Centre for Work Health and Safety

Development of industry-specific safety climate scales: Disability support

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Executive Summary

Objective and Aims

The objective of this project was to develop a set of six industry-specific surveys to measure safety climate (hereafter referred to as 'safety climate scale'). In this report, we concentrate on the safety climate scale developed for the disability support industry. We focus on exploring the aspects of safety climate that are important across the whole cohort of workers, supervisors and managers in this industry. The aims of this project were to:

- Understand and explore the industry-specific nuances of safety climate.
- Demonstrate the utility of industry-specific safety climate over general safety climate scales.
- Establish the validity and reliability of the industry-specific safety climate scale.
- Contribute to the broader research surrounding safety climate.
- Build a practical set of tools that the industry can use to measure safety climate and identify areas for improvement.

Method

To develop the disability support safety climate scale, we followed a modified version of the three-phase, nine-step process of scale development outlined by Boateng et al. (2018). This process included: a literature scan of previous industry-specific safety climate research; orientation interviews with industry-experienced work health and safety inspectors; refinement of scale items through an industry focus group; testing and confirmation of scale dimensionality with two international online panels of respondents; psychometric evaluation; and validity checks. Finally, we undertook an industry validation, partnering with a medium-sized (approximately 300 employees) disability support organisation based in New South Wales, Australia.

Summary of Findings

Although some safety climate research has been done in the disability support industry, most studies have applied generic safety climate scales or made minor customisations to such scales to suit the industry setting. Disability support is a high-risk industry, particularly as a function of client disabilities and behavioural needs, as well as the physical nature of some of the tasks involved. Safety climate is likely to be quite distinct in the disability support industry because the nature of hazards tends to be more psychosocial (e.g., occupational violence and aggression, stress, excessive job demands) but also includes some physical hazards like manual handling. Further, staff can work in a variety of roles, either visiting clients in their own homes or managing centres, services, and respite facilities.

Disability support safety climate is best represented by the following factors:

1. Management safety priority: balancing of client and staff safety needs by management and

the use of data to improve safety at an organisational level.[1]

2. Safety resourcing: the provision of information about safety, provision of time to complete safety documentation effectively, encouragement to share safety information, and provision of adequate time to complete shifts safely.
3. Supervisor support for mental health: supervisory practices that concentrate on employee wellbeing and welfare (e.g., debriefing with staff regularly).
4. Supervisor proactivity: practices around pre-emptive risk assessment and encouragement of staff to raise safety concerns and giving staff feedback on where such issues are up to.

Statistical testing with an industry sample showed that the disability support safety climate scale was significantly associated with safety behaviour over and above a generic safety climate scale. This finding highlights the value of measuring an industry-specific version of safety climate.

Conclusions and Practical Implications

The safety climate scale developed in this project captures nuances specific to the disability support industry in Australia. It not only provides a more valid way of measuring safety climate in this industry but is also helpful for users in pointing out concrete areas for possible health and safety improvement in their workplaces.

Specific advice for this industry includes the following points:

- Employers are encouraged to measure their organisation's safety climate regularly (every 3-6 months) and interpret the results for each of the four factors that make up disability support safety climate separately for clear insights in what can be practically done to improve.
- Where health and hygiene behaviours in relation to COVID-19 are of interest, disability support organisations could measure and review their workforce's perceptions of COVID safety climate in addition to 'regular' safety climate.
- Management's safety priority can be demonstrated through balancing of client and staff safety needs, and highlighting to workers how existing data such as audit reports are being used to generate safety improvements at an organisational level.
- Mental health support and stress management assistance for disability support workers appears to be an important component of safety climate in this industry; supervisors can be seen as a major source of such support, given they conduct regular debriefs with staff and help them to manage challenging clients and other sources of stress.
- Resourcing for disability support workers also appears to be critical. Disability support organisations should ensure adequate numbers of staff per shift and to provide staff with easy access to safety information, even when on the road or away from the office.
- Finally, supervisors' proactivity around health and safety appears to be a key component of disability support safety climate. Supervisors can ensure psychological safety by fostering an

[1] This factor does not include allocation of funding to safety and/or the priorities of funding/governing bodies to safety.

environment in which workers feel comfortable to speak up and report or share concerns.

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Introduction

Broadly, safety climate refers to the importance of or value placed on safety, as inferred from people's perceptions of safety policies, procedures, and practices within an organisation (Griffin & Curcuruto, 2016). At a more nuanced level, safety climate refers to the shared perceptions of safety priority that develop among workers, both at a work unit or group level (in reference to supervisors and co-workers) and at an organisational level (in reference to management and organisational systems; Zohar, 2010). Safety climate has also been described as a more superficial (and hence, measurable) facet of the deeper organisational culture for safety (Guldenmund, 2007).

Studies have shown that when a safety climate is positive in level and strong in terms of its consistency across workers (measured by the similarity of survey responses within a group), safety behaviours are typically more frequent and injuries are less likely (Clarke, 2010). A safety climate exerts a positive effect on safety performance through several mechanisms, as explained by Griffin and Curcuruto (2016). Safety climate creates a sense of obligation to reciprocate among workers, in the form of more frequent and effective safety behaviours. There is a sense that the organisation genuinely cares, and so workers feel more engaged and willing to be part of safety programs and initiatives. Another mechanism through which safety climate influences safety performance is through worker motivation. Safety climate contributes to both external (i.e., driven by factors outside the individual) and internal (i.e., driven by the individual's own desire) motivation. Regarding external motivation, safety climate conveys specific behaviour-outcome expectancies—that behaving safely will be met with rewards and recognition from the organisation. For internal motivation, a workplace with a positive safety climate causes workers to experience aspects of self-determination, (Scott, Fleming & Kelloway, 2014), namely, social connectedness and belonging (i.e., the organisation cares about staff welfare), competency (i.e., safety training, coaching, and capability-building are valued), and autonomy (i.e., the organisation supports workers who speak up and have input into safety decisions).

In a comprehensive review of safety climate intervention studies, Lee et al. (2019) identified strategies that have proven effective in generating safety climate improvement. These strategies included improved safety leadership and redeveloped organisational structures, such as reporting lines, safety management systems, how work is designed and performed, consideration of human factors, and the conditions in which work is performed. Communication about safety was also identified as a critical feature of effective safety climate interventions. Although much work has been done to develop general safety climate scales that incorporate these features to measure safety climate in any industrial context where safety is a goal or priority (e.g., Beus et al., 2019), more nuanced and specific scales that capture industry-specific contexts tend to perform better (Huang et al., 2013). Indeed, Zohar (2010) argued that industry-specific safety climate scales are required, because this approach improves face validity among participants and adds extra context, improving the functioning of these scales in real-world settings. In other words, industry-specific safety climate

scales not only seem more accurate and valid to the workers completing them, but they also capture additional diagnostic and predictive information that can be used to improve safety performance by organisations.

In the remainder of this report, we provide an overview of existing safety climate research in the health care and social assistance sector, and particularly the disability support industry. We then describe the process used to develop a scale specifically designed to measure safety climate in disability support, followed by the results of this process, including the safety climate scale.

Safety Climate in Disability Support

A literature scan, drawing on the most highly cited articles published since 2000 and accessible through the Scopus database, identified seven studies that investigated safety climate or related constructs in the disability support (or similar) industry. The majority of these studies took place in Australia (Harries et al., 2015; Harries et al., 2018; Harries et al., 2019; Vu and De Cieri, 2016; Zontek et al., 2009). The other two were carried out in the USA and Canada (Denton et al., 2018; Anderson et al., 2000). Most participants across the seven studies were disability support workers, also referred to as 'direct care workers' and 'personal support workers'. Some studies also involved aged-care workers and general health care workers.

The studies identified in this literature search mostly used existing general questionnaires to measure safety climate. These included the Nordic Safety Climate Questionnaire (NOSACQ-50; Kines et al., 2011), the Co-worker Safety Climate Scale (Geddes, 2012), the Psychosocial Safety Climate Questionnaire (PSC-12; Dollard et al., 2012), the Organisational Safety Climate Questionnaire (Anderson et al., 2000), and the Organisational Factors Questionnaire included in the "Personal Support Workers Health and Safety Matters Survey" (this particular set of questions measured organisational factors crucial to the role of improving safety climate; Denton et al., 2018). The remainder of the studies adapted well-known and widely used generic safety climate questionnaires (e.g. from Zohar & Luria, 2005; Griffin & Neal, 2000) for the purposes of their research.

'Management's commitment to and priority of safety' was frequently measured in these questionnaires, along with 'safety communication' (e.g., "We can talk freely and openly about safety"), 'workers' safety commitment' (e.g., "We try hard together to achieve a high level of safety") and 'safety behaviours' (e.g., "My co-workers follow correct safety procedures when using equipment"). Factors less frequently measured included 'safety training', 'safety competence' and 'management safety justice' (e.g., "Management collects accurate information in accident investigations").

It is worth noting that only a few of the safety climate scales used in the studies above had been specifically tailored to the disability support industry (e.g., those from Denton et al., 2018, referring to care recipients' needs and work conditions in clients' homes). However, the characteristics and

organisation of disability support work are very different to other industry sectors, and it is likely that these intricacies and their role in shaping safety climate are not all captured by general safety climate measures. This points to a need to develop safety climate measures that purposely reflect the specificities and nuances of the of disability support industry in Australia.

Method

Scale Development Process

To develop the disability support safety climate scale, we drew on established best practices from the psychology and general health sciences literatures. Specifically, we followed a modified version of the three-phase, nine-step process of scale development outlined by Boateng et al. (2018).

The steps followed during scale development were as follows:

1. Literature scan of the domain-specific safety climate research.
2. Orientation interviews conducted with SafeWork NSW inspectors (domain subject-matter experts)
3. Formal identification and definition of content domain.
4. Further refinement of content domain through industry focus groups.
5. Item generation.
6. Review of scale items.
7. Recruitment and testing of scale dimensionality with an online panel of respondents (exploratory factor analysis phase).
8. Item reduction and refinement.
9. Recruitment and confirmation of scale dimensionality with an online panel of respondents (confirmatory factor analysis phase).
10. Psychometric evaluation.
11. Validity checks (construct, criterion, and discriminant).

To develop the specific items for the safety climate scale, we conducted a combination of interviews and focus groups with subject matter experts. Existing networks of well-connected subject matter experts (ranging from consultants to regulators and academics) for the Australian disability support industry were consulted and briefed on the project requirements, and a snowball methodology was used to identify participants. Specifically, we interviewed five SafeWork NSW industry-experienced inspectors in addition to conducting a focus group with 10 industry representatives. Workers, supervisors and managers were eligible for the focus group if they had been employed for at least six months or more in the target industry, had operational 'hands-on' roles, and were comfortable participating in a virtual focus group environment.

The draft scale items were constructed following the focus groups and interviews by a team of tertiary qualified researchers. The senior researchers on the team and the Centre for WHS reviewed

the items, making edits and refinements to ensure the items performed effectively, had face validity, and were easy for respondents to interpret.

Once the draft item pool was developed, the scale was subjected to testing with two online panels. The first was recruited for the purpose of an Exploratory Factor Analysis (EFA), which determines how the items 'hang together' or to what extent they collectively measure the same construct (safety climate). A second sample provided a more rigorous test through a process of Confirmatory Factor Analysis (CFA).

The final step was to 'road test' the safety climate scale with real-world industry participants. The objectives of performing this industry validation included the following:

- Confirm the psychometric performance of the safety climate scale, including incremental association of safety climate with safety behaviour over and above a generic safety climate scale.
- Evaluate the practical utility of the scale and obtain feedback from participating organisations.
- Inform any final tweaks or adjustments to the scale items.

Detailed Analytical Strategy

Our process to refine and finalise the disability support industry safety climate scale adopted a two-phase approach. First, we conducted EFAs to identify the emergent factor structure and eliminate any poorly performing items (i.e., low factor loadings, cross loadings). Multiple EFAs were conducted, removing one item at a time, and re-examining the factor structure until a 'clean' solution was found.

Next, we conducted a CFA using the second research sample. A CFA for scale development proceeds with the following steps. First, we tested a series of nested models starting with a single factor (i.e., a congeneric model) and up to the expected number of factors in the scale. Then we examined discriminant validity by including a divergent measure (a personality factor—'conscientiousness'). Including the personality measure in the survey enabled us to determine the validity of each of the measures separately by observing whether they were measuring two distinct constructs. Third, we assessed model fit and examined criterion validity by conducting path analysis (e.g., examining the relationship with safety performance). The last step included an analysis of the relationships between personality measures, safety performance and safety climate.

We also conducted additional analyses to demonstrate the utility of the disability support safety climate scale, namely, through hierarchical multiple regression and measuring the change in total variance explained by the model over and above a generic safety climate scale (Hahn & Murphy, 2008).

Sampling of Interview and Focus Group Participants

The selection of participants followed a purposive sampling approach focused on obtaining a sample with diverse experiences of safety climate in the industry. The selection was consistent with best research practices (Creswell & Plano Clark, 2011). Our methodology also followed best practices in scale development; namely, a combination of deductive (theory and literature-driven) and inductive (data-driven) methods (Hinkin, 1995; Morgado et al., 2017). In general, qualitative data saturation is typically achieved between 6-12 participants (Guest et al., 2006). Other academic published research on safety climate scales reported to have used between 8-20 subject matter experts to review items (e.g., Jafari et al., 2017). Our study used actual workers to generate the scale items that were then combined with expert review and feedback, resulting in a more rigorous process.

All levels of organisation (workers, supervisors and managers) were invited to participate in the focus group to ensure that the items applied equally to them. Example questions covered during these investigations included:

What does senior management say or do that tells you how much they care about safety?

What does your supervisor do that tells you how much they care about safety?

What priorities or tensions do you experience at work that affect how much safety is prioritised?

We also asked questions about how their organisation was seen to manage COVID-19 to develop a specific measure that captures this important contemporary health and safety concern. Interview data were thematically analysed and specific safety climate scale considerations, draft items, and contextual information (e.g., language) summarised to inform scale development.

A strength of our scale development process is the integration and synthesis of both academic and industry data sources. These steps ensured that not only did the safety climate scale accurately represent the nature of the safety climate construct, but it was contextualised to the disability-support industry context, increasing face validity for respondents.

The outcomes of this process included an initial pool of 89 draft scale items and eight factors. These draft items were later refined down to a total of 16 high-performing items across four factors (14 were initially developed and two extra items were added at a later stage).

Sampling for Scale Validation

The online panel Prolific, comprising of a combination of Australian (10%), US (30%), and UK (40%) workers, was employed for the validation samples. The remainder (20%) were from European English-speaking countries. This approach was taken because Australia does not yet possess a cost-effective crowd sourced survey sampling platform. We did not consider nationality to be an important factor for initial validation since the analysis relies on simply understanding and interpreting the item content rather than focusing on actual safety practices in the industry. Similarly, differences in practice and attitudes between Australian participants and those participant workers from other countries were not important for the psychometric analyses we conducted. Our focus was on assessing the performance of the items, such as construct and criterion validity, rather than

creating benchmarks or other geographically comparative information. Finally, the international sample provides a conservative test of the psychometric performance of the scale because the items were originally written for the Australian context. This means that if the scale performs well internationally, then theoretically, its suitability for Australian workers would be even greater.

In return for participating in academic research surveys, participants receive a sizeable reward—typically in the vicinity of $15 AUD per hour. Consequently, Prolific participants are highly engaged and provide quality data. Indeed, researchers have shown that Prolific users are generally more diverse, more engaged, and provide better-quality survey responses than popular alternatives such as MTURK (Peer et al., 2017).

For the industry validation phase, the organisation's management received an online link to the industry-specific scale along with some collateral material including an information sheet to be distributed to employees. We used the Qualtrics platform for the survey delivery. Managers forwarded the information sheet about the project stating what the project was about, a brief introduction to the concept of 'safety climate', an overview of what the survey measures, the requirements of their involvement (including time requirements and a statement on how the project will protect their privacy, as well as contact details for the research team should the need to raise concerns about the survey arise, along with a references to the approval by the Human Research Ethics Committee of Queensland, #2019/22).

Participants

Scale Validation Study 1 – Online Panel

For the first sample in this study, we recruited 150 disability support workers from the Prolific user population. Participants were paid a fee of 1.23 GBP (approximately $19 AUD per hour) in exchange for completing the 5-min survey with the draft safety climate items. To 'clean' the data, we removed cases from the sample where there was no variation across all survey items (e.g., the participant 'strongly agreed' with all items on the survey) or where the duration of participation was below 60 seconds. Further checks were made by including an 'attention' item in the survey where participants had to follow a specific instruction. After data cleaning, a total of 134 participants remained in the dataset. Eighty-eight (66%) respondents were employed in the disability support industry on a full-time basis, 39 (29%) were part-time, and seven (5%) were on a casual or short-term contract. The average tenure of respondents in the industry was 7.1 years (SD=8.1 years).

Scale Validation Study 2 – Online Panel

For the second sample, we recruited 250 disability support workers, again from the Prolific platform. After data cleaning, 240 cases remained. Within this sample, 174 (73%) were employed full-time, 55 (23%) were employed part-time, and 11 (5%) were employed casually or on a contract basis. The average industry tenure was 5.9 years (SD=6.3 years).

Scale Validation Study 3 – Industry Sample

A medium-sized disability support organisation (employing approximately 450 people) based in Australia (with operations in NSW) participated in a further validation of the safety climate scale, including some specific questions to capture COVID-19 safety climate. The organisation participated in exchange for a free survey administration service, written feedback, and a verbal debrief session on the findings. A total of 140 workers across all levels of the organisation, including administration, support and care participated in the survey. Participants were mostly new in their tenure, with 29% of the group being with the organisation between 1 to 3 years, and 26% having tenure of between 3 to less than 5 years. Mostly workers participated in the study (69%), followed by supervisors and team leaders (22%). Females comprised 67% of the sample.

Results and Interpretation

Scale Development

Exploratory Factor Analysis

Using the first research sample, a series of EFAs were conducted to explore the emergent factor structure of the industry-specific safety climate scale. The method used was Principal Axis Factoring with Promax rotation, as recommended by foundational psychology texts (Field, 2009). Pairwise deletion of cases with missing data was used, and item-factor loadings below 0.50 were suppressed to assist in interpretation. Factors were retained through a process of examining visual 'scree plots' and where factors had eigenvalues of 1.0 or above. Table 1 shows the results from our final EFA using the industry-specific safety climate items developed initially (note that two extra items were added to the scale at a later stage to improve the scale).

An example of a popular generic safety climate scale is shown below as a comparison against our items, which are more nuanced and specific to the disability support industry (Hahn & Murphy, 2008).

Generic safety climate scale items:

1. New employees learn quickly that they are expected to follow good health and safety practices.
2. Employees are told when they do not follow good health and safety practices.
3. Workers and management work together to ensure the safest possible conditions.
4. There are no major shortcuts taken when worker health and safety are at stake.
5. The health and safety of workers is a high priority with management where I work.
6. I feel free to report safety problems where I work.

The generic items listed above were compared with the industry-specific items we developed during this research. The industry-specific items performed significantly better in terms of their ability to measure the association with safety behaviour.

Table 1. Final Exploratory Factor Analysis results for the disability support safety climate scale.

	Factor		
	1	2	3
Management keep up with provision of safety resources in response to increased client demand	0.864		
Management do not expect that support staff will put the safety needs of clients over their own.	0.823		
Management uses audit data to improve staff safety.	0.787		
At this organisation, all support staff have access to safety information wherever they are (e.g. including on the road)	0.739		
At this organisation, the safety team welcomes contact from support staff around safety issues and concerns	0.725		
At this organisation, support staff will not lose their job for speaking up about safety concerns.[2]	0.683		
At this organisation, there is enough staff per shift to maximise worker safety	0.619		
At this organisation, support staff are given enough time on their shifts to complete all applicable safety documentation.	0.592		
Supervisors debrief with support workers daily to help them manage stress.		0.942	
Supervisors encourage support workers to share when they feel burned out or distressed.		0.864	
Supervisors routinely speak about the various support and assistance services that are available to workers (e.g., EAP, debriefings, peer support).		0.595	
Supervisors encourage staff to proactively identify hazardous client care situations before injuries occur.			0.805
Supervisors follow up individually with support staff who raise concern about safety at work.			0.771
Supervisors expect that support workers will speak up if they ever feel unsafe when working with a particular client.			0.682

The first factor, we termed 'safety priority', which also included some 'resourcing' items. The second factor was 'support for mental health' and focussed on supervisor practices around helping workers to manage stress. The final factor, we termed 'supervisor proactivity,' and included practices relevant to following up with staff and generally engaging in pre-emptive risk management.

For the CFA, we included additional items based on research team discussions following the focus group results and also separated the 'safety priority' and 'resourcing' items into separate factors.

The additional items were:

[2] We acknowledge that, despite the existance of legislation to protect workers in instances where they feel the need to report their safety concerns, in practice workers face many challenges preventing them from doing so.

- Supervisors perform welfare checks to see how workers are going
- Supervisors require support workers to carefully assess the safety risks when working with a new client

Reliability Analysis

Reliability refers to the ability of a group of related items to consistently measure a target construct, such as safety climate. Values of internal consistency range from 0.0 (meaning the items are essentially measuring different constructs) to 1.0 (meaning the items are highly correlated and measuring the same construct). Overall, the disability support safety climate scale reliability Alpha was 0.91, while dimension-level reliabilities ranged between 0.62 to 0.85. The minimum cut-off for reliability values is 0.60, although, values of 0.70 and above are recommended.

Confirmatory Factor Analysis

A CFA was conducted with all items loaded onto a single congeneric safety climate factor. The fit for this single factor model was unacceptable ($\chi^2(90)=298.86$, $p<.01$; RMSEA=0.10, 90%CI=0.09 to 0.11; CFI=0.84, TLI=0.81; SRMR=0.07). Therefore, the safety climate scale is best represented by more than one factor, supporting our EFA results.

A second CFA was then run using the dimensions identified during the EFA process, with separate 'Resourcing' and 'Safety Priority' dimensions. The results of this second CFA showed excellent fit statistics ($\chi^2(86)=146.39$, $p<.01$; RMSEA=0.05, 90%CI=0.04 to 0.07, p=0.31; CFI=0.95; TLI=0.94; SRMR=0.05). Figure 1 shows a visual representation of the CFA results, with standardised factor loadings shown.

Regarding low factor loadings, in particular, SC_2 and SC_9 (noting that values of 0.30 and above are acceptable), there may be opportunities to tweak item wording to improve performance. For SC_2, participants may have been confused by the way the item was worded (i.e., management does not expect…), because a more direct way of writing the item might be more effective. For SC_9, the wording may be too extreme, such as the use of the qualifier 'every day'. A less extreme wording may improve the performance of this item.

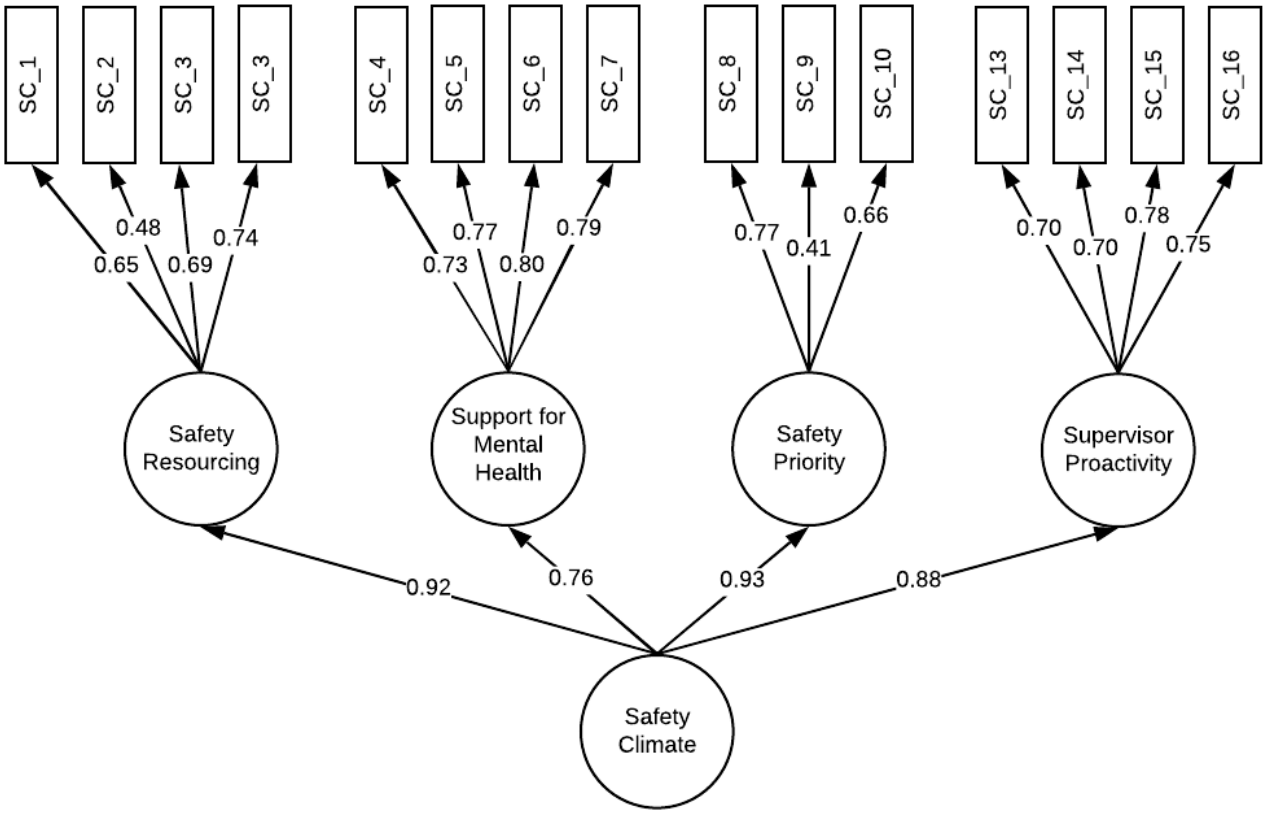

Figure 1. Confirmatory Factor Analysis results for the disability support safety climate scale, linking 16 items to four key factors, fully standardised coefficients shown.

Additional Validity Checks

Discriminant Validity

To determine discriminant validity, a CFA was conducted that included the disability support safety climate items and five items from a conscientiousness personality scale (Hogan & Foster, 2013).

First, a CFA with all items loading onto a single factor was conducted. The model had very poor fit statistics, which indicated that loading the personality items with the safety climate items was inappropriate (χ2(170)=692.67, p<.01; RMSEA=0.11, 90%CI=0.10 to 0.12, p<.01; CFI=0.68; TLI=0.65; SRMR=0.10).

Next, another CFA with the safety climate items differentiated from the conscientiousness items was conducted. This model showed significantly better fit, with CFI and TLI value changes exceeding 0.10 as recommended to demonstrate a change in model fit (Byrne, 2010; χ2(169)=407.60, p<.01; RMSEA=0.08, 90%CI=0.07 to 0.09; CFI=0.86; TLI=0.84; SRMR=0.06).

Criterion Validity

To check criterion validity, a series of bivariate correlations were calculated between all variables included in the CFA. As shown by Table 2, disability support safety climate was significantly related to a similar construct—'management safety commitment'. It was also related to the safety

performance variables 'safety compliance' and 'safety proactivity', and at levels equal to or higher than general work performance (i.e., 'proficiency', 'adaptivity' and 'proactivity'). Finally, the safety climate scale was not significantly related to an unrelated stable trait—'emotional regulation'.

Table 2. Bivariate correlations between study variables.

	SC*	1	2	3	4	5	6	7
(1) Management safety commitment	0.72							
	0.00							
(2) Conscientiousness	0.17	0.13						
	0.01	*0.04*						
(3) Safety compliance	0.34	0.34	0.29					
	0.00	*0.00*	*0.00*					
(4) Safety proactivity	0.30	0.10	0.13	0.23				
	0.00	*0.13*	*0.05*	*0.00*				
(5) Emotional regulation	0.07	0.00	-0.14	-0.06	-0.01			
	0.26	*0.99*	*0.03*	*0.33*	*0.87*			
(6) Work performance - Proficiency	0.16	0.23	0.40	0.47	0.09	-0.04		
	0.01	*0.00*	*0.00*	*0.00*	*0.16*	*0.53*		
(7) Work performance - Adaptivity	0.26	0.17	0.30	0.33	0.24	0.00	0.49	
	0.00	*0.01*	*0.00*	*0.00*	*0.00*	*0.96*	*0.00*	
(8) Work performance - Proactivity	0.18	0.08	0.13	0.17	0.39	0.05	0.16	0.44
	0.01	*0.22*	*0.04*	*0.01*	*0.00*	*0.47*	*0.02*	*0.00*

Note: SC refers to the disability support safety climate scale, with all items aggregated to an overall score. P-values are shown in italics underneath each bivariate correlation.

Incremental Validity

To assess the incremental validity of the disability support safety climate scale, a short-form generic safety climate scale was included in the survey and assessed in terms of the association with safety behaviour variables ('safety compliance' and 'safety participation'; see Appendix). A series of hierarchical multiple regression analyses were undertaken with the short-form safety climate scale included first, followed by the disability support safety climate scale.

At the overall scale level, the disability support safety climate scale did not add incremental utility to the measurement of 'safety compliance'. However, when 'safety proactivity' was included as the dependent variable, disability support safety climate was associated with it at a level over and above the generic safety climate scale (R^2_{change}=0.03, p<.05). Also, when we added each dimension separately, we found that for 'safety compliance', 'supervisor proactivity' (R^2_{change}=0.01, p<.05) explained significant variation in the outcome over and above the generic safety climate scale. For 'safety proactivity', 'safety priority' (R^2_{change}=0.02, p<.05) and 'support for mental health' (R^2_{change}=0.05, p<.01) were both related to an extent over and above general safety climate.

Industry Validation

In this instance, management in the disability support organisation under study reported satisfaction

with the process, including the practical utility, support and information provided during the process. No changes to the safety climate scale were implemented following review by the organisation's management. Having a high degree of involvement and regular communication with the organisation's management warranted the seamless implementation of the survey.

Criterion Validity

To check criterion validity, a series of bivariate correlations were calculated between all variables included in the industry sample survey. As shown by Table 3, disability support safety climate was positively related to the safety performance variables 'safety compliance' and 'safety proactivity'. It was also positively related to 'COVID safety climate' (i.e., perceptions of how effectively the company's management has handled the pandemic, including topics such as resourcing, communication, and COVID-specific safety practices, see Appendix) and 'engagement', and inversely related to 'emotional exhaustion'.

Although COVID safety climate was strongly related to 'deep' COVID compliance as opposed to 'superficial' compliance (e.g., going through the motions of complying), 'regular' safety climate did not have as strong a relationship with 'deep' COVID compliance. Further, there was no relationship between 'emotional exhaustion' and COVID safety climate or compliance, meaning that disability support workers in this organisation may be less likely to 'put on a show' and act as though they are complying (i.e., 'superficial compliance') even when they may be feel depleted by their job.

Table 3. Bivariate correlations between study variables.

	SC*	2	3	4	5	6	7
(2) Safety compliance	0.42						
	0.00						
(3) Safety proactivity	0.38	0.41					
	0.00	*0.00*					
(4) COVID safety climate	0.64	0.28	0.34				
	0.00	*0.00*	*0.00*				
(5) COVID deep compliance	0.20	0.53	0.39	0.40			
	0.07	*0.00*	*0.00*	*0.00*			
(6) COVID surface compliance	0.25	0.20	0.05	-0.01	-0.11		
	0.02	*0.07*	*0.67*	*0.94*	*0.27*		
(7) Engagement	0.49	0.39	0.15	0.34	0.29	0.05	
	0.00	*0.00*	*0.17*	*0.00*	*0.00*	*0.66*	
(8) Emotional exhaustion	-0.34	-0.27	-0.07	-0.04	-0.12	-0.15	-0.29
	0.00	*0.02*	*0.51*	*0.74*	*0.26*	*0.17*	*0.00*

Note: SC refers to the disability support safety climate scale, with all items aggregated to an overall score. P-values are shown in italics underneath each bivariate correlation.

A series of hierarchical regression analyses were run to test for the incremental explanation of safety behaviour over and above the generic safety climate scale. Both analyses showed that the disability-

support-specific safety climate scale explained additional significant variance over and above general safety climate for compliance (R^2_{change}=0.08, p<.01) and proactivity (R^2_{change}=0.07, p<.01). This result means that the industry-specific safety climate scale still managed to account for variation in performance even after general safety climate was accounted for, and overall was a stronger correlate than general safety climate. Overall, within a real-world industry context, the industry-specific safety climate scale performed better than when an online sample was used. The smaller change in disability-support safety climate performance in the online panel sample as compared to the industry sample could be due to 1) the small tweaks and improvements made to the items in-between these studies, and 2) differences in respondent engagement in the industry sample (i.e., more engaged in the survey process). From these results, it seems that when the safety climate survey is administered within an organisational setting, and possibly also within an Australian context, it performs better than if it is used with a sample of people from multiple organisations and based internationally.

Summary of Scale Psychometric Properties

- Overall, the disability support safety climate scale reliability Alpha was 0.91; dimension-level reliabilities ranged between 0.62 to 0.85. These results mean that the items in the scale consistently measure a single topic (safety climate), balancing the breadth of the topic with specific repeated instances of each item to ensure that the influences of response error are minimised.
- The disability support safety climate scale demonstrated acceptable CFA model fit, highlighting strong construct validity. A strong CFA result means that the items in the scale are associated with each other and collectively tap into the concept of safety climate in a valid way.
- The scale was related to variables as expected, such as 'safety performance' and 'management safety commitment'. Further, it was *not* related to a dissimilar construct (personality trait—'emotional regulation'). The first two results show that the scale is associated with similar other topics, which helps to establish its validity. Discriminant validity was shown by differentiating conscientiousness from the safety climate items. The other results show that safety climate is not related to dissimilar topics like personality, again bolstering the validity and integrity of the newly-developed scale.
- Incremental validity over a general safety climate scale was demonstrated when explaining variation in 'safety proactivity', and also at the dimension level for both 'safety compliance' and 'safety proactivity', which means that the industry-specific scale was still significantly associated with outcomes like safety performance even after accounting for the effects of a general safety climate scale.
- Overall, within a real-world industry context, the disability support safety climate scale performed better than when an online sample was used.

Limitations

One of the limitations of this study was the use of cross-sectional data. Within the scope of the study and timeframe, it was not possible to collect data at two or more time points (e.g., safety climate data at time one, and outcome data at time two). Therefore, further evidence of the safety climate scale's ability to truly predict future incident involvement and safety performance will need to be gathered. Also, the scale was tested in just one industry setting with a limited sample of approximately 100 employees. Ideally, multiple organisations would be used to test the safety climate scale performance to account for differences in context and variations within the disability support sector.

Conclusions and Practical Implications

The development and implementation of the disability support scale served 6 main purposes:

- Understand and explore the industry-specific nuances of safety climate;
- Demonstrate the utility of the industry-specific safety climate scale over general safety climate scales;
- Establish the validity and reliability of the industry-specific safety climate scale;
- Contribute to the broader research surrounding safety climate;
- Build a practical tool that the industry can use to measure safety climate and identify areas for improvement.

This project shed light onto the industry-specific nature of safety climate within the disability support industry. In particular, it emphasised the importance of both physical and psychological health and safety in the industry. Disability support safety climate was best represented by four separate factors: 'Management safety priority,' 'Supervisor support for mental health,' 'Safety resourcing,' and 'Supervisor proactivity'. Together, these factors predicted disability support safety performance as expected. Further, our industry validation study showed that the disability-support safety climate scale predicted safety performance over and above the general safety climate scale.

Acknowledging the limitations of a cross-sectional design and the limited organisational sample, we found evidence that the disability support safety climate scale is valid and largely reliable. As the industry continues to use the scale, further data should be collected to inform future refinements and improvements, and generally add to the evidence base around this scale. Finally, the experiences of the participating organisation and testimonial feedback showed that the scale is practical and a useful source of safety improvement information.

Regarding the use and interpretation of this safety climate scale, several practical recommendations are apparent:

- Disability support organisations are encouraged to measure safety climate regularly (every 3-6 months) and interpret the results for each of the four factors that make up disability support

industry safety climate separately for clear insights into what can be practically done to improve.

- Where health and hygiene behaviours in relation to COVID-19 are of interest, disability support organisations could measure and review their workforce's perceptions of 'COVID safety climate' in addition to 'regular' safety climate.
- Management's safety priority can be demonstrated through balancing client and staff safety needs and using data to improve safety at an organisational level.
- Mental health support and stress management assistance for disability support workers appears to be an important component of safety climate in this industry; supervisors can be seen as a major source of such support, given they conduct regular debriefs with staff and help them to manage challenging clients and other sources of stress.
- Resourcing for disability support workers also appears to be critical. Disability support organisations should ensure adequate numbers of staff per shift and to provide staff with easy access to safety information, even when on the road or away from the office.
- Finally, supervisors' proactivity around health and safety appears to be a key component of disability support safety climate. Supervisors can ensure psychological safety by fostering an environment in which workers feel comfortable to speak up and report or share concerns.

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Appendix

The Disability Support Safety Climate Scale

Management Safety Priority

- Management makes sure there is enough safety resources even when workload increases
- Management does not expect support staff to put the needs of the client above their own personal safety
- Management uses information from site inspections to improve safety for support staff

Safety Resourcing

- At this organisation, support staff have access to safety information no matter where they are (for example, on the road)
- At this organisation, the safety team is happy to hear about safety issues and concerns from support staff
- At this organisation, support staff are not afraid of losing their job for speaking up about safety concerns
- At this organisation, there is enough support staff per shift to work safely
- At this organisation, support staff are given enough time on their shifts to follow all safety activities and processes

Supervisor Support for Mental Health

- Supervisors talk with support staff every day to help them manage stress
- Supervisors encourage support staff to tell the supervisors when they feel burned out or distressed
- Supervisors make sure support staff know how to get help from the organisation (for example, Employee Assistance, debriefings, peer support)
- Supervisors check in with support staff regularly to see how they are going with their workload and stress

Supervisor Proactivity

- Supervisors encourage support staff to identify risks (for example, heavy lifts, challenging behaviours) before injuries happen
- Supervisors follow up individually with support staff who have raised safety concerns at work
- Supervisors expect that support staff will speak up if they ever feel unsafe when working with a particular client
- Supervisors require support staff to carefully assess the safety risks when working with a new client

The Disability Support Safety Performance Scale

Safety Compliance

- I keep up to date with the latest safety alerts and information
- I ask questions about safety-related information if I am unsure or confused
- I follow all safety procedures and protocols for small jobs
- I take care of my own wellbeing and mental health

Safety Proactivity

- I look for ways to improve the safety of support staff in client care plans
- I offer help to co-workers so they can do their work safely.
- I share safety information with other support staff.
- I give feedback to other support staff on their safety-related performance

COVID-19 Safety Climate Scale

- Senior management is genuinely concerned about protecting workers from COVID-19
- Senior management takes COVID-19 safety requirements (e.g. hand washing, social distancing) into consideration when designing work rosters
- Senior management addresses people's concerns about COVID-19
- During meetings, my supervisor speaks about the risk of COVID-19
- My supervisor reminds people to comply with COVID-19 safety requirements
- My supervisor makes sure employees with COVID-19 symptoms will not show up at work
- At this workplace, people regularly talk about the risk of COVID-19
- At this workplace, people comply with new COVID-19 safety measures
- At this workplace, people come up with new ways of doing work to reduce COVID-19 infection

COVID-19 Compliance Behaviours Scale

- I increase my awareness of how COVID-19 infects people
- I try to understand how COVID-19 safety practices help to reduce the risk of infection
- I follow COVID-19 hygiene and sanitisation procedures very closely
- I make a conscious effort to minimise the risk of infection to myself and others
- I treat COVID-19 safety procedures like a tick and flick exercise
- I put in the minimum effort needed to meet COVID-19 safety requirements
- I act like I am complying with COVID-19 safety requirements
- I follow COVID-19 safety procedures while feeling unconcerned about the risk of infections

Recruitment & Administration Resources

Example Recruitment Email

As part of our commitment to building a workplace that fosters excellent health and safety, we are conducting a short survey. The purpose of this survey is to give everyone an opportunity to share their experiences of our workplace, and what makes them feel more or less safe when undertaking work.

In this survey, you will be asked questions about things that we know influence health and safety, with a focus on the culture of this workplace. The survey questions were made using feedback from actual workers from our industry. This is your chance to give us honest and open feedback so we can make further improvements. This survey should only take about 10 minutes to complete.

The main benefit to you is that, by participating, you will allow us to incorporate your views and experiences into our future initiatives and programs. Creating and maintaining a workplace culture which promotes safety is one of our key priorities. In the survey, there is space for you to write some comments and share your views, in addition to rating questions that ask about your experiences and perceptions in the workplace.

Your personal information will never be shared. We are only interested in the grouped and deidentified trends across all people—not the details of what individuals answer on the survey.

Thank you in advance for your time to complete this important survey. We hope you will find the time to participate fully and honestly. You can access the survey using the link below:

INSERT SURVEY LINK HERE

Example Information Flyer

Safety culture survey project

What is this project about?

We are interested in hearing about your unique experiences and views on safety at this workplace. The idea of doing a survey is to provide everyone that works here with a voice about what they see and hear. That way, we will get useful feedback about our workplace culture which will help to drive future improvements in safety.

What is the survey measuring?

The survey is measuring a specific part of the broader culture for safety at this worksite called the 'safety climate'. Safety climate is like the mood of our worksite around safety (i.e., is safety valued and prioritised?) whereas culture is more like the personality (i.e., what do people believe about safety?). Safety climate is known as a 'leading safety indicator' because it gives information about where we can focus our energy and attention to improve before accidents happen. The survey asks you about your perceptions of safety policies, practices, and procedures at our workplace. There are no right or wrong answers—just answer what comes to mind immediately. We include a comments box so you can provide some more detailed feedback not captured by the survey questions.

How will my privacy be maintained?

Your privacy is very important because without it, you might feel less comfortable to be open and honest. When the survey responses are submitted, they are grouped together with everyone else's and cannot be identified. This means that we are unable to link what your answer on the survey back to you as an individual. That should help you to feel comfortable in answering how you really see things at this workplace.

When can I complete the survey?

You will be given time during your working day to complete this survey because we feel it is important for everyone to get involved. A link to the online survey will shortly be distributed.

Who can I talk to with questions about this project?

Please get in touch with <INSERT NAME & DETAILS> if you have any questions about this project.