Journal of Safety Research 95 (2025) 505–514

Contents lists available at ScienceDirect

Journal of Safety Research

journal homepage: www.elsevier.com/locate/jsr

Protective factors in potential trauma for adolescent surf lifesavers

Jasmin C. Lawes [a,b,*], Samantha Fien [a,c,d], Jessica Ledger [a], Murray Drummond [e], Pamela Simon [a], Nancy Joseph [a], Shane Daw [a,b], Talitha Best [d,f], Robert Stanton [d,g], Ian de Terte [h]

[a] Surf Life Saving Australia, Bondi Beach, New South Wales, Australia
[b] Beach Safety Research Group, UNSW Sydney, Sydney, New South Wales, Australia
[c] School of Health, Medical and Applied Sciences, Central Queensland University, Mackay, Queensland, Australia
[d] Cluster for Resilience and Wellbeing, Appleton Institute, Central Queensland University, Wayville, South Australia, Australia
[e] College of Education, Psychology and Social Work, Flinders University, Adelaide, South Australia, Australia
[f] School of Health, Medical and Applied Sciences, NeuroHealth Lab, Appleton Institute, Central Queensland University, Brisbane, Queensland, Australia
[g] School of Health, Medical and Applied Sciences, Central Queensland University, Rockhampton, Queensland, Australia
[h] School of Psychology, Massey University, Wellington, New Zealand

ARTICLE INFO

Keywords:
Protective factors
Social support
Self-efficacy
Mental health
Surf life saving

ABSTRACT

Introduction: Surf lifesavers form a key part of Australia's first responder workforce. Patrolling members can start from 13 years old, with potential exposure to traumatic incidents. Protective factors may mitigate the trauma exposure. This study investigated protective factors associated with mental health outcomes among adolescent surf lifesavers (13–17 years), including in response to exposure to potentially traumatic events. *Methods:* An online survey was developed to collect data from Australian surf lifesavers (13–17 years). Measures included demographic factors, stressful life events, post-traumatic stress symptoms (PTSS), self-efficacy, social support, and attitudes toward mental health problems. Hierarchical regressions and moderation analyses explored the relationships between variables. *Results*: There were 118 responses collected with overall mean age 15.4 years (SD = 1.3). PTSS was moderately to strongly positively correlated with all trauma domains. Higher self-efficacy and social support scores were correlated with lower PTSS. Hierarchical regression showed that Trauma within SLS, social support, self-efficacy and attitudes toward mental health were significantly associated with the outcome in the final regression model ($F(5,110) = 17.87$, $p < 0.001$), with the protective factors collectively explaining 28% of the variance in PTSS. Negative attitudes were positively associated with PTSS, while social support and self-efficacy scores were both negatively associated with PTSS. *Conclusions:* This study highlights the critical and protective interplay between social support, self-efficacy, mental health attitudes and trauma exposure among adolescent surf lifesavers. The findings will guide the development of targeted interventions to support younger patrolling members with an emphasis on supportive interventions to improve resilience and wellbeing in young emergency service personnel exposed to trauma. *Practical applications:* This study highlights the importance of encouraging protective factors with young individuals in emergency service roles, with practical implications for mental health professionals, emergency service agencies, surf lifesaving organizations, and policymakers interested in promoting the wellbeing of adolescent emergency service personnel.

1. Introduction

Emergency service personnel confront unique potentially traumatic challenges in their roles. As frontline responders to potentially traumatic events (PTEs), there is an increased risk of heightened psychological distress and increased susceptibility to mental health issues (Liao et al., 2023; Soravia et al., 2020; Michaels et al., 2014; Kleim & Westphal, 2011). Surf Life Saving (SLS) is one of the largest community volunteer driven organizations in Australia in which members benefit from a variety of areas that include sport, education, lifesaving, and membership development (Surf Life Saving Australia, 2023). Despite the inherent risk of trauma in their first responder role, SLS exists to save lives and nurture a distinct emergency service. The link between emergency service personnel, trauma exposure, protective factors and mental health

* Corresponding author at: Surf Life Saving Australia, Level 1, 1 Notts Avenue, Bondi Beach, New South Wales, Australia.
E-mail address: jaz.lawes@sls.com.au (J.C. Lawes).

https://doi.org/10.1016/j.jsr.2025.10.026
Received 12 November 2024; Received in revised form 1 September 2025; Accepted 31 October 2025
Available online 11 November 2025

outcomes is limited in the context of lifesaving personnel (i.e., surf lifesavers and lifeguards) (Fien et al., 2021), with research and understanding only beginning to emerge (Fien et al., 2023; Fien et al., 2025).

In Australia, adulthood occurs at 18 years of age and is linked to eligibility to vote and being independent (A guide to enrolling and voting., 2025). Similarly, in SLS, adolescents are classified as 13–17 years old and 18+ years as adults for the purposes of patrolling, awards, and surf sports (Surf Life Saving Australia, 2024). This is important since younger surf lifesavers begin patrolling at 13 years after being awarded their Surf Rescue Certificate (SRC), a skills-based award that forms the entry level qualification for adolescent surf lifesavers that develops an understanding of basic patrolling, surf awareness, and lifesaving methods, which may increase their exposure to trauma or stress.

Uniquely among emergency services, lifesaving personnel can actively patrol as adolescents, during a developmental stage where the effects of direct and indirect trauma and stress may have repercussions for mental health and wellbeing, including increasing prevalence of behavioral and emotional problems and suicide risk (Darnell et al., 2019; World Health Organization, 2025). Direct trauma occurs when an individual is exposed directly to a distressing event, such as performing resuscitation, responding to fatal accidents, or witnessing severe injuries (Ten Holt et al., 2022). These encounters can have immediate and long-term psychological impacts, influencing an individual's wellbeing and professional longevity (Ten Holt et al., 2022). In contrast, indirect trauma arises when exposed to the traumatic event of others, often through providing support, witnessing the aftermath, or engaging with survivors and their families. This secondary exposure can lead to vicarious trauma or compassion fatigue, both of which affect mental health and operational performance (Ten Holt et al., 2022). In addition to this, trauma exposure may occur within surf lifesaving but may also occur outside the lifesaver role, for example motor-vehicle accidents or occupational incidents.

Understanding these impacts and the role of the protective factors: social support, self-efficacy, and attitudes towards mental health are important in this vulnerable adolescent cohort (13–17 year old SLS members). Life skills developed during adolescence can lead to life-long benefits, influencing adulthood and then defining the trajectories for the next generation of children (Patton et al., 2016). Similarly, supportive social networks can have a significant, positive association for higher self-efficacy levels and positive attitudes toward mental health in adolescents (Cherewick et al., 2023; Cherewick et al., 2016; Triana et al., 2019). Given the important role that SLS plays within the Australian community, SLS participation is likely to be valuable for building resilience in such vulnerable groups.

Higher rates of post-traumatic stress disorder (PTSD), post-traumatic stress symptoms (PTSS), and mental illness are more prevalent in Australian adult emergency service populations than in the general population (Beyond Blue Ltd, 2018; Claringbold et al., 2022). An evidence-based approach to mental health is critical so SLS volunteers can protect themselves and their respective communities, especially for younger members who may be exposed to traumatic events directly or indirectly (Fien et al., 2021; Fien et al., 2023). Research into mental health and lifesaving is limited and has predominantly focused on risk factors (Fien et al., 2023; Fien et al., 2025; Fien et al., 2021) and resource development (Stewart et al., 2025; Stewart et al., 2024). However, understanding factors that may act as protectors of health, herein referred to as protective factors, is equally as important especially when we consider the community network of clubs and participation that exists within SLS. SLS clubs are considered significant community hubs for social connection and can provide many opportunities to develop leadership, lifesaving, and other skills that contribute to the personal growth of members (Deloitte, 2020). These opportunities also position SLS clubs well to develop, nurture, and promote protective factors that support mental health and wellbeing, such as increasing social support and self-efficacy, while also decreasing stigma (i.e., negative attitudes) around mental illness or concerns within their membership.

Social support and self-efficacy play a protective role in buffering the adverse effects of stress and trauma (Cox et al, 2022; Van Trijp et al., 2018; Feuer, 2021). Social support is a known moderator of stress and health outcomes (Ogińska-Bulik, 2015), with lower support associated with higher PTSD symptomatology with regards to both police officers (Stephens et al., 1997; Shakespeare-Finch et al., 2015) and firefighters (Shakespeare-Finch et al., 2015; Regehr et al., 2003), while self-efficacy (defined as the belief in one's ability to navigate difficult situations and to overcome adversity) has been shown as protective against the negative effects of psychological distress by way of promoting resilience and coping mechanism development for adolescents and to buffer burn out symptoms in firefighters (Makara-Studzińska et al., 2019). In the context of lifesaving, SLS members who feel safe, comfortable, and well-supported are less likely to feel stressed when performing their role, which can reduce severity of negative outcomes (including post-traumatic stress symptoms) after exposure to trauma. A study of lifeguards in New Zealand showed that older lifeguards had higher self-efficacy, which was attributed to greater coping experience after trauma exposure (Rooke & de Terte, 2024). Whether it be through peer networks, family relationships, or organizational structures, the presence of robust social infrastructure can boost social capital, increase self-confidence, foster resilience, and instill better coping strategies for challenges inherent in their role, which may also reduce the risk of post-traumatic stress (Pinto et al., 2017; Acoba, 2024).

Individual and collective attitudes toward mental health issues significantly influence help-seeking behaviors and the engagement of available support services among emergency service personnel (Rikkers & Lawrence, 2021; Clement et al., 2015). In contrast, negative attitudes, stigma, and misconceptions surrounding mental health can act as barriers to seeking assistance, exacerbate mental health issues, and impede intervention effectiveness and are linked with higher stress symptoms after exposure to trauma (Ahad et al.; Auth et al., 2022; Fien et al., 2025; Henderson et al.; Jaeb & Pecanac, 2024). Improving individual and collective attitudes about mental health problems, along with normalizing and fostering a culture of openness and acceptance towards mental health concerns, is imperative for promoting psychological wellbeing among emergency service personnel, including SLS members who are a motivated population, driven to protect the community through a shared appreciation of the beach and its risks.

Examining the mental health of adolescent surf lifesavers aged 13–17 years old is relevant for public health and youth development within surf lifesaving and emergency service organizations. In addition to general adolescent developmental milestones (Sawyer et al., 2018), adolescent surf lifesavers face a unique combination of stressors inherent in their role, including exposure to PTEs and the responsibility of safeguarding lives in challenging aquatic environments (Gulliver et al., 2010). Moreover, this age group is at a pivotal stage in forming individual attitudes and behaviors toward mental health, their own identity, shaping their lifelong approach to self-care, and help-seeking (Birkeland et al., 2022; Ivanic et al., 2014; Patel et al., 2007).

The present study provides insight into the role of protective factors known to mitigate stress responses that are important for adolescent first responder volunteers. Specifically, we explore protectivemeasures of perceived social support, self-efficacy, and attitudes toward mental health and their relationships with post-traumatic stress symptoms (PTSS), and whether these factors play a moderating role for trauma exposure and PTSS. We propose that the protective factors and trauma scores will correlate with PTSS scores, where increased PTSS will be negatively correlated with social support and self-efficacy scores, and positively correlated with negative attitudes toward mental health problems and increased trauma across each trauma domain. We further propose that social support, self-efficacy, and attitudes toward mental health may also moderate the relationship between the trauma domains and PTSS, where lower PTSS scores will be associated with greater perceived social support and self-efficacy scores, while being positively

associated with negative attitudes toward mental health problems.

2. Method

Before being broadly promoted across the membership, the anonymous, online survey for adolescent SLS members aged 13 to 17 years was developed and piloted with 19 selected lifesavers aged 13 to 17 years old (Fien et al., 2023) to validate the survey tool. The results from the adolescent pilot survey showed the responses for the included scales (Post-traumatic Stress Disorder Checklist-5 (PCL-5), Generalized Self-Efficacy Scale (GSE), social support, and Attitude Towards Mental Health Problems (ATMHP)) had good internal consistency (Cronbach's alphas ranged from 0.75 to 0.91) and was deemed suitable for broader dissemination within the membership. Noting, that the following scales and questions in the adolescent pilot survey LEC-5, ALESS, and experience of mental health questions and scales were measuring a different construct analysis of internal consistency were inappropriate and therefore, not run. The study was approved by Central Queensland University Human Research Ethics Committee (HREC 22265). Consent was obtained by the adolescent and parent/legal guardian of the adolescent at the commencement of the online, anonymous survey. Data were collected online via the Qualtrics survey platform. A priori power analyses determined for a hierarchical regression with five predictors via G*Power 3.1.9.7 for adequate power of 0.90, alpha level of $p < 0.05$, and a medium effect size of 0.15, required a minimum of 108 respondents (Kang, 2021). Post-hoc power analysis of the final hierarchical regression testing four from a total nine predictors revealed computed power of 0.93 with the same input parameters (Kang, 2021).

2.1. Participants

Participants were recruited through SLS membership database via email and SLS Facebook group pages.

2.2. Demographic items

Demographic items included gender, age, membership role in SLS, the state in which their club was located, years as a member of SLS, and years spent as an active patrolling member. Given the respondent number, this information was deemed not to render responses re-identifiable.

2.3. Adolescent life events stress scale

To examine participant life events, adolescents completed 40 of the 41-item Adolescent Life Events Stress Scale (ALESS; Aggarwal et al., 2007) which is a validated scale to specifically test stress within adolescent cohorts. Participants completed this scale, plus five items from the Life Events Checklist (LEC-5; natural disaster, fire/explosion, transportation accident, serious accident at work, home, or during recreational activity, any other very stressful event or experience; Weathers et al., 2013) deemed appropriate for an adolescent population, the 13 SLS specific items (successful/unsuccessful search for missing people, body retrieval, successful/unsuccessful resuscitation, complex and/or life-threatening rescue, drowning fatality, providing treatment and/or support to a significant incident, responsible for filling out forms, handover to emergency services, dealing with self-harm incidents, and dealing with someone under intoxication; Rooke & de Terte, 2024), one item related to the COVID-19 pandemic (due to the timing and impact of the pandemic in Australia at the time of the survey being released), followed by a final item used to screen for any other PTE not otherwise specified. The addition of the pandemic item was to facilitate an exploration into the extent of the stress associated with COVID-19 impacts on adolescent members. This is because some members experienced significant lock down and pandemic-related stress, while other states remained COVID free and operated as usual for the majority of the time. The complete survey can be found in Supplementary Material 1. The response options for the 59-items were modified to be consistent with the LEC-5 and were reduced to seven options as follows: "1 = Happened to me, 2 = Witnessed it, 3 = Learned about it, 4 = Within SLS, 5 = Not within SLS, 6 = Not sure, 7 = Doesn't apply." Thus, respondents could indicate if they had experienced an event, and whether it was within the SLS role or not. Answers were compiled into four trauma domains, as seen in Table 1. Participant scores for each of the four trauma domains was calculated by averaging the scores for each of the adolescent life events items. Scores were calculated using the criteria set in Table 1. If a participant met the criteria set out for that domain, they were given a score of 1 for that item, and scores for items could accumulate if participants met the criteria multiple times. If they did not meet the response criteria, participants were given a score of 0 for that item.

2.4. Post-traumatic stress symptoms checklist

The survey included the 20-item Post-traumatic Stress Disorder Checklist-5 (PCL-5) to measure presence and severity of PTSS experienced within the past month (Weathers et al., 2018), validated in adolescents as young as 12 years old (Liu et al., 2016). Each symptom was rated on a five-point scale ranging from "0 = Not at all, 1 = A little bit, 2 = Moderately, 3 = Quite a bit, 4 = Extremely." Data showed good internal consistency (Cronbach's alpha = 0.93). Items are summed to provide a total severity score (0–80): higher scores indicated more severe PTSS. For this study, scores of $\geq$ 33 were indicative of PTSS in adolescents (Weathers et al., 2018), but only a clinician can determine a confirmed diagnosis of PTSD (Weathers et al., 2018).

2.5. Self-efficacy scale

The Generalized Self-Efficacy Scale (GSE) measures participants' self-belief in their own ability to succeed and overcome different situations (Schwarzer & Jerusalem, 1995). The scale comprises 10 items scored on a four-point scale ranging from "1 = Not at all, 2 = Hardly true, 3 = Moderately true, and 4 = Exactly true," and overall scores were calculated by summing the scores of the 10 items. Data showed good internal consistency (Cronbach's alpha = 0.86). Higher scores represented higher perceived self-efficacy.

2.6. Social support index scale

A modified version of the social support index scale was included

Table 1
Trauma Domain Definitions and Response Items Included in Each Domain Measure.

	Direct Trauma	Global trauma	Trauma within SLS	Trauma experienced outside of SLS
Definition	Trauma experienced by the participant	Trauma the participant has either experienced, witnessed, or learnt about	Trauma that has occurred within SLS role	Trauma that did not occur within SLS role
Answers participants needed to select within the survey	Response 1*	Response 1, OR 2, OR 3*	Response 1, OR 2, AND 4*	Response 1, OR 2, AND 5*
Score range for each item	0–1	0–3	0–2	0–2

Note: SLS = Surf Life Saving; Response items*: 1 = Happened to me, 2 = Witnessed it, 3 = Learned about it, 4 = Within SLS, 5 = Outside of SLS.

(Caplan et al., 1975) with questions having a good internal consistency (Cronbach's alpha = 0.90). Modifications to reflect SLS context included rephrasing Items 1 and 3, and asking about support people more relevant within SLS context (Rooke & de Terte, 2024). For example, item 1 changed from "How much does each of these people go out of their way to do things to make your work life easier for you" to "How much does each of these people go out of their way to do things to make your Surf Life Saving time more enjoyable for you?" and Item 3 "How much can each of these people be relied on when things get tough at work?" to "How much can each of these people be relied on when things get tough?" Similarly, the original measure asks participants to report on "Your immediate supervisor," "Other people at work," and "Your wife, friends and relatives," which was altered to "A significant other (e.g., spouse/closest friend)," "Family/friends," "Surf Life Saving peers," "Patrol captain," and "Peer support worker."

Participant social support responses for each item were on a five-point scale from "1 = Very little, 2 = A little, 3 = Some, 4 = A lot, 5 = A great deal" with the inclusion of a "Not applicable" option. Overall, social support scores were calculated by averaging the scores, except items where participants selected "Not applicable," which did not receive a score. Higher scores indicated greater perceived social support available.

2.7. Attitude towards mental health problems subscale

The Attitude Towards Mental Health Problems scale (ATMHP; Gilbert et al., 2007) was used to explore mental health attitudes focusing on the two subscales of: (i) community attitudes toward mental health problems and (ii) family attitudes toward mental health problems. This subscale comprised of eight items measured on a four-point scale ranging from "1 = Do not agree at all, 2 = Agree a little, 3 = Mostly agree, 4=Completely agree." Items were scored by summing the scores for each subscale with higher scores indicating more negative attitudes toward mental health problems, with lower scored considered to be more protective. Data showed good internal consistency (Cronbach's alpha = 0.91).

2.8. Statistical analyses

All analyses were performed using SPSS 27 (IBM Corp, Armonk, NY). Internal consistency of the relevant scales was assessed using Cronbach's alphas. Normality was assessed using the Shapiro-Wilk test and assumed where $p > 0.05$. All p values were 2-sided with demographic characteristics reported as *M (SD)* or *n*/%. Pearsons correlations examined the association between demographic factors, stressful life events, and post-traumatic stress symptoms. For this study, correlation coefficients near ± 0.10 are considered weak, values near ± 0.30 are considered moderate, and values near ± 0.50 or more are considered strong (Price et al., 2017).

Hierarchical regression analyses were used to explore effects of significantly correlated predictor variables on PTSS for each trauma domain, and to determine the contribution of variables to PTSS, and the effects of social support, self-efficacy, and attitudes toward mental health problem measures. Trauma experienced outside of SLS was added in the initial step of the hierarchical model to account for differences in the exposure environment and to focus analyses on trauma experienced within the SLS context.

Multicollinearity and tolerance assumptions for hierarchical regression analyses were performed and there were no high correlations within variables. The moderating roles of social support, self-efficacy, and attitudes toward mental health problems on the relationship between PTSS on each trauma domain were separately tested using Hayes' PROCESS method (Hayes, 2013). Since some of the measures started above zero, scores were mean centered (Hayes & Rockwood, 2017). The mean centered trauma and protective factor scores (perceived social support, general self-efficacy, and attitudes toward mental health problems) were entered in the first model of additional hierarchical multiple regression analyses, followed by their product (the interaction term), which was entered in the second model. PTSS was the dependent variable for moderation analyses, and all analyses were deemed statistically significant where $p \leq 0.05$.

3. Results

In total, 275 members responded to the survey: 7.6% did not continue with the survey following consent; 31.6% completed the demographics and role in SLS sections; 3.6% did not continue after the ALESS; 4.7% did not continue after the PCL-5; 0.7% did not continue after the ATMHP; 0.4% did not continue after the social support section; and 1.5% did not continue after the GSE. A further 6.9% were outside the target population of the survey (aged 18 years and older). For the purposes of this study, only participants who were under 18 years of age and had completed 100% of the key survey variables were included in the analysis. Overall, 118 adolescents aged between 13–17 years completed the full survey giving a completion rate of 43%. This stringent completion inclusion rate was determined to robustly explore potential related measures in this cohort.

3.1. Survey sample characteristics

Over half of respondents identified as female (58.5%; Table 2), and the mean age of participants was 15.4 years (*SD* = 1.3; Table 3). Participants reported membership of SLS for an average of 5.9 years (*SD* = 3.5) and had been patrolling for an average of 2.5 years (*SD* = 1.3; *NB: 16 participants were not actively patrolling so skipped responding about patrol years;* Table 2). Most participants were born in Australia (89.8%, *n* = 106; Table 2) and were predominantly from Queensland (75.4%, *n* = 89; Table 2). Additionally, 39 respondents (33%; Table 2) were identified to be potentially at a high risk of developing PTSS indicated by a PCL-5 score of 33 or above (Weathers et al., 2018) (Table 2). Equal proportions of participants reported experiencing some form of trauma within SLS role and outside of SLS role (54.2%, n = 64). The life event items that were reported to have occurred most within SLS role were outstanding personal achievement, global pandemic, complex and/or life-threatening rescue, providing treatment and/or support to a significant incident, and handover to emergency services (e.g., police, paramedics). Please note, these items were specifically referred to as events that may be difficult or stressful (Supplementary Material 1).

3.2. Correlations

Correlations assessed associations between demographic factors, stressful life events, and PTSS (Table 3). PTSS was moderately to strongly correlated with each trauma domain (Table 3).

Age was correlated with member years and PTSS. Trauma domains were correlated with all other trauma domains (Table 3).

PTSS was correlated with both protective factors, that is, self-efficacy and social support (Table 3). Self-efficacy was correlated with most trauma domains, but not direct trauma (Table 3). Social support was moderately correlated with direct trauma only (Table 3). No significant relationships were found between demographic variables and protective factors (Table 3).

Attitudes toward mental health problems were strongly correlated with PTSS and weakly with age (Table 3), but no other demographic factor. Attitudes toward mental health problems were strongly correlated with the direct trauma and trauma within SLS, and weakly with trauma outside of SLS (Table 3).

3.3. Hierarchical regressions

Multiple hierarchical regressions were performed to investigate the amount of variation in PTSS that could be explained by the type of

Table 2
Demographics of Adolescent Sample with Completed Responses Included in Analyses and Total Received Responses.

Variable	Included Responses *n*	%	Received Responses^ *n*	%
Respondents	118	100.0	275	100.0
Gender				
Male	42	35.6	98	35.6
Female	69	58.5	144	52.4
Non-binary	4	3.4	7	2.5
Prefer not to disclose	3	2.5	3	1.1
Birth Country				
Australia	106	89.8	233	84.7
Other	12	10.2	20	7.3
Indigenous Australians				
Yes	9	8.6	26	9.5
No	109	92.4	227	82.5
State				
Queensland	89	75.4	188	68.4
New South Wales	18	15.3	32	11.6
Victoria	3	2.5	9	3.3
Western Australia	5	4.2	13	4.7
South Australia	3	2.5	6	2.2
Role in Surf Life Saving$^{\alpha}$				
A volunteer surf lifesaver	117	99.2	233	84.7
A paid lifeguard	7	5.9	22	8.0
Member Years				
0—9	98	83.1	179	65.1
10—19	20	16.9	54	19.6
Active participant in patrols				
Yes	103	87.3	222	80.7
No	15	12.7	31	11.3
Patrol Years				
0 – 4	94	79.7	193	70.2
5 – 9	8	6.8	45	16.4
Not currently patrolling*	16	13.6	32	11.6
PTSS (PCL-5 scores)				
Indicates that the criteria for PTSS are met (PCL-5 score ≥33)	39	33.1	47	17.7
Indicates that the criteria for PTSS are not met (PCL-5 score ≤ 32)	79	66.9	108	39.3
Trauma Domains β				
Participants who reported have experienced any trauma within SLS role	64	54.2	64	23.3
Participants who reported having experienced any trauma outside of SLS role	64	54.2	64	23.3

Note. α = participant response could select both a volunteer surf lifesaver and a lifeguard. * = indicates that participants did not enter any years as they were not currently patrolling but have previously.^Missing data have not been presented for simplicity but can be deduced from the proportion not presented. SLS = Surf Life Saving; PTSS = Post-traumatic stress symptoms; PCL-5 = The Post-traumatic Stress Disorder Checklist with a score of 33 or more indicating probable PTSD (Weathers et al., 2018).
Membership can start from the age of 5 years via participation in junior activities, i.e. Nippers.
β = participants could indicate that they experienced trauma within SLS role AND/OR outside of SLS role, meaning participant could have experienced both

traumatic domains and protective factors. Regression coefficients and standard errors can be found in Table 4.

In Model 1 of the hierarchical multiple regression, gender, and age significantly contributed to the regression model, $F(2,115) = 6.21$, $p = 0.003$, and accounted for 9.7% of the variation in PTSS scores. Introducing trauma outside of SLS into Model 2 explained a statistically significant additional 8.6% of variation in PTSS scores, $\Delta F(1,114) = 12.07$, $p < 0.001$, with all variables contributing significantly to the model. Adding trauma within SLS into Model 3 explained a statistically significant additional 3.0% of the variation in PTSS scores, $\Delta F(1,113) = 4.31$, $p = 0.040$, with age, gender, and trauma within SLS contributing significantly to the model. Including social support, self-efficacy, and attitudes toward mental health problems to the final regression model (Model 4) explained an additional 28.5% of the variation in PTSS scores. This change in R^2 was also significant, $\Delta F(3,110) = 24.93$, $p < 0.001$. The full model of age, gender, trauma outside SLS, trauma within SLS, social support, self-efficacy, and attitudes toward mental health problems (Model 4) was statistically significant, $R^2 = 0.53$, $F(7,110) = 17.87$, $p < 0.001$, and accounted for an additional 31.8% of the variance in PTSS scores. Attitudes toward mental health problems explained 11% of the model variance and was positively correlated to PTSS. Social support and self-efficacy, respectively, explained 9% and 8% of the variation in the model; however, they were both negatively correlated to PTSS.

When all significant predictor variables were included into the regression model, neither age, gender, nor trauma outside of SLS were significant predictors of PTSS.

3.4. Moderation

No predictor variables were found to moderate the relationship between each trauma domain and PTSS ($p \leq 0.050$). Moderation analysis results are provided in Supplementary material (Supp. Material 2; Supp. Table 1).

4. Discussion

This is the first study to explore trauma, stress, and protective factors in Australian adolescent surf lifesavers and lifeguards and provides valuable insights into the complex interplay between psychological distress, trauma exposure, social support, self-efficacy, and attitudes toward mental health problems. The methodology is particularly noteworthy, as previously validated tools had been thoughtfully tailored to the study population along with a pilot study (Fien et al., 2023) to ensure both relevance and rigor.

Consistent with our hypotheses, PTSS scores were significantly associated within the following trauma domains: direct trauma, trauma within and outside of Surf Life Saving (SLS). Furthermore, PTSS was lower with greater levels of both self-efficacy and social support. This aligns with existing literature highlighting the protective effects of self-efficacy and social support against the deleterious effects of trauma in adolescents and young adults in general and in emergency service contexts (Danielson et al., 2017; Benight & Bandura, 2004; Panagioti et al., 2014).

Previous scientific evidence suggested that social support and self-efficacy would moderate the relationship between trauma exposure and psychological consequences (Zalta et al., 2021; Calhoun et al., 2022). This hypothesis was not confirmed within this study with no moderation effects of protective factors on relationships between PTE and PTSS observed. However, the hierarchical regression analysis showed that appropriate social support, relevant self-efficacy, good attitudes toward mental health problems, and trauma experienced within SLS roles accounted for a significant amount of overall variance (32%; when controlling for age, gender, and trauma experienced outside of the SLS role) in PTSS. While the moderation hypotheses were not supported, given the novelty and uniqueness of the sample population (adolescent surf lifesavers) it remains interesting to find that social support, self-efficacy, and attitudes toward mental health and trauma experienced within SLS duties impacted PTSS scores. This may be due to this particular cohort of participants so it would be beneficial to replicate within SLS and in other adolescent emergency responders.

Research studies involving those aged in a similar age bracket, with lower rates of social support from family, friends, or a significant other were associated with PTSD symptoms in both South African paramedic trainees (mean age 22.05 years) (Fjeldheim et al., 2014), and Chinese rescue workers (93.17% under the age of 20 years) following an earthquake (Huang et al., 2013). Similarly, an evaluation of a youth engagement program conducted by the U.S. Medical Reserve Corps (MRC) showed community engagement by adolescent participants (aged 14–18 years) significantly fostered adolescents' development by offering opportunities for skill-building, mentorship, and meaningful community

Table 3
Descriptive Statistics and Correlations (Two-tailed) for Continuous Study Variables (n = 118).

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Age	15.36	1.26	–								
2. Member Years	5.92	3.47	0.19*	–							
3. Global trauma	0.7	0.39	0.09	0.08	–						
4. Direct trauma	0.29	0.14	0.14	0.17	0.50***	–					
5. Trauma within SLS	0.09	0.17	0.03	0.08	0.57***	0.50***	–				
6. Trauma outside of SLS	0.15	0.26	0.01	0.1	0.66***	0.38***	0.77***				
7. PTSS (PCL-5)	23.97	19.76	0.25**	−0.09	0.33***	0.54***	0.35***	0.28**	–		
8. Generalized Self-Efficacy Scale	30.28	5.18	0	0.12	0.21*	0.18	0.29**	0.23*	−0.30***	–	
9. Social Support Index	3.53	0.85	−0.14	0.11	−0.1	−0.26**	−0.14	−0.11	−0.53***	0.31***	–
10. Attitudes Towards Mental Health Problems Subscale	12.77	5.51	0.24**	0.06	0.14	0.30**	0.28**	0.20*	0.58***	−0.23*	−0.43***

Note: PTSS (PCL-5) = Post-traumatic stress symptoms measure; SLS = Surf Life Saving.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4
Summary of Hierarchical Multiple Regression with PTSS as the Dependant Variable.

Variable	*B*	*B*	*SE*	sr^2	*R*	R^2	ΔR^2	*p*
Model 1:								
Intercept		−39.44	21.51					0.069
Age	0.22	3.47	1.41	0.05				0.015*
Gender	0.19	5.81	2.72	0.04				0.035*
$F(2,115) = 6.21$**					0.31	0.10	0.10	0.003**
Model 2:								
Intercept		−42.47	20.56					0.041*
Age	0.21	3.36	1.34	0.04				0.014*
Gender	0.22	6.63	2.61	0.05				0.012*
Trauma outside of SLS	0.3	22.83	6.57	0.09				0<.001***
$F(3,114) = 8.56$***					0.43	0.18	0.09	< 0.001***
Model 3:								
Intercept		−40.95	20.28					0.046*
Age	0.21	3.33	1.32	0.04				0.013*
Gender	0.19	5.83	2.6	0.03				0.027*
Trauma outside of SLS	0.08	6.24	10.28	0.00				0.545
Trauma within SLS	0.28	31.13	14.99	0.03				0.040*
$F(4,113) = 7.69$***					0.43	0.18	0.09	< 0.001***
Model 4:								
Intercept		21.13	18.97					0.268
Age	0.16	1.89	1.07	0.03				0.079
Gender	0.09	3.09	2.09	0.02				0.142
Trauma outside of SLS	0.05	4.84	8.05	0.00				0.549
Trauma within SLS	0.24	27.87	12.32	0.04				0.026*
Social Support	−0.45	−5.92	1.78	0.09				0.001**
Self-Efficacy	−0.43	−0.90	0.29	0.08				0.002**
ATMHP	0.48	1.05	0.28	0.11				< 0.001***
$F(5,110) = 17.87$***					0.73	0.53	0.32	< 0.001***

Note. $N = 118$. β = standardized regression coefficients. *B* and *SE* = unstandardized regression coefficients. *R* = multiple correlation coefficients. R^2 = coefficients of determination. $\Delta R^2 = R^2$ change. sr^2 = squared semiparital correlation coefficients. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
PTSS = Post-traumatic stress symptoms; SLS = Surf Life Saving; ATMHP = Attitudes towards mental health problems scale.

contribution in a supportive environment (Dieke, 2011). The evaluation found a variety of positive impacts on young adults, including providing an opportunity to prepare them for their future careers and giving participants a focus beyond themselves (Dieke, 2011; Taylor et al., 2023). This supports the results in this study that show the social infrastructure and leadership opportunities provided by SLS clubs are likely to promote measures such as social support and self-efficacy that reduce impacts of PTEs.

Meanwhile, from emergency responder studies, New Zealand lifeguards found perceived social support showed a small positive significant relationship with post traumatic growth, while older lifeguards (27 years and above) presented higher self-efficacy when compared with younger (17–19 years old) and middle aged (20–26 years old) lifeguards (Rooke & de Terte, 2024). Interestingly, a study that looked at South Australian firefighters (Centre for Traumatic Stress Studies, 2017) contradicted these findings, with younger firefighters (19–34 year olds) seeing themselves as fit, capable, more 'bullet proof,' and less concerned with health and welfare programs being offered in the workplace compared to older firefighters (those aged 35+ years) and the senior leadership team (55–64 years old). A recent review (Taylor et al., 2023) highlighted the scarcity of mental health research into impacts of young volunteer emergency service personnel, even though in their role they can encounter uniquely challenging experiences that may contribute to adverse mental health. This highlights the novelty and exploratory nature of this research into adolescent volunteer surf lifesavers and the relative absence of comparative literature in adolescent and volunteer emergency responder samples.

Higher scores of self-efficacy were significantly correlated to global trauma, trauma within and outside of SLS, but not to direct trauma experiences. This suggests that an individuals' perceived sense of efficacy in coping with stressors may be linked more closely to certain types of potentially traumatic experiences than others (direct or indirect) (Birkeland et al., 2022; Birkeland et al., 2021), which emphasizes the importance of understanding trauma sources and reinforces the need for tailored prevention and intervention strategies (Calhoun et al., 2022; Richins et al., 2020; Kangaslampi & Peltonen, 2022). For example, the

stressful events relating to the COVID-19 pandemic was a life event item reported to have been experienced most within SLS role. This result may not seem unexpected given its global extent, but the impact of this experience from an Australian context will differ significantly as the influence of the pandemic on everyday life was dramatically different across Australia for SLS and other services (Lawes et al., 2021). The impacts of the pandemic varied across Australian states and territories with similarly differing impacts on Australian young people, which for some was potentially traumatic (Li et al., 2022), these impacts included altered service delivery, mandatory vaccinations, increased drowning death numbers, and a change in how people interacted along the coast (Lawes et al., 2021). Similar interpretive challenges exist for other most experienced items, including complex and/or life-threatening rescue, providing treatment and/or support to a significant incident, and handover to emergency services (e.g., police, paramedics). Understanding the source of trauma is essential because it informs how individuals perceive and respond to their experiences. Different domains of trauma may require different approaches to help individuals manage and recover from their effects (direct or indirect) (Birkeland et al., 2022; Birkeland et al., 2021). For example, experiencing a direct traumatic event, such as a global pandemic or life-threatening rescue, may require different coping strategies compared to someone who has indirectly experienced trauma, such as a caregiver of a trauma survivor or someone who has witnessed a traumatic event.

Similarly, social support scores were negatively correlated with PTSS scores and directly experienced trauma scores. This result aligns with the capacity for social support to mitigate adverse effects of trauma, regardless of its nature (Saan et al., 2022). The negative correlation between social support and PTSS provides evidence to promote the importance of meaningful, interpersonal relationships and support networks in protecting against psychological distress following trauma exposure. Social support has been shown to have various protective effects in young adult emergency service and frontline responders (Taylor et al., 2023), such as reducing the risk of negative psychological outcomes such as PTSD, depression, and self-harm (Danielson et al., 2017; Panagioti et al., 2014; Calhoun et al., 2022). However, there is work that suggests in at-risk groups of PTSS in adolescents, social support may not be the main factor to consider as results indicated that social support was not enough to reduce symptoms (Pinto et al., 2017). For example, social support may facilitate the ability to talk about trauma and receive insights and perceptions from family and friends within and outside of SLS. However, the complexities of trauma and factors contributing to the PTEs occurring in adolescents is more complex in comparison to adults (Pinto et al., 2017).

Given that social support and self-efficacy are modifiable and promoted as promising opportunities for prevention (Cherewick et al., 2024) of mental illness and promotion of enhanced social and emotional wellbeing, these findings have potential to be implemented and contextualized across all levels of SLS. Specifically, sources of social support (i.e., relationships with family, patrol teams, and training cohorts that foster healthy interpersonal connection) and the dimensions of self-efficacy (i.e., club-related social activities or training) (Cherewick et al., 2024), if holistically nurtured will safeguard future generations of surf lifesavers, the SLS movement itself, and ensure SLS services continue to protect beachgoers nationally.

Attitudes toward mental health problems (ATMHP) emerged as a significant predictor of PTSS, with positive attitudes toward mental health (i.e., lower ATMHP scores) being associated with lower stress (i.e., lower PTSS scores) and negative attitudes (i.e., higher ATMHP scores) associated with higher levels of PTSS and direct experiences of trauma, both within and outside of SLS roles. This may suggest that actively destigmatizing attitudes and promoting mental health literacy may help to reduce the risk of post-traumatic stress symptoms within adolescent surf lifesavers. Moreover, the positive correlation between ATMHP and age underscores the potential impact of age-related perceptions and beliefs on individuals' attitudes toward mental health, where negative attitudes toward mental health increased with age and were associated with higher exposure to trauma. This is of utmost importance for adolescents as fostering and supporting mental health and relationships can significantly support their wellbeing (Blum et al., 2022).

Adolescents are in a development stage of their life and their social support may change (Acoba, 2024) or be shaped by cultural and contextual factors (Cherewick et al., 2024). SLSA currently has specific policies regarding age restrictions for certain awards, such as a minimum age of 17 years for Inflatable Rescue Boat Driver, which are determined by nationally representative committees who consider levels of maturity and physical development that enable awardees to perform that duty safely. There are also minimum age requirements around roles involving member protection and peer support officers in some states when dealing with frontline critical incidents, and the implications this may have on members with vicarious and/or indirect trauma. Similarly, it is increasingly important for members with leadership roles to understand this complexity and that there are other important factors to consider such as childhood adversity, family support, coping mechanisms, and substance abuse. These changes can happen frequently and overlap, affecting how they interact with the world and the people around them (Pinto et al., 2017).

Young emergency services personnel may encounter unique experiences in their role that may challenge and contribute to adverse mental health (Taylor et al., 2023). From a practical Surf Life Saving perspective during patrol, patrol captains fill the role of the on-beach coordinator in charge of patrolling members during any emergency. It is at their discretion to prevent someone from attending an incident based on that member's age, maturity, or experience. While this is achievable for most situations, this may not be practicable in some situations, such as if there are only a limited number of members on a specific patrol. In our study we did find that some of the most reported events adolescents were participating in as part of their SLS roles included complex and/or life-threatening rescues, providing treatment and/or support to a significant incident, and handover to emergency services, all of which can be stressful, particularly for young and/or inexperienced members. It should also be acknowledged that members may also volunteer to assist in traumatic events that occur outside of their surf lifesaving roles (e.g., car accidents), given that they have the training, skills, knowledge, and the impetus to help others in distress (Surf Life Saving New South Wales, 2020).

Understanding the benefits and challenges around the complexities of PTEs and member coping strategies is important to build and promote resilience at every level of Surf Life Saving (i.e., member, patrol, club, branch, state, and national). By promoting the need to identify and strengthen social support and self-efficacy networks of adolescent SLS members within the SLS environment, may help to foster protective factors for managing exposure to PTEs and/or PTSS.

4.1. Strengths and limitations

This study is the first of its kind to explore the how protective factors promote the mental health and wellbeing of younger adolescent emergency service workers. The thorough analysis of the data supports meaningful outcomes that may have significant implications for adolescent surf lifesavers, by way of supporting multi-level or sequential early intervention networks that enhance mental wellbeing via broader promotion of social support and self-efficacy networks (Cherewick et al., 2024). While this novel study shows the benefits of community and belonging within an under researched vulnerable emergency service personnel or first responder cohort, limitations remain regarding interpretation of the results. The PTSS scale used in this study considers trauma in the past month and therefore it is likely to also incorporate impacts of trauma exposure experienced over longer time periods (i.e., with long-standing members) but may similarly miss PTEs experienced in peak lifesaving patrol seasons that may not have coincided with the study period. This could equate to an underestimate of actual trauma

exposure, and some exposure measured may not have been relevant for SLS experiences but for other experiences over longer period. Importantly within this sample, most respondents were within the non-clinical range of PTSS, which may suggest PTSS is more associated with age and experience to traumatic events. Also, care must be taken when interpreting the results, as the survey attrition rate (43%) due to stringent completion rate used for inclusion left a smaller sample size (n = 118), representing < 2% of the 16,817 active and cadet members for the year the survey was conducted (Surf Life Saving Australia, 2021), such that the sample cohort may not be fully representative of all the breadth of experiences in adolescent patrolling members of SLS. Moreover, given that the study design was cross sectional, it is not possible to make inferences about the direction of associations. Another limitation that needs to be acknowledged is that the modified measures (specifically SLS items relating within the LEC-5) of previously validated tools, while having been previously piloted, have not been comprehensively validated within the adolescent emergency service population.

5. Conclusions

The results of this research highlight the critical roles of social support, self-efficacy, and attitudes toward PTSS in mitigating the adverse effects of trauma exposure in adolescent surf lifesavers. These findings have important implications for increasing awareness of PTSS in these vulnerable populations but also highlight the importance of maintaining and fostering the already strong sense of belonging and community within SLS. Specifically, these findings promote the need to identify and strengthen social support and self-efficacy networks of adolescent SLS members. Future action should examine how the findings of this study can be integrated into existing practices, member-focused resources, and interventions to holistically support adolescent surf lifesavers and reduce future trauma risk, while also promoting resilience of members and across the broader Surf Life Saving movement itself.

6. Patient Consent Statement.

Parental/guardian consent was obtained along with adolescent consent.

Funding source

This study received no specific funding but was supported by Surf Life Saving Australia.

CRediT authorship contribution statement

Jasmin C. Lawes: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Samantha Fien:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Conceptualization. **Jessica Ledger:** Writing – review & editing, Investigation, Formal analysis, Data curation. **Murray Drummond:** Writing – review & editing, Methodology, Conceptualization. **Pamela Simon:** Writing – review & editing, Methodology, Conceptualization. **Nancy Joseph:** Writing – review & editing, Methodology, Conceptualization. **Shane Daw:** Writing – review & editing, Methodology, Conceptualization. **Talitha Best:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Robert Stanton:** Writing – review & editing, Methodology, Conceptualization. **Ian de Terte:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization.

Declaration of competing interest

The authors declare the following conflicts of interest: SF is a volunteer surf lifesaver based in Queensland. SF also is the SLSA Well-Being Advisor and the SLSQ State Lifesaving Officer and Research Panel Chair (volunteer level). MD is a volunteer surf lifesaver based in South Australia. NJ is a volunteer surf lifesaver based in Victoria and is the National Chair for Membership Development for Surf Life Saving Australia. JCL, JL, PS, SK, and SD are employed by Surf Life Saving Australia. The authors declare that they have no other known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The research team would like to sincerely thank the survey participants and relevant parents/legal guardians that took part in the study. Also, a big thank you to the national membership and Surf Life Saving committee members that contributed to the study and survey for their valuable input and feedback. We would also like to thank the reviewers for their invaluable feedback during the preparation of this manuscript for publication.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jsr.2025.10.026.

References

Acoba, E. F. (2024;). Social support and mental health: The mediating role of perceived stress. Original Research. *Frontiers in Psychology.*, 15. https://doi.org/10.3389/fpsyg.2024.1330720

Aggarwal, S., Prabhu, H. R. A., Anand, A., & Kotwal, A. (2007). Stressful life events among adolescents: The development of a new measure. *Indian Journal of Psychiatry, 49*, 96–102. https://doi.org/10.4103/0019-5545.33255

A guide to enrolling and voting. 2025. Accessed 1/4/2025. https://www.aec.gov.au/voting/files/guide-enrolling-voting-large-print.pdf.

Ahad, A. A., Sanchez-Gonzalez, M., & Junquera, P. (May 2023). Understanding and addressing Mental Health Stigma across Cultures for improving Psychiatric Care: A Narrative Review. *Cureus, 15*(5), Article e39549. https://doi.org/10.7759/cureus.39549

Auth, N. M., Booker, M. J., Wild, J., & Riley, R. (2022). Mental health and help seeking among trauma-exposed emergency service staff: A qualitative evidence synthesis. *BMJ Open. Feb 2, 12*(2), Article e047814. https://doi.org/10.1136/bmjopen-2020-047814

Benight, C. C., & Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self-efficacy. *Behaviour Research and Therapy, 42*(10), 1129–1148. https://doi.org/10.1016/j.brat.2003.08.008

Beyond Blue Ltd. *Answering the call: Beyond Blue's National Mental Health and Wellbeing Study of Police and Emergency Services - Final report.* 2018. https://www.beyondblue.org.au/docs/default-source/resources/bl1898-pes-full-report_final.pdf.

Birkeland, M. S., Skar, A. M. S., & Jensen, T. K. (2021). Do different traumatic events invoke different kinds of post-traumatic stress symptoms? *Eur J Psychotraumatol. Feb 1, 12(Suppl):1866399*, 2021. https://doi.org/10.1080/20008198.2020.1866399. eCollection.

Birkeland, M. S., Skar, A. S., & Jensen, T. K. (Dec 2022). Understanding the relationships between trauma type and individual posttraumatic stress symptoms: A cross-sectional study of a clinical sample of children and adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines (Cambridge), 63*(12), 1496–1504. https://doi.org/10.1111/jcpp.13602

Blum, R. W., Lai, J., Martinez, M., & Jessee, C. (2022). Adolescent connectedness: Cornerstone for health and wellbeing. *BMJ. Oct 27, 379*, Article e069213. https://doi.org/10.1136/bmj-2021-069213

Calhoun, C. D., Stone, K. J., Cobb, A. R., Patterson, M. W., Danielson, C. K., & Bendezú, J. J. (Dec 2022). The Role of Social support in Coping with Psychological Trauma: An Integrated Biopsychosocial Model for Posttraumatic stress Recovery. *Psychiatric Quarterly, 93*(4), 949–970. https://doi.org/10.1007/s11126-022-10003-w

Caplan RD, Cobb, S., French, J. R. P., Harrison, R. V., & Pinneau, S. R. Job demands and worker health: Main effects and occupational differences. 1975:Ann Arbor, MI: Institute for Social Research.

Centre for Traumatic Stress Studies. *MFS Health & Wellbeing Study*. 2017. https://safecom-files-v8.s3.amazonaws.com/current/docs/20182121028609/mfs_health_and_wellbeing_study_full_report.pdf.

Cherewick, M., Doocy, S., Tol, W., Burnham, G., & Glass, N. (2016). Potentially traumatic events, coping strategies and associations with mental health and well-being measures among conflict-affected youth in Eastern Democratic Republic of Congo. *Glob Health Res Policy., 1*, 8. https://doi.org/10.1186/s41256-016-0007-6

Cherewick, M., Dahl, R. E., Bertomen, S., et al. (2023). Risk and protective factors for mental health and wellbeing among adolescent orphans. *Health Psychology and*

Behavioral Medicine, 11(1), Article 2219299. https://doi.org/10.1080/21642850.2023.2219299
Cherewick, M., Lama, R., Rai, R. P., et al. (2024). Social support and self-efficacy during early adolescence: Dual impact of protective and promotive links to mental health and wellbeing. *PLOS Global Public Health, 4*(12), Article e0003904.
Claringbold, G., Robinson, N., Anglim, J., Kavadas, V., Walker, A., & Forsyth, L. (2022/12/31 2022;). A systematic review of well-being interventions and initiatives for Australian and New Zealand emergency service workers. *Australian Journal of Psychology., 74(1):2123282*. https://doi.org/10.1080/00049530.2022.2123282
Clement, S., Schauman, O., Graham, T., et al. (Jan 2015). What is the impact of mental health-related stigma on help-seeking? a systematic review of quantitative and qualitative studies. *Psychological Medicine, 45*(1), 11–27. https://doi.org/10.1017/s0033291714000129
Cox, M., Norris, D., Cramm, H., Richmond, R., & Anderson, G. S. (Apr 25 2022;). Public Safety Personnel Family Resilience: A Narrative Review. *International Journal of Environmental Research and Public Health, 19(9)doi:10.3390/ijerph19095224*.
Danielson, C. K., Cohen, J. R., Adams, Z. W., et al. (2017). Clinical Decision-making following disasters: Efficient Identification of PTSD Risk in Adolescents. *Journal of Abnormal Child Psychology, 45*(1), 117–129. https://doi.org/10.1007/s10802-016-0159-3
Darnell, D., Flaster, A., Hendricks, K., Kerbrat, A., & Comtois, K. A. (Mar 2019). Adolescent clinical populations and associations between trauma and behavioral and emotional problems. *Psychological Trauma, 11*(3), 266–273. https://doi.org/10.1037/tra0000371
Deloitte. *Between the red and yellow flags: The social and economic value of Surf Life Saving Australia*. 2020. Accessed 1/04/2025. https://issuu.com/surflifesavingaustralia/docs/the_social_and_economic_value_of_slsa_report_augu/1.
Dieke, A. C. (2011). *Adolescent engagement within community-based public health emergency preparedness and response organizations: An assessment of the Medical Reserve Corps*. The University of Arizona.
Feuer, B. S. (2021,). First Responder Peer support: An Evidence-Informed Approach. *Journal of Police and Criminal Psychology., 36*(3), 365–371. https://doi.org/10.1007/s11896-020-09420-z
Fien, S., Lawes, J. C., de Terte, I., et al. (2021). Forgotten first responders: Australian surf lifesavers and lifeguards. *Emergency Medicine Australasia.*. https://doi.org/10.1111/1742-6723.13754
Fien, S., Lawes, J. C., de Terte, I., et al. (2021). Forgotten first responders: Australian surf lifesavers and lifeguards. *Emergency Medicine Australasia., 33*(3), 572–574.
Fien, S., Lawes, J. C., Ledger, J., et al. (2023;). A preliminary study investigating the neglected domain of mental health in Australian lifesavers and lifeguards. *BMC Public Health, 23(1):1036*. https://doi.org/10.1186/s12889-023-15741-5
Fien, S., Lawes, J. C., Ledger, J., et al. (2025). Exposure to Traumatic events and Shame in Adolescent Surf Lifesavers: An Australian Perspective. *Journalof Child & Adolescent Trauma., 18*(1), 127–137. https://doi.org/10.1007/s40653-024-00662-1
Fjeldheim, C. B., Nöthling, J., Pretorius, K., et al. (2014). Trauma exposure, posttraumatic stress disorder and the effect of explanatory variables in paramedic trainees. *BMC emergency medicine., 14*(1), 11.
Gilbert, P., Bhundia, R., Mitra, R., McEwan, K., Irons, C., & Sanghera, J. (2007). Cultural differences in shame-focused attitudes towards mental health problems in asian and non-asian student women. *Mental Health, Religion & Culture., 10*, 127–141. https://doi.org/10.1080/13694670500415124
Gulliver, A., Griffiths, K. M., & Christensen, H. (2010;). Perceived barriers and facilitators to mental health help-seeking in young people: A systematic review. *BMC Psychiatry, 10(1):113*. https://doi.org/10.1186/1471-244X-10-113
Hayes AF. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Press; 2013:xvii, 507-xvii, 507.
Hayes, A. F., & Rockwood, N. J. (2017). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour research and therapy., 98*, 39–57.
Henderson, C., Evans-Lacko, S., & Thornicroft, G. (May 2013). Mental illness stigma, help seeking, and public health programs. *American Journal of Public Health, 103*(5), 777–780. https://doi.org/10.2105/ajph.2012.301056
Huang, J., Liu, Q., Li, J., et al. (2013). Post-traumatic stress disorder status in a rescue group after the Wenchuan earthquake relief. *Neural regeneration research., 8*(20), 1898–1906.
Ivanic, L., Perrens, B., Fildes, J., Peery, Y., & H. c.. (2014.). *Youth mental health report. Youth survey*.
Jaeb M.A., Pecanac K.E. (2024) Shame in patient-health professional encounters: A scoping review. *International Journal of Mental Health Nursing*. 33(5)doi:https://doi.org/10.1111/inm.13323.
Kang, H. (2021). Sample size determination and power analysis using the G* Power software. *Journal of educational evaluation for health professions., 18*.
Kangaslampi, S., & Peltonen, K. (2022,). Mechanisms of change in psychological interventions for posttraumatic stress symptoms: A systematic review with recommendations. *Current Psychology., 41*(1), 258–275. https://doi.org/10.1007/s12144-019-00478-5
Kleim, B., & Westphal, M. (2011). Mental health in first responders: A review and recommendation for prevention and intervention strategies. *Traumatology, 17*(4), 17–24. https://doi.org/10.1177/1534765611429079
Lawes, J. C., Strasiotto, L., Daw, S., & Peden, A. E. (2021). When Natural Hazards Intersect with Public Health: A Preliminary Exploration of the Impact of Bushfires and the COVID-19 Pandemic on Australian Coastal Drowning fatalities. *International Journal of Environmental Research & Public Health., 18*(10), 5314. https://doi.org/10.3390/ijerph18105314
Liao, D., Long, Y., Yu, T., et al. (2023). Emergency medical service personnel' post-traumatic stress disorder and psychological detachment: The mediating role of presenteeism. *Frontiers in Public Health, 11*, Article 1030456. https://doi.org/10.3389/fpubh.2023.1030456
Li, S. H., Beames, J. R., Newby, J. M., Maston, K., Christensen, H., & Werner-Seidler, A. (2022). The impact of COVID-19 on the lives and mental health of Australian adolescents. *European child & adolescent psychiatry., 31*(9), 1465–1477.
Liu, L., Wang, L., Cao, C., Qing, Y., & Armour, C. (2016). Testing the dimensional structure of DSM-5 posttraumatic stress disorder symptoms in a nonclinical trauma-exposed adolescent sample. *Journal of Child Psychology and Psychiatry., 57*(2), 204–212.
Makara-Studzińska, M., Golonka, K., & Izydorczyk, B. (2019). Self-Efficacy as a Moderator between stress and Professional Burnout in Firefighters. *Int J Environ Res Public Health. Jan 10, 16(2)doi:10.3390/ijerph16020183*.
Michaels, P. J., Corrigan, P. W., Buchholz, B., et al. (May 2014). Changing stigma through a consumer-based stigma reduction program. *Community Mental Health Journal, 50*(4), 395–401. https://doi.org/10.1007/s10597-013-9628-0
Ogińska-Bulik, N. (2015). Social support and negative and positive outcomes of experienced traumatic events in a group of male emergency service workers. *International Journal of Occupational Safety and Ergonomics., 21*(2), 119–127.
Panagioti, M., Gooding, P. A., Taylor, P. J., & Tarrier, N. (2014,). Perceived social support buffers the impact of PTSD symptoms on suicidal behavior: Implications into suicide resilience research. *Comprehensive Psychiatry., 55*(1), 104–112. https://doi.org/10.1016/j.comppsych.2013.06.004
Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: A global public-health challenge. *Lancet, 369*(9569), 1302–1313. https://doi.org/10.1016/s0140-6736(07)60368-7
Patton, G. C., Sawyer, S. M., Santelli, J. S., et al. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *Lancet, 387*(10036), 2423–2478. https://doi.org/10.1016/s0140-6736(16)00579-1
Pinto, R. J., Morgado, D., Reis, S., Monteiro, R., Levendosky, A., & Jongenelen, I. (2017). When social support is not enough: Trauma and PTSD symptoms in a risk-sample of adolescents. *Child Abuse & Neglect., 72*, 110–119. https://doi.org/10.1016/j.chiabu.2017.07.017
Price PC, Jhangiani, R. S., Chiang, I. A., Leighton, D. C., & Cuttler, C. . *Research methods in psychology (3rd american edition)*. PressBooksPublications; 2017.
Regehr, C., Hill, J., Knott, T., & Sault, B. (2003). Social support, self-efficacy and trauma in new recruits and experienced firefighters. *Stress and Health., 19*(4), 189–193.
Richins, M. T., Gauntlett, L., Tehrani, N., et al. (2020;). Early Post-trauma Interventions in Organizations: A Scoping Review. *Review. Frontiers in Psychology.*, 11. https://doi.org/10.3389/fpsyg.2020.01176
Rikkers, W., & Lawrence, D. (2021,). Mental health help-seeking experiences and service use among Australian first responders. *Australian Journal of Psychology., 73*(2), 125–133. https://doi.org/10.1080/00049530.2021.1882271
Rooke, A., & de Terte, I. (2024). The working life of a Surf Lifesaver: The traumatic experiences and consequences of New Zealand Surf Lifeguards. *Traumatology, 30*(1), 58–68. https://doi.org/10.1037/trm0000243
Saan, M., van Wesel, F., Leferink, S., Hox, J., Boeije, H., & van der Velden, P. (2022). Social network responses to victims of potentially traumatic events: A systematic review using qualitative evidence synthesis. *PLoS One1, 17*(11), Article e0276476. https://doi.org/10.1371/journal.pone.0276476
Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (Mar 2018). The age of adolescence. *Lancet Child Adolesc Health., 2*(3), 223–228. https://doi.org/10.1016/s2352-4642(18)30022-1
Schwarzer R, & Jerusalem, M. Generalized self-efficacy scale. 1995:Retreived from: http://userpage.fu-berlin.de/health/engscal.htm.
Shakespeare-Finch, J., Rees, A., & Armstrong, D. (2015). Social support, self-efficacy, trauma and well-being in emergency medical dispatchers. *Social Indicators Research., 123*, 549–565.
Soravia, L. M., Schwab, S., Walther, S., & Müller, T. (2020). Rescuers at risk: Posttraumatic stress Symptoms among Police officers, Fire Fighters, Ambulance Personnel, and Emergency and Psychiatric Nurses. *Frontiers in Psychiatry, 11*, Article 602064. https://doi.org/10.3389/fpsyt.2020.602064
Stephens, C., Long, N., & Miller, I. (1997). The impact of trauma and social support on posttraumatic stress disorder: A study of New Zealand police officers. *Journal of criminal justice., 25*(4), 303–314.
Stewart, E., Fien, S., Lawes, J. C., & Peden, A. E. (2024). Mind over Waves: Uncovering Mental Health Toolkit Gaps for Young Australian Surf Lifesavers through an. *Environmental Scan and Expert Survey*.
Stewart, E., Fien, S., Peden, A. E., & Lawes, J. C. (2025). Mental health needs and wants of younger first responders: Identifying vulnerabilities and opportunities for developing a targeted mental health toolkit for surf lifesavers aged 13–25 years. *Journal of Safety Research., 92*, 437–447.
Surf Life Saving Australia. *Annual Report 2020-21*. 2021. https://issuu.com/surflifesavingaustralia/docs/slsa_annual-report-2021.
Surf Life Saving Australia. *2022/23 Annual Report*. 2023. https://issuu.com/surflifesavingaustralia/docs/slsa_annualreport_2023?fr=xKAE9_zU1NQ.
Surf Life Saving Australia. *2023/24 Annual Report*. 2024. Accessed 1/04/2025. https://issuu.com/surflifesavingaustralia/docs/annualreport_2024_web.
Surf Life Saving New South Wales. Critical Incident Management Support Procedures. 2020.
Taylor, A., Cocks, J., Ashe, M., Van Hooff, M., & Lawn, S. (2023). Mental health in young adult emergency services personnel: A rapid review of the evidence. *International Journal of Disaster Risk Reduction., 88*, Article 103605.
Taylor, A. M., Cocks, J. H., Ashe, M. C., Van Hooff, M., & Lawn, S. (2023;). Mental health in young adult emergency services personnel: A rapid review of the evidence.

International Journal of Disaster Risk Reduction., 88, Article 103605. https://doi.org/10.1016/j.ijdrr.2023.103605

Ten Holt, J., van Emmerik, A. A., Blanken, P., et al. (2022). Direct and indirect exposure to trauma, posttraumatic stress disorder symptoms, and poor subjective sleep quality in patients with substance use disorder. *Psychiatry and Clinical Psychopharmacology., 32*(3), 188.

Triana R, Keliat BA, Sulistiowati NMD. The relationship between self esteem, family relationships, and social support as the protective factors and adolescent mental health. *Humanities & Social Sciences Reviews*. 03/23 2019;7(1):41-47. doi:10.18510/hssr.2019.715.

Van Trijp J, Boersma K, Groenewegen P. Resilience from the real world towards specific organisational resilience in emergency response organisations. *International Journal of Emergency Management*. 12/30 2018;14:303. doi:10.1504/IJEM.2018.10018475.

Weathers FW, Blake, D.D., Schnurr, P.P., Kaloupek, D.G., Marx, B.P., & Keane, T.M. . The Life Events Checklist for DSM-5 (LEC-5). 2013:Retrieved from https://www.ptsd.va.gov/professional/assessment/te-measures/life_events_checklist.asp.

Weathers, F. W., Bovin, M. J., Lee, D. J., et al. (2018). The Clinician-Administered PTSD Scale for DSM–5 (CAPS-5): Development and initial psychometric evaluation in military veterans. *Psychological assessment., 30*(3), 383.

World Health Organization. Mental health of adolescents. Accessed 1st April, 2025. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.

Zalta, A. K., Tirone, V., Orlowska, D., et al. (2021). Examining moderators of the relationship between social support and self-reported PTSD symptoms: A meta-analysis. *Psychological bulletin., 147*(1), 33.

Dr Jasmin Lawes Dr Jasmin Lawes is an internationally recognised coastal risk and drowning prevention research expert and multidisciplinary researcher with interests in multisectoral collaboration, and research translation and implementation. Jasmin is the National Research Manager at Surf Life Saving Australia and holds adjunct Senior Lecturer positions at UNSW Sydney and Edith Cowan University. Jasmin is also a co-founder of UNSW's beach Safety Research Group and was also recently appointed as a member of the Drowning Prevention Commission of the International Lifesaving Federation in recognition of her research skills and collaboration capacity. Through these roles, PI Lawes integrates epidemiological, theoretical and applied science into lifesaving practice and injury prevention strategies, ensuring that services provided to safeguard the community are evidence-informed and align with best practice and patient outcomes.

Dr Samantha Fien Dr Samantha Fien (PhD) is a driven researcher at CQUniversity. Samantha is a Senior Lecturer and Practicum Coordinator in Exercise and Sport Sciences. Samantha is passionate about her research in ageing and surf lifesaving. Samantha believes in translating research into practice with strong industry links as the National Well-Being Advisor for Surf Life Saving Australia, and State Lifesaving Officer and Chair of the Research Panel for Surf Life Saving Queensland.

Jessica Ledger Jessica was the assistant researcher at Surf Life Saving Australia, and a recent Master of Research graduate with a background in psychology. She has been a volunteer surf lifesaver for over 10 years and is interested in using her research expertise to improve the lives of surf lifesavers and coastal users.

Professor Murray Drummond Murray Drummond is a Research Professor and the Director of the Sport, Health, Activity, Performance and Exercise (SHAPE) Research Centre at Flinders University in South Australia. His research interests are based around qualitative sport and health research with a particular interest in gender and sports, including women and sport, and men, masculinities and mental health. Murray's current research includes several significant research projects on young males, sport and masculinity as well as a major project on mental health among surf lifesaving first responders. He has written around 200 peer reviewed journals articles, book chapters and conference proceedings based on his research over the past 25 years. Murray is an active patrolling, and competitive, surf lifesaver.

Pamela Simon Pamela is the Learning and Development Manager at Surf Life Saving Australia, having worked for the movement since 2007. Her current role includes setting the Surf Life Saving L&D strategy and ensuring the alignment of education products and services across all portfolios. Pamela was appointed a member of the Rescue Commission for the International Life Saving Federation and in 2017 was named as one of the top 36 most influential women in drowning prevention. Pamela has worked for not-for-profits and been employed in the VET system in a variety of roles for more than two decades.

Nancy Joseph Nancy is a long-standing member of the lifesaving movement, and her service to lifesaving has spanned many years at club, state and national level. Nancy has been involved in all aspects of lifesaving, including administration, lifesaving operations, junior development, training, assessment and competition. Her involvement at the Fairhaven SLSC has included positions of Chief Instructor, Club Captain, Vice President and Secretary. Nancy was awarded Life Membership of the Fairhaven SLSC in 2007, and continues to develop her own lifesaving capacity as an active lifesaver. Nancy is currently the Chair of SLSA's Development Advisory Committee and Club of the Year panel.

Shane Daw ESM Shane Daw ESM is the General Manager – Southern Region SLSA Helicopter Rescue Service and is responsible for delivering national strategic direction across SLS. Shane has 30+ years' experience within surf lifesaving across research, operations, coastal risk management and strategy. He has extensive experiences as a rescue practitioner, including within helicopter operations. He is also a member of the International Life Saving Federation Drowning Prevention Commission.

Associate Professor Talitha Best Talitha Best is an Associate Professor, Clinical Psychologist, researcher, educator and head of the NeuroHealth Lab within the School of Health, Medical and Applied Science and Appleton Institute at CQUniversity. Her research explores the impact of therapeutic approaches, including diet and lifestyle, for promoting neurocognitive function, health, psychological well-being and mental health across the lifespan. She has over 15 years' experience integrating innovative practice and applications of psychological science to community and industry-based development.

Associate Professor Robert Stanton Associate Professor Rob Stanton is a research-focused academic, Chair of CQUniversity's Human Research Ethics Committee, and Research Cluster Lead for Resilience and Wellbeing. He has secured >$1.2m in research funding and published >180 peer-reviewed manuscripts in the mental health, wellbeing, and sports science fields. Rob has supervised >10 Honours and 4 Research Higher Degree students to completion, and currently supervises 6 Research Higher Students. Rob has a strong track record in industry engagement, and currently works with Dr Sam Fien and Professor Talitha Best on a program of surf lifesaving-related research.

Dr Ian de Terte Dr Ian de Terte is a registered clinical psychologist with research interests in the areas of psychological resilience, coping mechanisms, work-related trauma, traumatic stress, vicarious trauma, posttraumatic growth, and burnout. He investigates these constructs in populations of first responders and high-risk occupations. His actual research interests can be divided into three main themes: (1) the health/mental health of workers in high-risk occupations (posttraumatic stress); (2) prevention strategies or interventions that moderate or protect against the potential consequences of occupational trauma (psychological resilience/coping strategies); and (3) how clinical psychology can contribute to the domain of high-risk occupations. Dr de Terte is a senior lecturer in clinical psychology based at the Wellington Campus of the School of Psychology, Massey University, New Zealand.