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Table of Contents

Towards Understanding Workplace Antecedents that affect Mental Health of LGBTQIA+

Kristen L. Grisdale[1] and Madelyn Geldenhuys [2]

[1]*The Australian College of Applied Professions*
[2]*University of Notre Dame, Australia*

It is evident that LGBTQIA+ people are at higher risk of mental health difficulties which is worsened by discrimination and poor work relationships. The theory of employee engagement suggests that work engagement can be facilitated through positive psychological experiences of meaningfulness, availability, and safety at work, which is expected to also promote wellbeing. This study expands on this understanding by examining how these positive psychological conditions can relate to work engagement and positively affect the overall mental health of LGBTQIA+ employees daily. Data was collected from a diverse group of Australian LGBTQIA+ employees (N = 27) over five consecutive days (N = 135 observations). Results from regression analysis demonstrated that psychological meaningfulness and psychological availability fostered work engagement among LGBTQIA+ employees and improved their overall mental health through work engagement. Psychological safety decreased anxiety among LGBTQIA+ employees when the workplace climate was supportive. Thus, it was determined that psychological meaningfulness, availability and safety are important not only for employees to engage, but also the mental health of LGBTQIA+ employees. This provides important insights for organisations and employees that can guide them to target factors in the workplace to improve the mental health of LGBTQIA+ employees.

Key words: Work engagement, LGBTQIA+, psychological meaningfulness, psychological availability, psychological safety, stress, depression, minority stress

Workplace mental health conditions are one of the costliest forms of workplace injury, with those affected taking significantly more time off work and receiving higher compensation when compared with physical injuries and diseases (Safe Work Australia, 2022). Further, Australian businesses are estimated to spend up to 39 billion dollars each year due to absenteeism, reduced work performance, and presenteeism (poor functioning at work due to fatigue, decreased concentration, and poor memory) (Productivity Commission, 2020). This data suggests that not only are workplaces fertile for the development of mental-ill health, the impact of mental-ill health is significant to both the employee and employer.

As a minority group, LGBTQIA+ (Lesbian, gay, bisexual, transgender, queer, intersex, asexual, and other diverse sexualities, and genders) people experience higher levels of mental health problems in their direct and broad social and community environments (see Owens et al., 2022) because poor relationships may develop in these environments due to a person's gender and/or sexual identity. Research further confirms that LGBTQIA+ people are also at higher risk of developing depression, suicidality, and substance use problems (MONGeLLi et al., 2019; Valentine & Shipherd, 2018). As a leading social environment that can cause further social stress (Meyer, 2003), work can increase mental health problems for LGBTQIA+ people (Owens et al., 2022).

Work and workplaces have the potential to influence mental health outcomes given their ability to amplify minority stress, and their ability to influence social and economic wellbeing in this already marginalised population. For example, due to high rates of

discrimination and prejudice specifically in the tyworkplace (Tatum, 2018), unsafe and unsupportive workplaces (Owens et al., 2022) and significant distress relating to disclosure of gender identity (Newheiser et al., 2017), mental health concerns for LGBTQIA+ people are exacerbated. Indeed, hostile workplaces, characterised by demeaning attitudes toward LGBTQIA+ employees, derogatory jokes, and verbal and physical abuse contributes to absenteeism, lower job satisfaction, and strong intentions to leave organisations (Holman et al. 2019). It is plausible to consider that under these circumstances, their ability to experience positive psychological work states would become compromised. Owens et al. (2022) mentions that the workplace environment can impact mental health outcomes (e.g., psychological distress and/or depression) of LGBTQIA+ employees.

One of workplace factors that is likely to have a significant impact on overall work-related wellbeing is the degree to which an employee engages (or disengages) in or at their work. Work engagement can be defined as the physical, cognitive, and emotional investments and expression in work roles (Lemon & Palenchar, 2018; May et al., 2004). Employees who are highly engaged have been found to experience good mental health, whereas those who are disengaged experience poor mental health outcomes such as, burn out, emotional exhaustion, and depersonalisation (Afrahi et al., 2021; Shuck & Reio, 2013). Given LGBTQIA+ employees experience barriers that may prevent engagement in work, it is important to explore their experiences of this and consider any flow-on effects that may be evident for overall mental health over time. Further, exploration into factors that may facilitate mental health through work engagement facilitate insight necessary to manage and prevent poor mental health outcomes for LGBTQIA+ employees.

While the impact of engagement and disengagement in the workplace has been extensively researched (Al-Tit et al., 2015; Heikkeri, 2010; Saks, 2019), the focus has largely concerned the consequences relevant to the organisation (e.g., commitment, performance, satisfaction, employee retention) as opposed to the long-term and overall impact on mental health outcomes, such as state-like depression and anxiety for employees (see Allam, 2017; Azeem et al., 2020; Ram & Prabhakar, 2011; Thanacoody et al., 2014). Since work is a prominent role in a person's life (Meyer, 2007) and can significantly influence a person's mental health state (Afrahi et al., 2021), it is critical to investigate how we can attain work engagement as well as consider how minority groups such as LGBTQIA+ employees can attain work engagement.

Three positive psychological conditions have been well-supported as critical to attaining employee engagement, namely *psychological meaningfulness*, the sense that one is receiving rewards as a result of investing oneself physically, cognitively, or emotionally (May et al., 2004); *psychological availability*; having access to physical, emotional, or psychological resources to personally engage (May et al., 2004), and *psychological safety* the sense that one can confidently and predictably be one's true self without fear of negative consequences to self-image, status, or career (May et al., 2004). Previous research clearly shows these positive conditions are essential to engage at work (see Frazier et al., 2017; Geldenhuys et al., 2014; Geldenhuys & Łaba, 2018), however, only a few studies have examined these relationships among working populations with minority status (e.g., women, people with disabilities). Of those that have investigated minority groups, barriers to psychological meaningfulness, psychological availability, and psychological safety attainment have been found (see Banihani et al., 2013; Rudstam et al., 2012).

The present study therefore makes the following contributions. Firstly, we add to the theory of employee engagement (Kahn, 1990) by investigating how psychological meaningfulness, psychological availability, and psychological safety directly relate to work engagement among LGBTQIA+ employees. While research has shown the barriers minority groups such as women and people with disabilities have in attaining these positive

psychological states (Banihani et al., 2013; Laba & Geldenhuys, 2016, 2018; Rudstam et al., 2012), it is important to extend this further to other marginalised populations (e.g., LGBTQIA+) who experience unique stressors that lead to high levels of mental health concerns. Secondly, we show how psychological meaningfulness, availability and safety specifically relate to depression, stress, and anxiety of LGBTQIA+ employees. Previous research mainly shows broad work-related well-being outcomes for the organisation (Allam, 2017). Thirdly, although work engagement (Bakker, 2017), meaningfulness (Geldenhuys et al., 2021) and availability (Geldenhuys & Łaba, 2018) has been investigated over time before, it was linked to workplace outcomes broadly and has not formed part of the original theory of employee engagement (Kahn, 1990). We therefore do not know how psychological meaningfulness, availability, and safety affect work engagement and mental health outcomes day to day.

Theoretical Background

Work engagement is defined as the simultaneous employment and expression of one's 'preferred self' at work (Kahn, 1990). The Theory of Employee Engagement posits that when employees are engaged, they become cognitively vigilant, physically involved, and empathetically connected to work (Kahn, 1990). This allows them to express what they think and feel, be creative, and align their beliefs and values, and their desires for relations with others. Conversely, personal disengagement is the simultaneous withdrawal and defence of one's preferred self, which is characterised by the absence of connections to work and to others, lack of emotional, cognitive, and physical presence, and passivity and incompletion of role performances. Thoughts and feelings, creativity, and beliefs and values are thus suppressed, and tasks are motivated by role obligations. The employee engagement theory posits that employees either employ and express or withdraw and defend their preferred selves based on their psychological experiences of self-in-role (Kahn, 1990). Whether one engages or disengages depends on three psychological conditions.

Psychological Meaningfulness as explained by Kahn (1990) refers to the sense that one is receiving rewards because of their physical, cognitive, or emotional investments in their work. These rewards include feelings of being valued and giving to and receiving from work and others. Three factors influence psychological meaningfulness. Firstly, task characteristics that facilitate psychological meaningfulness must be challenging, clear, varied, creative, and autonomous to some degree. Secondly, given that roles often require employees to adopt congruent identities, if the employee views the role as being suited to them or encapsulates how they wanted to see themselves, they are more likely to experience psychological meaningfulness. Lastly, when tasks promote rewarding interactions between co-workers and clients, dignity, self-appreciation, and a sense of worthwhileness and human connection meaningfulness can be facilitated.

Psychological availability as explained by Kahn (1990) is the sense that one possesses the physical, emotional, and psychological resources needed for investment in role tasks and the preparedness to harness engagement. These components require strength, energy, and readiness. Psychological availability can become compromised by a lack of emotional investment, insecurities, self-consciousness, status, and ambivalence about their role due to an incompatibility with the organisation's values. Employees' outside lives can also distract them from being available in their role and compromise availability.

Psychological Safety as explained by Kahn (1990) refers to the feeling of being able to show and employ oneself in the absence of fear of negative consequences to self-image, status, or career. Employees must also feel as though situations are trustworthy, secure, predictable, and behavioural consequences are known. Psychological safety is dependent on social systems that create a degree of trustworthiness, consistency, and non-threatening cultures. Interpersonal

relationships that offer support, trust, openness, flexibility, and that are non-threating are essential, as well as informal roles within groups that allow one to safely express parts of self.

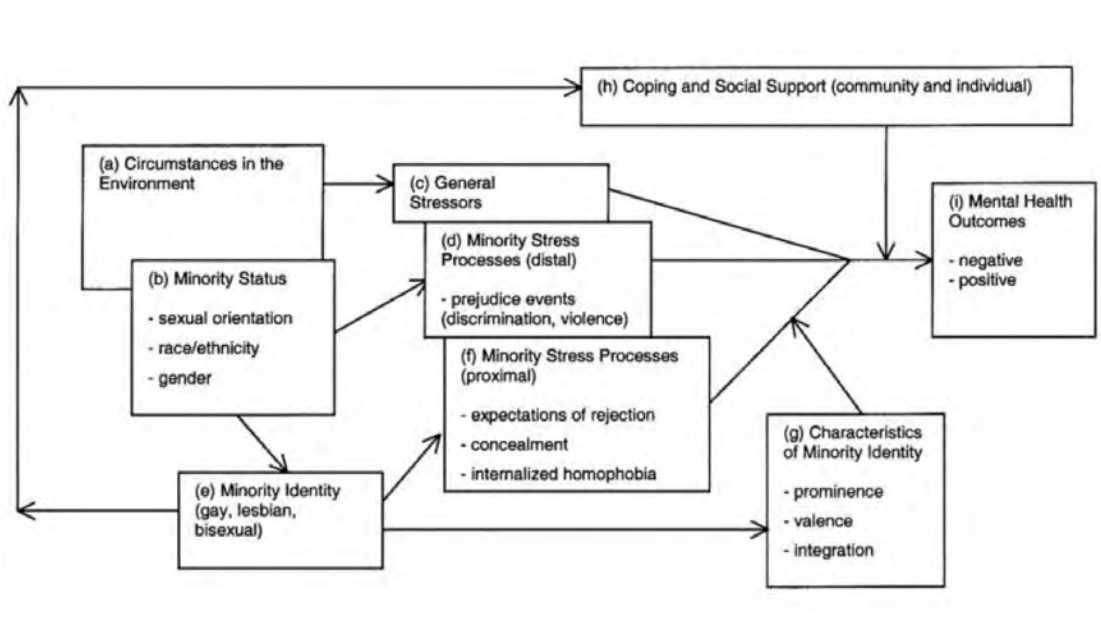
Therefore, if employees in general perceive their work to be incongruent to their own identity or desired status, work is unlikely to facilitate psychological meaningfulness. Similarly, psychological meaningfulness becomes compromised with interactions that inhibit the interpersonal connections needed for successful completion and enjoyment of tasks. Further, untrustworthy, unaccepting, rigid, and threatening dynamics and actions afforded at any organisation level are likely to compromise psychological safety for employees. Given the unique nature of mental health of LGBTQIA+, they are likely not to have congruence in their work experiences. As mentioned before, poor mental health among LGBTQIA+ people are exacerbated because of stress they perceive within family, community, and societal dynamics (see Owens et al., 2022). With work being a social environment, it is yet another environment that can increase and trigger mental health.

Minority stress is distinguished from stress that stems from events and conditions that result in the need for an individual to change and adapt to new circumstances by accounting for the excess stress that exists due to stigmatised minority social positions (Meyer, 2003). The minority stress model suggests that minority groups are alienated from social structures, norms, and institutions, and experience an incongruency of dominant social values and ways of living (Meyer, 2003). Given the need for humans to have interactions with others to achieve a sense of self (Cooley, 1922), the need for normality and social control to function in society (Durkheim, 1951), and the need for harmony between the dominant group and the individual to facilitate healthy living (Selye, 1982), minority stress can result in detrimental outcomes.

In their application of minority stress to lesbians, gay men, and bisexuals (LGB), Meyer (2003) proposed that sexual prejudice, stigma, and discrimination create hostile and stressful environments that contribute to a higher prevalence of mental disorders among LGB individuals compared to heterosexual individuals. Three processes of minority stress were identified that are relevant to LGB individuals to develop the minority stress model: 1) external, objective, and stressful events and conditions (chronic and acute); 2) expectations of such events and the vigilance associated with them; and 3) the internalisation of negative attitudes. These processes are described to exist along a continuum from distal stress to proximal stress. Distal stress is objective and does not rely on perceptions or interpretations from the individual and can be independent from identification with minority status. For instance, a man dates men, but does not identify as gay, yet receives discrimination due to others' perception of him as gay (Meyer, 2003). Proximal stress is subjective and thus typically relates to self-identity as LGB (Meyer, 2003). Personal meanings attached to one's identity vary according to the subjective stress experienced (Meyer, 2003). For instance, a female employee who identifies as lesbian tells her co-workers that she is in a relationship with a man due to fears of rejection and internalised shame associated with her sexual identity. Figure 1 provides a summary of minority stress model.

Figure 1

Minority Stress Processes in Lesbian, Gay, and Bisexual populations



Note. General environmental circumstances (box a), for example, homelessness is interdependent with minority status (box b). For instance, homelessness for a gay adolescent being associated with being excluded from the family home. These factors lead to exposure to stressors, such as loss of employment (box c) and stressors associated with minority status, such as violence (box d) that are also interdependent with proximal stressors, such as internalising homophobia (box f). One's identification with minority status (box e) can also lead to proximal stress processes. Characteristics of minority identity can strengthen or weaken stress processes (box g), for instance health outcomes are impacted more when the LGB identity is prominent than when it is secondary to self-identification. LGB identity may also be a strength (box h) for instance, when it facilitated community connection. From Meyer, I. H. (2003). Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence. *Psychological Bulletin*, *129*(5), 674–697. https://doi.org/10.1037/0033-2909.129.5.674

Daily psychological conditions and work engagement

As discussed, Kahn's (1990) theory of employee engagement posits that to facilitate personal engagement in work, psychological meaningfulness, psychological availability, and psychological safety must be fulfilled. In the absence of these psychological conditions, disengagement is a likely consequence (Kahn, 1990; May et al., 2004). In their study, Chikoko et al. (2014) found psychological meaningfulness to be a predictor of engagement, while Frazier et al., (2017) found psychological safety to be positively related to engagement. Geldenhuys and Łaba (2018) found that psychological availability predicted engagement among women in professional and business roles across time. However, as mentioned, few studies (see Banihani et al. 2013 and Rudstam et al. 2012) have applied this model to minority samples. Of those that have, significant barriers (Banihani et al., 2013) were uncovered that prevented employees from attaining the psychological conditions.

The minority stress model (Meyer, 2003) can be used to understand the unique stressors evident in workplace contexts that go beyond general day-to-day work stress, as well as supportive ameliorating factors that can buffer against stressors for LGBTQIA+ employees. In applying the minority stress model to the workplace context, Holman et al. (2019) identifies two types of workplace climates; hostile, characterised by demeaning interactions between colleagues or harassment and supportive, characterised by organisation-wide policy prohibiting

discrimination based on sexual orientation, diversity trainings, and public support. The predicament of disclosing or concealing one's sexual identity also complicates LGBTQIA+ employees' experiences at work (Newheiser et al., 2016). For instance, disclosing contributes to feelings of vulnerability, while concealing reduces feelings of belonging (Newheiser et al., 2016). Given the distinct and unique climates and stressors that can exist for LGBTQI+ employees, it is too possible that this minority population experiences barriers to the fulfilment of psychological meaningfulness, psychological availability, and psychological safety.

Further, existing research largely focuses on the relationship between psychological meaningfulness, psychological availability, psychological safety, and engagement at one point in time, with the exclusion of Geldenhuys and Łaba (2018). An important aspect of engagement for employees is that it is susceptible to day-to-day level fluctuations (Kahn, 1990). Bailey and Madden (2016) concluded that meaningfulness arose in an episodic way rather than in a sustained way. That is, employees would experience highly meaningful moments or feelings related to their work, yet this was not shown to sustain over a single working day. Thus, while these experiences likely contribute to an overall sense of meaningfulness and engagement, which may explain previous findings of the relationship, there is the potential that psychological conditions are not met every day. Similarly, Saks (2006) notes that employees engage themselves to varying degrees according to the resources provided to them from the organisation, suggesting that psychological availability is too susceptible to fluctuations depending on the availability and provision of employer resources. Interestingly however, Geldenhuys and Łaba (2018) was the first study to investigate the relationship between psychological availability and engagement using a day-level design.

There is a need to investigate the relationship of psychological meaningfulness, psychological availability, and psychological safety using a longitudinal design to not only capture differences between participants, but also within participants at the day level. This is particularly important for LGBTQIA+ employees given that disclosure of one's sexual or gender identity, which is commonly the basis for discrimination in the workplace (Newheiser, et al., 2017; Rengers, et al., 2021) is a continuum rather than a dichotomy (Rengers, et al., 2021). That is, disclosure of one's sexual or gender identity is a selective process, whereby employees may disclose to some colleagues, but not others. Thus, depending on who an employee works with at given times, engagement is likely to fluctuate if indeed it is found that the possession of the psychological conditions is influenced by supportive or hostile workplace climates.

Hypothesis 1*: Daily a) Psychological meaningfulness, b) psychological availability, and c) psychological safety has a positive direct effect on work engagement of LGBTQIA+ employees*.

Daily psychological meaningfulness, psychological availability, psychological safety, work engagement and overall mental health

Levels of engagement in the workplace have been linked to how employees perceive and experience aspects of their life beyond work, commonly referred to as psychological wellbeing. For instance, in a sample of health care workers, Shuck and Reio (2013) investigated whether engagement moderated the relationship between workplace climate and emotional exhaustion, depersonalisation, psychological wellbeing, and personal accomplishment. It was found that employees with high levels of engagement exhibited higher overall psychological wellbeing, while employees who had low levels of engagement experienced exhaustion and depersonalisation. Further, Roiguez-Muñoz et al. (2014) found that engaged employees experience a spill-over effect of daily happiness in their lives as a result of engagement in the workplace (Roiguez-Muñoz et al., 2014). Similarly, in a longitudinal design, Shimazu et al.

(2015) found that engagement predicted future wellbeing, as indicated by psychological health and high job satisfaction following a two-year interval.

While psychological wellbeing is an important outcome to measure, it is also important to examine clinical mental health problems that may arise in the workplace. Specifically, depression and anxiety are common mental health diagnoses that are found to arise as psychological outcomes in Australian organisations (Black Dog Institute, 2016). Depression is characterised by the World Health Organisation (2023) as persistent sadness, a lack of interest or pleasure in enjoyable activities, and disruptions with sleep, appetite, tiredness, and poor concentration. Anxiety is characterised by persistent and excessive worry, often about daily situations, such as family, life, or work that is difficult to control (Australian Psychological Society, 2021). There is limited research that investigates the workplace antecedents of these outcomes and thus it is critical address these specifically.

Given the established relationship between psychological meaningfulness, psychological availability, psychological safety, and work engagement and between work engagement and psychological wellbeing, it is important to understand how these relationships interact together. We also know very little about how these relationships manifest for LGBTQIA+ employees. As stated, given the evidence of poor mental health outcomes for LGBTQIA+ employees, it is imperative to determine the potential buffering effects of these positive workplace factors on overall clinical mental health outcomes especially because they find it more difficult to fully experience meaningfulness, availability, and safety at work due to ongoing discrimination and hostile interactions at work. To fill these gaps, this research measures anxiety and depression over the period of five days to capture these variations and demonstrate not only overall mental health, but also work-related mental health among LGBTQIA+ employees. The rationale for a five-day investigation stems from previous research (see Bakker, 2014 and Sanz-Vergel & Rodriguez-Munoz, 2013) that have found within person daily fluctuations on variables including engagement, wellbeing, and mental health.

Hypothesis 2*: Daily a) psychological meaningfulness, b) psychological safety, c) psychological availability and d) work engagement has a negative direct effect on depression.*

Hypothesis 3*: Daily a) psychological meaningfulness, b) psychological safety, c) psychological availability and d) work engagement has a negative direct effect on anxiety.*

Method

Procedure

Ethics approval was obtained from the Navitas Human Research Committee (Approval number: 749090721). Advertisements that were placed on Facebook and Instagram included a link to the expression of interest form, which was hosted by the online data collection software, Qualtrics (https://www.qualtrics.com). Students recruited from the Australian College of Applied Psychology accessed the same link via their online student research platform. The expression of interest survey included information about the study, including what was required of them if they chose to participate. Upon consenting to participation, by indicating 'yes' to the question, 'I consent to participate in this study', participants were sent the link to the first of five surveys on the next coming Monday at 5pm. On Tuesday, Wednesday, Thursday, and Friday, participants were sent the relevant links for the four remaining surveys. Each time participants were sent a link via email they were provided with a link to opt out if they chose to. Each of the surveys also included a psychological services sheet and a debriefing statement at the end. Participants from the general public were also given the option to go in the prize draw at the conclusion of the fifth survey.

Participants

Participants were $N = 27$ ($N = 135$ observations) members of the general public and students enrolled in first-year psychology units at a higher education institution, holding employment. Female participants constituted 48.1% ($N = 13$) of the sample, 22.2% ($N = 6$) were male, 11.1% ($N = 3$) were non-binary, 11.1% ($N = 3$) were transgender, and 7.4% ($N = 2$) were genderqueer. Participants identifying as gay constituted 33.3% ($N = 9$) of the sample, 7.4% ($N = 2$) identified as lesbian, 40.7% ($N = 11$) identified as bisexual, and 18.5% ($N = 5$) identified as pansexual. Participants were eligible to participate if they were over 18 years of age, identified as LGBTQIA+, were proficient in English, and had held the same job for at least one year. Participants from the general public were recruited through convenience sampling via Facebook and Instagram and were offered the opportunity to go in the draw to win a gift voucher. Given participant numbers, this provided them with a one in 5.4% chance of winning.

The data from the participants recruited from the higher education institution were managed through an online student research platform. Participation was voluntary and consent was obtained prior to commencement of the questionnaire each day. The intended sample size of 50 was chosen based on the rationale that for a day level design, a sample size smaller than 30 may lead to biased results and thus, an increased sample size at the person level has been demonstrated to have a greater impact than increasing sample size at a day level and increases the likelihood of generalisability (Scherbaum & Ferreter 2009). Additionally, multilevel modelling requires a sample size of at least 30 to provide sufficient statistical power (Maas & Hox, 2004).

Measuring Instruments

The five-day study and an initial expression of interest survey were hosted by Qualtrics (https://www.qualtrics.com). The expression of interest survey consisted of a demographic survey and an option to consent or not consent to participate. The first of five surveys consisted of six self-report tests and the remaining four surveys consisted of five self-report tests. All scales were adapted to gauge the participants experience on the day rather than over a longer period. For instance, 'Today at work, I felt busting with energy'.

Demographics

Participants provided their gender (open text), length of time in current work role (1-2 years, 2-3 years, 4-5 years, 5+ years), job status (full time, part time, casual, temporary, contract, other), position in the organisation (open text), whether they were self-employed (yes or no), sexual orientation (open text), and ethnic group (open text).

Control Variables

A workplace climate measure was used to determine the environment in which the participants worked and whether they felt supported or not. The lesbian, gay, bisexual, and transgendered climate inventory (LGBTCI; Liddle et al., 2004) was adopted for this purpose and was administered once. We also controlled for the effects of job status.

Lesbian, Gay, Bisexual, and Transgendered Climate Inventory

The LGBTCI is a 20-item self-report measure that assesses the atmosphere of a workplace in terms of the degree of supportiveness and hostility evident in the workplace (Liddle et al., 2004). The items are scored on a 4-point Likert scale from 1 (doesn't describe at all) to 5 (describes extremely well) (Chronbach's $\alpha = .96$). Twelve items are positively geared, for example, "LGBT people consider is a comfortable place to work" and the remaining eight

are negatively geared, for example, "employees are expected to not act too gay" and are reverse scored. Total scores range from 20 to 80, with low scores indicating a hostile work climate and high scores indicating a supportive work climate. The scores from this questionnaire were used to establish a measure of supportiveness (high scores) and hostility (low scores).

The Depression, Anxiety, and Stress Scale

The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) is a 21-item self-report screening measure that assesses the emotional states, depression, anxiety, and stress. The items are scored on a 4-point Likert scale measuring the frequency or severity of participants' experiences from the day (Chronbach's α ranging from .92-.95). The scale ranges from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Example items include, 'I found it difficult to relax' and 'I felt down-hearted and blue'.

The Utrecht Work Engagement Scale

The Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) is a 17-item measure which has been validated using Australian samples used to assess engagement. It includes three subscales: vigour (Chronbach's α =.82), dedication (Chronbach's α =.89), and absorption (Chronbach's α =.83). The items are scored on a 6-point Likert scale measuring the frequency of experiences from 1 (Almost never) to 6 (Always). Example items include, 'today, I was immersed in my work' and 'today, I was proud of the work that I did'.

Psychological Meaningfulness, Psychological Availability and Psychological Safety Scale

The Psychological Meaningfulness (Spreitzer, 1995; May, 2003), Psychological Availability (May et al., 2004), and Psychological Safety (May et al., 2004) Scale is a 14-item self-report measure used to assess the degree of psychological meaningfulness (Chronbach's α = .90), psychological availability (Chronbach's α =.85) and psychological safety (Chronbach's α =.71) one experiences at work. The items are scored on a 5-point Likert scale ranges from 1 (strongly disagree) to 5 (strongly agree). The psychological meaningfulness scale consists of six items, example items include, 'today, my job activities were personally meaningful to me' and today, my job activities were significant to me. The psychological availability scale consists of five items, example items include, 'today I was confident in my ability to think clearly at work' and 'today, I was confident in my ability to display the appropriate emotions at work'. The psychological safety scale consists of three items, one is positively geared and two are negatively geared, example items include, 'today, I was not afraid to be myself at work' and 'today, there was a threatening environment at work'.

Statistical Analysis

Assumption tests for multilevel regression analysis were performed using SPSS, including the linearity of relationships, normality, homoscedasticity, and normal residual errors, as suggested by Field (2013). Descriptive statistics were also analysed for each of the scales used, including, means, standard deviations, correlations, skewness, kurtosis, and reliabilities. The Multilevel Mediational Analysis was then conducted using the *R* statistical programme (version 3.1.3, R Core Team, 2015, Culpepper & Aguinis 2011), specifically the *psych* (Revelle, 2016) statistical package, *nlme* (Pinheiro, et al., 2016), *lme4* (Bates, et al., 2015) and the PROCESS mediate statistical packages were used. Analyses were conducted at the between person level and the within person level. Day-level data (level 1: within-persons) was nested within the person (level 2: between persons). Both an intercept-only (Null model) and intercept-slope (Hypothesised) model were adopted for each analysis with the slope model

allowing for daily-level variation of the relationships. To determine if daily-level variation was evident, Log Liklihood (LogLik) scores, variance, a chi-square difference test, the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC) were applied. Additionally, the interclass correlation coefficients (ICC's) were determined for each variable.

Results

Preliminary Analysis

The assumptions of linearity and normality were met with all predictor variables on the outcome variables. Homogeneity of variance was met for all the variables, except for psychological safety and depression and anxiety, psychological availability and depression, and psychological availability and depression and anxiety. However, the sample size is equal for each of the outcome variables which means that homogeneity of variance is not needed (Field, 2013). The residuals of the model were also normally distributed and there was no evidence of multicollinearity, with all VIFs <10.

Descriptive Statistics

The means, standard deviations, reliabilities, and correlations among the observed study variables are included in Table 1 in addition to the ICC values for each variable. The ICC values ranged between .53 and .76, showing sufficient support for variance in the variables across days and confirming that multilevel regression was appropriate for the analysis (Zhang & Wang, 2022). Based on comparison of the fit statistics, the hypothesised model, that is, the intercept and slope model, fit the data best. Using a growth curve analysis to determine how the variables varied across days, our results showed psychological meaningfulness fluctuated over the five days (γ = -.89; $p < 0.05$), psychological safety remained relatively stable (γ = -.05; $p > 0.05$), psychological availability fluctuated over the five days (γ = -.95; $p < 0.05$), work engagement fluctuated over the five days (γ = -1.21; $p < 0.001$), anxiety (state) fluctuated over five days (γ = -.67; $p < 0.05$) and while depression did not vary much over the five days (γ = .04; $p > 0.05$).

Table 1

Descriptive Statistics, Interclass Correlation Coefficients and Correlation Coefficients

	M	*SD*	ICC	1	2	3	4	5	6
1. Meaning	3.46	1.20	.66	-					
2. Availability	3.70	0.77	.45	.47*	-				
3. Safety	3.79	0.83	.70	.14	.43*	-			
4. Depression	8.65	8.09	.76	.01	.39*	-.26*	-		
5. Anxiety	7.08	7.51	.53	.06	.32*	-.48*	.63*	-	
6. Work Engagement	68.07	11.34	.55	.77*	.62*	.24*	.03	.05	
7. Workplace Climate				.06	.33*	.60*	-.28*	-.59	.25*

The variables that were significantly correlated were psychological meaning and psychological availability (r = .47, $p < .05$) psychological meaning and work engagement (r = .77, $p < .05$), psychological availability and psychological safety (r = .43, $p < .05$), psychological availability and depression (r = .39, $p < .05$) psychological availability and anxiety (r = .32, $p < .05$), psychological availability and work engagement (r = .62, $p < .05$), psychological availability and workplace climate (r = .33, $p < .05$), psychological safety and depression (r = -.26, $p < .05$), psychological safety and anxiety (r = .48, $p < .05$),

psychological safety and work engagement ($r = .24$, $p < .05$), psychological safety and workplace climate ($r = .60$, $p < .05$) and work engagement and workplace climate ($r = .25$, $p < .05$). While, work engagement and psychological meaning were highly correlated ($r = .77$), Tabachnick and Fidell (2014) note that variables should only be considered redundant if the correlation is above .90.

Hypothesis Testing

Hypothesis 1 stated that daily a) psychological availability, b) psychological safety, and c) psychological meaningfulness has a positive direct effect on work engagement. The results in Table 2 demonstrate that while controlling for workplace climate and job status, daily psychological availability ($\gamma = .18$; $p < 0.001$; $R^2 = 0.16$), psychological meaningfulness ($\gamma = .60$; $p < 0.001$; $R^2 = 0.49$) and psychological safety ($\gamma = -.89$; $p < 0.05$) were positively related to daily work engagement. There was no significant direct effect of workplace culture and job status on work engagement. Thus, the results provide support for hypothesis 1a, 1b, and 1c.

Table 2

Weekly Psychological Conditions predicts weekly Work Engagement

	Null Model (Intercept only) (fixed model		Model 1 Hypothesized model (Intercept and slope) (Random effects)	
Variable	Estimate	*SE*	Estimate	*SE*
Intercept (person-job fit)	3.36	0.92	3.31	0.06
Control: Work Culture			-0.05	0.01
Control: Job Status			0.23	0.17
Psychological meaningfulness			0.60**	0.08
Psychological availability			0.18**	0.08
Psychological safety			0.17*	0.08
-2 x log (deviance)		222.00		204.1
Δ - 2 log				17.90*
Df		7		9
AIC		276.10		236.00
BIC		380.70		256.34
Variance				
Between-person				
Random intercept variance		0.42		
Random slope variance				0.22

Within-person				
Residual variance	0.22	0.46	0.18	0.40

Note. AIC, Akaike information criterion; BIC, Bayesian information criterion **p < .001, *p < .05. Chi-square difference test *p < 0.05

Hypothesis 2 stated that daily a) psychological meaningfulness, b) psychological availability, c) psychological safety and d) work engagement has a negative direct effect on depression. We controlled for the effects of workplace culture and job status. Neither had significant direct effects on depression. The results in Table 3 demonstrate a direct effect of daily psychological meaningfulness on depression while controlling for workplace climate and job status (γ =-0.91; $p < .001$; $R^2 = 0.33$). Further, while controlling for workplace climate and job status, daily psychological availability (γ = -1.76; $p < .001$; $R^2 = 0.24$) had a negative direct effect on depression. However, there was no significant relationship between psychological safety (γ = -0.97; $p > .05$) and depression, nor work engagement (γ = 1.12; $p > .05$) and depression (γ = -.176; $p < .001$).

Hypothesis 3 stated that while controlling for workplace climate, daily a) psychological meaningfulness, b) psychological availability, and c) psychological safety has a negative indirect effect on anxiety through work engagement. We controlled for the effects of workplace climate and job status. Workplace culture (γ = -.89; p < 0.05) and job status (Part time: γ = -6.67; p < 0.001; Full time: γ = -4.08; p < 0.001) had a significant direct effect on anxiety. The results in Table 3 show that while controlling for workplace climate and job status, psychological safety (γ = -1.80; $p < .001$; $R^2 = 0.64$) negatively predicted anxiety. There was no direct relationship between psychological meaningfulness (γ = -0.79; $p > .05$) and anxiety, nor psychological availability (γ = 0.29; $p > .05$) and anxiety, nor work engagement (γ = 1.03; $p > .05$) and anxiety while controlling for workplace climate and job status. Daily psychological meaningfulness indirectly affected anxiety through work engagement (95% CI = [0.382; 0.740]; $p < 0.001$; Estimate = 0.555). The results provide support for hypothesis 3b.

Table 3

Weekly Psychological Conditions, Work Engagement and Mental Health

	Null Model (Intercept only)		**Model 1 (Intercept and slope)**	
Variable	Estimate	*SE*	Estimate	*SE*
	Psych conditions → Work engagement → Depression			
Intercept	4.78	2.94	21.682	1.19
Control: Work culture			-0.11	0.08
Control: Job Status			FT: 5.86* | PT: 5.10	FT: 2.31 | PT: 5.10
Psychological meaningfulness			-0.91**	0.84
Psychological availability			-1.76**	0.74
Psychological safety			-0.97	0.67
Work engagement			1.21	0.92
-2 x log		803.97		794.80

Δ - 2 log				9.17*
df		8		22
AIC		838.78		819.97
BIC		902.03		843.04
Variance				
Between-person				
Random intercept variance		6.39		
Random slope variance				5.36
Within-person				
Residual variance	15.06	3.87	13.37	3.29

Note. AIC; Akaike information criterion; BIC, Bayesian information criterion; **p < .001.

	Null Model (Intercept only)		**Null Model (Intercept only)**	
	Estimate	*SE*	Estimate	*SE*
	Psychological conditions → Work engagement → Anxiety			
Intercept	3.62	2.88	10.09	0.28
Control: Work culture			-0.44**	0.07
Control: Job Status			FT: 4.08* | PT: 6.77*	FT: 1.7 | PT: 2.17
Psychological meaningfulness			-0.79	0.96
Psychological availability			0.29	0.64
Psychological safety			-1.80**	0.78
Work engagement			1.03	0.92
-2 x log		819.12		800.38
Δ - 2 log				18.74*
df		8		22
AIC		844.38		835.12
BIC		908.30		858.36
Variance				
Between-person				
Random intercept variance		5.66		
Random slope variance				10.04
Within-person				
Residual variance	15.59	3.94	9.52	3.08

Note. AIC; Akaike information criterion; BIC, Bayesian information criterion; **p < .001.

Discussion

Given the gaps in the current literature, the aim of this research was to examine how psychological meaningfulness, psychological availability, and psychological safety directly relate to work engagement with LGBTQIA+ employees. Further, it aimed to investigate the relationship between psychological meaningfulness, psychological availability, and psychological safety and work engagement on overall psychological wellbeing over time. These findings are discussed in the sections that follow.

Daily psychological meaningfulness, psychological availability, psychological safety, and engagement

The results of the study confirm that daily psychological meaningfulness and psychological availability positively relate to work engagement for LGBTQIA+ employees. However, psychological safety does not. That is, when LGBTQIA+ employees feel they are receiving rewards because of their physical, cognitive, or emotional investments in their work (psychological meaningfulness) they are likely to feel engaged in their work. Further, when they feel that they have the physical, emotional, and psychological resources needed for investment and preparedness in role tasks (psychological availability), engagement in work is facilitated. This finding lends partial support for Kahn's (1990) theory of employee engagement and extends it further by demonstrating its application to LGBTQIA+ employees. Additionally, fluctuations in levels of work engagement were examined among LGBTQIA+ employees demonstrating support for Geldenhuys and Łaba (2018) and Bailey and Madden (2016) who confirmed the episodic nature of engagement in the workplace suggested by Kahn.

The unexpected result that psychological safety does not relate to engagement may indicate that LGBTQIA+ employees do not feel as though they can show and employ themselves in the absence of fear of negative consequences to self-image, status, or career to the degree to foster engagement. Given that workplace climate was controlled for and not significant, the hypothesis could not be explained by a hostile work environment that presents these threats. However, only 33% of participants reported having disclosed their sexual or gender identity to everyone or mostly everyone at work. Kahn (1990) suggests that psychological safety is facilitated by employees staying within the bounds of acceptable behaviour at work. This may suggest that rather than external factors, such as discrimination in the workplace, perhaps the risk of not staying within the boundaries of acceptable behaviour is sufficient to impede the fulfilment of psychological safety and thus, work engagement. Indeed, Newheiser et al. (2017) suggest that concealing one's identity is a common management strategy whose primary value is to protect themselves against devaluation.

It is also important to note that previous research investigating the relationship between psychological safety and work engagement had a weak relationship. For instance, Olivier and Rothmann (2007) found that psychological safety was a weak predictor of engagement compared to psychological meaningfulness and psychological availability.

Daily psychological meaningfulness, psychological availability, psychological safety, work engagement, and mental health

The results of this study found that there was a direct negative relationship between psychological meaningfulness and depression through work engagement. This finding suggests that when employees experience high levels of or continuing reward for the cognitive, physical, and emotional investment in their work daily and when they are engaged in their work depressive symptoms may reduce. When employees feel the fulfilment of physical, emotional, and psychological resources needed for investment in role tasks and engagement is harnessed,

depressive symptoms may reduce. Psychological safety did not influence engagement or depression, which may be explained by the aforementioned rationale.

There was a direct negative relationship between psychological meaningfulness and work engagement respectively, and anxiety. Thus, when employees feel as though they are being rewarded for their cognitive, physical, and emotional investments in their work, engagement improves, and anxiety symptoms may reduce. The results also indicate that while controlling for workplace climate and job status, there was a direct negative relationship between psychological safety and anxiety. That is, when employees feel as though they can be themselves at work without fearing negative consequences and work within a supportive work environment, their anxiety may reduce regardless of whether engagement is present or not. The results further showed that a supportive workplace climate, characterised by organisation-wide policy prohibiting discrimination based on sexual orientation, inclusion of sexual orientation in company diversity statements or diversity trainings, sexual minority resource-support groups, public support of LGBTQIA+ issues, and a general sense of acceptance (Holman, 2019), decreased anxiety among LGBTQIA+ employees. Interestingly, there was also a direct negative relationship between job status as a control on anxiety. Specifically, anxiety reduced when employees were engaged on either or full time or part time basis.

These findings provide support for Shuck and Reio (2013) who found that employees with high levels of engagement exhibited higher overall psychological wellbeing and Shimazu et al. (2014) who found that engagement predicted future wellbeing, as indicated by low ill-health and high job satisfaction. Further, the current results extend on the research literature by illustrating additional factors relevant to the experience of good mental health in the workplace. That is, the role of psychological meaningfulness and psychological availability in improving work engagement and subsequently buffering the incidence of mental-ill health. While psychological safety was not found to relate to engagement, it was found to directly buffer against anxiety, suggesting that it is remains imperative to consider as a factor to foster in organisations.

Limitations and Recommendations for Future Research

Although we were able to collect important information about the positive workplace experiences of LGBTQIA+ employees, this research was not without any limitations. Firstly, the sample size was small, which may have generated bias in the results and places limits on its generalisability. Given that LGBTQIA+ individuals make up about 3-4% of the overall population (Carman, et al., 2020), it was difficult to recruit more participants. However, this study does offer preliminary findings that illuminate the need for further research that targets larger samples in this area. Secondly, we reported that daily experience of positive psychological conditions can lead to better engagement and reduced mental health concerns, however, it is necessary to determine these relationships over extended time frames, e.g., over months. Future research should also endeavour to extend on the current findings by conducting an in-depth analysis of workplace climate and its possible moderating effect on engagement and mental health to further understand its influence on LGBTQIA+ employees. Finally, given the scope of this study, we did not collect demographic data that indicated whether employers worked remotely to determine any impact this may have had on the targeted variables. This would be a useful endeavour for future research.

Practical Implications and Contribution of the Study

The relationship between psychological meaningfulness, psychological availability, and psychological safety and engagement has important implications for organisations and employees. In applying this model to employees from the LGBTQIA+ community, further

insight is gained that suggests that organisation s should facilitate psychological meaningfulness and psychological availability in the workplace so that engagement can be harnessed. It also suggests that organisations should endeavour to understand what psychological safety means to LGBTQIA+ employees and the factors needed for them to feel psychologically safe and further enhance engagement.

The relationship between psychological meaningfulness, psychological availability, and psychological safety, engagement, and mental health among LGBTQIA+ employees also has critical implications for organisations. Organisations can use these findings as a guide to develop programs, training, and supervision to target the facilitation of the psychological conditions, which are likely to lead to engagement and buffer against adverse mental health outcomes. Furthermore, these findings may provide insight to LGBTQIA+ employees by encouraging them to reflect on their mental health and potentially identify psychological conditions that may be lacking in their workplace.

The critical finding of workplace climate and its influence on anxiety illuminates the necessity to implement culturally responsive training, beyond a tokenistic effort to facilitate a supportive and inclusive workplace culture and to buffer against ill-mental health and promote good mental health.

Conclusion

The current study demonstrated that psychological availability and psychological meaningfulness fostered work engagement among LGBTQIA+ employees across time. Further, results of multilevel regression found that adverse mental health can be buffered by psychological meaningfulness and psychological availability in their facilitation of engagement. Lastly, psychological safety reduces anxiety when employees work within a supportive environment.

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Address for Correspondence

Please address correspondence to Kristen Grisdale: kristengrisdale24@hotmail.com

Author Biographies

Kristen Grisdale is a Clinical Psychology Registrar and employed at SAL Consulting as a Clinical Consultant / Psychologist. She has previously worked as a Sessional Teaching academic at the Australian College of Applied Psychology and Guest Lecturer at Macquarie University. She is passionate about research in mental health and resilience, particularly among the LGBTQIA+ community.

Madelyn Geldenhuys (PhD) is an Associate Professor of Psychology and Organisational Psychology at the School of Arts and Sciences at The University of Notre Dame Australia. She is also a registered psychologist with research interests in mental health and

psychological wellbeing, work-related wellbeing, meaningful work, personality, gender in the workplace and organisational psychology (and behaviour). She collaborates on national and international research projects, while also supervising Honours, HDR and PhD research projects and theses.

Measuring Spirituality and Associated Health Outcomes Across Different Cultural Groups: A Scoping Review

Ms Alexandra E. Mannarino[1], Dr Rachel Reilly[2], and Assoc. Prof. Odette Pearson[2]

[1] *School of Psychology, University of Adelaide*
[2] *Wardliparingga Aboriginal Health Equity Theme, South Australian Health and Medical Research Institute*

To inform the development of a measure of non-religious spirituality for Aboriginal and Torres Strait Islander people, this review examined studies utilising scales that assessed non-religious spirituality. We also investigated associations between non-religious spirituality and health and identified the cultural groups in which these instruments had been validated. Across the 115 studies included, 28 spirituality tools were employed. A total of 50 health outcomes pertaining to physical health (34%) and psychological wellbeing (66%) were observed in their relationship to spirituality. The studies were conducted across 32 different countries, with the majority from the USA and involving White populations. Only seven studies used instruments developed for specific cultural groups. Future research is needed to enhance our understanding of how spirituality can be understood and measured in various cultural contexts.

Keywords: spirituality, health outcomes, Indigenous, measurement, scoping review

Aboriginal and Torres Strait Islander people experience considerable health inequity, including a greater burden of disease and lower life expectancy (Australian Institute of Health and Welfare, 2020). To effectively address this disparity, health interventions must conceptualise health from the perspective of Aboriginal and Torres Strait Islander people (Browne et al., 2021). Spirituality, for example, is rarely represented in Western approaches to health (Butler et al., 2019), but is inseparable from Aboriginal and Torres Strait Islander understandings of wellbeing (Gee et al., 2014). While Aboriginal and Torres Strait Islander nations within Australia have different terms, practices and epistemologies that reflect their worldviews; broadly speaking, Aboriginal and Torres Strait Islander spirituality establishes the interconnectedness of all things in creation, including land, water, sky, people and all living things (Grieves, 2008). It is expressed through sacred stories that have been passed down through generations, alongside ritual, ceremony, and cultural practices (Gee et al, 2014; Grieves, 2008). The objective of creation is to live in balance and harmony with all living things, and spiritual laws and practices are directed towards achieving this goal. When lands or waters are not healthy, it affects the health of Aboriginal and Torres Strait Islander people because they are spiritually connected to them (Clyde Rigney, personal communication). This is expressed by Gee et al. (2014) in their widely cited model of Aboriginal and Torres Strait Islander social and emotional wellbeing, which places 'Connection to spirit, spirituality and ancestors' alongside connection to body, mind, family, community, culture and country. Despite its significance, there are not currently any culturally sensitive measures of spirituality to indicate wellbeing and to inform health intervention for Aboriginal or Torres Strait Islander populations.

In comparison, there has been a notable rise in global academic interest regarding the connection between spirituality and health, leading to the development of a wide range of

assessment tools to measure spirituality (Austin et al., 2018; Demir, 2019). Whilst traditionally the term "spirituality" has been used interchangeably with "religiosity", recent trends to delineate between the two emphasise the unique relationship that each construct has to health. More frequently, researchers are opting to use instruments that appraise spirituality as a construct distinct to religiosity (Hammer et al., 2019). For instance, Kim and colleagues (2015) observed a significant negative correlation between spirituality and treatment response in patients with depressive disorders whereas religious affiliation and attendance of religious services were not at all related to treatment outcomes. Similarly, Alvarez and colleagues (2016) reported that patients with ambulatory heart failure who had higher levels of spirituality had better treatment adherence ($r = .26$, $p = .003$), whilst religiosity did not show a significant association with treatment outcomes ($r = .13$, $p = .14$).

Religiosity is commonly defined as an organised system of practices, beliefs and rituals that enable closer transcendence to a higher power or truth. By contract, spirituality is understood to be a universal (secular or religious) human experience (Koenig, 2012). Themes of connectedness (either to the self, others, nature, a higher power or a supreme being); transcendence (the ability to transcend the self); and life meaning, or purpose are often ascribed to definitions of spirituality (Weathers et al., 2016), with reference to awe; sacredness; power; and journey (Sessanna et al., 2011). Conceptualised in this manner, spirituality allows for an individual to identify as both religious and spiritual, or spiritual but not religious, which aligns more closely with the experience of many Aboriginal and Torres Strait Islander people.

The lack of uniformity in how these constructs have been conceptualised over time has resulted in ambiguity over what spirituality instruments actually measure. For instance, some tools purport to measure spirituality but in actuality operationalise religiosity, illustrated through enquiries about specific beliefs such as God (e.g. The Spiritual Assessment Inventory: Hall & Edwards, 2002) or practices such as prayer (e.g. Assessment of Spirituality and Religious Sentiments; Piedmont, 2010; Daily Spiritual Experiences Scale (DSES); Underwood & Teresi, 2002). Such measures thus lack construct validity (Kapuscinski & Masters, 2010; Pargament et al., 2013) and additionally, fail to recognise the unique expression of spirituality across cultures, particularly non-religious forms of spirituality (Büssing, 2017; de Jager Meezenbroek et al., 2012). Acknowledging diversity in spirituality may in turn lead to a more comprehensive understanding of health as rooted in culture (Sessanna et al., 2011; World Health Organization Quality of Life-Spiritual Religiousness and Personal Beliefs (WHOQOL-SRPB) Group, 2006).

This scoping review commenced with the consultation of a working group led by Aboriginal and Torres Strait Islander people who had determined that, despite the importance of spirituality for many Aboriginal and Torres Strait Islander people, an assessment tool had not been developed nor validated within this population. In line with their aim to develop a new spirituality tool, research was first required to investigate pre-existing measures used in health settings, and to determine if culturally relevant tools had been developed elsewhere. Although the discussion surrounding spirituality has been amplified in recent times, no reviews have been conducted since Monod and colleagues (2011) explored spirituality measures within the health literature, where spirituality was considered as a concept distinct from religiosity.

This scoping review sought to address three broad objectives:

1. To map the characteristics of studies published since 2011 that utilised non-religious measures of spirituality and reported associated health outcomes;
2. To summarise reported associations of spirituality with health outcomes; and
3. To identify the cultural populations in which these instruments had been validated.

In doing so, this study aims to inform the future development of spirituality measures for Aboriginal and Torres Strait Islander populations, as well as other culturally diverse groups, and to analyse the relationship between spirituality and health.

Methods

A protocol was developed according to the Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocols (PRISMA-P; Shamseer et al, 2015) following the Joanna Briggs Institute (JBI) guidance (Joanna Briggs Institute, 2015). A scoping review was deemed appropriate to meet the research objectives of this study, given we sought to chart concepts and identify gaps and trends in the available data.

Inclusion Criteria

Studies that administered spirituality tools in order to explore associations with health were selected for inclusion. All age groups, cultural groups and countries were included. To capture previously developed measures of spirituality; quantitative, qualitive, mixed-methods studies and grey literature were considered. Meta-analyses, systematic reviews, opinion papers, letters, conference presentations and journal abstracts were omitted. Only studies published in English between 01 January 2011 and 01 February 2021, and using a spirituality tool available in English were included.

Studies were included if they utilised a spirituality tool that conceptualised spirituality as distinct to religiosity (as defined in the introduction), or if the non-religious subscale scores of multi-dimensional tools were reported separately. Further, studies were only considered for inclusion if the tool consisted of more than a single item enquiring about general spirituality or spiritual wellbeing. Finally, studies using spirituality tools that advised substitution of the word "God" for a more relevant divine or holy term, without elaborating on replacements (such as the DSES; Underwood & Teresi, 2002) were excluded. Phrasing items in this way may lead to variation in how questions are interpreted, thus impacting upon the instrument's construct and concurrent validity (Hammer et al., 2013; Hwang, et al., 2011).

Search Strategy

Following the style of Peters and colleagues (2015), this review utilised a three-step search strategy. Both published and unpublished studies were included. An initial search of PubMed and PsycInfo was conducted whereby relevant keywords and index terms were identified. Following this, the text words in the title and abstract, as well as the index terms used to describe the article, were analysed. The second stage involved the use of keywords and index terms identified from the initial search, and in consultation with a research librarian, including, but not limited to, a combination of terms such as: "spirituality", "spiritual*", "survey", "questionnaires" and "assessment tool". Finally, the reference lists of all studies selected for the review were considered in order to capture additional studies not discovered previously. Databases were chosen based on their relevance to the health literature, the availability of psychometric tools, and their inclusion of unpublished studies. The databases used were PubMed, PsycInfo and Embase. The full search strategy for each database is listed in Additional File 1. Where relevant, studies reporting on the initial development of instruments were sourced in order to extract specific information regarding the spirituality tool.

All citations identified from the initial search were uploaded to Endnote (Thomson Reuters, Version X8), where duplicate citations were removed. When the abstract did not contain enough information about the type of spirituality instrument used, the full text was examined. The full text search was peer-reviewed by two additional reviewers (RR, OP), and disagreement on inclusion criteria was resolved through discussion by all three researchers. Articles that did not meet the inclusion criteria following the full text review were excluded, with at least one reason for their omission listed in Additional File 2.

Data Extraction

The data were extracted and charted according to extraction tools designed for this study, which adhered to the specific objectives of this review. Pertinent information from each study regarding the participant characteristics (e.g., demographics), setting (e.g., country or cultural identification), health outcomes measured, name of spirituality instrument, and the correlation and regression coefficients of the relationship between spirituality and health outcomes was extracted (Additional File 3). Characteristics of the spirituality tools identified in the studies were documented, including their names, dimensionality and number of times used in the studies (Additional File 4).

Results

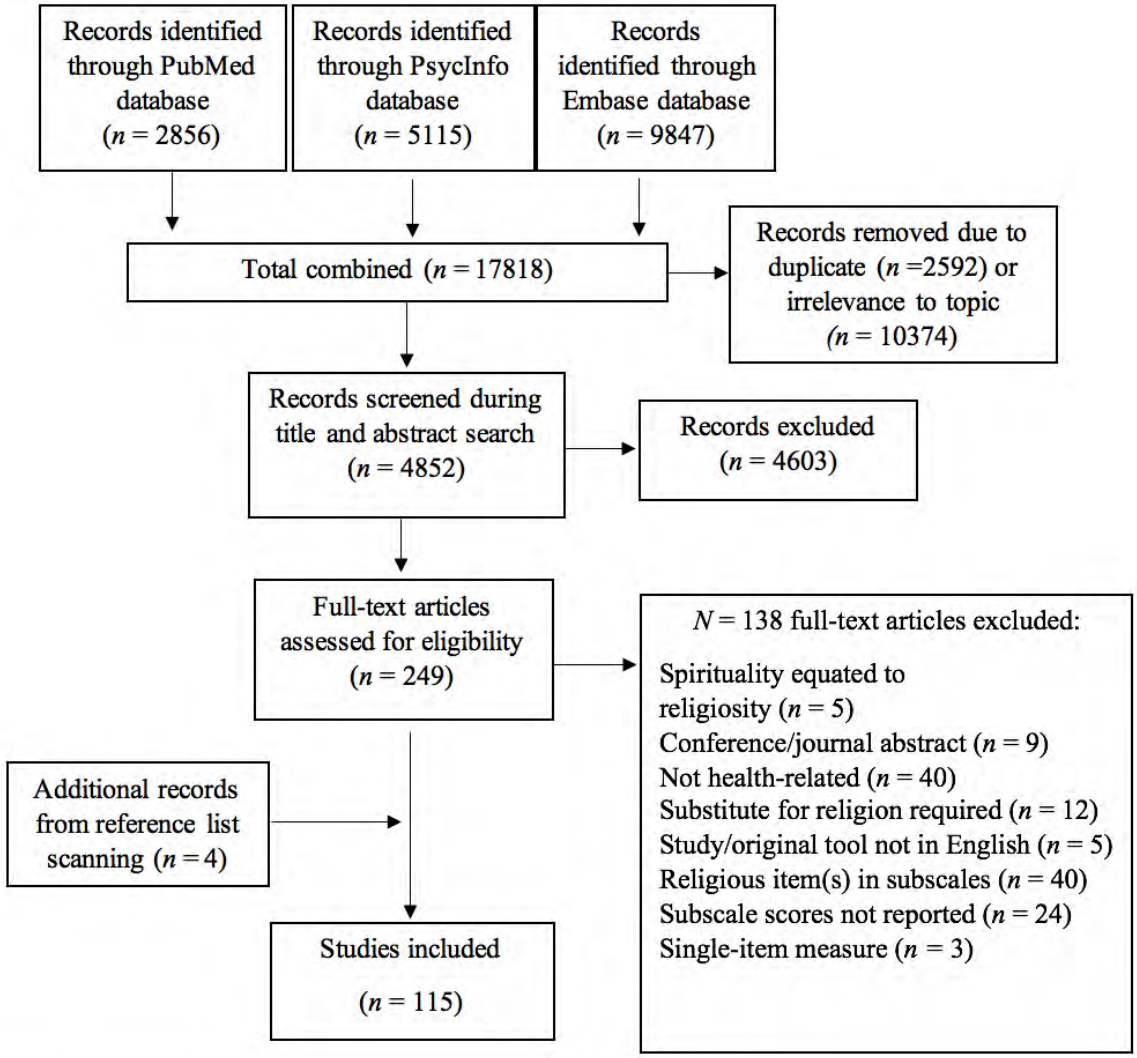
Description of Studies

The literature search initially retrieved 17,818 citations that were published between 2011 and February 2021. After 2,592 duplicates and 10,374 irrelevant citations were screened and discarded by the primary reviewer (AM), a title and abstract search removed 4,603 further citations that did not meet the inclusion criteria. Following this, the full texts of 249 studies were screened to determine eligibility, and a further 138 were excluded, leaving 111 articles. During this stage, two additional reviewers (RR, OP) examined 20% of the studies at random to ensure the exclusion criteria were being applied consistently.

Notably, we found that tools use vernacular conventionally associated with religion to define subscales, for instance the “Faith” and “Prayer” subscales of the FACIT-Sp and STS, respectively. However, the question items within these subscales allow for responses that do not necessarily pertain to religion and for this reason were included. For example, the “Faith” domain of the FACIT-Sp includes questions that enquire, “I find strength in my faith or spiritual beliefs”, thus accounting for people who are religious; or spiritual but not religious. As such, articles that presented the initial development of spirituality tools were sourced to provide information regarding their definition of spirituality and the content of assessment items.

At the final stage, four additional articles were identified from the reference lists of included studies, as outlined in Figure 1, bringing the total number of studies to 115.

Figure 1
PRISMA Flowchart for the Scoping Review Selection Process (Moher et al., 2009)



Note. A comprehensive review of the article retrieval and screening process according to the PRISMA reporting guidelines.

Study Characteristics

Articles included in the final review were published between 2011 and 2021. These studies collectively involved a total of n = 102, 701 participants ranging in age range from 10 to 104 years. The most prevalent population sampled was individuals with cancer (38 articles, comprising 33% of the total). University students accounted for 8.7% (n = 10), while individuals with a mental health disorder were represented in 8 studies (7%). Members of the general public, people who used substances, participants with cardiovascular disease and individuals with kidney disease each accounted for 5.2% (6 studies), while school students and participants with spinal cord injury each made up 4.3% (5 studies) of the included studies. Individuals in hospital or healthcare settings, and those involving older people, each made up 3.5% of included studies (n = 4), while patients in palliative care, members of nursing homes, and people who had attempted suicide were each represented twice (1.7%). Other populations individually accounted for 0.87% (n = 1) of the total review sample in areas of: HIV/AIDS; stroke; people without housing; sexual minorities; multiple sclerosis; counsellors; government

employees; surfers; war veterans; and nursing students. Most studies employed the use of cross-sectional, correlational designs (80.9%), and the remainder used prospective, longitudinal designs.

Spirituality Instrument Information and Characteristics

Within the 115 studies included in this review, 29 distinct spirituality instruments were used, with 48.3% (n = 14) developed between the years 2010 - 2021, 31% (n = 9) between 2000 – 2009, and 20.7% (n = 6) prior to 2000, as noted in Table 1. Spirituality was operationalised according to two classification types: general spirituality (62.1%, n = 18) and spiritual wellbeing (37.9%, n = 11).

Although some studies conceptualised spiritual wellbeing as a component of quality of life, others defined it as synonymous to general spirituality (Davison & Jhangri, 2013). As reported in Table 1, 75.9% of instruments utilised a multidimensional approach to measure spirituality, with subscales most commonly including the following themes: meaning or purpose (31%); connection (31%); transcendence (27.6%); and existentialism (20.7%). Table 1 further illustrates that 55.2% (n = 16) of instruments included the words "spiritual" or "spirituality" in at least one question/item when operationalising spirituality. For example, one of the ten WHOQOL-SPRB items that uses such terminology questions; "To what extent do you have spiritual beliefs?" (WHOQOL SPRB Group, 2006).

The most commonly utilised instruments were the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-Sp: Peterman et al., 2002; 44.3%), the SWBS (20%), the WHOQOL-SPRB (7%), the FACIT-Sp-Expanded version (FACIT-Sp-Ex: Brintz et al., 2017; 2.6%) and the Intrinsic Spirituality Scale (ISS: Hodge, 2003; 2.6%). The majority of studies featured previously validated measures.

Table 1
Characteristics of Spirituality Instruments and Health Outcomes Explored

Instrument name	Scale type (*n* of items, *n* of subscales)	Non-religious subscales (*n* of items)	Studies utilising instrument
General spirituality			
BENEFIT Scale (Büssing & Koenig, 2008)	5-point Likert scale (6, 1) U	-	Xue et al. (2016)
Cultural Connectedness Scale – Short Version (CCS-S; Snowshoe et al., 2015)	Dichotomous response scale of no/yes; 5-point Likert scale (10, 3) M, R, S	Identity (4); Traditions (3); Spirituality (3)	Snowshoe et al. (2017)
Existential Spirituality (ES; Jang, 2016)	4-point Likert scale (2, 1) U	-	Jang (2016)
Expressions of Spirituality Inventory (ESI; MacDonald, 2000)	5-point Likert scale (98, 5) M, B, P, S	Cognitive Orientation to spirituality (40) Existential Wellbeing (9)	Mendez & MacDonald (2012)

GES Questionnaire (Benito et al., 2014)	5-point Likert scale (8, 3) M	Intrapersonal (4) Transpersonal (2) Interpersonal (2)	Benito et al. (2014)
The Intrinsic Spirituality Scale (ISS; Hodge, 2003)	11-point phrase completion (6, 1) U, S	-	Bhattarai et al. (2018); Davino (2013); Stern & Wright (2018)
Native American Spirituality Scale (NASS; Greenfield et al., 2015)	5-point Likert scale (2, 12) M, S	Spiritual behaviours (8) Spiritual beliefs (4)	Greenfield et al. (2015)
The NonReligious-NonSpiritual Scale (NRNSS; Cragun et al., 2015)	5-point Likert scale (17, 2) M, S	Individualistic Spirituality (9)	Tiggemann & Hage (2019)
The Ritualistic, Theistic, Existential measure of Spirituality (RiTE; Webb et al., 2014)	5-point Likert scale (30, 3) M, B, P	Existential spirituality (10)	Chang et al. (2015); Hall et al. (2020)
The Spiritual Assessment Scale (SAS; Howden, 1992)	5-point Likert scale (28, 4) M, S	Purpose/meaning in life (4) Interconnectedness (9) Inner resources (9) Transcendence (6)	Amrhein et al. (2016);
The Spiritual Attitude and Involvement List (SAIL; de Jager Meezenbroek et al., 2012)	6-point Likert scale (26, 7) M, S	Meaningfulness (3) Acceptance (4) Caring for Others (4) Connectedness with Nature (2) Transcendent Experiences (5) Spiritual Activities (3) Trust (5)	Visser et al. (2018)
Spiritual Intelligence Self-Report Inventory (SISRI-24; King, 2008)	5-point Likert scale (24, 4) M	Critical Existential Thinking (7) Personal Meaning Production (5) Transcendental Awareness (7) Conscious State Expansion (5)	Chan & Siu (2016)
Spiritual Meaning Scale (SMS; Mascaro et al., 2004)	5-point Likert scale (15, 1) U, S	-	Felker (2011)

Spiritual Orientation Inventory (SOI; Elkins et al., 1988)	7-point Likert scale (85, 9) M, S	Transcendent Dimension Meaning and Purpose in Life Mission in Life Sacredness of Life Material Values Altruism Idealism Awareness of the tragic Fruits of Spirituality	Koessel (2012)
Spirituality measure (Kulis et al., 2012)	4-point Likert scale (2, 1) U, S	Two questions on importance of spirituality to life	Kulis et al. (2012)
25-item Sky Spirituality Scale (SS-25; Kimura et al., 2016)	5-point Likert scale (25, 4) M, P, B	Social Connections (8) Life Satisfaction (4) Other (5)	Kimura et al. (2016)
Spirituality Transcendence Scale (STS; Piedmont, 1999)	5-point Likert scale (24, 3) M, B, S	Prayer fulfilment (9) Connectedness (6)	Bauer (2016)
Tribal Cultural Spirituality Measure (Bear et al., 2018)	Dichotomous response scale of agree/disagree (8, 1) U	-	Bear et al. (2018)
<u>Spiritual wellbeing</u>			
European Organisation for Research and Treatment of Cancer Measure of Spiritual Well-Being (EORTC QLQ-SWB32; Vivat et al., 2017)	4-point Likert Scale (32, 4) M, S	Existential (4) Relationship with Self (5) Relationship with Others (6)	Chen et al. (2021)
Functional Assessment of Chronic Illness Therapy-Spiritual Wellbeing Scale (FACIT-Sp; Peterman et al., 2002; Canada et al., 2008)	5-point Likert scale (12, 3) M, S	Meaning (4) Peace (4) Faith (4)	Agli et el. (2017); Allanson (2019); Bai et al. (2014); Bamishigbin et al. (2020); Bernard et al. (2017); Bormann et al. (2011); Bovero et al. (2019); Cha et al. (2019); Chaar et al. (2018); Cheng et al. (2019); Davis et al. (2017); Davis et al.

			(2018); Douglas & Daly (2013); Eggleston (2015); Flint et al. (2019); Fradelos et al. (2017); Frost et al. (2013); Gonzalez et al. (2014); Goyal et al. (2019); Gudenkauf et al. (2019); Hasegawa et al. (2017); Haugan et al. (2014); Johnson et al. (2011); Jones et al. (2019); Kamijo & Miyamura (2019); Kelly (2011); Kim et al. (2011); Kim et al. (2015); Kandasamy et al. (2011); Leeson et al. (2015); Lewis et al. (2014); Loureiro et al. (2018); Lucchetti et al. (2015); Mills et al. (2015); Mollica et al. (2016); Nsamenang et al. (2016); Panati et al. (2020); Salmoirago-Blotcher et al. (2012); Salsman et al. (2011); Samuelson et al. (2012); Sansone et al. (2012); Sansone et al. (2013); Scheffold et al. (2019); Shin et al. (2018); Song et al. (2016); Song et al. (2018); Wachelder et al. (2016); Washburn (2012); Whitford & Olver (2012); Wilson et al. (2017); Yilmaz & Cengiz (2020)
FACIT-Sp Expanded Version (FACIT-SP-Ex; Brintz et al., 2017)	5-point Likert scale (23, 4) M, S	Meaning (4) Peace (4) Faith (4) Additional Spiritual Concerns (11)	Holt-Lunstad et al. (2011); Johnson (2011); Siddall et al. (2017)
Hua Oranga (Durie & Kingi, 1999; Harwood et al., 2012)	5-option response: Much worse; worse; no change; better; much	Spiritual (4)	Harwood et al. (2012)

	better (4, 1) U, S		
Multidimensional Inventory for Religious/Spiritual Well-Being (MI-RSWB; Unterrainer et al., 2012a)	6-point Likert scale (48, 6) M, B	Hope Imminent (8) Forgiveness (8) Sense of Meaning (8)	Unterrainer et al. (2012b);
Spiritual Health and Life-Orientation Measure/Spiritual Well-Being Questionnaire (SHALOM/SWBQ; Gomez & Fisher, 2003)	5-point Likert scale (20, 4) M	Personal (5) Communal (5) Environmental (5)	Riklikienė et al. (2020); Stern & Wright (2018)
Spiritual Health Module (adapted for brevity from SHALOM/SWBQ; Michaelson et al., 2016)	5-point Likert scale (8, 4) M, S	Personal (2) Communal (2) Environmental (2) Transcendental (2)	Brooks et al. (2018); Michaelson et al. (2019)
Spiritual Index of Well-Being (SIWB; Daaleman et al., 2002)	5-point Likert scale (12, 2) M	Self-Efficacy (6) Life Scheme (6)	Wu et al. (2017); Spatuzzi et al. (2019)
Spiritual Wellbeing Scale (SWBS; Ellison, 1983)	6-point Likert scale (20, 2) M, B	Existential Wellbeing (10)	Alshraifeen et al. (2020); Davison & Jhangri (2013); Diaz et al. (2014); Florez et al. (2018); Hajiaghababaei et al. (2018); Hardiman & Simmonds (2013); Hirsch et al. (2014); Holzer (2011); Hurlbut et al. (2011); Ibrahim et al. (2019); Jacobs et al. (2012); Kannai (2019); Lee (2014); Li et al. (2012); Khumalo et al. (2014); Martinez & Custodio (2014); McCaffrey (2015); Miller & Saunders (2011); Mohebbifar et al. (2015) ; Piacentine (2013); Staton-

			Tindall et al. (2013); Tudder et al. (2017); Velasco-Gonzalez & Rioux (2014)
World Health Organisation Quality of Life-100 (WHOQOL-100; Power et al., 1999)	5-point Likert scale (4, 1) U	Spirituality (4)	González-Celis & Gómez-Benito (2013)
World Health Organisation Quality of Life-Spirituality, Religion and Personal Beliefs (WHOQOL-SRPB; WHOQOL SRPB Group, 2006)	5-point Likert scale (32, 8) M, S	Connectedness Meaning of life Awe Wholeness and Integration Spiritual Strength Inner peace/serenity/harmony Hope and optimism Faith	Alvarez et al. (2016); da Rocha & da Almeida Fleck (2011); Das et al. (2018); de Camargos et al. (2015); Giovagnoli et al. (2019); Mihaljevic et al. (2015); Mihaljevic et al. (2016); Turke et al. (2020);

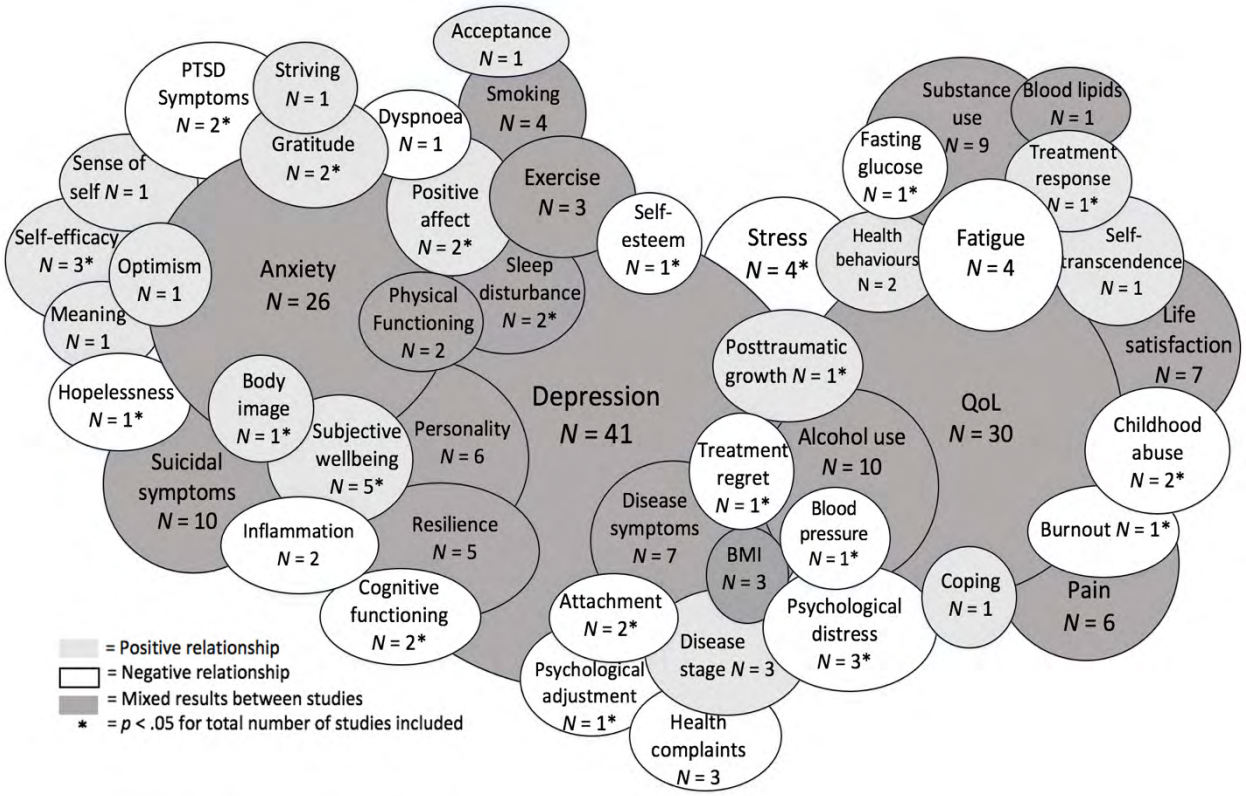
Note. **M = multi-dimensional spirituality instrument; U = uni-dimensional spirituality instrument; B = at least one subscale excluded due to reference to specific religious/spiritual belief; P = at least one subscale excluded due to reference to specific religious/spiritual practice; R = at least one subscale excluded as not relevant to spirituality; S = contains terms "spiritual" or "spirituality" in at least one scale item.**

Health Outcomes Associated with Spirituality

Among the studies included in this review, 50 different health outcomes and their associations with spirituality were identified, as charted in Figure 2. Of these, 34% focused on physical health outcomes, whilst the remainder examined factors relating to psychological wellbeing. Depression, followed by quality of life, and anxiety, were the three most frequently reported health outcomes. Quality of life as an outcome measure tended to trend in a positive direction with spirituality, however this was not reported for all studies, as displayed in Figure 2. In contrast, depression and anxiety mostly exhibited inverse and significant correlations, with only a few studies reporting otherwise. As highlighted in Additional file 3, the correlations between health outcomes and spirituality were mostly small to moderate.

Figure 2

Types of health outcomes associated with spirituality, number of studies exploring these associations, and the directions of the relationships



Note. BMI = body mass index; HD = hastened death; PTSD = Posttraumatic stress disorder; QoL = quality of life.

Validation of Spirituality Instruments in Different Countries or Cultural Groups

The majority of studies were conducted in the USA (n = 54), followed by Brazil (n = 6), Australia (n = 5), South Korea (n = 5), Canada (n = 3), China (n = 3), India (n = 3), Italy (n = 3) and Japan (n = 3). Populations from Croatia, France, Iran, the Netherlands, South Africa, Taiwan and the UK were each sampled twice, whilst those in Austria, Germany, Greece, Jordan, Lebanon, Lithuania, Malaysia, Mexico, Nepal, New Zealand, Norway, Puerto Rico, Spain, Sri Lanka, Switzerland and Turkey were each represented once.

Seven studies utilised spirituality measures for specific cultural groups, including the Hua Oranga tool, adapted for use with Maori and Pacific People (Harwood et al., 2012); the Cultural Connectedness Scale (CC-S: Snowshoe et al., 2017) used within the Saskatchewan population in Southwestern Ontario; the Native American Spirituality Scale (NASS; Greenfield et al., 2015), developed for Native Americans in a Southwestern tribe; the Spirituality measure (Kulis et al., 2012), used by Native American youth in a Southwestern city of the USA; the Tribal Cultural Spirituality Measure (Bear et al., 2018), for Northern Plains tribes in the USA; the GES Questionnaire (Benito et al., 2014); and the SS-25, for Spanish and Japanese populations, respectively.

Where First Peoples across the globe (Including Aboriginal or Torres Strait Islander people) were represented, their participation did not exceed 5.5% of the total sample size,

excluding the five studies that examined the relationship between spirituality and health exclusively to Maori and Pacific people; Native American; or First Nations populations (Bear et al., 2018; Greenfield et al., 2015; Harwood et al., 2012; Kulis et al., 2012; Snowshoe et al. 2017). No measures have been specifically developed and validated with Aboriginal and Torres Strait Islander people.

Discussion

This scoping review mapped studies published between 2011 and 2021 that utilised non-religious spirituality instruments to measure spirituality and its correlation with health outcomes. We note that there is an overwhelming preference within the health literature to use the FACIT-Sp and the SWBS. Interestingly, the SWBS, comprised of Religious Wellbeing and Existential Wellbeing subscales, was employed even when authors explicitly delineated spirituality from religiosity (Holzer, 2011). Despite increased discussion within the literature about the need for more inclusive spirituality tools that capture non-religious experiences (O'Connell & Skevington, 2010), this review highlights that in addition to alternative tools not being used, few are being developed. This may be viewed as a significant gap given increasing trends for people to identify as non-religious (Australian Bureau of Statistics, 2022), or as spiritual but not religious (Ammerman, 2013; Mercadante, 2020).

Koenig (2008) has suggested that scales measuring spiritual wellbeing, including the FACIT-Sp and SWBS, operationalise general wellbeing as opposed to spirituality. For example, spiritual wellbeing may include items inquiring about positive psychological states, such as a sense of meaning and gratitude (Koenig, 2008; O'Connell & Skevington, 2010). In this way, a person with depression, in responding to the item "my life lacks meaning and purpose" in the FACIT-Sp, may inaccurately reflect low spirituality (Koenig, 2008). By contract, in their factor analysis of the WHOQOL-SRPB (WHOQOL-SRPB Group, 2006) amongst 285 sick and well people in the UK, O'Connell & Skevington (2010) found that spiritual quality of life was distinct from the psychological, physical and social domains suggesting it to be a separate construct.

In relation to objective 2, numerous health outcomes were observed to relate significantly to spirituality, providing strong evidence for a relationship between spirituality (as distinct from religion) and health. Current practice in health promotion, however, does not commonly account for spirituality as a contributing factor to health (Michaelson et al., 2019). For example, evidence suggests that psychologists are disinclined to discuss spirituality with clients (Hage, 2006; Hathaway et al., 2004; Holzer, 2011). This is significant given the preference for clients to talk about spirituality with mental health professionals over other health practitioners (Curlin et al., 2007). Interestingly, barriers to discussing spirituality include unfamiliarity with the evidence-base surrounding spirituality and health (Moreira-Almeida et al., 2014). By providing an overview of the associations between spirituality and various health outcomes, this review may guide mental health professionals in seeking further information within the literature and thus learning more about this relationship.

Regarding objective 3, this review underscores the scarcity of tools available to assess spirituality outside of a Euro-centric context, which limits the ability to capture diverse expressions of spirituality. For Aboriginal and Torres Strait Islander communities, spirituality is not only integral, but fundamental to understandings of daily life and wellbeing (Dudgeon & Walker, 2015; Grieves, 2009). Additionally, during the development of spirituality tools, there appears to be a prevalent assumption that spirituality as assessed in one population can be generalised across all populations (Benito et al., 2014). However, when assessing spirituality using two distinct tools (one more generalised, and one specific to the spiritual beliefs and practices of Native American Northern Plains tribes), Bear and colleagues (2018) concluded

that significant associations with mental health indicators were only detected with use of the tribal spirituality scale. It was thus surmised that general spirituality instruments would not adequately capture Native American spirituality (Bear et al., 2018).

For Aboriginal and Torres Strait Islander people, spirituality is a core feature of health, and therefore should be included in assessment and intervention tools (Grieves, 2009). This idea is echoed by research conducted within Native American cultures (Greenfield et al., 2015; Kulis et al., 2012) and First Nations people (Snowshoe et al., 2017). Culturally appropriate spirituality assessments are thus integral to understanding the link between spirituality and health (Hodge & Limb, 2011). As highlighted in this review, there is a need for future research to investigate and conceptualise the meaning of spirituality with greater consideration of cultural variability, in order to more accurately explore its relationship to health, and thus health intervention cross-culturally.

Limitations

In an attempt to exclude measures of religiosity, only non-religious subscale scores were reported, and for some studies, only the subscale scores were provided (Haugan et al., 2014; Leeson et al., 2015). The reporting of subscales may limit the construct validity of the reported measures. For instance, a negative association observed between the Hope Immanent subscale of the Multidimensional Inventory for Religious/Spiritual Well-Being (MI-RSWB) and suicidal ideation (Unterrainer et al., 2012b) may only pertain to the construct of hope as opposed to spirituality in general. This review was also limited to studies and tools published in English and associated with health outcomes, which may have excluded valuable information about the operationalisation of spirituality in non-health contexts and published in other languages.

Conclusions

Consistent with prior literature, this review illustrates that there is a limited number of spirituality instruments designed to measure spirituality as distinct from religion (O'Connell & Skevington, 2010). However, where studies do employ use of such tools, associations between spirituality and a broad range of health outcomes have been observed, highlighting the significance of spirituality as a distinct construct in health. Finally, this review emphasises that current tools lack consideration for cultural diversity in the experience of spirituality. These findings have implications for the role of spirituality in health assessment, intervention, and healthcare. Further research is needed that conceptualises and operationalises spirituality within diverse cultural groups, to enhance our understanding of the relationship between spirituality and health for distinct populations.

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Address for Correspondence
Correspondence concerning this article should be addressed to A/Prof Rachel Reilly:
Institution/Organization: Wardliparingga Aboriginal Health Equity Theme, South Australian Health and Medical Research Institute
Telephone: +61 8 8128 4230
Email: rachel.reilly@sahmri.com

Author Biographies
Name: Alexandra Mannarino
Title: Ms
Institution/Organization: University of Adelaide
Email: alexandra.mannarino@gmail.com

Name: Rachel Reilly
Title: Associate Professor
Institution/Organization: Wardliparingga Aboriginal Health Equity Theme, South Australian Health and Medical Research Institute
Email: Rachel.Reilly@sahmri.com

Name: Odette Pearson
Title: Associate Professor
Institution/Organization: Wardliparingga Aboriginal Health Equity Theme, South Australian Health and Medical Research Institute
Email: Odette.Pearson@sahmri.com

Facilitating the university transition and Australian First-in-Family students' sense of community: Environmental understanding and the mediating role of place familiarity

Laurie A Chapin [1,2], Xin Yang[1], and Humberto Oraison[1,2,3]

[1]*College of Sport, Health & Engineering, Victoria University, Melbourne Australia*
[2]*Institute for Health and Sport, Victoria University, Melbourne Australia*
[3]*First Year College, Victoria University, Melbourne Australia*

Kick Start is a program to facilitate the transition to university for students who are the first in their family to attend university. Previous research has identified the achievement gap between first-in-family (FiF) and non-FiF students and the unique challenges FiF students encounter. This research focuses on the social dimension of learning using the community psychology framework of sense of community (SoC) and the individual-place relationship, and explores how familiarising FiF students with the university settings can improve their social integration into the university community. Social constructionism was used to frame the research. Seven Kick Start participants were interviewed, and thematic analysis was utilised to explore how the program facilitated the process of building environmental understanding upon their transition to university. Six themes were identified that were relevant to SoC, namely, confidence, competence, feeling settled, connectedness, relaxed, and relatedness. The findings have suggested that place familiarity can strengthen the link between individuals and the community, where an increased SoC leads to motivation to utilise resources to achieve positive university outcomes. One implication of the current research is to support the efficacy of contextualised learning opportunities like Kick Start to provide FiF students with hands-on experience of university when assisting with their transition.

Key words: first-in-family students; first-generation students; sense of community; transition to university

First-in-family (FiF) students are broadly defined as university students whose parents did not attend university, also known as first-generation in the literature. FiF status intersects with other categories of equity tertiary students including Indigenous Australians, low socioeconomic status backgrounds, and non-English-speaking backgrounds, however there is also immense diversity as FiF is not synonymous with these statuses (Patfield et al., 2021). In Australia, the Department of Education's student equity data has not included family background, so there are no current national estimates of the number of first-in-family tertiary students (Patfield et al., 2022). Self-report estimates suggest that the Australian universities with the most domestic undergraduate first-in-family students range from 45-54%, while the universities with the least have 12-21% (Good Universities, 2024). The literature has suggested an achievement gap between FiF and non-FiF students in terms of their university outcomes (Southgate et al., 2014). FiF students demonstrated poorer academic performance and higher attrition rates (Kim et al., 2020; O'Shea, 2015; Tate et al., 2015; Wilbur & Roscigno, 2016), as well as social disengagement, which often leads to anxiety and lacking a sense of belonging (Orbe, 2004).

However, positioning FiF as a category of non-traditional students has created challenges which result in the inability to reach a consensus regarding any approach to specifically address FiF students' needs. O'Shea et al. (2017) explain that the first few months of university is a transition period, when FiF students are figuring things out at the same time they are taking their

first classes, and they must rapidly acquire information and behaviours required for success. The current study focuses on FiF students' challenges in adjusting to the university environment and developing a sense of community in the new setting. Kick Start is a program for FiF students designed to support this period of transition to university. Interviews with participants explore the concept of environmental understanding and how the individuals make sense of a new place, which is a natural step and prominent exercise in the process of transitioning into university and assuming the identity of university student.

Sense of Community

Sense of community (SoC) is the overarching concept in community psychology and involves several relevant ideas for FiF and the university transition. First, individual differences are acknowledged in the context that a successful community should provide necessary resources for individuals to achieve their goals (Chavis & Newbrough, 1986). Second, community psychology has taken the political stance to advocate for social justice (Jason, 2016). Therefore, in terms of the enfranchisement of the underrepresented groups in the current Australian tertiary education systems, institutions should take responsibility to implement structural change and create an inclusive culture (Perkins et al., 2002). Third, SoC is experienced at an individual level as the result of an adaptive environment, which is often linked to motivation to participate in the community, and pro-community behaviours such as help seeking (Perkins et al., 2002). Taken together, SoC provides a framework to explore strategies to examine the challenges of the transition to university for FiF and non-FiF students. It implies an ultimate person-environment fit which often leads to social and academic integration at the institutional level. At the individual level, SoC is often a precursor to empowerment, a term that suggests intrinsic motivation and personal growth in a community, and in the current study has implications for academic success.

Furthermore, McMillan and Chavis (1986) defined four dimensions of SoC, namely, membership, influence, fulfilment of needs, and shared emotional connections. *Membership* refers to the belief and feeling of being part of a group, sharing a common symbol system as other members (McMillan & Chavis, 1986). Previous research has reached the consensus that FiF students reported a weaker sense of belonging, feeling like they are an outsider or an imposter, which often results in alienation (O'Shea et al., 2015, 2017). First generation students report lower sense of belonging to their university community, which is negatively associated with persisting in studies, using campus services, and mental health (Gopalan & Brady, 2020). *Influence* refers to being open to the influence of the community, and also to feeling consensual validation (McMillan & Chavis, 1986). Differences in the language of higher education, terminology, and communication modes at university is particularly challenging for FiF students (O'Shea et al., 2017), and can interfere with the development of influence and consensual validation. *Integration and fulfilment of needs* refers to the need for the individual-community relationship to be rewarding (McMillan & Chavis, 1986). While being the first in the family to go to university is often associated with pride and sense of achievement, adapting to university studies tends to be more difficult for FiF students compared to non-FiF (O'Shea et al., 2015). FiF and other equity groups frequently lack the information, experience, and mentoring in high school that contributes to a smooth transition to university (Patfield et al., 2021). Lastly, *shared emotional connections* can be broadly defined as the feeling of alignment and closeness to the community to which individuals feel they belong (McMillan & Chavis, 1986). In the university context, where students enter the new community as first year students, this connection must be built over time, and hinges on the first three elements, which the research indicates is more challenging for FiF students.

Place, Identity and Transition

In essence, SoC implies an ideal person-environment fit which often leads to pro-community behaviours, and individuals access community for personal betterment, while

community becomes a part of individual identity and the collective identity is enhanced when the community members collaboratively contribute to it (Cicognani et al., 2008; McMillan & Chavis, 1986; Perkins et al., 2002). However, in conceptualising FiF students' experience using the person-environment lens, the mediating role of place has been largely underexplored. Place is an integral part of environment which forms the backdrop of the social and cultural development of individuals (Proshansky, 1983). Place refers to space, including layout, structure, settings, and people in the space; and place also encompasses a conceptual dimension, for example, the location of a place is underpinned by the mental representation of a series of spatial relationships (Proshansky, 1983). The individual-place relationship is best explained by the concept of place identity, which is a multi-faceted construct that consists of cognition, feelings, and attitudes towards places, which is parallel to the process of identity formation.

First year students, and FiF students in particular, are confronted by a foreign place upon their transition to university. Forming a new place identity is an intertwined process of making sense of the unfamiliar culture of the academic system and social norms (Orbe, 2004). Specifically, the lack of connection to university as a place can also negatively impact on an individual's social engagement. This is evident in a reported loss of identity which characterises the common experience of all first-year students (Scanlon et al., 2007).

Therefore, the current research explores support strategy through the lens of place identity, where the individual-place relationship influences one's social experience at university. Practically, the tangibility of a place enables the process of delineating specific aspects that play a significant role in an individual's experience (Sampson & Goodrich, 2009). Furthermore, rather than grappling with the changing group membership, such bottom-up approaches can pinpoint specific context and reveal the complexity of how different social and cultural influences intersect when shaping individual identities.

Kick Start: Environmental Understanding and Spatial Familiarity

Kick Start is a program developed to assist FiF students settling into the university environment. The unique orientation program is for students commencing their first year of university and consists of two workshops in the week before semester 1 classes begin. A previous study of Kick Start found that students who participated reported better academic engagement and better grades compared to a control group (Chapin et al., 2023). The support strategies aimed to increase FiF students' sense of belonging and familiarity with their new environment through enhancing their environmental understanding, which includes the individual process of making sense of their surroundings. Spending more time at a place can increase the opportunity to engage with this process and maximise the chance of spatial familiarity, which suggests a close tie to the place as familiar places are likely to be those best remembered. This establishes a foundation for academic work to commence when students start classes. Kick Start addresses FiF students' potential barriers of conceptualising university as a foreign place to their future engagement when their courses commence in a week. The program instructors aim to foster the participants' belonging through empathy and responsiveness.

Kick Start was designed to simulate the classes students would encounter. The university is located in Melbourne, Australia, and the vast majority of students live at home and commute to campus, sometimes travelling for as long as 2 hours each way. Workshops were held at three campuses, and each group was limited to 20 students. The workshops were taught by the first and third authors and conducted in a typical tutorial room where first-year classes run. Most sessions also had the support of a 3rd year student who was also first-in-family, who could answer questions and work with small groups of students. The workshop format was based on the format of classes the students would encounter. The university has a unique learning model, with students taking one 4-week class ("block") at a time and class sizes are typically about 30 students, and there is an emphasis on interactive learning, group activities, and technology (Victoria University, 2024).

Kick Start is designed to specifically mirror how their classes are taught to make them more comfortable in the university environment. Table 1 summarises the Kick Start curriculum. The content is relevant for successful transition, but it is also the way it is conducted (through presentations, discussions, and activities) that is very important.

Table 1

A summary of the 2020 Kick Start program.

Workshop 1	Workshop 2
Introduction Introduce themselves. Ice breaking activities for students first in small group and then to the whole group. Connecting to university system Help students get connected to campus wifi. Students to navigate their personal university login (web-based class management program) to locate key information, opportunities for individual assistance. Navigating campus Students locate their classrooms and find their way around, locating key support services and other places of their interest. Students received discount coffee vouchers that were only valid during the program. Teaching staff demystified Reviewing different staff roles, explaining who they are, what the job titles are, and how to contact them. Student mentors panel 3-4 FIF students who had been at the university for at least one year shared their experiences, open to questions from Kick Start students.	Time management Explain the benefits of time management and what is recommended for academic success, emphasising they are capable and can be successful. Assist students to schedule their week and discuss balancing study, travel, family, work, and time for fun. Top study hints from FIF Small group discussion about top study tips compiled from a study of FIF students. This activity simulates group discussions students will encounter in their classes. Ready for Week 1 Complete check list for Ready for Week 1. Answer any last-minute questions students may have.

Note. Each workshop lasted about 2 hours. The academic year began in late February and Kick Start was the week prior.

Aim and Research Questions

The current research explores the mediating role of place familiarity in the development of SoC. In the context of institutional support, intervention strategies which enhance individual's environmental understanding are evaluated in terms of the positive changes in individual-place relationship. The efficacy of the Kick Start program is explored under these frameworks. The specific research questions are as follows:

1. How do changes in individual-relationship foster SoC in the university transition?
2. In evaluating Kick Start strategies to enhance environmental understating, how can universities maximise the opportunity for individual-environment fit?
3. What are the changes in individual identity?

Methodology

Social constructionism provided a foundation epistemology for the current study. Social constructionism is based on the idea that knowledge and interpretation are grounded in our experiences and social interactions (Crotty, 1998; Harper, 2012). Because this study was not focused on a particular phenomenon, but on how individuals understand their experience, social constructionism was the guiding epistemology. As first-year FiF students negotiate the transition to university through participating in Kick Start, begin their studies, and become familiar with the physical and virtual academic environments, they construct a new understanding of themselves and their new student identity, which might be a constructed differently than students who are not FiF. Interactions with other students, teaching staff, other university staff, and family and friends is also a key process in exploring the new environment and experiencing the university transition. Social constructionism allows for a focus on the social process of producing knowledge and relevant cultural contexts (Harper, 2012). This is ideal for understanding the role of Kick Start in facilitating the transition, but also accounts for cultural and personal contexts that also impact the experience. This provided the basis for a general qualitative methodology and for thematic analysis.

Participants

Kick Start participants were recruited through an email inviting first-year students who identified as FIF students on their enrolment. Eighty-five students signed up to participate in the program, and 50 attended one or both sessions. All were enrolled in a bachelor's degree and started university in semester 1, February 2020.

Table 2

Demographics of the participants and course participants enrolled in.

Participants	Age	Course enrolled	Other reported cultural/social status
Michael (M)	19	Construction	Regional Victoria; working class
Taylah (F)	18	Social Work	Second-generation Australian; working class
Kaylen (F)	18	Nursing	Working class
Shawn (M)	18	Business	Working class
James (M)	18	Business	Second-generation Australian; working class
Jennifer (F)	18	Business and Psychology	Working class
Coby (M)	37	Psychology	Migrant; working class

Note. Names are pseudonyms.

Procedure

The University Human Research Ethics Committee reviewed and approved this study. A participant information statement was provided to all the prospective participants and participants signed a participant consent form. Participants were informed they could stop participating at any time. Participants received a movie ticket voucher as thanks for their time.

All 50 program participants were invited to complete an interview and to contact the research team. Participants who indicated interest in completing an interview were contacted within the two weeks after the Kick Start program via email and phone calls. The interviews were completed by the second author, who was not involved in teaching the program, so that participants would feel freer to discuss their experiences with the program. Initially eight students agreed to participate, and a mutually convenient time and place were scheduled for the interviews to take place. Six interviews were conducted prior to the local COVID-19 lockdown that commenced in late March, 2020. One interview was completed remotely during lockdown and one interview was cancelled and failed to reschedule. The demographics for the seven interviewees are summarised in Table 2. Potentially the uncertainty at this time in 2020 impacted the number of volunteers for the research. At the time of the interviews, the participants had been studying for 3-5 weeks, meaning students had completed or almost completed their first 4-week block class, all completed on campus. The interviews lasted 40-50 minutes and then the recorded interviews were transcribed verbatim.

Data Analysis

Thematic analysis is a process to identify, analyse and report themes in data (Braun & Clarke, 2006). This method offers flexibility in interpreting data whereby researchers can make a number of choices to define what accounts for a theme guided by their epistemological stance

and specific research question. Guided by Braun and Clarke (2006)'s summary of the important choices inherent in conducting qualitative analysis, a number of decisions were made to define the scope of this study. We adopted a theoretical thematic analysis, whereby a detailed account of aspects that are related to sense of community and place identity were the focus in order to explore the research questions. Furthermore, the themes were identified within the explicit meaning of the data, which can shed light on the specific aspects of the individual-environment related to change.

The themes and on-going data analysis were discussed by the first two authors of the research team. The researchers acknowledge that their own cultural, personal and historical background inevitably impact the research process (Creswell, 2007). This included our own educational background and professional training. The data analysis involved careful examination of how the researchers' contexts affect the interpretation of the data and findings, and the authors discussed how to separate their experience from the participants throughout analysis. When adopting thematic analysis, community psychology has also acknowledged the ingrained limitation of this approach due to the intersubjectivity of the researcher and the researched at the operational level. The plurality of 'truth' means that when exploring an issue, individual researchers bring their unique lens as the result of their own beliefs, values and experiences, which can manifest in the choices they make in analysing data (Braun & Clarke, 2006). In other words, data analysis is a subjective process of selection, editing and deploying to support an argument. Although it is impossible to eliminate biases, reflexivity however provides the 'best practice' for researchers to reflect on their positionality on the matter in order to avoid potential biases (Darawsheh, 2014).

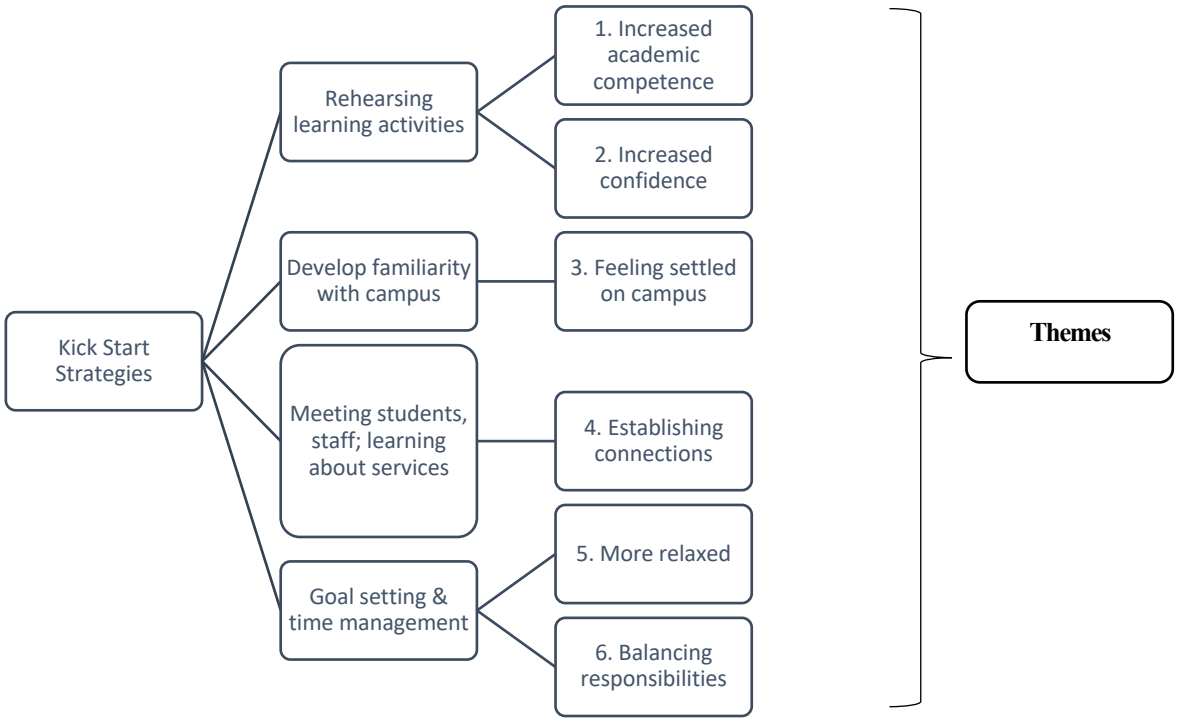
Researcher Positioning

Reflexivity also opens up the dialogue between the researcher and the readers by providing the additional information regarding the analytical process involved (Darawsheh, 2014). Therefore, the readers are also positioned to acknowledge the intersubjectivity of the research, and hopefully adopt the same approach of self-interrogation when conceptualising the issue for themselves. The three researchers were not the first in their families to attend university and all completed at least part of their education outside of Australia. They recognised the advantage they had that came with family familiarity with university, and used this reflection throughout the research. Authors 1 and 3 have years of experience as university lecturers working with students from diverse backgrounds, which they have brought to developing Kick Start. The researchers believe that the disadvantages are a result of systems that perpetuate inequality, and not that FiF students are deficient in any way. Throughout the interview and data analysis process, the authors used memos and meetings to explore the emerging themes in relation to biases, experience, and scholarship.

Findings

Overall, on completion of Kick Start, students reported feeling settled with lower stress and uncertainty about engaging in their studies. Figure 1 outlines four broad Kick Start strategies that the students experienced in the workshops, and the six themes identified through data analysis have been aligned with the relevant parts of the program.

Figure 1
Summary of themes describing the transition to university and related Kick Start program strategies.



Increased Academic Competence

All participants found the Kick Start activities related to navigating the university's web-based class-management system very valuable (this is the platform for announcements, assignments, readings, and class material). The experience provided "vital" pieces of information, and the participants reflected a sense of competence in the ability to begin their classes. For example, Shawn found that Kick Start helped him to understand "what to do", as he stated: "especially in the second session, because the session seems to focus a lot more on like, actually practical work when it came to, knowing what to do, how to use Kick Start and, using the learning space, checking all sorts of information about your course, even getting into email and all that."

Another example of the increased competence was evident in how James' attitude about starting university changed after Kick Start. As he had formed his understanding of university primarily based on other people's views, such as his high school teachers and peers, and his parents who pressured him to go to university, James developed anxiety about not being able to cope with the learning. This was further perpetuated by the uncertainty of what to expect, as he described university as "so a huge class, just one lecture, all assignments and subjects all crammed up together, and I thought I won't be able to complete uni, and I might drop out in the first year uni." Therefore, being able to get a grasp the activities and steps involved assisted James to focus on the process of participation and utilise resources to reduce the perception barriers: "The first session of Kick Start, I had some idea how [Blackboard] work, and this really helped me with my first class, especially in regards to finding my classes, using my timetable."

Increased Confidence

There was also an increased confidence regarding the new identity of being a university student, and specifically in their response to the question about how much they felt like a university student after Kick Start. While all the participants rated higher for this question compared to their rating based on prior Kick Start experience, the salient information they identified which linked to a stronger university student identity was diversified. Therefore, the opportunity to experience university and to ask specific questions and express concerns seemed to act as a catalyst to increase their confidence to assert themselves in this space. As people process information differently, this helped students to seek reassurance based on individual needs to bridge the gap in the process of forming this new identity. Interacting with other nervous students and hearing from the panel of experienced FIF students who had overcome challenges, legitimised any feelings of anxiety.

Kick Start has replicated the classroom environment they experience at Kick Start with a small class size and the tutorial room setting. The close physical proximity and interactive layout allowed instant opportunity for peer interactions, one-on-one conversations, as well as whole-class discussions. The participants commented on the facilitators' "accessibility" and "friendliness", which made them comfortable to ask questions. This was reflected in Shawn's comment that he appreciated hearing other students' questions: "like, if you want to go to the toilet, do you ask? Even small things like that, I didn't even think of." Gaining knowledge and familiarity was important to start their classes the following week with a high level of confidence.

Feeling Settled on Campus

By the time of the interviews, the participants reported being settled into the physical space and more broadly into the routine. Attending Kick Start required the students to first find their way to campus, which required either navigating by car and finding parking or by planning and catching public transport (which might require two or more legs on buses, trains, and making transfers). Having a practice run for Kick Start (when the stakes are lower) helped them feel more settled when they did it "for real." A university campus itself can be intimidating and daunting, and several students expressed that they felt anxious about getting lost the first week. During Kick Start, participants became familiar with many different locations on the campus, first needing to find the building and room where the program began, and later locating restrooms, cafes, classrooms, and other important locations. Interestingly, one of the first things that came to Jennifer's mind regarding studying on campus was summarised in her hypothetical scenario, when she "only has 20 minutes before class starts", could she get coffee and still get to class on time? She was able to resolve and stated "… by going to Kick Start I felt a lot better about it because I knew about the layout of the university, so I know where to get the best coffee or that sort of stuff." This might seem minor, but this comfort was the foundation for building later confidence.

In the weeks following Kick Start, the participants reported a great amount of depth in their understanding about the physicality of a space. For example, Taylah described the library as "a place to do my thing", and James appreciated the "beautiful view" from the library window, whereby both established a link between their needs and the functionality of the space. Moreover, in Shawn's case, he observed both the ambience and people in the library while spending time there. The realisation that other people who share the same space also showed "maturity" which he inferred from observable signs, and which he associated his own university student identity with, together made him feel included and more settled, as he stated:

> *It is the fact that everyone's here to learn… They are always willing to help they are there for the same reason as you are. It is the environment where everyone shares that sort of same, I believe, reason why they are at the university, and what makes it appealing to me.*

It is different from high school, because everyone is there because they need to. There is a big maturity gap there.

Establishing Connections

Understanding the people is an integral process of understanding a place. Kick Start aimed to provide the attendees opportunities to meet and interact with their peers. This involved ice breaker activities in small groups and inviting second and third-year FiF students to talk about their experience and answer questions from the attendees. Meeting peers was also identified as a key motivator for the attendees to participate in the Kick Start program. None of the participants interviewed knew anyone at the university, as their close friends were going to other universities or not going to university at all. Coby, for example, reported barriers for him to "know people" in his life as he migrated to Australia in his 20s and had not established any close connections, which, for him, was attributed to the fact that he did not attend school here in Australia. Coby regarded Kick Start as an opportunity for him to get to know people, and perhaps become familiar with other aspects of Australian society. He valued the face-to-face interaction, he said, "I meant to learn different [things from] people, I want to learn critical stuff about them."

Furthermore, the improved social connectedness associated with the Kick Start support facilitated making connections with peers once classes began. Taylah explained how she was able to make new friends by sharing the knowledge she learnt from Kick Start. Interestingly, Taylah reported a sense of insecurity navigating through university where none of the peers she met at Kick Start was enrolled in her course, as she "always had someone to lean on" going through school. She was empowered to become someone other people can lean on by sharing her knowledge of the place. Taylah stated:

Yeah, I met a few people they all have morning classes; all my classes are in the afternoon. I see them sometimes. I also made friends from my course. I start helping people with what I was taught from Kick Start. I was feeling pretty good.

In addition, participants felt connected to the wider student cohort. There was a sense that they shared values with the university community about the importance of education, individual career development, and taking opportunities to "go further" than their families.

Feeling More Relaxed

After familiarising the attendees with the virtual space and physical space of university, Kick Start invited the attendees to turn to the academic demands they would encounter and the time involved. In one Kick Start activity, they wrote some concrete goals for their first class and the steps to get there. Prior to Kick Start, all the participants reported anxiety about workload. Specifically, amongst all the research participants, Kaylen reported a meltdown before her first day at university as she was overwhelmed by what was expected from her in the new environment. However, Kaylen found the goal-setting worksheet from Kick Start assisted her in focusing on one thing at a time, which made university a less daunting experience. During the interview, she also produced her worksheet from her folder and explained what her personal goals were for the semester. She commented:

(Kick Start taught me) how to use the website, how to prepare, as in how to, the five tips…I think I still got the handouts here…yeah the goal worksheet, to focus on one thing, one goal you want to achieve. That was a good thing to get prepared, to focus on one thing about the subject and hopefully achieve it.

Balancing University and Other Responsibilities

The interviewees also reported the need to balance university workload with other commitments in life, including part time jobs and looking after family members. During Kick Start there was discussion and an activity about time management which included scheduling time for fun and family, not just work and classes. How much time is required to spend at university therefore has become an important piece of information, as illustrated by Michael's quote below. By estimating the required time and planning ahead, Michael's anxiety of not being able to manage his studies and part-time job at the same time decreased. He stated:

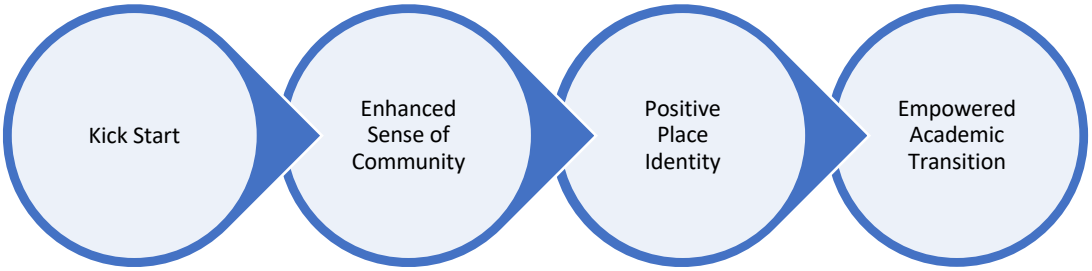
> *So we went through and calculated how much free time I have, and I have loads of time. They were saying you will be doing 18 hours of study, I was like, it is not too bad, I get plenty of time to do my own things, to study and do my job, and still a few block of hours in the middle to do whatever I wanted.*

Discussion

The findings support the role of Kick Start in facilitating the transition to university for the FiF student participants. SoC was a useful framework for understanding the transition to university and the novelty of this research is to fill in the gap of inadequate understanding of individual-place relationship in previous literature that conceptualises FiF students' university engagement, and more importantly, informs practical support strategies. Figure 2 represents the way Kick Start first enhanced students' SoC and fostered a positive identity with the university, which led to students feeling empowered and prepared for the academic demands in their transition semester at university.

Figure 2

Process of Kick Start and university transition.



SoC and place identity upon transition

In essence, SoC situates individual experience with the students' environment (McMillan & Chavis, 1986). While social and cultural context have been used almost synonymously in the analysis of environment, the physical dimension of an environment has been largely overlooked in studying individual development. The notion of place identity suggests that the formation of individual-place relationship is intertwined with social and cultural development, together contributing to one's identity development (Proshansky, 1983). The themes identified in the findings of this study illustrate the promotion of SoC as a pathway to improve FiF social integration and overall university experience. Specifically, transition to university is marked by

entering a new environment and after the adjustment period the participants described themselves as competent, confident, and settled.

In addition, there was a connectedness in the shared sense of university being a place for opportunities beyond what their family could provide. Subsequently, individuals will make sense of the place through figuring out strategies to manipulate the environment. For example, this was evident in participants' need to understand how they can navigate the campus to meet their individual needs, such as going to their class and engaging in other social activities of their choice. It is encouraging that Kick Start facilitated the students to feel competent in their surroundings and how this led them to feel more confident about being a student.

The changes in individual-place relationship after the implemented program, are captured in all six themes. It seems that when social relationships were involved, particularly student-staff ones, greater shifts were observed in the sense that the theme is mapped to a higher level of SoC. For example, competence related to knowing how learning activities work is related to a sense of membership of being a university student in SoC, as learning is an important part of this identity. The understanding of how individuals can engage in learning activities by focusing on one task or goal at a time fosters a sense of feeling relaxed, where the ability to control the physical task was generalised to the control of the environment in SoC. Additionally, the reported sense of relatedness as a result of being able to situate university commitments within one's overall life commitment, fostered a sense of their needs being fulfilled in SoC.

The environmental opportunity to form quality social relationships tends to foster stronger SoC, as captured in the shared emotional connectedness (Rappaport, 1981). For example, the findings demonstrate the rich context face-to-face interaction can provide for individuals to draw their environmental understanding of others from, such as observing others' physical features and behaviours. The role of place is also evident as sharing a same space, as well as the same symbolic understanding of a place, which is generalised into a sense of solidarity (Proshansky, 1983). For example, the physical immersion in the library can develop a feeling of being part of a bigger group who share the same goals, which was communicated through observable signs (being quiet and studying at the library). Furthermore, the shared emotional connectedness is further enhanced through the staff- student relationship (Scanlon et al., 2007). A small classroom inherently signifies physical closeness and openness, which increases staff's accessibility and provides ample opportunities to strike a personal conversation with others, and can contribute to feeling settled. The resultant shared emotional connectedness was evident in participants' increased confidence when their personal questions about university were answered. The reassurance further solidifies the participants' environmental understanding, which encouraged them to access the resources for their personal growth (Proshansky, 1986; Chavis & Newbrough, 1986).

Empowerment

SoC is often discussed hand-in-hand with the concept of empowerment, which can be viewed from both an individual and an organisational level as supporting people to feel control over their lives (Perkins et al., 2002). While Australian universities are seeing increasing enrolments of students from non-traditional backgrounds, including FiF students, their success at university can be impeded by the barriers imposed by the very education system. FiF students often struggle to form a cohesive identity when their existing identities are marginalised in the university community in the process of adopting the role of being a university student (O'Shea, 2016). In order to empower the FiF students upon their transition to university, several themes, such as competence and confidence with utilising the place, which lead to connectedness, suggest the importance of creating positive individual-place relationships. Kick Start provided a framework for students to be aware of their power and control they have as university students.

From a community psychology perspective, the structural change to create diversity in the very identity of university student is the key to address such disconnectedness. FiF students are

to be given the resources and choices to assert their own identity while pursuing their self-growth at university.

Implications for Remote Learning

This research was initiated and conducted entirely before COVID-19 disruptions to face-to-face learning, however there are important implications from the current findings. University students were forced to restrict or limit their campus contact for up to two years, with some reaching the end of their studies with little to no in person learning. The findings here indicate the environment is incredibly important in the development of student identity and confidence in a new role. For higher education students who completed much of their degrees remotely, there are certainly implications that future research should explore. A number of new research studies indicate the challenges of remote university classes. Besser et al. (2020) found Israeli university students forced to study remotely in 2020 reported face-to-face classes were more positive than online classes, in regard to mood, motivation, and performance. In a study conducted during late 2020 in the US with students studying remotely, academic motivation and academic belonging were each positively correlated with university identification, with no significant differences for FiF and non-FiF (DeRossett et al., 2021). The current study in conjunction with the research related to remote learning indicate that being on campus and developing connections in a classroom is a preferred learning environment and is related to positive academic outcomes.

Limitations and Future Directions

The limitations of this research can stem from the conceptualisation of the issues and the inherent disadvantage of a qualitative study design, favouring depth over quantity. While SoC has shifted the paradigm from individual-focused to multi-level analysis, due to the scope of this study the emphasis has only addressed the issue at the meso-level, individual interaction with the institutions. The influences of the broader sociopolitical culture, although briefly discussed, require more attention. Moreover, the study has only captured a snapshot at a specific time point. While it provides a thick description of the participants' experience, more data are needed to further ascertain a cause and effect relationship to effectively inform support strategies. All research is limited and potentially biased toward participants who volunteer to participate, and therefore we cannot make conclusions about students who do not choose to complete an interview.

Future research can explore how specific predisposing factors such as coping styles intersect support strategies aimed to develop FiF students SoC. This research conceptualised FiF students as one social group who share the same identity as being the first in their family to attend university, where the individual differences in this heterogeneous group were not explored. Moreover, longitudinal studies can also shed light on the changes of the individual-place relationship over time, and how university can develop and maintain SoC at different stages of the student life cycle.

Conclusion

For FiF students, the transition can be associated with anxiety and isolation. By contrast, non-FiF students' parents can provide personal accounts of the place which can guide their offspring to navigate the university system (O'Shea, 2015). The lack of university experience and connection also begins in high school, and there are implications that environmental familiarity should be fostered as early as possible (Pires & Chapin, 2022). As argued previously, the underlying theme that regarding university as a foreign place, which can contribute to FiF students' disengagement, has been ignored. In the exploration of strategies to address this, the

current research has proposed the utility of enhancing the individual development of environmental understanding, which was operationalised in the Kick Start program. Overall, this program provided contextualised learning for individuals to interact with place prior to starting university. The implications include an empowering approach with the focus on how individuals interact with the institutional system; and an inquiry into what resources are needed for FiF students to succeed, considering their unique social and cultural background.

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Address for Correspondence

Correspondence concerning this article should be addressed to Laurie A Chapin, Victoria University, PO Box 14428, Melbourne 8001 Australia. Email: laurie.chapin@vu.edu.au

Author Biographies

Laurie A. Chapin https://orcid.org/0000-0003-4080-7717
Humberto Oraison https://orcid.org/0000-0002-5997-6265

Predictors of Deep Behavioural Engagement in Climate Action Among Australian Adults

Adele O'Hare and Kate E. Murray

School of Psychology and Counselling, Queensland University of Technology

Climate change affects all social and ecological systems, and its mitigation will entail billions of humans transforming their relationships with those complex systems. Amid signs that more people are alarmed and taking action to mitigate climate change, a new concept of deep behavioural engagement (DBE) in climate action is presented and explored through a mixed methods study. Australian adults (N=384) were surveyed anonymously online using open- and closed-ended items, with the sample including 111 people who reported practising DBE. Thematic analysis of open-ended items revealed that DBE activities ranged from nonviolent direct action, to teaching climate science, to practising permaculture. Binary logistic regression identified that people who reported higher levels of duty to mitigate climate change for the sake of others, combined with climate anxiety, active hope, and biospheric values, were more likely to practise DBE. Findings are important for understanding the motivations of people who are already doing the kinds of collective activism, career shifts and major lifestyle changes that are needed on a global scale as part of limiting climate change.

Key words: climate change, deep behavioural engagement, climate action, climate anxiety, active hope, Australia.

Climate change is a major concern for most Australians. In 2020, 79% of participants in a large Australian survey agreed that climate change was occurring, 74% were concerned about climate change, and, in the wake of a catastrophic 2019-2020 bushfire season, 82% were worried about bushfires (Quicke & Bennett, 2020). Other research into climate change attitudes has segmented populations into six groups (Leiserowitz et al., 2021). The *Alarmed* are convinced the planet is warming due to human activities and that this is an urgent threat, and they strongly support climate action. The *Concerned* share these views but view climate change as still distant in time and space. The *Cautious* express uncertainty about the reality and seriousness of the threat, while the *Disengaged* have little awareness of the issue. The *Doubtful* say it is not happening or not dangerous, and the *Dismissive* tend to endorse conspiracy theories about climate change (Leiserowitz et al., 2021). Australians were last grouped this way in 2013 (Morrison et al., 2013), but in recent years in the United States (US), the *Alarmed* group has more than doubled (Goldberg et al., 2021). Within that group, the *Active Alarmed* are most likely to be already participating in activism, volunteering, and advocacy to deliver large-scale action (Goldberg et al., 2021).

In its report on the challenge of limiting warming to 1.5 degrees, the Intergovernmental Panel on Climate Change makes it clear that "transformative systemic change" on a planetary scale is needed in order to avoid worst-case-scenario consequences of climate change (de Coninck et al., 2018). This requires massive shifts at the group level, because individual actions have little impact unless combined into collective mobilisation (Fritsche & Masson, 2021). These group-level phenomena are the topic of a growing body of literature on the social psychology of climate change (Mackay et al., 2021).

Nevertheless, there is still a need for psychology to examine individual-level phenomena because individuals' actions are the building blocks of collective mobilisation and

transformative systemic change. The present study is concerned with understanding what motivates individuals to undertake deep behavioural engagement such as climate activism, reorienting their work lives towards climate change efforts, or drastically reducing the carbon intensity of their lifestyle. According to complexity theory, complex systems transform as a result of "myriad small, simple changes, with each element doing its own simple thing while the whole is acquiring increasing complexity and emergent properties" (Hill, 2015, p. 51). Change is a bottom-up process involving disorganisation, a qualitative shift at some critical point, and reorganisation into something new (Hill, 2015). The top-down power of the systems inhibiting climate action does not obviate the need to examine bottom-up processes of individuals acting collectively to transform those systems.

Deep behavioural engagement in climate action (DBE) is a new construct, intended to represent extensive engagement in carbon-reducing activities within one's personal lifestyle, professional life, or through volunteer and advocacy activities. Other than Goldberg and colleagues' (2021) identification of the *Active Alarmed*, there is little previous research on characteristics of people who practice DBE. In the present study, a person's deep behavioural engagement (DBE) is defined as self-reported current action "in a major way" in at least one of the following three areas: engaging in volunteering and/or activism toward mitigating climate change; directing the focus of one's work, study or career toward mitigating climate change; and designing one's personal lifestyle (transport, housing, diet, and/or energy consumption) to reduce one's contribution to climate change. This expansion of the scope of pro-environmental behaviours (PEBs) to emphasise major changes aligns with increased calls in urgency for larger carbon reductions. The aim of the present study is to identify psychological factors that predict DBE among Australian adults through qualitative and quantitative exploratory analyses. In the absence of previous research on DBE, it draws on variables that previous research has found to be linked to PEBs or collective action in response to climate change, and variables that have a theoretical link to DBE. These links are briefly summarised below.

Climate change anxiety has been identified theoretically as a necessary precursor to taking action (Burke, 2017; Lewis et al., 2020). Climate change anxiety has been defined as "heightened emotional, mental or somatic distress in response to dangerous changes in the climate system" (p.22, Climate Psychology Alliance, 2020). When the threat seems terrifying and overwhelming, people who shut down and deny their feelings about it can be paralysed into inaction, while those whose feelings are acknowledged and responded to with compassion may be inspired towards taking action (Cunsolo et al., 2020; Lertzman, 2008). Affective responses, which can include anxiety, have been identified as being among the strongest predictors of climate change mitigation and adaptation behaviour, although research has not yet established causal pathways from affective responses towards either PEB or deeper forms of engagement in climate action (Brosch, 2021).

The conditions of uncertainty that produce anxiety can also give rise to hope: a belief that a positive future is possible (Verlie, 2019). Research has found that different kinds of hope, driven by different underlying appraisals, have contrasting effects on PEB (Brosch, 2021). Constructive, or active, forms of hope relate to believing that taking action collectively can help mitigate climate change, and have been shown to correlate with PEB, support for climate action policy, and political engagement (Brosch, 2021). False hope, based in denial of the seriousness of the threat of climate change or a focus on positive consequences of climate change, has been reported to have the opposite effect (Marlon et al., 2019; Ojala, 2015). A survey of middle school students in the US found that climate change concern and climate change hope, which was measured with items tapping into both personal active hope and hope about collective action, appeared to be independent antecedents to PEB (Stevenson & Peterson, 2016). Hope and concern could coexist, and contrasted with the negative effects of climate

change despair on PEB (Stevenson & Peterson, 2016). These findings suggest hope is likely to be related to engaging in impactful forms of climate action, and that different forms of hope might have varying impacts on engagement with different forms of climate action.

Given the global and unevenly distributed nature of the threat of climate change and its greater impact on developing countries, there has been some research examining attitudes that would promote global solidarity and cooperation towards mitigation. Studies have found a link between cosmopolitan orientation (the attitudinal and value orientations of people who see themselves as global citizens), and in particular a component called global prosociality, with intentions to engage in PEB (Ito et al., 2020; Leung et al., 2015). Outcome measures were intentions to engage in non-activist behaviours in the private sphere, and frequency of basic PEBs such as turning off lights in unused rooms or taking shorter showers. While it is not yet clear from research whether cosmopolitan orientation is predictive of more impactful environmental behaviours, the collective and community scale of many forms of climate action means that a sense of global prosociality or solidarity has potential theoretical relevance to DBE.

People's values also seem to have a role in their willingness to engage in PEB. Research has examined the role of hedonic values (related to feeling good and reducing effort), egoistic values (related to increasing money and status), altruistic values (related to benefiting others), and biospheric values (related to how their choices affect nature and the environment) (de Groot & Steg, 2008; Steg, 2016, 2018; Steg, Bolderdijk, et al., 2014). Strong endorsement of hedonic or egoistic values is associated with lower PEB, and strong endorsement of altruistic and particularly biospheric values is associated with higher PEB (Steg, 2016). An Australian study ($N = 921$) found that sociocultural influences, namely free-market ideology, prescriptive norms (social pressure to personally take action), and biospheric values, played a role in predicting participants' willingness to engage in climate change mitigation behaviours (Xie et al., 2019). A model that included these factors explained 72% of variance in climate change risk perception, but only 47% of variance in willingness to engage in mitigation behaviours, suggesting other factors prevented concern translating into action (Xie et al., 2019). Reviewing the literature, Bouman and colleagues (2021) noted a collective lack of action on climate change despite widespread endorsement of biospheric values, and suggested that people's non-engagement in climate action may be motivated by protecting other values where there is a value conflict – such as when a pro-environmental action is time consuming and brings hedonic costs.

Some climate psychology research in high-income countries has linked collective inaction to the way the threat has often been seen as distant, abstract, in the future, and uncertain (Jones et al., 2017; McDonald et al., 2015; Spence et al., 2012; Van Lange & Huckelba, 2021). Lower psychological distance (i.e., climate change as close) is generally associated with higher levels of concern. Messaging that makes the consequences of climate change, and instrumental actions individuals can take, seem more concrete and less uncertain, has been used as a way of encouraging climate action (Jones et al., 2017; Van Lange & Huckelba, 2021), though the role of psychological distance in DBE has not yet been explored.

Climate change could be expected to feel closer in time and place when a person has personally experienced its effects. In large Australia-wide surveys conducted in 2010 (N = 3,096) and 2011 (N = 4,347), 45% of respondents reported direct personal experience with climate change, such as in the forms of seasonal changes, extreme weather, environmental degradation, and water scarcity (Bradley & Reser, 2017). Reporting direct personal experience of such events was associated with greater acceptance of climate change as reality, perceived risk, objective knowledge, distress, psychological adaptation, and behavioural engagement, compared to people who did not report such personal experience (Bradley & Reser, 2017). In 2020, 57% of Australians reported they had experienced some form of direct impact from the

2019/2020 Black Summer bushfires; this group was more likely than those who had not been directly impacted to agree with statements such as "This is a wake-up call for the world on the impacts of climate change" and "The current bushfires demonstrate the cost of climate inaction" (Quicke & Bennett, 2020, p. 10).

This kind of psychological "reckoning with reality" has been described as just as crucial as work to mitigate climate change and to adapt to aspects of it that cannot be avoided (Lewis, 2021). As more people report that climate change makes them concerned and alarmed (Goldberg et al., 2021), psychotherapists have observed that all people are in a process of emerging from various degrees of disavowal or denial about climate change (Lewis, 2021). For some, this reckoning brings a sense of duty, or responsibility, to safeguard a safe climate for the sake of future people (Mulgan, 2018). Bateman and O'Connor (2016) argue that a future-oriented feeling of personal responsibility is a vital psychological link between acceptance of climate science and behavioural engagement in climate action. Felt responsibility reflects the extent to which people feel capable of and compelled to take useful action towards a desired result, like the way some bystanders feel a duty to help a person in need (Bateman & O'Connor, 2016). Felt responsibility or duty has been linked to taking action to adapt to climate change (Bateman & O'Connor, 2016; Wang et al., 2018). As such, a sense of duty or responsibility is worth examining in relation to DBE in climate action.

With growing awareness that transformative systemic change is needed in response to the climate emergency, and indications that more people are *Alarmed* and engaging in collective action, the concept of DBE is necessary and warrants further exploration. The present study involves a survey of people residing in Australia to identify some who are undertaking DBE, and the concept of DBE is elaborated with examples from these participants. Using the quantitative data, mean comparisons are used to identify ways in which people who practice DBE differ from people who do not. Finally, logistic regression identifies factors predicting that a person will be deeply behaviourally engaged in climate action. Implications for driving transformative systemic change are discussed.

Theory

Two decades ago, Stern (2000, p. 421) noted that environmentally significant behaviour was "dauntingly complex" and depended on a broad range of causal factors, sometimes in interaction, that seemed to vary greatly across different target behaviours and individuals. For example, value-belief-norm theory was able to predict environmental citizenship, private-sphere behaviour, and policy support, but was a limited predictor of environmental activism (Stern, 2000). Since then, theory-driven research into the antecedents of PEB has continued to be central in climate psychology (Nielsen et al., 2021). The theory of planned behaviour, based in broader social psychology, posits that attitudes, social norms, and perceived behavioural control influence intentional behaviour. While perceived behavioural control is linked to structural constraints, it does not fully account for the cultural and physical context of people's action and inaction (Whitmarsh et al., 2021). Attempts to do so include ABC theory, where behaviour (B) is the result of personal-sphere attitudinal variables (A) interacting with contextual factors (C) (Guagnano et al., 1995). This has led to findings that attitudes predict behaviour more strongly when contextual factors are neutral but have very little association with behaviour in the face of influential contexts, which seem to powerfully compel or prohibit PEB (Stern, 2000).

Psychological factors that predict low-impact behaviours, typically studied in PEB research, have been shown to be less predictive of higher-impact environmental actions (Nielsen et al., 2021). Research into higher-impact behaviours, and characteristics of people who would fit the DBE or *Active Alarmed* categories, has been limited because these behaviours do not necessarily fit the theoretical requirements of PEB scales (Nielsen et al.,

2021). As such, the present study is exploratory and inductive, aiming to understand the proposed phenomenon of DBE and identify whether selected attitudinal variables used in other climate psychology research are predictive of DBE.

Material and Methods

Prior to commencing, all research materials were reviewed and approved by the Queensland University of Technology Ethics Committee (protocol #2000001000).

Participants

Data were collected via a 106-item online survey that was hosted via Qualtrics between 23 January and 30 May 2021. The survey was promoted via a dedicated Facebook page and in Facebook groups focused on climate activism, low-carbon living, and climate advocacy. In addition, the link to the survey was shared via email and LinkedIn messages to professionals working in climate change, including climate scientists and people who had spoken publicly about their commitment to climate action. People were encouraged to share the survey. Adults aged 18 years and over were eligible, and participants could opt into a prize draw of 12 e-gift cards valued at $50.

Criteria for a participant's responses to be included in the present study were that they had given their age as 18 years or older, indicated that they currently resided in Australia, and completed all relevant survey questions. Table 1 presents data collected on the included participants' sociodemographic characteristics.

Table 1

Sociodemographic Characteristics of Participants (N = 384)

Characteristic	n	%
Gender		
Female	272	70.8
Male	109	28.4
Nonbinary	1	0.3
Transgender	1	0.3
Not specified	1	0.3
Parenthood status and intentions		
Parent of one or more children	266	69.3
Not a parent but intend to have children	41	10.7
Not a parent and do not intend to have children	47	12.2
Not a parent and unsure about intention	30	7.8
Education completed		
0-6 years of schooling (primary school)	0	0
7-10 years of schooling	5	1.3
11-12 years of schooling	16	4.2
Vocational or trade certification	43	11.2
University (undergraduate)	146	38.0
University (postgraduate)	174	45.3
Remoteness		
Urban area or city	298	77.6
Town or village (coastal)	26	6.8
Town or village (inland)	43	11.2
Remote/isolated area (coastal)	3	0.8
Remote/isolated area (inland)	16	3.6

Enough money for basics		
Never	5	1.3
Rarely	9	1.6
Sometimes	13	3.4
Most of the time	94	24.5
All of the time	266	69.3
Enough money for extras		
Never	5	1.9
Rarely	19	7.1
Sometimes	71	22.3
Most of the time	155	38.1
All of the time	134	30.6
Work situation		
Working full-time	158	41.1
Working part-time	74	18.2
Working on a casual basis	25	6.5
Studying	36	9.4
Caring responsibilities	18	4.7
Unemployed and looking for work	11	2.9
Unemployed and unable to work	5	1.3
Retired	60	15.6
No response	1	0.3

Note. Participants were on average 46.6 years old (*SD* = 14.0).

Measures

Demographic and Contextual Questions

The survey asked participants to indicate their gender, age, country of residence, and country of birth. They were also asked about the remoteness of their location, the amount of education they had completed, and their employment situation, with answer options as listed in Table 1. Participants were asked whether they were parents and whether they intended to become parents, and to estimate financial security were asked "How often do you feel that you have enough money to cover your basic needs (such as food, housing and clothing)?" and "How often do you feel that you have enough money to cover extra expenses, like special occasions or treats?", with responses on a 5-point Likert scale from "Never" to "All of the time".

Participants' level of general life stress was measured using the Short-form Perceived Stress Scale (SFPSS), which consists of four items on a five-point scale from "Never" to "Very often". An example is "In the last month, how often have you felt you were unable to control the important things in your life?" The scale is a shortened version of the 14-item Perceived Stress Scale (Cohen et al., 1983), which has demonstrated reliability and validity across settings and in multiple languages, and has been confirmed as having acceptable psychometric properties (Warttig et al., 2013). The higher a respondent's score, the greater their perception that demands on them are higher than their ability to cope, and scores can be compared to population norms. A general life stress measure was included to be able to differentiate from stress and anxiety specific to climate change. In the present study, the SFPSS was found to have good reliability ($\alpha = .801$).

Climate Change Anxiety (CC Anxiety)

Participants' level of cognitive-emotional impairment and functional impairment due to anxiety about climate change was measured using the CC anxiety scale, which consists of 13 items on a 5-point Likert scale from "Never" to "Almost always" (Clayton & Karazsia, 2020). Examples are "I find myself crying because of climate change" and "My concerns about climate change interfere with my ability to get work or school assignments done". The CC anxiety scale was developed and validated in two samples of US adults, recruited online (Clayton & Karazsia, 2020), and has been widely cited. In the present study, the CC anxiety scale was found to have high reliability ($\alpha = .914$).

Psychological Distance of Climate Change (PDCC)

Participants' perception of the psychological distance of climate change was assessed using a measure consisting of four components: geographic distance (four items), temporal distance (four items), social distance (two items), and uncertainty (six items) (Jones et al., 2017). Example items include "The worst effects of climate change will be felt by countries far from where I live", and "Climate change is likely to have a big impact on people like me". Responses are on a 5-point Likert scale from "Strongly disagree" to "Strongly agree". Low total mean scores indicate a perception that climate change is geographically, temporally and socially close and imminent to the participant, and that there is little uncertainty that it is occurring. In the present study, the total PDCC scale was found to have acceptable reliability ($\alpha = .779$).

Psychological Sense of Global Community (PSGC)

The extent of participants' sense of global community or solidarity was assessed using the global subscale of the Psychological Sense of Community scale, which consists of five items on a 7-point Likert scale from "Strongly disagree" to "Strongly agree" (Malsch, 2005). Examples are "People all over the world have a shared fate", and "People's actions can affect others in the world, whether directly or indirectly". Higher scores indicate a greater sense of being connected to people all over the world. In the present study, the scale was found to have acceptable reliability ($\alpha = .754$).

Climate Change Hope (CC Hope)

Participants' sense of hope about climate change was measured using the CC Hope scale, including three subscales: collective-sphere willpower and waypower (CW), personal-sphere willpower and waypower (PW), and lack of willpower and waypower (LW, reverse coded), all measured on a 7-point Likert scale from "Strongly disagree" to "Strongly agree"(Li & Monroe, 2018). The PW subscale had the strongest theoretical link to DBE, because it was about active steps a person was willing to take to address climate change, whereas the CW subscale was about trusting that the problem would be solved, and the LW subscale was about a sense of defeat, but reverse coded. Acceptable reliability was found for the CC Hope scale ($\alpha = .835$), and the CW ($\alpha = .762$), PW ($\alpha = .706$), and LW ($\alpha = .714$) subscales.

Values

To measure participants' alignment with hedonic, egoistic, altruistic and biospheric values, they were asked to rate the importance of 16 different values as guiding principles in their lives on a 9-point scale from "Opposed to my principles" to "Extremely important". Following Steg, Perlaviciute and colleagues (2014), a short version of a value scale with the addition of three items measuring hedonic values was used. The hedonic ($\alpha = .753$), egoistic

(α = .817), altruistic (α = .791) and biospheric (α = .877) values scales all demonstrated acceptable reliability in the present study.

Observation of Climate Change (Observed CC)

To gauge the extent to which participants had personally noticed the effects of climate change in their own local area, they were asked the extent of their agreement or disagreement, on a 5-point Likert scale from "Strongly disagree" to "Strongly agree", with the following six items: "I have observed sea levels rising, higher tides, decreased beaches/soil erosion etc, in my country"; "My country is experiencing more frequent/severe bush fires"; "My country is experiencing more frequent/severe droughts"; "I have observed changes in wildlife (e.g., fewer fish in rivers/oceans, more/fewer wild animals in my area)"; "My country is experiencing more frequent cyclones/severe storms"; and "I have observed decreased food and fresh water supply in my area". An average score was created where higher scores represented greater overall exposure.

Reckoning with Reality

To gauge participants' level of reckoning with the seriousness of the climate change threat, and whether this had affected their reproductive intentions, they were asked the extent of their agreement or disagreement, on a 7-point Likert scale from "Strongly disagree" to "Strongly agree", with the following three items: "Climate change has influenced my thinking about whether to have children or how many children to have" (Whether Children); "Climate change is a global emergency, caused by human activity, that threatens the extinction of human life" (Emergency); and "I have a duty to help mitigate climate change for the sake of others, including future generations" (Duty). Higher scores indicate greater agreement with the statement, with each item analysed independently.

Forms of DBE

The key outcome variable of interest was DBE in climate action, in any of three distinct spheres of life: volunteering or activism; work, study or career; and personal lifestyle. These forms of DBE were measured with a single purpose-designed item each: "I engage in volunteering and/or activism toward mitigating climate change"; "I direct the focus of my work, study or career towards mitigating climate change"; and "I design my personal lifestyle (transport, housing, diet, and/or energy consumption) to reduce my contribution to climate change". For each item, participants were asked to choose from the following answer options: "I currently do this in a major way", "I currently do this to some extent", "I do not do this but want to", "I do not do this but I am open to it", "I did this in the past", and "I have no intention to do this". Presence of DBE in climate action was operationalised as the presence of the answer "I currently do this in a major way" in response to one or more of the DBE items (n = 111). Participants who did not answer "I currently do this in a major way" to any of the three items were categorised as non-DBE (n = 273).

For each of the forms of DBE (volunteering/activism, work/study/career, and personal lifestyle), participants who responded with any option other than "I have no intention to do this" were asked to briefly describe their activity in this area, including current, past, or intended actions, by typing into a text box. For the three forms of DBE, 331 participants, 300 participants, and 366 participants, respectively, gave responses that led to them being invited to describe their activity, and participants took up the invitation to do so in about 65% of cases.

Analytic Strategy

Six hundred and fourteen individuals commenced the survey, 480 reached the end, 96 were filtered out due to not meeting the study's eligibility criteria for age and country of

residence, and 384 were included in the data analysis. IBM SPSS Statistics 27 was used for quantitative data analysis, which began with descriptive statistics, including examination of histograms, scatterplots and boxplots. A missing values analysis on the dataset (N = 384) showed that no variable had missing data for more than 1.8% of the sample. Little's MCAR test supported the null hypothesis that data were missing completely at random, X^2 = 3018.903, df = 3566, p = 1.000. Expectation maximization imputation was used to manage missing data (Grace-Martin, 2014).

The outcome variable for the primary research question was presence of DBE in climate action (1 = DBE, 0 = no DBE). Independent variables where there was a statistically significant mean difference between the DBE and non-DBE groups were considered potential predictors, and their bivariate relationship with DBE was tested using unadjusted (crude) odds ratios. After confirming that the assumptions for binary logistic regression were met, the predictors (PDCC, PSGC, CC anxiety, altruistic values, biospheric values, PW, Observed CC, Emergency, and Duty) were entered into a binary logistic regression to examine their relationship with DBE while controlling for the other predictors.

Results

Forms of DBE Reported by Participants

The participants who responded with "in a major way" to any of the three DBE items gave a range of examples of ways in which they were contributing to climate change action. Many indicated a high level of commitment, such as a leadership role, dedication of most of their career to climate work, or climate change as their primary focus in work or life. A summary is presented in Table 2.

Table 2

Deep Behavioural Engagement (DBE) Activities Reported by Participants

Sphere of activity	Examples
I engage in volunteering and/or activism towards mitigating climate change (in a major way) n = 47 (12.2%)	Activism, e.g., with Extinction Rebellion, Stop Adani, Lock the Gate alliance Volunteering for the Australian Greens political party, local sustainability groups, and climate action groups Nonviolent direct action, such as blocking coal trains Attended multiple demonstrations or protests Volunteering in organisations involving native tree seedlings, revegetation, community compost Climate change awareness photography Working in climate change action and advocacy Creating and running climate action groups Supporting people with climate emotions
I direct the focus of my work, study or career towards mitigating climate change (in a major way) n = 47 (12.2%)	Teaching preschool, school and university students about environmental issues including climate change Doing paid or unpaid work in climate advocacy organisations Working in human rights charities to help people affected by climate change Studying or practising permaculture or regenerative agriculture Organising climate-focused election campaigns Advancing legislative proposals for climate action Studying environmental science in various forms Working in renewable energy, recycling, sustainability, environmental science, environmental management, climate communication, local adaptation, disaster preparedness, environmental campaigning, climate change impact research, and climate psychology research
I design my personal lifestyle (transport, housing, diet, and/or	Walking and bicycling for transport, using public transport Limiting car journeys, electric car use, living car-free

energy consumption) to reduce my contribution to climate change (in a major way) *n* = 77 (20.1%)	□ Reducing or eliminating plane travel □ Reducing or eliminating consumption of beef, all meat, or all animal products □ Growing own food, making own clothes and bread □ Installing solar power, solar hot water and home batteries □ Making energy efficient home modifications □ Recycling, composting, off grid living, living in a small home □ Choosing not to have children □ Planting trees □ Buying produce directly from farms □ Buying second-hand clothes, reducing consumption in general □ Financially supporting climate advocacy organizations

Descriptive Statistics

Chi-square tests indicated no significant differences between the DBE and non-DBE groups based on gender (female, male, or nonbinary/transgender/not specified; X^2 (2, N = 384) = .05, p = .977), their current work situation (full-time, part-time, casual, studying, caring, unemployed and looking for work, unable to work, or retired; X^2 (7, N = 384) = 9.06, p = .248), or educational attainment (0-6 years of schooling, 7-10 years of schooling, 11-12 years of schooling, vocational or trade certification, undergraduate degree or postgraduate degree; X^2 (4, N = 384) = 3.91, p = .419). A chi-square test indicated that the groups differed on whether climate change had influenced their reproduction decisions, X^2 (6, N = 384) = 62.51, p < .001. Post-hoc tests using a Bonferroni adjusted alpha level of .007 per test (.05/7, for 7 tests) (Geert van den Berg, 2021) showed that the DBE group was significantly more likely than the non-DBE group to "strongly agree" that climate change had influenced their thinking about whether to have children or how many children to have, and the non-DBE group was significantly more likely to "strongly disagree" with this statement.

Mean comparisons for continuous variables are shown in Table 3. The DBE and non-DBE groups did not differ significantly in age, perceived stress, or egoistic values. Mean comparisons revealed the DBE group reported significantly higher anxiety about climate change (CC anxiety), sense of global solidarity (PSGC), hedonic, altruistic and biospheric values, and personal active hope in climate action (PW) than the non-DBE group. The DBE group scored higher on both CC Hope and its PW subscale, but PW had a larger effect size; this was expected because of its closer theoretical fit with active hope. As such, PW, rather than CC Hope, was used as a measure of hope in subsequent analyses. The DBE group was significantly more likely than the non-DBE group to report higher agreement with the framing of climate change as an emergency, and greater sense of duty to mitigate it. The DBE group scored significantly lower on PDCC, indicating that they perceived climate change as more imminent, geographically and socially close, and certain, compared to the non-DBE group.

Table 3

Descriptive Statistics for DBE (n = 111) and Non-DBE (n = 273) Groups.

Variable	DBE		Non-DBE		*t*(*df*)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Age (years)	48.2	13.9	45.9	14.0	1.45 (206)	.149	0.16
Enough money for basics (1-5 scale, never to always)	4.66	0.65	4.56	0.78	-1.25 (243)	.214	-0.13
Enough money for extras (1-5 scale, never to always)	4.05	0.88	4.01	0.94	-0.39 (216)	.697	-0.04
SFPSS (1-5 scale, never to very often)	2.51	0.66	2.39	0.76	1.47 (233)	.143	-0.16
CC anxiety	2.12	0.64	1.60	0.58	7.55 (187)	< .001	0.89
PDCC	2.01	0.35	2.33	0.51	-7.05 (292)	< .001	-0.68
PSGC	5.84	0.80	5.29	1.07	5.40 (270)	< .001	0.54
PW	6.12	0.73	5.46	0.90	7.54 (251)	< .001	0.78
CC Hope	5.58	0.79	5.28	0.84	3.26 (217)	.001	0.36
Hedonic values	6.35	1.14	6.62	1.19	-2.06 (213)	.041	-0.23
Egoistic values	4.70	1.39	4.77	1.41	-0.45 (207)	.651	-0.05
Altruistic values	8.04	1.00	7.75	1.12	2.44 (228)	.015	0.26
Biospheric values	8.43	0.80	7.74	1.10	6.81 (279)	< .001	0.67
Observed CC	4.26	0.52	3.83	0.83	6.02 (317)	< .001	0.56
Emergency (1-7 scale, strongly disagree to strongly agree)	6.75	0.64	5.76	1.70	3.23 (217)	.001	0.67
Duty (1-7 scale, strongly disagree to strongly agree)	6.89	0.41	6.07	1.36	9.04 (360)	< .001	0.71

Note. t tests assume unequal variance. SFPSS = Short-form Perceived Stress Scale; CC anxiety = Climate Change Anxiety; PDCC = Psychological Distance of Climate Change; PSGC = Psychological Sense of Global Community; PW = Personal-sphere willpower and waypower; CC Hope = Climate Change Hope; Observed CC = Observed Climate Change; DBE = Deep Behavioural Engagement in Climate Action.

Pearson product-moment correlations between predictor variables were analysed. As shown in Table 4, the highest correlations were between Duty, Emergency, PDCC, and Observed CC. The r = .77 correlation between Duty and Emergency was relatively high, however no variables in the analysis had a tolerance value of less than .10, a commonly used cut-off point for identifying multicollinearity (Pallant, 2020).

Table 4

*Pearson Product-Moment Correlations Between Predictor Variables (*n = *382).*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. CC anxiety	—											
2. PDCC	−.40**	—										
3. PSGC	.28**	−.44**	—									
4. SFPSS	.36**	−.20**	.07	—								
5. Hedonic	−.15**	.04	-.01	-.06	—							
6. Egoistic	−.00	−.00	.02	.04	.38**	—						
7. Altruistic	.13**	−.30**	.39**	−.09*	.26**	.13*	—					
8. Biospheric	.32**	-.35**	.32**	.12**	.11*	-.07	.52**	—				
9. PW	.29**	-.46**	.42**	.07	-.03	.03	.32**	.36**	—			
10. Emergency	.44**	-.69**	.43**	.18**	-.04	-.02	.37**	.40**	.48**	—		
11. Duty	.41**	-.69**	.48**	.12*	-.10	-.08	.31**	.39**	.58**	.77**	—	
12. Observed CC	.41**	-.68**	.40**	.21**	-.05	-.04	.37**	.39**	.46**	.69**	.67**	—

Note. CC anxiety = Climate Change Anxiety; PDCC = Psychological Distance of Climate Change; PSGC = Psychological Sense of Global Community; SFPSS = Short-Form Perceived Stress Scale; PW = personal-sphere willpower and waypower; Observed CC = observed climate change. n = 382 due to two participants not completing the PW scale. $^{*}p < .05$. $^{**}p < .01$ (2-tailed).

Logistic regression predicting DBE

Logistic regression analysis assessed the combined effect of nine independent variables (CC anxiety, PDCC, PSGC, PW, altruistic values, biospheric values, Observed CC, Emergency, and Duty) on the odds that participants would exhibit DBE. The full model containing all predictors was statistically significant, X^2 (9) = 114.02, $p < .001$, indicating that the model was able to distinguish between participants who did and did not exhibit DBE. The full model correctly classified 76.7% of cases (sensitivity 50.5%, specificity 87.5%). The model explained 36.8% (Nagelkerke R^2) of the variance in DBE. As shown in Table 5, only four of the independent variables made a unique statistically significant contribution to the model (CC anxiety, biospheric values, PW, and Duty). The strongest predictors were CC anxiety and Duty: each one-unit increase in anxiety or in duty more than doubled the odds of exhibiting DBE.

Table 5

Logistic Regression Predicting Likelihood of Deep Behavioural Engagement in Climate Action.

Variable	B	SE	Wald	*p*	Exp(B)	95% CI	
						LL	*UL*
CC Anxiety	0.77	0.22	11.90	.001	2.16	1.39	3.33
PDCC	-0.65	0.42	2.34	.126	0.52	0.23	1.20
PSGC	0.13	0.17	0.64	.424	1.14	0.83	1.58
PW	0.65	0.21	9.97	.002	1.92	1.28	2.87
Altruistic values	-0.20	0.17	1.44	.231	0.82	0.59	1.14
Biospheric values	0.42	0.18	5.34	.021	1.52	1.07	2.17
Observed CC	-0.15	0.28	0.30	.582	0.86	0.50	1.48
Emergency	0.23	0.21	1.21	.272	1.26	0.84	1.90
Duty	0.72	0.36	3.87	.049	2.05	1.00	4.18
Constant	-13.01	3.00	18.85	< .001	0.00		
Full model: X^2 (9) = 114.02, $p < .001$, Nagelkerke $R^2 = .368$							

Note. df = 1. Hosmer and Lemeshow Test of goodness of fit was non-significant. *N* = 382. SE = standard error; Exp (B) = odds ratio; CI = confidence interval; *LL* = lower limit; *UL* = upper limit. CC Anxiety = Climate Change Anxiety; PDCC = Psychological Distance of Climate Change; PSGC = Psychological Sense of Global Community; PW = Personal-sphere willpower and waypower; Observed CC = Observed Climate Change.

Discussion

This study proposed a new construct called deep behavioural engagement (DBE) in climate action, referring to self-reported climate change mitigation activities in either volunteering and/or activism, work, study or career, or personal lifestyle, that a person reports currently doing in a major way. This exploratory, mixed methods study surveyed a non-random convenience sample of Australian adults to find examples of DBE, thematically analysed activities perceived to exemplify DBE, identified ways in which people practising DBE differed from other people in the sample, and identified several factors that predicted whether a person would practise DBE.

Results showed that the reported DBE activities of adults in Australia in the volunteering and activism sphere included involvement in nonviolent direct action, creating and running climate action groups, promoting the election of pro-climate-action candidates, and supporting people in their emotional responses to climate change. In the work, study and career sphere, DBE activities included spending decades working in climate advocacy or human rights organisations, teaching students about climate change, organising climate-focused election campaigns, advancing legislative proposals for climate action, and working in

various areas of science, research, energy, adaptation, and psychology around climate change. In terms of personal lifestyle changes, DBE participants reported impactful activities such as reducing or eliminating car journeys, plane travel, or consumption of animal products; growing their own food, making their own clothes, and composting; small homes, solar power, and living off the grid; and choosing not to have children. The broad range of DBE activities reported by participants demonstrates that there are many ways people can contribute towards climate action, and that despite barriers, people are capable of deep commitments to these efforts. These findings have potential to inform development of scales to measure deep behavioural engagement in climate action across different spheres of activity.

Descriptive statistics revealed that people in the sample who were practising DBE did not differ significantly from people who were not practising DBE on any of the demographic variables measured: age, gender, current work situation, educational attainment, or parenthood status and intentions. This shows that in this sample DBE was not unique or specific to one or more subgroups of the population in terms of demographic characteristics. It was also notable that although DBE participants experienced significantly more climate change anxiety, they did not have higher or lower general life stress than non-DBE participants. This supports the premise that climate change anxiety is specific to the climate reality, can be differentiated from other forms of psychological distress, and while associated (r = .36) it is distinct to feeling overwhelmed by life in general.

While other research linked strong endorsement of egoistic or hedonic values to lower PEB (Steg, Perlaviciute, et al., 2014), in the present study there was a significant difference between the DBE and non-DBE groups on endorsement of hedonic values but not egoistic values, with the DBE group scoring lower on hedonic values. Consistent with PEB research, the DBE group was significantly more likely to strongly endorse altruistic and biospheric values, and to have a sense of global solidarity (higher scores on PSGC). Promotion of these values and attitudes could be part of the cultural change entailed in a transformation towards a zero-emissions world. Also, consistent with PEB research (e.g., Jones et al., 2017), those who viewed climate change as proximal, immediate, and certain (i.e., lower scores on PDCC) were more likely to engage in DBE. This is important because psychological distance can be reduced through message framing (Jones et al., 2017) and might already be reducing as the consequences of climate change become more personally relevant to people, such as Australians affected by bushfires and flooding. The DBE group scored higher on the PW form of climate change hope, representing an active form of hope. In line with theory, there were signs that the DBE group had been "reckoning with reality" more than the non-DBE group: DBE participants were significantly more likely to strongly agree that climate change had influenced their reproductive decisions, and significantly more likely to endorse the Emergency and Duty statements.

The logistic regression model predicting the presence or absence of DBE was able to correctly classify more than three quarters of cases. In this model, climate change anxiety and a sense of duty towards others, including future generations, emerged as the strongest predictors of DBE. The personal-sphere willpower and waypower subscale (PW) on the climate change hope scale, which is similar to an active form of hope, and biospheric values, involving appreciation of and connection to nature, also made uniquely significant contributions to the model after controlling for other variables. This indicates that what is different about people who practise DBE is a combination of a strong sense of duty for the sake of others, greater anxiety about climate change, a sense of constructive or active hope about responding to the emergency, and a stronger endorsement of goals to care about nature and the environment. Climate change anxiety and active hope are two distinct components co-occurring in some concerned and alarmed individuals and arising from similar conditions (Stevenson & Peterson, 2016; Verlie, 2019). Future research and climate change communication could focus on ways

of instilling a sense of duty, promoting active hope and protecting people from despair, and fostering cultural discourse that prioritises biospheric values.

Limitations

The present study was based on a non-random sample of adults residing in Australia. The sample was predominantly comprised of women, people living in urban areas, and those with a very high level of education (45.3% of participants with postgraduate-level education). Participants were also relatively affluent, with 69.3% saying they had enough money for basic items "all of the time" and 68.7% saying they had enough money for extra items either most of the time or all the time. This relative homogeneity of the sample makes it unsurprising that no significant differences were identified on demographic variables. It also means that the results cannot be assumed to generalise to the broader Australian adult population, nor to samples in other parts of the world. Given concerns that climate psychology research has been focused on the attitudes and experiences of relatively privileged people in affluent countries, it is unfortunate that recruitment for this study did not manage to counteract that trend. However, given this subgroup is also likely to represent higher carbon emitters, there is likely benefit in targeting this subgroup. Additionally, participants self-selected into the study and tended to find out about the study through environment-related Facebook groups or via people in their networks. These recruitment methods assisted in accessing a usefully high number of people who were practising DBE, at the expense of representativeness.

This research provides a preliminary understanding of the concept of DBE. It is important to note that the quantitative analyses rely on people self-identify as engaging "in a major way" within their lives in the three domains in pro-environmental ways. There is likely variability in how people conceptualise what constitutes minor versus major behaviours. The qualitative data provide further examples of how participants conceptualised these behaviours, however, further research is required for more detailed analysis and operationalisation of the concept.

Conclusions

This study is among the first to examine a phenomenon that has here been termed deep behavioural engagement in climate action, or DBE. The findings show that a portion of Australians practice DBE, and that they do so in a myriad of ways as activists, volunteers, educators, students, workers, leaders, householders, and citizens. The findings provide insights into the ways in which people practising DBE may differ from others. The most important predictors of DBE – climate change anxiety, duty, active hope, and biospheric values – are not characteristics that are fixed or only found in certain parts of the community. As people continue the process of emerging from degrees of disavowal or denial about climate change (Lewis, 2021), there is potential for a large portion of the community to take on these DBE-facilitating attitudes and affective stances, and commit to climate action.

The finding that climate change anxiety is a strong predictor of DBE, and the possibility of more people experiencing this as part of a shift towards more widespread DBE, might seem a dismaying outcome, especially to psychologists. However, it is worth noting how different climate change anxiety is from other forms of anxiety: it is about real threats, and treatment involves transforming the fear into effective action (Lewis et al., 2020). At the same time as humanity works to mitigate climate change and adapt communities towards greater resilience, it may be equally essential to experience the feelings associated with reckoning with this new reality. Verlie (2019, p. 751) calls for affective adaptation, in which people learn to "live with climate change", enduring the pain of letting go of the world they have known, and working to envision and create alternatives.

The other key predictors of DBE – a strong sense of duty about preserving a safe climate for the sake of others, an active form of hope, and biospheric values – have potential to be influenced through climate change communication. Messages that support and amplify these attitudes may have a role to play in growing the proportion of citizens who are *Concerned* and *Alarmed* about climate change and encouraging them to commit to action. In the face of powerful macrosystemic barriers, including the way the global economic system and government priorities are based on continued growth, expansion, extraction, and pollution, changing course away from the current trajectory will require many more people to deeply engage and collectively mobilise in climate action. Additional research, policy change, and collective action is required to avoid potential worst-case scenario outcomes in the coming years and decades.

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Address for Correspondence

Correspondence concerning this article should be addressed to Adele O'Hare, adele@beinghumanpsychotherapy.com.au.

Author Biographies

Adele O'Hare is an Educational and Developmental Psychologist and Attachment-Based Psychotherapist working in private practice. She draws on ecopsychology and The Work that Reconnects to help people who are experiencing distress and grief related to climate change. https://orcid.org/0000-0002-8643-463X

Kate Murray is an Adjunct Associate Professor in the School of Psychology at Queensland University of Technology. She conducts participatory action research to promote more just, equitable and inclusive systems. https://orcid.org/0000-0002-9935-8170

Reciprocal Ecotherapy: A Qualitative Exploration of Ecocentric Perspectives and Mutualistic Wellbeing in the Ecotherapies

Mitchell Lenehan and Lester Watson

Charles Sturt University

Alienation from nature may be deeply implicated in the global ecological crisis and its associated deleterious wellbeing impacts. This highlights the importance of research that focuses on addressing and improving human connectedness with nature. Our study aimed to investigate the human-nature connection by exploring the concept of human-nature wellbeing reciprocity in the context of ecotherapy theory and practice. A qualitative research methodology was employed and grounded in a critical realist ontology and epistemology. Participants were seven ecotherapy practitioners. Data were collected through semi-structured interviews, analysed using thematic analysis, and explored with reference to social and biological science, First Nations, ecological land management, and other literatures. Analysis constructed three themes: (1) Human-Nature Connection is Multidimensional, (2) Ecotherapy May Initiate Transactional Reciprocity, and (3) Ecotherapy May Facilitate Co-becoming with Nature. The findings suggest that the human-nature connection can be understood in diverse but ultimately compatible ways offering a multidimensional and ecocentric perspective on human-nature wellbeing. Furthermore, human-nature wellbeing reciprocity may influence ecotherapeutic outcomes and may be harnessed through ecotherapeutic practices. This research contributes to the conceptual articulation and practical application of ecotherapeutic approaches that empower mutually healing engagements of humans with nature.

Keywords: ecotherapy, human-nature connectedness, reciprocity, wellbeing

An impressive and growing body of evidence now demonstrates the health and wellbeing benefits of human contact with nature (Harper et al., 2021). These benefits may extend to nature itself, as connectedness with nature is associated with pro-environmental attitudes and behaviours (Zylstra et al., 2014). However, modern, urban, technologically dominated lifestyles diminish opportunities to interact with nature and may be reinforcing a cycle of deteriorating health and wellbeing, disaffection toward nature, and loss of motivation to care for and protect the natural world (Soga & Gaston, 2016). Thus, alienation from nature may be deeply implicated in the global ecological crisis and its associated deleterious public health impacts (Büscher, 2022; Thoma et al., 2021). These serious implications highlight the importance of research that focuses on understanding and enhancing the relationship between humans and the rest of nature—the *human-nature connection* (Ives et al., 2017).

Unfortunately, research on this topic lacks dedicated constructs, frameworks, and settings; consequently, it is fragmented by a plurality of disciplinary and conceptual perspectives, methods, and language, compromising the consolidation of findings and their practical applications (Ives et al., 2017). To address this issue, it may be necessary for researchers and practitioners to work beyond traditional disciplinary, and even cultural, boundaries (Ives et al., 2017). An effective approach may involve working across the social and environmental sciences (Cornell, 2010; Myers, 2017).

Ecopsychology is a synthesis of ecology and psychology that emerged in response to this need for interdisciplinarity (Roszak et al., 1995). Ecopsychology is more than an application of psychological strategies to environmental problems; rather, it is a transformation of psychology that re-values human physical, emotional, and spiritual bonds with the natural world that are marginalised within a mechanistic worldview and renewed by direct and experiential contact with nature (Davis & Canty, 2013).

Adjacent fields (e.g., environmental psychology) have tended to conceptualise 'people and their physical environment' in terms of a discontinuous subject-object dualism (Fleury-Bahi et al., 2017). By contrast, ecopsychology recognises both the ecological fact and the psychological experience of human interconnectedness with a living and aware web of life, ultimately calling for radical shifts in worldview and practice to address convergent eco(psycho)logical crises by conceptually reintegrating mind and matter—psyche and nature (Fisher, 2013). This project confounds Cartesian distinctions between human and nature, replacing them with a language and an ethic of mutuality and connectedness (Suchet-Pearson et al., 2013).

The applied or therapeutic practice of ecopsychology, and the way in which practitioners incorporate the natural world into a therapeutic model, has been labelled *ecotherapy* (Delaney, 2020). Buzzell and Chalquist (2009) describe ecotherapy as 'an umbrella term for nature-based methods of physical and psychological healing [that] addresses the critical fact that people are intimately connected with, embedded in, and inseparable from the rest of nature' (p. 70). A diverse generation of ecotherapeutic approaches has emerged and grown in recent years, including outdoor therapy, nature-based therapy, wilderness therapy, adventure therapy, animal-assisted therapy, garden and horticultural therapy, forest therapy, and surf therapy, among others (Harper & Dobud, 2020). The common factors unifying the field are a recognition of human-nature kinship, the centrality of experiential and embodied interaction with nature, and practices aimed at human-nature reintegration and healing (Davis & Canty, 2013).

The ecotherapies are now supported by an abundant evidence base linking their various approaches to comprehensive beneficial health and wellbeing outcomes across a broad spectrum of populations (Corazon et al., 2019; Coventry et al., 2021). Recent research indicates that ecotherapies may even improve the symptoms of clinical mental health issues such as anxiety and depression (Yeon et al., 2021), PTSD (Hediger et al., 2021), and schizophrenia (Lu et al., 2021).

However, the history of human-centred use of nature is a cautionary tale; such usage has tended to over-exploit and degrade the natural systems that support the being and wellbeing of all life on earth (Buzzell, 2016). Indeed, ecopsychologists have expressed concern that some approaches to ecotherapy may promote instrumental orientations towards nature that inadvertently perpetuate the alienation at the core of the ecopsychological crisis (Buzzell & Chalquist, 2009). Plesa (2019) has argued that attention must be focused on the mentality behind ethical and unethical engagements with nature. Similarly, Fisher (2013) recommends expanding the scope of ecotherapy by asking: 'In what ways and to what extent does a given practice address the roots of the ecological crisis?' (p. 221). Buzzell (2016) has called for approaches to ecotherapy that are grounded in an understanding of *human-nature wellbeing reciprocity*—the ecological inference that human-nature wellbeing is fundamentally reciprocal.

Animal-assisted therapies present opportunities for humans to experience and initiate reciprocity with the natural world. Gorman (2019) explored human-nature wellbeing reciprocity in the context of care farming (i.e., community farming engaged in intentionally therapeutic agricultural paradigms). They found that in addition to healing opportunities for both humans and animals, care farming facilitated human empathy with nature by providing

opportunities to critically engage with the subjectivity of farm animals (Gorman, 2019). The study concluded that while human-animal relationships were often human-centric, they could nevertheless result in reciprocal, though not necessarily equal, wellbeing benefits (Gorman, 2019).

However, by relegating non-human animals to a state of therapeutic utility, animal-assisted therapies also have significant potential to be exploitative and damaging to the animals involved (Bradshaw, 2009). Taylor and Carter (2020) qualitatively explored human-animal relations within the context of dolphin-assisted therapy. These authors acknowledged that dolphin-assisted therapy could not be morally justified with captive dolphins, and instead addressed the circumstances of human-dependent former entertainment and research dolphins 'recommodified' (p. 77) as therapy animals (Taylor & Carter, 2020). While, this study concluded that the therapy dolphins were 'not purely commoditised' (p. 78) but rather valued as members of a mutually beneficial interspecies community (Taylor & Carter, 2020), the objectifying language suggests a disregard for reciprocity.

Human-nature wellbeing reciprocity may also be a feature of conservation activities. In addition to environmental wellbeing, active conservation can improve human wellbeing, most noticeably through the effects of outdoor physical activity (Rosa & Collado, 2019). An experimental study that allocated participants to either a beach cleaning, rock pooling, or walking activity found that all three coastal activities were associated with positive mood and pro-environmental intentions (Wyles et al., 2017). Interestingly, the beach cleaning activity was associated with perceptions of meaningfulness and higher marine awareness (Wyles et al., 2017). Unfortunately, research into the human wellbeing benefits of conservation activity is scarce.

The integration of human-nature wellbeing reciprocity into ecotherapeutic approaches may be most comprehensively developed in the First Nations literature relating to land-based healing and wellness. Indeed, Aboriginal elders insist that reconnecting people with land is a preferred mode of healing (Gooda & Dudgeon, 2018), and Indigenous Australian wellness models have long recognised *connection to country* and *caring for country* as central dimensions of identity, healing, and wellness (Gee et al., 2014).

Taylor-Bragge and Whyman (2021) explored the symbiotic links between the health of Australian Aboriginal peoples and their lands by extracting common themes from case studies of Aboriginal land management programs. The researchers reported that Aboriginal land management programs were linked to broad, positive wellbeing outcomes for people, communities, and country (Taylor-Bragge & Whyman, 2021). Similarly, Kingsley et al. (2009) explored the health and wellbeing impacts of caring for country with traditional custodians and Indigenous environmental workers. They found that caring for country benefited Indigenous participants by building self-esteem, fostering self-identity, maintaining cultural connection, and enabling relaxation and enjoyment through contact with the natural environment (Kingsley et al., 2009).

The relationship between caring for country and Indigenous wellbeing is also supported by quantitative research. A cross-sectional study of 298 Indigenous residents of an Arnhem Land community investigated caring for country and its connection with health outcomes relevant to excess Indigenous morbidity and mortality (Burgess et al., 2009). The analysis revealed significant and substantial relationships between caring for country and health outcomes (e.g., body-mass index, psychological distress, five-year cardiovascular disease risk). While a causal direction was not determined, the researchers concluded that caring for country appears to deliver both ecological and human health benefits (Burgess et al., 2009).

Thus, Indigenous caring for country, conservation activities, and animal-assisted therapies each may harness human-nature wellbeing reciprocity. Nevertheless, the concept of

human-nature wellbeing reciprocity and the ways that it might be facilitated in ecotherapeutic practice remain almost entirely unexplored in the empirical literature.

Rationale

Critiques of ecotherapy have called for a more comprehensive integration of the wellbeing of nature into ecotherapeutic approaches (Buzzell, 2016; Fisher, 2013). A more thoroughly ecological ecotherapy might emerge from an explicit consideration of reciprocal interactions between human wellbeing and that of nature.

In addition, despite robust evidence of beneficial outcomes, ecotherapy lacks comprehensive theoretical articulation, particularly regarding the role or contribution of nature, leaving the field without an explicit theory of change (Harper et al., 2021). While some researchers have indicated biomedical causal mechanisms (Frumkin et al., 2017), others have pointed to the complexity inherent in nature and the human-nature connection (Harper et al., 2021). An account of human-nature wellbeing reciprocity may contribute to an understanding of the healing pathways underlying ecotherapeutic outcomes.

Finally, the language of reciprocity may provide a more appropriate and compelling language with which to understand and express the human-nature connection (Saunders, 2003). Such an understanding may empower an approach to nature that goes beyond management, conservation, or even stewardship, instead reflecting symbiotic ethical relationships among all living organisms (Plesa, 2019). Indeed, Fisher (2013) argues that a truly ecopsychological ecotherapy would generate radical praxes transitional to a society capable of ecocentric healing.

Research Aim and Questions

This study explored the concept of *human-nature wellbeing reciprocity* with the aim of generating insights that may inform the theoretical and methodological development of ecotherapy. The study was guided by three broad research questions:

1. For context, what is the human-nature connection?
2. What is the role, if any, of reciprocity in ecotherapeutic outcomes?
3. How can reciprocity be harnessed in ecotherapy practice?

Research Design

Method

Qualitative research aims to explore how people experience and make sense of the world in order to describe, and possibly explain, phenomena (Willig, 2013). This study is designed to investigate and describe the quality and experience of human-nature connection by identifying and analysing recurring patterns of experience and sensemaking among ecotherapy practitioners. Therefore, a qualitative research method was employed.

Ontology & Epistemology

This study seeks to generate knowledge that captures the reality of the human-nature connection and the role, if any, of human-nature wellbeing reciprocity in ecotherapy outcomes. Thus, it is assumed that the human-nature connection exists and can be described; however, the role, if any, of reciprocity is not assumed. This ontological position is consistent with a realist ontology, which maintains that a real world of structures and objects with cause-effect relationships exists independently of our perceptions and meaning-making (Willig, 2013).

However, it is also assumed that participants' statements are subjective constructions and not a direct reflection of reality, though they may provide a level of insight. Moreover, it is acknowledged that the data will be interpreted by the researcher to identify, explore, and construct an understanding of the factors and forces that may be involved. It is therefore understood that the subjectivity and judgemental rationality of the researcher will also be critically involved in the construction of the research outcomes (Quraishi et al., 2022). These assumptions are consistent with epistemological relativism, which accepts that observation and description are necessarily selective, and that perception and understanding of reality is only partial (Willig, 2013).

Thus, the study integrates ontological realism, epistemological relativism, and judgmental rationality—the 'holy trinity' of critical realism (Bhaskar, 2010). This approach is recommended for its balanced synthesis of the realist ambition to better understand reality, acceptance that our critical but subjective interpretation of reality is necessarily limited, and recognition of the inherent difficulty of describing complex phenomena in open systems (Cornell & Parker, 2010).

Ethics

Ethical approval to conduct research with human subjects was sought and granted through the Charles Sturt University Human Research Ethics Committee under approval number H22131.

Recruitment

Potential participants were identified by their professional and advertising material, as well as by word of mouth, and invited to participate by email. General invitations were also sent to professional associations and interest groups related to ecotherapy. In addition, recipients were requested to forward invitations to others who may be eligible. The two criteria for eligibility were: (a) self-identify as having at least one year's experience engaged in an ecotherapeutic practice; and (b) be aged eighteen years or over.

Participants

Seven participants were recruited including four Social Workers, two Psychotherapists, two Indigenous Knowledge Holders, one Clinical Psychologist, and one Outdoor Educator (some participants identified with multiple roles). Ecotherapeutic experience ranged from one year to 15 years. The specific approaches and modalities employed included wilderness expedition therapy, bush adventure therapy, nature-based therapy, rewilding, nature connection facilitation, walk-and-talk therapy, caring for country, and equine-assisted therapy. The participants' clients were diverse, but commonly included young people and others with clinical diagnoses (e.g., ASD, ADHD, anxiety, depression, schizophrenia).

Data Collection and Analysis

Semi-structured interviewing was chosen as a data collection method due to its compatibility with the kind of information being sought. To invoke and exemplify ecopsychological principles, interviews were conducted face-to-face in convenient spaces incorporating natural elements (e.g., a foreshore, a park, by a window with a view of a garden, by a river). Where face-to-face interviewing was not practical (e.g., due to prohibitive distances) interviews were conducted via video call. Each interview was held for approximately 60 minutes, audio recorded, and transcribed. Participants were given the opportunity to review,

correct, clarify, and/or expand upon their transcripts. One participant responded with minor clarifications.

The data were analysed inductively using thematic analysis. Thematic analysis is an accessible and theoretically flexible qualitative analytic method of identifying, analysing, and describing patterns in data (Braun & Clarke, 2006). The most salient and well-developed constellations of meaning identified at the semantic level were collated into themes representing some level of patterned response in the data relating to the research questions. Themes were explored through psychological, ecological, land management, theological, Indigenous, and systems perspectives. This approach supported a holistic analysis of the material, consistent with an ecopsychological research paradigm. To engage safely with issues of particular relevance to Indigenous peoples (Dudgeon & Walker, 2015; Jones & Segal, 2018), we have been guided by the notion of 'both ways' or 'two-eyed seeing', which stresses the importance of viewing the world through an eye using the strengths of Indigenous worldviews and with the other eye using the strengths of Western worldviews, and is akin to transdisciplinarity (Bartlett et al., 2012).

Critical Language Awareness

Alienation from nature may have its roots in fundamental cultural assumptions and linguistic conventions that cannot be adequately addressed, much less overcome, within the scope of this article. Indeed, the discussion of our relationship with nature requires distinct linguistic categories that reinforce the impression of separation. As a result, diverse, competing conceptual repertoires have emerged within the nascent ecopsychological literature, while conflicting and overlapping language exists in adjacent disciplinary and cultural fields (Ives et al., 2017).

One particularly troublesome example is the word 'nature' itself, which can be understood as both inclusive of, and in contradistinction to, 'human'. Unfortunately, the available alternatives appear to have their own limitations. For example, nature appears to have a non-physical dimension (Kamitsis & Simmonds, 2017) that is not well captured by 'environment', 'earth' or 'biosphere'; ecopsychological neologisms such as 'more-than-human world' (Abram, 2013) are marginal and cumbersome; and while arguably cognate, the Aboriginal English term 'Country' has sensitive cultural associations (Dudgeon & Walker, 2015; Suchet-Pearson et al., 2013).

While a more nuanced, relational, and non-dualistic terminology and discourse may be desirable, the English language, with its reliance upon dualistic categories and linear relationships, may simply be poorly suited to the discussion, particularly given the spiritual/transpersonal and the complex/multidimensional ontologies evident in the subject matter and findings. Nevertheless, the term 'nature' is preferred here as it is familiar and commonly employed in the ecopsychological literature and fields of practice, though it is usually left undefined (Ives et al., 2017). 'The rest of nature' is intended to refer to nature excluding humans, and 'human-nature' is used to indicate the overlapping zone shared between humans and the rest of nature. Moreover, by emphasising that human connectedness/relationship is *with* rather than *to* nature, it is hoped that an ecocentric sense of nature's subjectivity is conveyed. For further contextualising analysis, see *Theme 1*.

Results and Discussion

Three primary themes were constructed from the data analysis: *(1) Human-Nature Connection is Multidimensional, (2) Ecotherapy May Initiate Transactional Reciprocity,* and *(3) Ecotherapy May Facilitate Co-becoming with Nature*. In *Theme 1,* the essence of the human-nature connection is discussed. Potential pathways of human-nature wellbeing

reciprocity are constructed, and their implications for ecotherapy are discussed, in *Theme 2* and *Theme 3*.

Theme 1: Human-Nature Connection is Multidimensional

Theme 1 addresses participants' conceptualisation of the human-nature connection and is comprised of four subthemes: *(1.1) Interpersonal Relationship, (1.2) Ecological Interdependence, (1.3) Transpersonal Self-Identity,* and *(1.4) Complex Intra-action*. These conceptualisations are outlined, and their implications are discussed.

Subtheme 1.1. Interpersonal Relationship

The human-nature connection was characterised as an interpersonal relationship, with nature described as a therapeutic partner, a family member, a teacher, and a transpersonal other. Participants cautioned that the objectification of nature conflicts with this conceptualisation and may consequently harm the relationship.

> *It's a relationship between the therapist—nature; the facilitator—the psychologist/social worker; and the person. (Dora)*

> *[Horses] are colleagues. They're not there to be used […] In the horse world, people use horses. They're like a motorbike. (Cali)*

> *Respect is a really big thing. If you don't respect the plant, if you don't respect nature, then you don't have a relationship. (Dora)*

This view resembles ecofeminist conceptualisations of the human-nature connection. For example, Mitten (2020) noted that humans may relate to nature as an equal, a colleague/co-therapist, or a partner in treatment; an often-feminine cosmic caregiver, divine being, or supernatural force (e.g., Mother Nature); or, by contrast, as a nuisance or opponent to be overcome (e.g., by 'conquering' a mountain). This perspective similarly echoes Indigenous notions of connection to country: 'People talk about country in the same way that they would talk about a person: they speak to country, sing to country, visit country, worry about country, feel sorry for country, and long for country' (Rose, 1996, as cited in Burgess et al., 2009, p. 1).

Ecofeminism also observes parallels between human-human and human-nature relationships, highlighting correspondences between the domination and exploitation of both nature and women (Roszak, 1992). Moreover, Mitten (2017) argued that human attachment relationships resemble attachments with nature, which each have comparable influences on personal and interpersonal functioning. Pompeo-Fargnoli (2018) observes further parallels between relationships with nature, self, and the spiritual world. The essence of this relational dynamic is summarised by Xylo.

> *If we have a healthier relationship with nature, then we'll have a healthier relationship with ourselves. And if we have a healthy relationship with ourselves, we'll have a healthier relationship with nature too. (Xylo)*

Understanding the human-nature connection in terms of *Interpersonal Relationship* appears to align with both ecofeminist and Indigenous stances and suggests that nature can be related to as an interpersonal other. Moreover, the style of relationship formed with nature may reflect and influence the quality of our other relationships.

Subtheme 1.2. Ecological Interdependence

Participants conceptualised the human-nature connection as being embedded within the broader network of relationships that constitute a living whole. The functional interdependence of humans and nature was emphasised.

> *Everything is interconnected. Everything is relationship. We're not separate from the natural world. (Dora)*

> *That gum tree has a relationship with that sheoke which has a relationship with all of these species. It's not just a monoculture where there's just red gum. It's a diverse ecosystem. That little honeyeater has a relationship with every species in this, and is dependent on it for its existence, as it is dependent on us. (Erem)*

The standard view in biology defines ecosystems not only by their constituent parts but by how those parts are connected and interact (Estes et al., 2013). However, this view neglects the ways in which we simultaneously create and are created by our environment (Egmose et al., 2021). A more thoroughly ecological view highlights the radical ontological interdependence of organisms, and indeed all phenomena, and hence the absence of the inherent existence of either subject or object, organism or environment (Sharma, 2015). Rubi and Mell used biological metaphors that demonstrate this interdependence.

> *We can't be separated from the country we're on […] We're born in the womb, but nutrients come in that feed the foetus that then grows into a newborn baby. That cycle of everything depends on everything. (Rubi)*

> *I think it's a little bit like saying: 'Oh, this finger that's been severed from the hand, how would it benefit the finger, and how would it benefit the hand, if we sewed them back together again?' We weren't designed to be functioning separately. (Mell)*

Understanding the human-nature connection in terms of *Ecological Interdependence* accords with an ecological perspective that emphasises the interconnection, interaction, and radical ontological entanglement of parts and whole.

Subtheme 1.3. Transpersonal Self-Identity

Participants conceptualised the human-nature connection in terms of a transpersonal self, identifying personally and collectively with nature-as-a-whole (e.g., 'earth', 'biosphere', 'cosmos', 'spirit'). All participants stated categorically: 'We are nature' and referred to nature as self.

> *On a spiritual level, [ecotherapy] reconnects us to our authentic self. (Dora)*

> *We didn't come to the earth; we came out of the earth. And we can consciously choose to return to ourselves. (Rubi)*

Ecopsychologists similarly describe the entanglement of self and nature as a transpersonal self-identity that dissolves or transcends human-nature boundaries (Davis & Canty, 2013). Roszak (1992) introduced the concept of the *ecological unconscious* which links the individual's psyche to that of the living world. Similarly, Fisher (2019) understands the

psyche as a phenomenon arising from a complex network of interconnections that extends beyond the individual.

The transpersonal quality of the human-nature connection was also associated with a deeply felt intuitive knowing.

> *We are nature. Our view is, and our knowing is, we are the spirit, we are the earth, we are nature. (Erem)*

> *We're the cosmos discussing itself right here, right now on this park bench. I don't even believe that; I know that. I feel it. (Rubi)*

Kamitsis and Simmonds (2017) similarly found that ecotherapy practitioners conceptualise the human-nature connection as spiritual in essence. The associated expansion of identity is discussed by Fisher (2013) who likens the experience to a process of psychospiritual growth into alignment with ecological realities.

In this way, the *Transpersonal Self-Identity* conceptualisation of human-nature connection, and its associated psychospiritual experience, parallels the notion of self in transpersonal psychology wherein humans and the rest of nature are understood as a transpersonal whole (Davis, 2013).

Subtheme 1.4. Complex Intra-action

Participants rejected a simple dichotomy of humans and nature. While relying on semantic distinctions (e.g., using concepts like 'environment', 'natural', 'external,' 'outside,' 'non-human', 'organic', 'natural world', 'wild nature', 'unnatural', and 'the human sphere'), they nevertheless affirmed a holistic stance overall.

> *It's tricky, when we think about nature connectedness, because we have one planet, one universe, and everything that we consider unnatural still comes from what was naturally here. (Euca)*

> *If you're being fed by nature, and being clothed, and housed by nature, being warmed by these entities and aspects of nature, then the boundary between the us—the human sphere—and what goes on elsewhere […] that starts to blur a little bit more. (Mell)*

The apparently contradictory quality of the human-nature connection may nevertheless be consistent with complex systems theory, wherein many entities are understood to embody contradiction in their simultaneous position as both wholes and parts of larger wholes (Allen & Giampietro, 2014). However, this conceptual move causes such entities to become undefinable (Allen & Giampietro, 2014). Thus, the difficulty experienced when discussing the human-nature connection may be a function of its complex multidimensionality. Highlighting the limitations of English when discussing this complexity, Erem nevertheless demonstrates a synthesis of the *Interpersonal Relationship*, *Ecological Interdependence,* and *Transpersonal Self-Identity* conceptualisations of human-nature connection.

> *We're sitting here now with the blood running through our veins of mother earth—the river. (Erem)*

The *Complex Intra-action* conceptualisation also appears to be consistent with Indigenous Australian notions of country, which consists of people, animals, plants, minerals, waters, and dreamings in co-constitutive relationship. Rose (2005) describes an Indigenous philosophical ecology that recognises a 'mutually life-enhancing dynamic […] sustained by

synergistic flows of benefits through time, living things, and place' (p. 301). Indeed, as Rose (1996) asserted, 'Country is multi-dimensional' (as cited in Burgess et al., 2009, p. 1). Accordingly, Dora and Rubi note the relevance of Indigenous ways of knowing and being in ecotherapy practice.

> *Part of reconnecting back to nature and doing nature-based therapy is understanding Indigenous ways of being and doing. (Dora)*

> *I focus on Indigenous approaches because I think that's a higher priority for practitioners, particularly for Australian-based practitioners. It's not just about right practise, but right state of being. (Rubi)*

In summary, the *Human-Nature Connection is Multidimensional* theme constructs participants' views on the human-nature connection, which while potentially undefinable, may feature interpersonal, ecological, transpersonal, and complex qualities, broadly aligning with ecofeminist, ecological, psychological, complex systems, and Indigenous theories. Via *Complex Intra-action*, the *Human-Nature Connection is Multidimensional* theme permits a holistic synthesis of the *Interpersonal Relationship*, *Ecological Interdependence,* and *Transpersonal Self-Identity* subthemes.

This theme describes the context within which human-nature wellbeing reciprocity is assumed to function. Reciprocity may evolve from, or be influenced by, the human-nature connection conceptualisation adopted; for example, reciprocity experienced in human-nature relationships may reflect or be reflected in other interpersonal relationships (Pompeo-Fargnoli, 2018). Moreover, certain conceptualisations (e.g., nature as a partner, system, or transpersonal self) contrast with subject-object conceptualisations of nature (e.g., nature as a commodity, drug, or mechanism), with potentially contrasting influences on ecotherapeutic outcomes. Human-nature wellbeing reciprocity may also be understood, from the transpersonal perspective, as the earth caring for itself, as asserted by Dora:

> *We're caring for self. If nature's us, then we're self-healing. (Dora)*

Clinebell (1996) similarly argued that caring for the earth was 'enlightened self-interest' (p. 9). In addition, wellbeing may emerge through complex multidimensional intra-actions (Egmose et al., 2021; Sharma, 2015).

This theme also highlights the confounding influence of the English language and dualistic conceptual categories. More appropriate models of the human-nature connection and wellbeing reciprocity may therefore draw from complex systems theory and Indigenous ways of being and knowing.

Theme 2: Ecotherapy May Initiate Transactional Reciprocity

Theme 2 describes a possible pathway of human-nature wellbeing reciprocity characterised as an exchange of wellbeing benefits. However, participants indicated discomfort with the potential consequences of this understanding and questioned its compatibility with ecotherapy.

Participants consistently affirmed that reciprocity was a feature underlying ecotherapeutic outcomes.

> *You care for it, and it cares for you. (Cali)*

> *If I care for country, country will take care of me. (Rubi)*

> *It nurtures us. We need to keep doing those ceremonies—song, story, dance, language—to nurture it. (Erem)*

For some participants, experiencing the wellbeing benefits of ecotherapy may lead to a more aware, respectful, caring, or protective approach to the rest of nature.

> *A side effect can be someone having more respect for wild areas. (Euca)*

> *When people are more well, they are more effective […] I can imagine that there would be climate benefits from people having the mental energy to care about the environment. (Xylo)*

This view is supported by Clinebell (1996) who proposed a model intended to harness reciprocal healing called *the ecological circle* wherein (1) individuals experience being nurtured by nature, which (2) inspires awareness of nature's healing power, enhancing love for the natural world, deepening positive bonding with the earth, and potentially adding an earthly grounding to spirituality. This in turn motivates and empowers (3) engagement in pro-environmental behaviours. For Clinebell (1996), completing the ecological circle 'can heal persons and heal the living environment that is in them as they are in it' (p. 9).

Reversing this process, participants also indicated that actively caring for nature (e.g., gardening, ecological restoration, conservation, advocacy, land management) can lead to human wellbeing benefits.

> *When we create a garden, a sensory garden, space for nature to thrive, we're giving to nature, we're rejuvenating nature, but we're receiving too. (Dora)*

> *There are practitioners in this space who do that quite explicitly through either gardening or clean-ups. Part of their nature-based practice is that they're explicitly doing that reciprocity stuff and modelling that. (Xylo)*

Interestingly, horticulture and gardening have been applied as therapeutic interventions since at least the 19th century (Haller, 2020). Among the ecotherapies, horticulture and gardening therapies are unique in that they explicitly include active care for nature as a major aspect of the work (Haller, 2020).

Thus, both passively receptive and actively caring ecotherapeutic activities may initiate an exchange (i.e., giving/receiving) of wellbeing benefits between humans and the rest of nature. In this way, *Transactional Reciprocity* may operate like *reciprocal altruism* (Nowak & Sigmund, 2005). However, participants expressed some discomfort with this transactional understanding of human-nature wellbeing reciprocity, as it appears to operate like a trade or market exchange and may therefore reinforce a counterproductively instrumental and egocentric orientation toward the rest of nature.

> *That's a give-and-take relationship, which is typically not a great way to think about nature. (Euca)*

> *Reciprocity is quite transactional in a way. I get why we want to explain it to people that way, like, 'Hey, there's something in it for you.' (Mell)*

Accordingly, Mell attempted to re-establish a more holistic and systemic narrative of human-nature connection.

> *I much prefer the perspective where we're just saying: 'Actually, something's become separate from the whole. How can we heal that? How can we whole it again? Help things to become whole and remove these unnecessary divisions within a system?' (Mell)*

Participants further contrasted ecotherapeutic principles with instrumental or alienating forces exemplified by 'logical-rational mind' (Mell), 'techno-rational framework' (Euca), 'mastery and materialism' (Erem), 'colonisation' (Dora), 'colonised mind' (Rubi), 'medicalised and corporatised' (Xylo), 'capitalist forces' (Xylo), institutional and economic 'procedures' (Cali), and 'the system' (Erem), expressing scepticism that ecocentric approaches to wellbeing were compatible with current mainstream healthcare perspectives and structures.

> *If [a client is] coming in to treat a mental health problem and they have a mental health care plan through their GP that I have to be accountable for, I'm not just going to be like, 'Okay, well, stuff your anxiety, we're gonna go clean up trash.' Even though they could well be linked in my brain. (Xylo)*

> *We don't want nature to be put into a mainstream system. We are a system within ourselves. Nature has always been here, before mainstream healthcare. We don't have to adapt; mainstream healthcare has to adapt to nature. (Dora)*

In summary, the *Ecotherapy May Initiate Transactional Reciprocity* theme addresses the second and third research questions by constructing a linear pathway of human-nature wellbeing reciprocity characterised by an exchange of beneficial wellbeing outcomes. Experiencing the wellbeing benefits of connectedness with nature may motivate or otherwise support humans to reciprocate with nature. Conversely, activities that aim to deliver wellbeing benefits to nature may create opportunities for humans to enjoy complementary wellbeing outcomes. However, transactional conceptualisations of reciprocity may promote counterproductive perceptions of human-nature dichotomy and may ultimately be incompatible with an ecocentric ecotherapeutic paradigm.

Theme 3: Ecotherapy May Facilitate Co-becoming with Nature

Theme 3 constructs an alternative pathway by which ecotherapy may lead to reciprocal human-nature wellbeing by facilitating ecologically informed and aligned human functioning. This non-linear pathway is termed 'co-becoming with nature,' reflecting *Theme 1* and especially *Subtheme 1.4*, and following Suchet-Pearson et al. (2013) who described *Yolŋu* connection with country and caring for/as country as a 'co-becoming, a mutually constitutive *intra-action*' (p. 191). While 'interaction' implies pre-existing organisms that then participate in action with each other, 'intra-action' acknowledges the impossibility of any absolute separation or classically understood objectivity (Barad, 2007).

Participants described nature as a 'teacher' and a source of information (e.g., 'lessons', 'messages', 'law/lore') which frequently related to the needs and processes of a healthy ecosystem.

> *Nature has these intrinsic messages that are just a part of the natural world. Things like connectedness, or diversity, or cycles of light and dark, and that those are healthy and normal and a part of the world. (Xylo)*

> *Learning comes from when you look at what nature needs. (Dora)*

> *All of the species, whether it's malleefowl or crow or tea tree or spinifex, they all teach us lessons. (Erem)*

Rose (2005) similarly suggests that principles are articulated by and through nature in the form of patterns, which convey information about 'how life really works' (p. 301). This view

suggests that an understanding of healthy ecosystem patterns could be applied to support human wellbeing at individual and collective levels, a view promoted by Roszak (1992): 'The needs of nature are the needs of people' (p. 321).

Dora and Xylo spoke about applying an ecosystemic model of wellbeing in their ecotherapeutic practice, and Xylo compared the approach to *biomimicry* (i.e., the emulation of biological forms, processes, systems, and patterns to solve complex human problems; Vincent et al., 2006).

> *Our body is an ecosystem. Lungs are for air, right? The forest. Our liver and kidneys are a river system, a lake. What happens if you pollute the river, if you put too much alcohol or drugs in there? If we smoke too much—cigarettes or ice—what happens to your lungs? No different to what happens to the earth. So, we start to think more about our own health when we start to think about the health of the planet. The two are interconnected. (Dora)*

> *A lot of psychological and interpersonal distress and problems in the world, I feel, are because we've become quite disconnected from the importance or the validity of those things. We've forgotten about how important connection is, or we are trying to have light all the time and not making any room for dark, or we're creating monocultures or monocrops—literally and metaphorically—if we're only making room for one type of thing and then there's no room for anything else. There are global messages that nature has in spades that I think could go a long way if we can integrate those into our own lives and into the world more broadly. (Xylo)*

Duncan (2018) similarly proposed that an understanding of ecological processes can inform psychotherapeutic approaches. Moreover, ecological literacy is often identified as a potentially beneficial outcome of ecotherapies (e.g., Wyles et al., 2017). Laszlo et al. (2017) proposed that the development of a new educational paradigm 'relevant to the living context of our planet' (p. 1) might take cues from ecosystem studies and biomimicry, and training in biomimicry has been used to promote sustained, intrinsically motivated, pro-environmental behaviours in corporate research and development employees (McInerney & Niewiarowski, 2022).

Nature was also described as a source of information specific to an individual's 'role', 'purpose', 'context', or 'place' in nature. Aligning with this information was understood to be inherently beneficial to human-nature wellbeing. By contrast, misalignment was associated with egocentricity and harm to human-nature wellbeing.

> *People are an important part of the environment. We are the environment. We have an important role […] It's not a prescriptive thing. No, she'll give you—they'll all give you—the law/lore of the land. It's individual because it aligns with your purpose, your gift, and the actions you need to implement. […] The red gum is a red gum tree and doesn't do what sheokes do because they've got a different thing. That benefits nature by it being it and playing its part […] You benefit the bush and ecology by doing what you do. (Erem)*

> *Like a cancer cell that's no longer connected to the rest of the body, it's not obeying the rules of apoptosis, it's just going to carry on forever replicating and demanding resources and doing whatever it wants even if that means the death of the wider system. […] when we're blind to our context, then*

> *problems ensue; just like when a cell is blind to its context. Nature can't help but benefit when we get back into alignment with the wider context. (Mell)*

Ungunmerr-Baumann et al. (2022) similarly discussed 'knowing your place', describing it as integrating practical wisdom and co-authorised relationships. Ungunmerr-Baumann et al. (2022) suggested that deeply lived experience, transformational exchanges, and ongoing adjustments to the ebb and flow of life in an Aboriginal community may offer opportunities to know your place, both on country and within community.

Erem described ritual and ceremonial practices that may facilitate insights and reinforce learning around an individual's place in nature.

> *[By] imagining what that landscape used to look like full of water, that's dreaming what's in the past. Then we challenge people while we're there and say: 'Okay, what's your dreams for the future?' And get them to connect with the spirituality of the place and try and connect with the old people and talk to the old people about shaping where they need to go when they go back into the rat race. (Erem)*

> *Yungadhu, the malleefowl, when it comes out of that egg, it flies away into the nearest tree to get away from predators and it never sees its parents. It knows its gift already […] We do the malleefowl ceremony […] to deepen and strengthen that one lesson around purpose. Then people start thinking about their purpose and their role on this landscape […] That's a really good way to reinforce the values—through the ritual. (Erem)*

Participants reported that receptivity to nature-based learning could be enhanced through specific practices. The necessity of adequate time and space to feel safe and comfortable when in natural settings was emphasised.

> *Once there's room to feel safe, to feel freedom, and adventure, and mystery, and the pride of some more autonomy in their lives, and there's less restriction, the 'wall of green' starts to break down and they start to recognise individual trees. (Mell)*

> *That landscape is vast and open. The [urban] landscape is convoluted and cluttered […] So, we take clutter and shit to an open landscape. That landscape's got a different personality, so it'll actually empty you out. (Erem)*

> *If it's wet and rainy, are we as the facilitators also helping that person stay warm and dry so they can have an experience of feeling safe while listening to the patter of the rain on their tarp or the tent they're sleeping in? (Euca)*

Given adequate time, space, safety, and comfort, participants suggested that access to relevant information could be facilitated though mindful and embodied engagement with nature. Here, participants again emphasised Indigenous ways of being and knowing.

> *Just got to get out of your head and go light a fire and listen to her. Of course, that's how our old people did it. […] Deep meditation in the bush is really crucial. Just sit and be connected. Listening to all the sounds, taking in all the smells, and taking in all the lessons that nature teaches. (Erem)*

> *When you do nature-based mindfulness, you're really sitting tuning into your five senses. What that does is it then tunes you into your sixth sense, which is your intuition and knowing—that Indigenous knowing and being arises. (Dora)*

> *Most of the time, it's about observation and deep listening because when we listen, we might actually learn something. (Rubi)*

The relevance of mindful and embodied engagement is supported by Ungunmerr-Baumann et al. (2022) who described the application of *dadirri*—the art, practice, healing way, methodology, quality, and/or way of life often translated as 'deep listening'. According to Ungunmerr-Baumann et al. (2022), *dadirri* is being present, being still, connecting with yourself, and connecting with the environment in such a profound way that it creates space for relationships built on trust, respect, and reciprocity. Similarly, participants suggested that nature-based insights and learning could accompany the contemplation of vast space and time in nature, which may elicit profound experiences of awe or transcendence.

> *Looking up at the stars and seeing how small we are in comparison to things helps to put into perspective our place in the world. Having an experience of awe or profoundness is like a reset in some ways and can enable us to take a look over our life in a more global way. (Xylo)*

> *Having the ability and time and space to reflect and have self-awareness to step out of the busyness of your own colonised mind, you see that this is just a small sliver of what humans and the earth have gone through. (Rubi)*

Nature can be considered an inducer of awe, in particular through perceptions of personal smallness relative to the scale of nature, initiated for example when contemplating mountains, vistas, storms, or the fractal patterns in waves, trees, and clouds (Bethelmy & Corraliza, 2019; Gandy et al., 2020). Indeed, the experience of awe is itself linked to enhanced wellbeing, nature relatedness, and ecological behaviour (Zhao et al., 2018).

Some participants suggested that psychedelics may also facilitate and reinforce nature-based lessons by synergistically enhancing receptivity, stimulating awe-inspiring or transcendent experiences, and eliciting similar insights.

> *Look at mushrooms and psilocybin and different plants. Plants come with purpose and they're medicinal. They have a role to play. […] Plants can take us to a certain level of consciousness and beyond the physical realm and into the spiritual realm or different realms of existence which we always are in, but we're not taught how to do that. (Dora)*

> *A lot of the time, the realisations that people have with psychedelics are quite similar to the things that we notice from nature. They might realise in a very deep way that everything is connected, or the importance of reciprocity. There's an intrinsic overlap between the messages that people receive, or the kind of things that people come to through psychedelic experiences, and what is there on offer in nature. (Xylo)*

The potentially synergistic contribution of psychedelics is supported by Gandy et al. (2020) who found that psychedelic experiences incorporating nature contact enhanced mindfulness-related capacities, heightened states of awe, and potentiated increases in nature

relatedness. Indeed, psychedelics, spirituality, awe, and nature relatedness appear to be strongly linked (Gandy et al., 2020).

In summary, *Ecotherapy May Facilitate Co-becoming with Nature* addresses the second and third research questions by constructing a non-linear pathway of human-nature wellbeing reciprocity. 'Co-becoming with nature' integrates and applies ecological literacy and an understanding of one's place and role within the ecological matrix in a way that is non-transactional, inherently aligned with human-nature wellbeing, and may be harnessed in ecotherapy practice. Dora summarised the process:

> *You're opening your relationship and connection to your natural environment, whether it's the bird over there or other life that might be around and, further to that, I think it's about learning from that observation. How does nature work? How does the ecosystem work? What is nature teaching you from your observation? And then, how do you apply that teaching to your current situation or state of mind? (Dora)*

Ecotherapeutic approaches that promote mindful embodied engagement with nature may facilitate access to profound insights relevant to co-becoming with nature. Effective practices might therefore incorporate ecosystemic models of personal wellbeing, biomimicry, Indigenous methods of being and knowing such as *dadirri*, ritual and ceremony, awe, and psychedelic experiences.

General Discussion

This analysis suggests that the human-nature connection can be understood in diverse but ultimately compatible ways that, taken together, offer a multidimensional perspective of human-nature wellbeing as a pattern or property of a complex living system. Ecotherapeutic approaches characterised by an instrumental orientation towards nature may fail to integrate this complexity subsequently reinforcing human-nature alienation and thereby limiting human-nature wellbeing reciprocity. However, informed by nature-based insights into the wellbeing-promoting processes of healthy ecosystems and one's place and role therein, inherently mutualistic responses aligned with ecological realities may emerge. Thus, by harnessing reciprocally beneficial non-linear change pathways that recognise the multidimensionality of the human-nature complex, ecotherapists may be empowered to practice a profoundly ecosystemic approach to wellness.

Ecocentric ecotherapeutic approaches might involve practices that ensure adequate space and time to promote a sense of safety and comfort in natural settings, mindful observation, embodied/sensory engagement, ecosystemic models of personal wellbeing, biomimicry, awe, and transcendent experiences that reinforce a sense of identity with nature. The development of these practices might be informed by culturally appropriate engagement with Indigenous ways of being and knowing, strengthening the integration and cross-fertilisation of applied ecopsychology and Indigenous healing practices. Furthermore, ecotherapies might draw from emerging psychedelic-assisted therapies, as nature-based psychedelic experiences may synergistically facilitate awe, insight, and mindful embodied engagement.

These findings may further contribute to the conceptual and theoretical articulation of ecopsychology by illuminating a potential property and pathway of nature's contribution to ecotherapeutic outcomes—*human-nature wellbeing reciprocity*. This insight may eventually inform an ecotherapeutic theory of change. In addition, the language of reciprocity and complex systems may contribute to a more appropriate and compelling discourse with which to discuss the human-nature connection, resist alienation, and affirm ecocentric approaches to

wellbeing. Ecofeminist, Indigenous, and systems theories may be particularly relevant in this regard.

Conclusion

The findings of this study contrast with perspectives that construct nature as an object to be exploited, conserved, or stewarded for human wellbeing. Instead, this study reinforces the compelling notion that human wellbeing is entangled with that of nature. The concept of human-nature wellbeing reciprocity may therefore empower engagements with nature that go beyond pro-environmental behaviours to reflect our ethical relationship, interdependence, identity, and intra-action. Ecotherapies that incorporate these insights may present a powerful response to the ecopsychological crisis by challenging alienation and inviting us into active and informed participation in our mutual co-becoming.

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Address for Correspondence

Mitchell Lenehan, mlenehan@csu.edu.au

Author Biographies

Mitchell Lenehan is a PhD candidate at the Gulbali Research Institute, Charles Sturt University. His research aims to understand how complex social-ecological problems might be addressed through collaborative landscape stewardship.

Lester Watson is a Sessional Academic and an Adjunct Research Fellow in the School of Psychology at Charles Sturt University, Australia. His research is mainly centred around critical psychology with a specific interest in young people who are disadvantaged, marginalised, or experience social exclusion.

An Empirical Analysis into the Link between Somatic Pain and Psychological Trauma amongst a Sample of Tortured Tamil Asylum Seekers

Shakeh Momartin, Jorge Aroche, Samra Ahmed, Myat Pan Hmone and Mariano Coello

Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS)

Health care services have become increasingly concerned for asylum seekers suffering physical pain, which medical examinations cannot explain. This is the case of a growing number of traumatized asylum seekers holding temporary visas, who experience debilitating, long-term pain. With increasing presentation of pain, it is imperative to investigate a possible link with past trauma, as it often remains underdiagnosed, hindering recovery. Furthermore, there is a need to examine the efficacy of interaction with general practitioners as first-point of contact. Acknowledging trauma by GPs can promote safety, trust in health professionals and compassionate care. For this study, participants were 21 female asylum seekers, all ethnic Tamil women from Sri Lanka and Indonesia, aged between 31 and 39 years. Quantitative measures were used to obtain pain history: McGill Pain Questionnaire; Universal Pain Assessment, Wong-Baker Faces Pain Rating Scale, and Harvard Trauma Questionnaire. Results showed a link between somatic pain and PTSD, exacerbated by ongoing trauma such as visa insecurity. Semi-structured interviews revealed participants felt GPs, although caring, did not have sufficient time to explore trauma and listen to their trauma stories. Findings show that trauma exploration with asylum seekers presenting with pain can help better identify symptoms, providing comprehensive and empathic care. Addressing this link is important for devising effective referrals and developing appropriate and beneficial treatment programmes for improving overall health outcomes.

Keywords: Asylum seekers, temporary visa, Pain, Trauma, GP Assessment

The last decade has seen a substantial increase in the number of displaced individuals seeking international protection. Refugees and asylum seekers have been forced to flee their countries of origin as a result of religious, political or ideological persecution, war, traumatic loss and human rights violations. The UNHCR report at the end of 2022 revealed that 108.4 million people worldwide remain forcibly displaced. This figure represents an increase of 19 million since the end of 2021 and includes both refugees, who have been recognised by law as qualifying for refugee status, and asylum seekers who also seek international protection but whose claim for refugee status has not yet been accepted. The number of refugees worldwide increased from 27.1 million in 2021 to 35.3 million at the end of 2022, the largest yearly increase ever recorded, according to UNHCR's statistics on forced displacement (UNHCR, 2023). Achieving durable solutions for displaced populations has become even more challenging, especially when conflicts remain unresolved, leaving uncertainty and danger widespread in many countries, such as the renewed conflict and security concerns in Afghanistan (UNHCR, 2023).

Refugee and asylum seeker women have been documented as some of the most vulnerable groups, reporting highest rates of chronic pain. Women often find themselves in desperate situations, having been subjected to displacement, sexual assault, poverty and other stresses (Altun et al., 2022). Their unmet health needs, poor conditions and strain of adapting

to new environments can be exacerbated by the uncertainty and instability of their visa and asylum claims which can exacerbate existing health issues, leading to new ones and contributing to increased physical pain. The relationship between the arousal factor of somatic symptoms and Post Traumatic Stress Disorder (PTSD) is not surprising, as arousal symptom (i.e., hypervigilance, exaggerated startle response), is a function of sympathetic hyperactivation (Yehuda, 2006). Similarly, headaches and potentially life-threatening somatic symptoms such as shortness of breath or chest pain may result in increased sympathetic activation, together with secondary symptoms such as hyperventilation and tension headaches (Hinton et al., 2013). During times of conflict, refugees may be in survival mode, focusing on immediate threats to their safety. This heightened state of alertness can suppress the perception of pain temporarily as individuals prioritize escape or protection. Additionally, the chaotic nature of conflict may overshadow physical discomfort. Once the immediate danger subsides and people transition to post-conflict environments, they may become aware of pain, due to the absence of acute stressors and the challenges of rebuilding their lives amidst the aftermath of conflict.

One such group requiring further research and exploration are that of the female Tamil asylum seeker population. Amongst this population, many individuals hold Temporary Protection Visas and other insecure visa categories such as Bridging Visas, which limit their employment opportunities and offer no guarantee of their renewal (RCA, 2024). The uncertain nature of these visas has been shown to create uncertainty for asylum seekers, complicating their healing journey, imposing pressures and fear of forced deportation (Aroche et al., 2012a; Dangmann et al., 2022; Steel et al., 2011) with profound implications on their psychopathology (Jesuit Social Services, 2015; Johnson, 2009).

A study of Southeast Asian refugees by Wagner and colleagues (2013) found not only a link between elevated PTSD scores and high pain levels, but also discovered severe unexplained chronic pain persisting 30 years after resettlement. Similarly, Teodorescu and colleagues (2015) found a 66% rate of chronic pain in non-refugee samples with a PTSD diagnosis, compared to a significantly higher rate of 88% for chronic pain within the refugee sample with a PTSD diagnosis. Chronic pain has been shown to be related to the severity of PTSD symptoms (Hermansson et al., 2002) and have a negative impact on general functioning (Prip et al., 2011). The highest rates of chronic pain are routinely identified amongst those who have been exposed to physical torture and psychological trauma (Carinci et al., 2010; Williams et al., 2010).

Studies have also described that the contexts and mode in which trauma is interpreted, such as attentional bias, warning signs and triggers, recurrent memory of pain or traumatic events, can be associated with higher levels of PTSD, comorbidity and functional impairment in trauma-exposed individuals. This cycle of connection between trauma cues and physical pain could persist and pose hindrance to treatment amongst those who have been severely damaged by trauma. Tsur et al. (2017), observed such connection between severe back pain patients and ex-prisoners of war who had been physically and emotionally traumatized, indicating that amongst these survivors, the trauma that they had endured shaped the manner in which they interpreted and related to pain and bodily sensations (Ruiz-Parraga & Lopez-Martinez, 2014), which could be another mechanism through which pain and PTSD interact and exacerbate each other, increasing symptoms and deteriorating overall condition of the sufferer (Asmundson et al, 2002; Nordin & Perrin, 2019a). It has been suggested that PTSD and pain may interact in a mutually maintaining fashion through a combination of mechanisms, identification of which may assist in the development of more effective treatments (Nordin & Perrin, 2019b).

The Australian Context

Unfortunately, there is no efficient or robust protocol established around safely transporting asylum seekers from countries of crisis to those of safety. Hence, asylum seekers often find themselves embarking on hazardous journeys involving danger, hardship, separation, loss and ultimately more traumatic exposure. Australia has received a large number of asylum seekers and refugees in the last decade, all searching for security and safety for themselves and their families (Karlsen, 2016; Masters et al., 2018). Hence there is a humanitarian duty of care that falls upon the Australian community, with regards to supporting these vulnerable individuals heal from their traumas and begin to rebuild their lives and work towards their future.

Milosevic et al. (2012), report that in Australia, most health assessments including management of pain for newly arrived asylum seekers occur at the primary care level. General Practitioners (GPs) visiting community health centres or refugee health services are often the first health professionals approached with complaints of physical pain. With this in mind, it is important for health care professionals to continue providing the best care and to consider the physical and psychological effects of torture and trauma within this vulnerable population.

Given the health impact of the asylum and resettlement process (Johnston, 2009; Steel et al., 2006) and the enduring burden on victims inflicted by trauma and pain-related sequelae, it is paramount for there to be an emphasis on building sound rapport between the GP and client to detect psychological effects of trauma with which the client may be struggling. There should also be a standard assessment where various presentations of trauma symptoms are identified and investigated. The consequent effects from these traumatic experiences, coupled with misdiagnosis of pain and psychological anguish, often burden asylum seekers in ways that hinder adaptation in the new country. Care must be taken not to overlook any underlying reasons causing pain that do not fit typical Western expressions of pain. It is therefore vital to have an efficient and informed process to seek help from medical professionals.

An additional complication for asylum seekers is the context of Medicare. Medicare is central to accessing health care in Australia, yet many asylum seekers are ineligible for this scheme. It is noteworthy that since the time of the assessments for this study, there have been some amendments in asylum seeker's access to healthcare, allowing marginally more access to urgent healthcare. In NSW at present, Medicare ineligible asylum seekers have some access to public health care under the Medicare Ineligible Asylum Seekers - Provision of Specified Public Health Services policy (Pilato et al., 2023).

Nevertheless, in light of the revised policy, Mengesha and colleagues (2023) conducted a study to investigate experiences of Medicare ineligible asylum seekers in accessing health care in NSW and found that this group still do not have optimal access to health care, which may worsen existing health disparities. Educational initiatives that improve service providers' and asylum seekers' awareness of the revised policy are necessary to improve asylum seeker health equity in NSW.

The New South Wales Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS), one of Australia's leading organizations in refugee mental health, receives an average of 5000 refugees and asylum seekers annually from a large number of ethnicities and war-torn countries (STARTTS database, 2023), although these figures fluctuate depending on changes in policies, immigration schemes and global conflicts.

STARTTS data supports that the most common presentation amongst traumatized individuals during initial assessment is somatic pain, although it is sometimes expressed in various culturally idiosyncratic terms. Metaphorical or idiomatic expressions are used to suggest a state of emotional distress, sadness or deep despair, potentially implying comorbidity with depression and anxiety, and clients might use phrases similar to: heaviness in head, pressure on shoulders, feelings of numbness or alternatively burning, or feelings of suffocation. (STARTTS, 2023). These statements are expressions capturing the intense and consuming

nature of ongoing suffering, indicated by unique somatic expressions to explain ailments such as tension headaches, gastrointestinal problems, breathing problems, back and shoulder pain, general bodily or joint pains/aches, dizziness and sadness, which can easily be misunderstood and misinterpreted. Often, although injuries are not visually evident on the body, the pain is rated as severe (Prip, et al, 2011). Research has shown that traumatic experiences can lend themselves to different interpretations from culture to culture and subsequently, ethnic groups may experience stressors differently from one another and exhibit dissimilar symptoms (Aroche et al., 2012b; Trepasso-Grullon, 2012). It will be important to further study and evaluate marginalized groups, in order to better respond to their needs using culturally appropriate assessment methods, leading to better treatment and rehabilitation.

Aims

This study aimed to explore the link between traumatic experiences and pain in a sample of female Tamil asylum seekers, as pain is often a prominent manifestation of somatic symptoms most common among asylum seekers and displaced persons (Hurt, 2022) which impacts on every aspect of daily lives.

The study also examined the significance of GPs within the Australian context, who play a vital supportive role in the assessment and ultimately the healing phase of their resettlement. Given the suffering and the impact of torture and trauma (Gerdau et al., 2017; Nordin & Perrin, 2019a), such traumatized individuals particularly present with symptoms involving physical pain in addition to PTSD symptoms, and high rates of comorbid psychiatric disturbance including depression (Fazel et al., 2005; Teodorescu et al., 2015). Experience has shown that PTSD is often accompanied with comorbid conditions, and physical ailments are often among reported symptoms in traumatized individuals with PTSD (Rohlof et al., 2014). When both PTSD and pain are present, the severity, duration and functional impact has been shown to increase in intensity (Ruiz-Parraga & Lopez-Martinez, 2014). Nordin and Perrin (2019b) suggested that chronic pain in asylum seekers has significant impacts on their daily functioning and quality of life.

This highlights the need for increased clinical awareness to help inform health care and settlement services when managing and planning programs for women and their families. In summary, aims were:

1) To investigate if asylum seekers with elevated levels of PTSD will be significantly more likely to report higher levels of somatic pain, the outcome of which, will ultimately influence treatment programmes chosen for clients.

2) To explore what asylum seekers think of their GP care and how their pain is managed in the absence of obvious physical injury or illness. The ultimate objective of this study was to raise awareness amongst GPs regarding the significance of psychological trauma, its potential link with pain among asylum seekers and the significance of GP acknowledgement and assessment for past trauma.

Methodology

Mixed methods research was adopted in this study, in order to enable conceptual and analytical integration of qualitatively and quantitatively collected data. This aimed to afford richer results and to allow for triangulation of contextualized qualitative insights and measurable quantitative content.

Participants

Ethical approval was granted by the Research Directorate of the Research and Ethics Committee at South Western Sydney Local Health District (SWSLHD), Liverpool; (protocol #2019/ETH04342). Information statements in Tamil language were provided to all participants and Consent letters, prepared in Tamil language, were signed by all participants prior to the commencement of the study. Health interpreters were present for those participants who did not speak English.

Participants included 21 female asylum seekers, aged between 31 and 39 years. Participants were all ethnic Tamil women from Sri Lanka and Indonesia. All participants held temporary and insecure visas, such as Temporary Protection Visa or Bridging Visas. These participants were existing clients of STARTTS attending a women's Yoga group, with four currently receiving individual counselling. Although they had already provided signed consent for participation in STARTTS yoga groups, a separate consent process was followed for participation in the current study. Consent was sought after all participants clearly understood the aims and objectives of the study. Upon completion, those who needed counselling were immediately referred to STARTTS's counselling service and were provided with appropriate individual treatment.

All participants spoke Tamil, with 11 out of 21 requiring an interpreter. Participants had been in Australia for an average of 4.1 years. All were married with an average of 2.5 children under the age of fifteen years.

Measures

For the quantitative segment of this study, the following questionnaires were administered to participants to assess for type and description of pain and indication of PTSD.

1) *Pain Rating Index from the McGill Pain Questionnaire (Melzack, 1975).*
   This subscale allows individuals to describe the quality of pain they are experiencing by circling descriptions such as 'cramping', 'aching' and 'tender' and rating each term on a four-point Likert scale from "mild" to "severe".
2) *Universal Pain Assessment Tool (UPAT) – revised (Hicks et al., 2001).*
   In this visual analogue pain scale, individuals point to a display of faces to rate their pain intensity from 0 ("no pain") to 10 ("worst pain possible").
3) *Wong-Baker Faces Pain Rating Scale (Baker & Wong, 1987).*
   This is a pain scale that shows a series of six faces ranging from a happy face at 0, representing 'no hurt' to a crying face at 10, which represents 'hurts like the worst pain imaginable'. Based on the faces and written descriptions, the individual can choose the face that best describes their level of pain. This pain scale was originally developed for children, however, it can be used with all age groups 3 and above. The scale is applicable across various cultural groups and is useful for populations where English knowledge is limited and it is easy to match the level of pain to the emotion presented. Moreover, it is inexpensive and easy to use.
4) *Harvard Trauma Questionnaire (HTQ): Part IV (trauma symptoms) (Mollica et al., 1992).*
   The (HTQ) is a self-report scale for assessing experiences of torture and trauma and associated distress. Part IV of the measure was used, which consists of 16 items based on the diagnostic criteria for PTSD in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994). Respondents indicate whether they have been bothered by each symptom in the past week on a four-point Likert scale from "not at all" to "extremely". The HTQ has been translated into multiple languages and validated for use with refugees from a variety of cultural

backgrounds (Kleijn et al., 2001). Part IV is used routinely at STARTTS as part of clinical assessment.

5) *Body Map: The Michigan Body Map (MBM), (Brummett et al., 2016).*
This is a self-report measure to assess body areas where chronic pain is experienced and to specifically locate and quantify the degree of widespread body pain when assessing for centralized pain features. For the purpose of this study, only specific locations of pain were assessed.

The purpose of using three different pain measures was to conduct a more comprehensive assessment, and to capture various aspects of the pain experience, such as intensity, quality and the impact on daily functioning. Moreover, although all participants were ethnic Tamil, they had lived in different regions of Sri Lanka and Indonesia. As pain can be subjective and individuals might experience and report it differently, using multiple pain measures allowed a richer understanding of the pain sensation.

To collect qualitative data for this study, participants engaged in semi-structured interviews. Questions focused on pain management in the individual's country of origin as well as information regarding seeking and receiving treatment in Australia. In addition to this, participants were asked about any subsequent changes in psychosomatic symptoms and what they believed they could attribute changes to.

Data Analysis

The data for this study was analyzed using the STATA software version 16 (Stata corporation, USA). The female participants were grouped into women with PTSD symptoms (clinical group) and women without PTSD symptoms (non-clinical group), based on the recommended clinical cut-off score of 2.5 (Mollica et al., 1992). Continuous variables were defined as means and standard deviations (mean ± SD). An independent t-test was run on the participants to determine if there were differences in the level of pain between clinical (n=12) and non-clinical (n=9) groups. The level of significance was set at $p<0.05$. Data is mean ± standard error. The effect size was computed to examine whether there is a magnitude of differences between the two groups or not. The Cohen's d result of 0.2 is considered small effect, 0.5 was medium effect and 0.8 was large effect.

In the qualitative portion of the study, thematic analysis (Braun & Clarke, 2006) with a realist lens was used to interpret the data gathered during the semi-structured interviews. A few simple steps were carried out, such as translation of the interviews followed by reading transcription of the data, noting and highlighting major points. The most interesting and notable points provided by the participants were coded and collated into potential themes, which could be extracted from the data. This process was carefully repeated in order to limit and reduce the number of codes and categorize them into identifiable themes.

Results

Quantitative Results

Participants had an average score of 2.54 on the HTQ, suggesting high levels of PTSD symptoms (clinical indicator for PTSD is ⩾2.5 on the HTQ). Twelve of 21 participants scored above the clinical cut-off, indicating symptoms that may warrant clinical attention. The analysis found that women who had clinical PTSD scores had higher pain scores than women without it for all three pain measurements (McGill, Universal Pain, Wong Baker) though not significant. Examination by the effect size by McGill however reported that the magnitude of difference between the two groups was large with effect size 0.863.

Reported Somatic Pain Between Two Groups Measured by McGill Score

Figure 1

Average McGill Pain Score for Participants with Clinical and Non-Clinical PTSD Scores

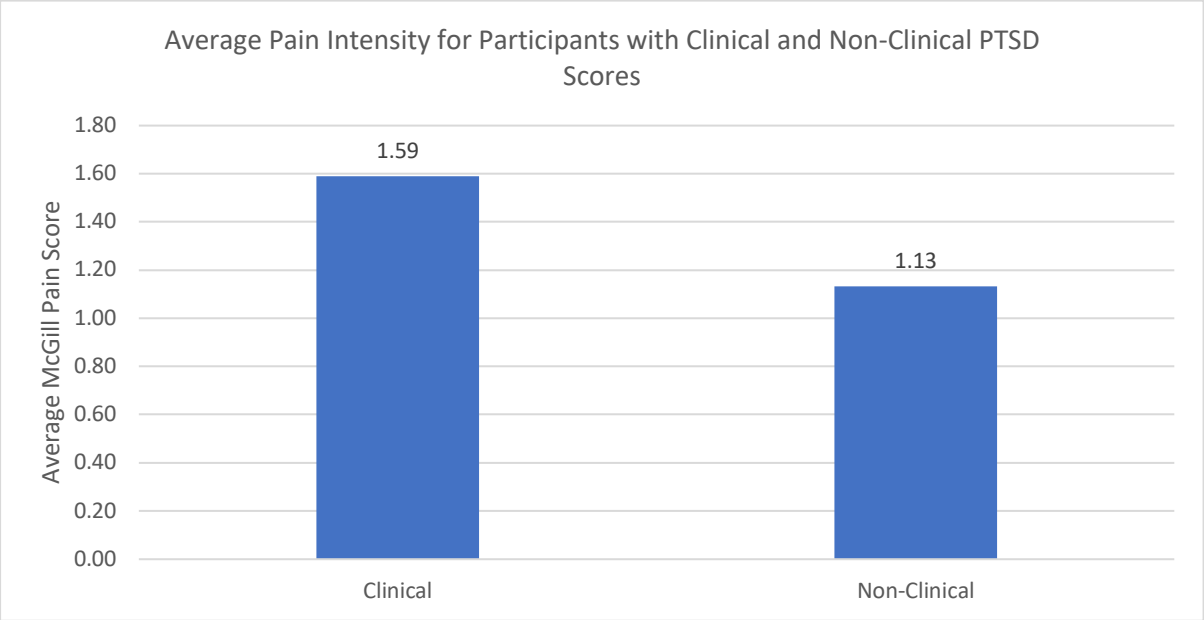

Figure 1 illustrates that individuals who had clinical PTSD scores, as indicated by the HTQ, measured by McGill pain scores, had on average higher pain scores compared to individuals who had a non-clinical PTSD score when comparing the mean difference between the two groups (1.59 vs 1.13).

An independent sample t-test was conducted to compare the McGill pain scores for clinical and non-clinical groups. Women from the clinical group (those with PTSD diagnosis) had a higher mean pain score, measured by McGill, than women from the non-clinical group (those without PTSD diagnosis).

There were no significant differences for clinical (M= 1.59, SD=0.53) and non-clinical groups (M=1.13, SD=0.53; t (19) = 1.96, p= 0.08, two-tailed). The magnitude of differences in the means (mean difference= 0.46, 95% CI [-0.94,0.03]) was large with 0.863, suggesting the finding has practical significance between the two groups.

Universal Pain Score

Figure 2

Average Universal Pain Score for Participants with Clinical and Non-Clinical PTSD Scores

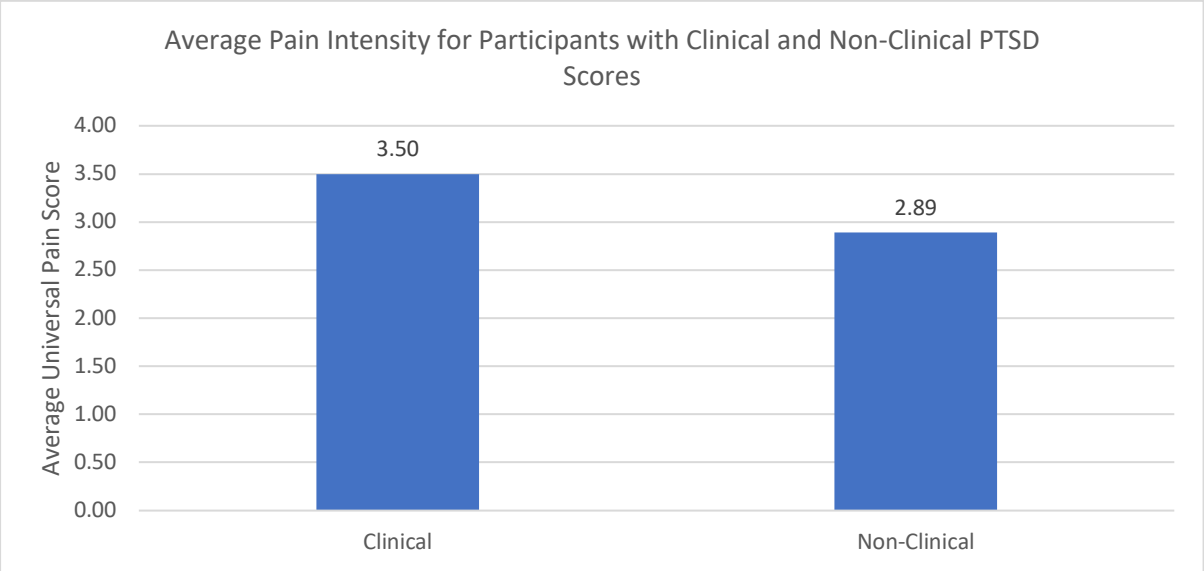

Figure 2 illustrates that individuals who had clinical PTSD scores as indicated by the HTQ, also had on average, higher pain scores, measured by the Universal Pain scores, compared to individuals who had a non-clinical PTSD score with 3.50 vs 2.89.

An independent sample t-test was conducted to compare the Universal Pain scores for clinical and non-clinical groups. Women from the clinical group had a higher mean pain score than women from the non-clinical group. There were no significant differences for clinical (M= 3.50, SD=1.57) and non-clinical groups (M=2.89, SD=1.54; t (19) = 0.89, p= 0.38, two-tailed. The magnitude of the differences in the means (mean difference = 0.61, 95% CI [-2.05,0.82]) was small to medium effect (0.393).

Wong Baker Faces Pain Rating Score

Figure 3

Average Wong Baker Pain Score for Participants with Clinical and Non-Clinical PTSD Scores

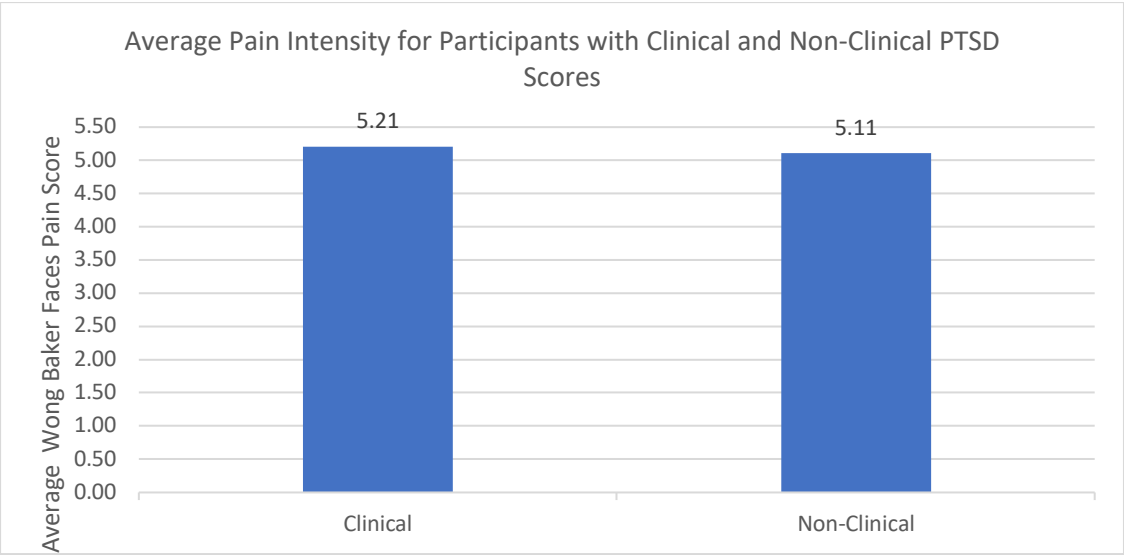

Figure 3 illustrates that individuals who had clinical PTSD scores as indicated by the HTQ, also had on average, higher pain scores, measured by Won Baker pain scale, compared to individuals that had a non-clinical PTSD score with 5.21 vs 5.11.

An independent sample t-test was conducted to compare the Wong Baker Facial Pain Rating score for clinical and non-clinical groups. Women from the clinical group had a slightly higher mean pain score than women from the non-clinical group. There were no significant differences for clinical (M= 5.21, SD=2.10) and non-clinical groups (M=5.11, SD=2.36; t (19) = 0.10, p= 0.92, two-tailed). The magnitude of the differences in the means (mean difference) = 0.10, 95% CI [-2.14, 1.95]) was very small (0.044).

For all pain score results, measured by the mean differences and by different methods, the clinical groups had higher pain scores than the non-clinical group, albeit no significant difference. Small sample size is one of the limitations of this study and for this finding. The McGill pain score shows a large magnitude of the mean difference while Universal Pain score shows a small to medium magnitude and the Wong Baker pain score shows a small magnitude between the mean difference of the clinical and non-clinical groups. Among this specific sample of Tamil asylum seekers with insecure visas, a higher PTSD score might increase the likelihood of the individual having a self-reported pain score.

The results from a series of t-tests are also reported in the below table.

Table 1

Clinical group (PTSD present or not) differences in Measures of McGill Pain Score, Universal Pain Score and Wong Baker Facial

	Non-Clinical			Clinical			Mean Difference	95% CI		df	t	p	Cohen's d
	n	M	SD	n	M	SD							
McGill Pain Score	9	1.13	0.53	12	1.59	0.53	0.46	-0.94	0.03	19	1.96	0.08	0.86
Universal Pain Score	9	2.89	1.54	12	3.5	1.57	0.61	-2.05	0.82	19	0.89	0.38	0.39
Wong Baker Pain Rating Score	9	5.11	2.36	12	5.21	2.1	0.10	-2.14	1.95	19	0.10	0.92	0.04

Body Map

In the quantitative analysis of the Body Map, among the given 13 regions, participants with clinical levels of PTSD symptoms nominated all 13 body regions while participants from the non-clinical group nominated 10 body parts. The clinical group had nominated more average areas of pain than the non-clinical group with 3.50 vs 2.90. Within the Clinical group, lower back had the highest level of pain (83%), following Headaches (58%) and shoulder pain (33%).

Qualitative Results

Thematic analysis facilitated the extraction of findings that captured the context within which pain and trauma amongst asylum seekers existed. In the current study, participants reported a high incidence of pain symptoms and an awareness of possible links between past trauma and current pain, despite having received no relevant psychoeducation. In addition, few participants sought psychological help for pain, highlighting that primary healthcare workers such as GPs are often the first point of contact for people suffering from somatic and psychosomatic pain.

Escalation of Pain Symptoms in Australia

In addition to resettlement complications such as language and cultural barriers, asylum seekers such as the following participant reported experiencing limited access to healthcare, insurance and other essential health services which are mostly taken for granted by Australians:

> *I want my headaches to stop, I didn't have this before, I am on bridging visa for 3 years and they tell me to just relax… How do I move on and relax when I could be deported? My GP is kind, but has no time… I am young and healthy, but I am scared and lonely and now my head feels numb, like there are rocks inside, I have no Medicare, no money, I just take Panadol when I can't cope.*

> *I asked doctor why I have so much headaches in Australia, why this much pain in my lower back and shoulders, like fire burning. He says it could be from my back. So he gives me painkillers. I said pain gets worse when I listen to news about bombing and killings…Doctor said the answer is less stress…How do I have less stress? I feel like my insides are burning, I want to keep busy, but I can't find a job, I am not allowed with my bad visa, I am lonely.*

The uncertainty about visa conditions and an insecure future, compounded by social isolation and lack of support networks, such as in the case of the above participant, exacerbate existing pain symptoms, in this case manifesting as fire burning inside the body, increasing pain perception and intensifying other health conditions. The most commonly reported types of chronic pain amongst asylum seeker women, and in this study, have been back pain, shoulder pain, headaches and indistinct general lingering pain. Women have been found to be more likely to report lower pain tolerance and more baseline symptoms following severe physical and psychological trauma, as well as depression, anxiety, and PTSD (Hurt, 2022).

Attitudes towards GP care

It is widely accepted and acknowledged that General Practice has a key role to play in undertaking asylum seeker's health assessments and providing ongoing care. Asylum seekers with complex needs and poorer health may require assistance as a first point of contact, which makes primary care ideal for managing referrals and provision of services. Some participants however expressed fears when accessing services:

> *I went to see doctor for my headaches, he prescribed Panadol…he said my headache was because of thinking too much. He told me just calm down and relax…that I am safe now, just forget the past. He didn't ask where I come from, why I don't have*

Medicare card, why I have no visa, no questions about my pain… I am so scared of being sent back to Sri Lanka…my head explodes every time I think of being sent back.

The expectation of asylum seekers such as this participant, would be to receive compassionate and culturally sensitive care, address their physical and psychological health needs, and help document necessary information to assist their asylum claims. Deportation seemed to be one of the main fears of the participants, on temporary visas such as bridging visas. Although GPs are unable to assist with visas, documenting consequences and exacerbation of pain as a result of psychological strain can be helpful in legal journeys. Part of the crucial compassionate caregiving process should be to ask relevant questions and listen to trauma stories. This was not reported, as with one participant who displayed obvious restraint marks on her ankle:

The headaches come when I'm stressed …got worse in Australia…, my shoulders feel on fire. I need more than Panadol. I am on bridging visa for 5 years, what if I am deported? I wish doctor would ask me questions so I can tell him my story…he asks me for medical documents…I don't have any...please ask me why I have chain marks on my ankle, ask me why my ankle is throbbing when I remember things…I need to tell you.

This participant revealed they had been chained in relation to sexual assault. Compassionate caregiving and time developing relationships could result in patients feeling empowered and heard, and consequently receiving the correct referral path (such as torture and trauma or sexual assault services) and a tailored treatment program with more effective outcomes.

Significance of Attentive Listening and Taking a Comprehensive Trauma History

A common suggestion for participants' pain seemed to be analgesic medication, which did not address the long-term effects or cause for intensification of the pain. When more positive relationships between GP and asylum seeker were reported however, strengthened by comprehensive trauma history taking, including potential impact of trauma on physical and mental health, this seemed to facilitate appropriate trajectory to treatment:

I think GPs in Australia are excellent, they really care about our health, just please listen to us more…I told him my mind is heavy, he said just empty your thoughts… …we are isolated and scared… ask us about our history, listen to our trauma stories, I was tortured, raped…you need to listen to me. I don't need Panadol, I need to tell you about me.

Listening attentively and empathically to trauma stories and paying attention to culturally idiosyncratic terms used to depict a state of pervasive sadness or profound desolation, was emphasised by the following participant, so a GP could build rapport and trust, creating a safe space for communication and managing pain:

I really want to share my torture experience with my GP, he really cares, he is clever and doesn't care about money… but he has no time to listen…, I feel like want to tell how I was hit and tortured, I am not alone but I feel so lonely, my heart is torn and my soul is wasted, I feel isolated, frightened to be kicked out of Australia.

Participants revealed many ways in which they wanted to be able to share history and needs with GPs, to access better support. They revealed many ways that services need to be

improved. Despite these issues, the overriding theme that came through from all participants' interview responses, was an overwhelming sense of appreciation of the medical profession in Australia. Whether this was an automatic reaction to persons and positions of authority, or a response to genuine positive experiences, possibly both, participants reported being generally satisfied with the medical care provided by their GP in Australia. They reported having trust and willingness to speak about their traumatic past, although they felt that the scope of their GPs examination and assessment did not extend to their trauma history.

Discussion

This study sought to understand the management of pain for a small sample of traumatized Tamil women living in Australia, awaiting resolution of their protection visa status. During this period of ambiguity and legal uncertainty, concern was raised regarding their mental health needs, and whether their needs had been adequately met by the community and health professionals.

Despite multiple healthcare services in Australia, the asylum seeker's ability to access mainstream health services is limited for various reasons, such as restrictions within their legal status, permission for employment, and access and knowledge about seeking appropriate help. As pain and other immediate physical conditions are commonly presented during GP visits and medical check-ups, it is possible that underlying PTSD or other trauma related conditions remain concealed and unexamined. Therefore, it is essential to raise awareness among GPs and other health professionals in relation to trauma accounts, in order to encourage comprehensive assessment and early intervention into specialized trauma services.

Thematic analysis in the present study highlighted that for most participants, pain began or intensified in Australia, especially when under emotional stress. This was an expected, though concerning finding: under stress of survival and flight, people may overlook their physical pain. Once in relative safety of a host country, the toll of their experiences can manifest in physical discomfort such as headaches and back pain, and heightened levels of pain may resurface as they confront new challenges. Moreover, although resettlement in host country offers opportunities for stability, asylum seeker women and their families still have to adapt to a new environment, language barriers, financial stress and cultural adjustment, while often dealing with psychological trauma and unresolved grief. The burden of current insecure visas, significantly add to and exacerbate these issues, and are potentially exacerbating pain post resettlement.

This study emphasised the importance of the relationship between asylum seekers and General Practitioners, where more efficient assessments could help detect physical and psychological effects of trauma (Morina et al., 2018). Findings highlighted that asylum seekers may have pre-existing pain sensations before travelling to Australia, however, following settlement, away from dangers of war, pain may continue and re-surface. Moreover, sometimes feelings of anxiety, depression and post-trauma may manifest as somatic pain, due to the immense stress and trauma they have experienced. Somatic pain can often serve as a manifestation of emotional distress, as well as a way to communicate suffering when verbal expression is difficult (Rohlof et al., 2014). Most commonly affecting head and back areas, it can further exacerbate mental health struggles, creating a vicious cycle of pain, discomfort and distress. The daily challenges which asylum seekers endure, such as lack of access to health services, can compound these issues, making it crucial to provide comprehensive support for both their mental and physical well-being.

The participants' wishes for physicians to acknowledge past trauma histories and their valuable suggestions and insight were noteworthy, highlighting the need for more communication with their GPs. It seems vital that GPs screen for post-trauma symptoms with

patients who present with non-specific somatic symptoms with trauma backgrounds. This can be achieved by further GP training, in order to enhance the provision of culturally competent care, creating a supportive environment with appropriate cross-cultural communication, use of Health interpreters, and referral to a specialist torture and trauma service such as STARTTS. GP trauma training can enrich GPs' ability to provide high-quality trauma-informed care, but can also promote health and well-being and increase help-seeking behaviour among asylum seekers with unstable visas.

Strengths and Limitations

One of the strengths of the study was that participants were from the same cultural background and were all female which made comparisons more feasible. Another strength of the study was that clinician administered questionnaires and semi-structured interviews were used to assess for PTSD, pain symptoms and pain histories, which helped build better rapport with the participants and obtain richer and detailed information about their trauma and pain histories.

In this study, the efficacy of data was limited due to the small sample of participants. We acknowledge that a sample of 21 is small to make statistical inferences; however, this study is a part of a larger study, which will be consolidated with the present database. In addition, all participants were female and from particular communities. Findings may therefore present a gender specificity with regards to the expression of pain and may incorporate cultural attitudes of dismissing personal affliction or verbal expressions of wellbeing. The inclusion of men and other cultures in further studies may unveil additional information as to the nature of pain and experiences with medical support.

A control group of a similar client cohort was not used in this study to provide a baseline for comparison. The reason for this was that having a group of asylum seekers in a non-treatment control group (or recruited from clinic's 'Waiting List') is implausible and ethically problematic in a clinical setting. It would be unethical to deny or delay assessment solely for the purpose of research as it would violate rights to receive proper assessment and timely treatment and would undermine STARTTS's fundamental principles of protecting client's human rights and promote well-being.

Upon completion of the present study, future research is planned to investigate links between somatic pain and psychological trauma among amongst female Burmese asylum seekers. Given the escalating human rights violation after 2021 Myanmar's coup d'etat, Myanmar ranked as the number three country receiving refugee support and Global Special Humanitarian Program visas in 2022-2023. Similar to the present study, somatic pain amongst a female Burmese cohort will be investigated, to provide valuable insights into the manifestation of pain and consequently physical and psychological well-being. These studies may benefit from exploring a more holistic understanding, and addressing research gaps and the needs of these vulnerable groups may help unfold their traumatic history, explore their physical pains further, and find culturally appropriate solutions and beneficial treatment programs.

Conclusion

Somatic and mental health problems are interrelated and affected by social circumstances. Forcibly displaced individuals are often subjected to profound psychological distress, which may manifest as both mental health problems and somatic experiences such as pain. Providers of healthcare services to asylum seekers should be attentive to the adverse effects of postmigration stressors and acknowledge the interrelations between pain and mental health. It is noteworthy that the lengthy and complicated nature of securing a visa and residency

documents exacerbate asylum seeker's existing conditions, introducing additional complications. Delays and rejections in their visa application process can prolong the sense of insecurity and disrupt resettlement progress.

Is it possible that the exacerbation of somatic pain in Australia could be a result of the perpetual fear of deportation, pervasive sense of uncertainty and unrelenting feelings of insecurity for asylum seekers, rather than the allostatic load of war, torture and the overall refugee experience? The cumulative psychological strain which asylum seekers endure can have profound implications for their health and well-being. The additional ongoing complications of insecure visa can certainly intensify the already exhausted individual's elevated existing anxiety, creating a state of chronic stress, depression and post-trauma symptoms, significantly impacting their mental well-being.

It seems that forced displacement of asylum seekers at present is not only widespread, but is no longer a short-term and temporary phenomenon. Clinical work with vulnerable individuals recognizes that there are multiple factors that must be explored when seeking to understand and rehabilitate such clients.

The implications of such findings should encourage enhancement of mental health proficiency in healthcare providers, building capacity to respond to complex needs of asylum seekers, consequently having precise referral paths, treatment plans and culturally sensitive, trauma-informed interventions. When presented with non-specific somatic complaints, physicians should be encouraged to build sufficient rapport with asylum seeker patients, initiate direct conversations about mental health, and validate and consider trauma sequelae, with the ultimate goal to best support them. Such an approach would encourage help seeking behaviour, empower patients to take an active role in their own treatment, and avoid future complications. This can also promote better understanding of symptom presentation of traumatized people and contribute to the provision of ongoing, coherent support and treatment.

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Address for Correspondence
Dr. Shakeh Momartin
Research Team Leader
STARTTS PO Box 203 Fairfield NSW 2165, Sydney, Australia
shakeh.momartin@health.nsw.gov.au

Author Biographies

Dr. Shakeh Momartin is Research Team Leader at STARTTS. Her research interests include Refugee mental health, torture and human rights, connection between trauma and psychotic illness.

Samra Ahmed is a Research Assistant at STARTTS.

Jorge Aroche is Chief Executive Officer of STARTTS and previous President of International Rehabilitation Council for Torture Victims (IRCT). His research interests include refugee mental health, torture and human rights, refugee policies.

Myat Pan Hmone is a Research and Evaluation Officer at STARTTS.

Mariano Coello is Clinical Services and Research Coordinator for STARTTS. His research interests include refugee mental health, torture and human rights, clinical services and programmes.