

Resilience and Mental Health in Mining

FINAL REPORT TO
THE COAL SERVICES HEALTH & SAFETY TRUST
Health & Wellbeing Research Unit (HoWRU)



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Executive Summary

Resilience has the potential to mitigate the high levels of psychological distress experienced by coal industry employees (Bowers, Lo, Miller, Mawren, & Jones, 2018; Considine et al., 2017). Moving away from a focus on individual resilience, recent research has highlighted how modifiable workplace structures, policies and practices can play a critical role in influencing employee resilience and responses to stressors (Hartmann, Weiss, Newman, & Hoegl, 2019).

We report on our analysis of interviews and surveys from coal industry employees primarily from underground and open cut settings, and from a variety of different roles within the industry. Participants were asked about the factors contributing to their resilience and their stress, and how companies can better address workplace stressors to enhance resilience.

Our findings reveal that there are positive signs of a changing culture in the industry, with many employees being more open to conversations around and disclosure of mental health challenges. Job satisfaction, teamwork, social support, psychological detachment and lifestyle and family factors were shown to be key factors contributing to resilience. Although there are still some barriers to help seeking as well as workplace factors which undermine resilience, participants typically provided constructive ideas on how these issues could be addressed. We also find evidence that factors outside work, including societal attitudes, can have an important impact on the capacity of coal mine employees to 'bounce back' after stress.

The results from this study provide a comprehensive and clear understanding of the factors that explain and predict resilience within the context of the coal industry in Australia.



Introduction

Resilience has the potential to be a key protective factor for the mental health outcomes of workers in the coal mining industry. Resilience can be defined as the ability to manage sources of stress or disruption in the environment through negotiation and adaptation (Windle, Bennett, & Noyes, 2011). Resilience has been shown to act as a potential buffer against the negative mental health outcomes normally associated with workplace stressors. Specifically, resilience has been shown to be related to increased quality of life, improved mental and physical health and effective adaptation (Caza & Milton, 2012).

Recent research indicates that organisational factors can act to bolster or undermine employee resilience to stressors (Hartmann et al., 2019; Khan et al., 2019; Meneghel, Borgogni, Miraglia, Salanova, & Martínez, 2016).

Accordingly, the present study aims to investigate these organisational factors and resilience within the Australian coal mining industry. A Macquarie University team has undertaken a two-phase qualitative and quantitative research project, the aims of which are:

1. To understand the link between workplace factors, resilience and mental health in Coal Mining.
2. To understand the practices that support resilience at work in Coal Mining, and those that may undermine resilience and mental health.
3. To provide guidance regarding the practices and strategies that support resilience and mental health in Coal Mining organisations.

The results of this study, reported here, will contribute to understanding organisational factors, practices, and strategies, that promote resilience, and in turn reduce the psychological distress associated with workplace stressors.

Resilience and Mental Health in Mining Qualitative Study

Here we present our preliminary findings based on interviews with a range of 59 coal industry employees who were asked about the factors that contribute to their resilience and stress, and how companies could more effectively manage workplace factors to enhance the resilience of their workforce.

The research protocol was approved by the Macquarie University Human Research Ethics Committee (Ref. No.: 52020614120501)

Interview transcripts were thematically analysed, with coding undertaken by two researchers independently and their findings compared for reliability (Braun & Clarke, 2006). NViVO software was used to manage the analysis process.

Just over two-thirds of the interviewees were male and just over half were from underground sites. Open cut sites accounted for another third with the rest of our participants from corporate settings. Detailed characteristics of the study sample are presented below in Table 1.

Table 1 - Participant characteristics

	Firm A	Firm B	Firm C	Firm D	Firm E	Firm F	TOTAL
Gender							
Male	14	15	1	0	0	0	30
Female	4	5	2	1	1	1	14
Employee Category							
Trades/Frontline	7	4	0	0	0	0	11
Supervisor	4	3	0	0	0	0	7
Administration	2	4	0	0	0	0	6
Professional	3	5	2	0	0	1	11
Manager	2	4	1	1	1	0	9
Mine Type/Setting							
Underground	18	7	0	0	0	0	25
Open cut	0	13	1	1	0	0	15
Corporate	0	0	2	0	1	1	4
TOTAL	18	20	3	1	1	1	44

Findings

The analysis revealed several factors which assisted employees to mitigate stress and build resilience, including job satisfaction, teamwork, social support and belonging, as well as the ability to psychologically detach at the end of the shift. Shift patterns and employment benefits were also noted as positive factors contributing to an enhanced lifestyle for the employees and their families.

In terms of mental health support, employees at one mine recounted how a peer support program successfully raised awareness of mental health issues and created a safe space for employees to seek help. However, there is a need to further facilitate help seeking behaviour and develop the capabilities of supervisors and leaders in this area. Interviewees across several sites noted barriers to employees seeking support through Employee Assistance Programs (EAP), although one manager explained how their firm has been successful in overcoming employees' reticence to utilise this service. Despite the increasing awareness of mental health issues and growing evidence of supportive cultures, the interviewees noted that cultural barriers and time and cost constraints within the industry have made the implementation of programs to address mental health issues more challenging.

Factors which were shown to inhibit or erode resilience were gaps in communication, concerns about safety, work patterns and physical conditions and high workload levels. Associated with inherent volatility in the sector, uncertainty about job security and financial and family issues were predominate themes.

These findings are presented in more detail below, with representative quotes from interviewees illustrating each of the themes.

RESILIENCE STRENGTHENING FACTORS

Resilience as a factor in overcoming adversity has been of recent interest. It has been shown to enable a positive approach to work and aid in maintaining motivation in times of stress and conflict, overall providing a protective effect in high strain environments (Shatté, Perlman, Smith, & Lynch, 2017). The findings from the present study demonstrated that a number of work and organisational factors, along with some individual strategies to ‘switch-off’ from work during leisure hours, are key to building resilience and mitigating the impact of stressors.

JOB SATISFACTION

Job satisfaction has consistently been shown to have a beneficial relationship with individual health outcomes (Faragher, Cass, & Cooper, 2005). It refers to positive evaluations of the range of tasks that individuals complete in their job (Loher, Noe, Moeller, & Fitzgerald, 1985), and has been associated with lower levels of psychological distress in a recent study of mining employees (James et al., 2018a). Participants noted that they derived satisfaction from challenging work, opportunities to develop, as well as strong sense of achievement as depicted in Table 2 below.

Table 2 - Job satisfaction

Challenging work	Well, I actually like working with a group of guys, it can be fun, and I like the challenge...putting all the pieces together, planning for the day-to-day work to make it succeed for the end of the shift (Supervisor – underground).
Opportunity to develop	So, I love my job, I love doing what I do, and to the point that I’m now in the process of doing my deputy’s [ticket] as well (Trades/frontline – underground).
Achievement	For me, keeping my teams mentally stable and physically stable and achieving what our goals are. It makes us look like we’re all doing something worthwhile. I believe you don’t get much out of people unless they see a bit of a purpose in what they do (Manager – open cut).

TEAMWORK

There were recurrent stories from the participants that teamwork was one of the most positive aspects of their work environment. The participants described how good working relationships with team members enabled them to effectively solve problems, to debrief and to collaborate on the achievement of goals. This echoes previous research pointing to the link between effective teamwork and work-related wellbeing (Salas-Vallina, Alegre, & López-Cabrales). A notable finding was how nonverbal communication signals between underground co-workers developed over time and contributed to effective teamwork in a noisy environment. Teamwork was also important for sharing the burden of work.

Table 3 - Teamwork

Focus on achieving goals	Working with the guys, I love it, as a team. The crew that we have on the shift that I'm currently on now, I couldn't speak more highly of them. They, everyone works together so well. There's, I'll call it banter, very, very minimal banter on this shift... And we all have the same attitude of, I mean the more coal we cut, the more bonus we get (Trades/frontline – underground).
Non-verbal communication contributing to safety	It's like a marriage. When you go out with your wife, if she's being too loud or you're being too loud, there's that look, and you know that, "Oh okay", and nothing has to be said. It's the same underground...so I think it's good to develop that communication without communicating, because it's very noisy as well. (Trades/frontline – underground).
Mitigating stress	But I think what helps me get through it with the stress of that is that the burden of that project is spread across my team that I work with, guys that I work with (Manager – underground).

SOCIAL SUPPORT & BELONGING

Linked to the concept of teamwork, research has shown that having a network of supportive others is key to protecting mental health in times of stress via feelings of being understood, more positive appraisals of stressful events, increased sense of control, self-esteem, and better coping strategies (Southwick et al., 2016). In line with this research, participants highlighted psychologically benefiting from a culture of comradery, interpersonal empathy, and a sense of belonging. Importantly, several interviewees recounted how informal gatherings strengthened this sense of belonging and had the added benefit of diffusing conflict and tension.

Table 4 - Social support & belonging

Looking out for each other	I mean, mining's always had a good comradery so to speak...Everyone's got each other's back because obviously it's a dangerous environment that we work in (Supervisor – Underground). And I also work with a sensational team that that make coming into work a pleasure, they look after each other. They look after me (Manager – open cut)
Facilitating social interaction, diffusing situations & recognising achievements	I know when I used to work for [another company], they used to have a barbecue once a month and everyone used to go to it. That was something that you didn't realise how valuable it was until they stopped having it...it defuses a lot of situations just by an hour talk, have a sausage sandwich and talk to each other and not be so uptight all the time with the way things are onsite...And then if they had a someone that was nominated for an achievement award, it was handed out at the barbecue and it felt more like a family environment than a business (Trades/frontline – open cut).

ABILITY TO SWITCH OFF – DISENGAGE

Psychological detachment refers to the ability to mentally 'switch off' from work outside of work hours (Sonnentag, Kuttler, & Fritz, 2010). Research has shown that psychological detachment can play an important role in combatting work related fatigue and emotional exhaustion (Sonnett & Bayer, 2005). Participants noted that there were a number of ways that they disconnect from work, such as engaging in recreational activities or enjoying the company of their family. It was clear that participants who were able to psychologically detach from work realised that it was a way to combat stress.

Table 5 - Ability to switch off - disengage

Routine at the end of the shift	It can be the worst shift I can ever think of, but when I come out of it from work, and I have a shower, I wash that shift down the drain and then I get in my car and think about my wife, my family, and that's how I deal with my everyday work (Trades/frontline – underground).
Physical activity after work	But yeah, if I just go home and go for a surf or take the kids and the dog down the beach, I find I can switch off pretty quick (Supervisor – Underground).

LIFESTYLE & FAMILY

It was found that in addition to playing a role in psychological detachment, family was also important for building employee motivation and resilience. Participants noted that high salaries were a motivator to continue to work in the industry, with some participants indicating that while work can be stressful, the shift patterns and pay levels enables them to have an enjoyable life outside of work.

Table 6 - Lifestyle & family

Shift patterns enhancing lifestyle	Most of the guys like their shifts, because now, they only work 3 days and they have 4 off, but they're long shifts, they're 12-hour shifts. A lot of guys I've spoke to actually like it now because they're spending more time at home. A lot of guys are actually enjoying that (Trades/frontline – underground).
Pay levels enhancing lifestyle	<p>I know that if I go to work and I do an overtime shift, that's worth like \$550 after tax for me, so I think my partner doesn't have to go to work. But if she wanted to go and work a full-time job, when you look at day care expenses, all the running back and forth and all that sort of rubbish, that one extra shift per week negates all that; she doesn't have to go to work, she doesn't have to go through that, and all I have to do is four nights a week (Trades/frontline – underground).</p> <p>And I like the lifestyle, I like the roster, it gives me an opportunity to have a house in a decent area. I've got a decent sort of, it's just a good neighbourhood, I feel secure, I think my family feels secure, so that's got to be the most important thing (Trades/frontline – underground).</p>

MENTAL HEALTH SUPPORT

Recent research has highlighted that an increased perception that an employer is committed to addressing mental health issues is associated with reduced rates of psychological distress (James et al., 2018a).

Overall, there was an acknowledgement of a growing awareness in the industry in relation to psychological risk factors and increasing levels of support provided, yet some barriers to help seeking persist. Importantly in this section, we draw attention to how some organisations have tackled some of these cultural barriers.

FACILITATING HELP SEEKING

Several of the participants discussed how a comprehensive education and peer support program at one site was very effective at promoting a culture of help seeking and awareness of mental health issues.

Nonetheless, there was a view that supervisors could benefit further from additional training. One organisation had addressed this skills gap by having brief monthly webinars delivered by their EAP provider on topics such as managing stress and anger. The benefit of such an initiative is reinforced by previous research that shows managers who are confident having mental health conversations are significantly more likely to engage with employees who are experiencing significant stress (Bryan et al., 2018).

Table 7 - Facilitating help seeking

Facilitating peer support	<p>We brought a provider in to do education sessions initially, with a pretty powerful sort of personal story, and a guy who's an ex-footballer. So, a really good connection to the workforce because there's a lot of football players...and then we followed it up with some training to our frontline supervisors on how to identify people that might need support. We asked for volunteers and we trained up a group of [peer support workers] and those people are across all shifts, and their role is to be a conduit between their colleagues and some support. So, they can obviously talk to people and try and help them, but also try and link them up with other services we needed. So, we trained all those guys in some mental health first aid principles, and...a couple of times a year, we do some mental workshops and things like that with them, just to keep their skills up in that sense. So, and we've got resources and things like that on site where people can go and get information (Professional – underground).</p> <p>Like, we're getting trained as champions to just come straight out and say, "Have you thought of suicide? Have you thought of taking your own life?" and I think the reason why they're training us on it because a lot of guys say..."Oh, you're not gonna do something stupid are you?" That's not the way you say it (Trades/frontline – underground).</p>
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Table 7 - Facilitating help seeking

Supervisor/leader development	<p>But the thing is as a supervisor you don't get trained to be like a psychologist and a counsellor sort of thing. Like what we need is and it is because guys have got all these issues at home with family lives and all that sort of stuff and they come to work and that's on the back of their mind and we're working with heavy machinery that can actually if their mind's not on the job, things can happen (Supervisor – underground).</p> <p>So, we started that program that...was directed more at the leaders to develop their capability in handling those sorts of stressful interactions. It's called a quick five minutes with [the name of the] EAP provider and that video goes out one a month. So, we've had, managing stress, we've had managing anger - the one just went this month is managing emotions. And so our EAP provider just provides some really good information, simple to understand, just key thoughts (Manager – open cut).</p>
Creating the space to open up.	<p>Within a crew like we can actually have a chat like ten minutes before each shift and say like, how's everyone going, how's everything going at home, and all that sort of stuff. That sort of communication we don't have that (Supervisor – underground).</p>

EMPLOYEE ASSISTANCE PROGRAMS (EAPs)

Although EAPs were common and generally well promoted, there was a reluctance to utilise these services for fear that discussions with psychologists could be reported back to employers. Others had had the experience of EAP providers not being responsive or being unable to schedule appointments due to roster conflicts. Significantly, one employer had been able to overcome some of these barriers by bringing psychologists on site to briefly meet each employee and explain how the service operated.

Table 8 - Employee assistance programs

Barriers to uptake	<p>It's kind of out there and well-promoted. As for how successful it is, I have got some doubts about that...We've had feedback that guys have called and haven't had a return phone call or the service hasn't been able to see them or make an appointment with them in a sort of timely fashion (Professional – underground).</p> <p>I think the hardest thing is to convince people that it is confidential, because a lot of people tend to think that if you're thought as soft or you're a bit of a weak link, people don't want to be seen as that (Trades/frontline – underground).</p> <p>She [an apprentice] ...did mention some of the counselling sessions she'd done, she's gone to her own counsellor because she couldn't access the facilities that are around her work roster and hours...I've had people come and ask me if I access this facility is it going to affect my job future and potential employers down the track (Manager – open cut).</p>
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Table 8 - Employee assistance programs

Improving trust in the EAP	We so we started the program which was basically rolling out that everyone in our business from CEO to apprentice is to get into a little van and meet our employee assistance program providers and put a face to that name. And the reason being is because I think we were finding that people for mental health meant bipolar or mental health meant anxiety or stress. They didn't realize mental health could also be, you know, anxiety and concern about your daughter having bad school results are not listening to you, your child not sleeping and all the things that can just to add to that. And we wanted people to know the process and the level of confidentiality and all this stuff that they need to be comfortable with. And we got a lot of great value out of that initiative and feedback that [more than 80] percent of our workforce would now go to the EAP (Manager – open cut).
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MENTAL HEALTH CULTURE

Interviewees reported an increasing awareness of and support for mental health challenges, although there was recognition that men may find it difficult to seek help beyond their family and peers. For some, there was still a lack of awareness of the symptoms of mental ill health. One participant highlighted how initiatives to improve the mental health culture can be constrained by a focus on cost reductions and production priorities, while another noted that important physical fitness programs had been phased out during industry downturns. Critically, some interviewees described how additional mental health support was not offered to those made redundant, when it was most needed.

Table 9 - Mental health culture

Supportive culture	We've had in one of our workplaces xx suicides in the last 15 months of their peers and that's affected them wanting to open up more about their story or talk and then they're being more engaged in that now and we're hearing it come out a lot more. A lot of supervisors at the moment are telling me that you know people are saying I've got a mental health issue or I've got this problem (Manager – open cut).
Men tending not to seek out external support	I think it's hard for people and for me being male, middle aged...Like they speak to their peers and hopefully their family, sort of thing. I don't think there's that, there's all this support that with the company saying, "yeah, ring this number or see this person", or whatever. But at the end of day, I don't think we're there yet for people to step up and make that call or whatever (Trades/frontline – underground).

Table 9 - Mental health culture

Lack of mental health awareness	<p>I don't know to be honest. I don't really know, and I don't even know if I know the meaning of stress or what. I don't even know if I'm stressed...the whole thing at work with the redundancies, that was stressful for me but my levels of stress I don't know me actual levels of how if I'm like highly stressed or, we've had a lot going on this year (Trades/frontline – underground)?</p> <p>I think people either don't realise what mental health is or, like, you know, what it might look like when they're struggling until someone confronts them with it or they don't know what to do about it, they don't know where to get information from (Administration – open cut).</p>
Time & cost constraints	<p>It's tough again with the cyclical nature of the industry that obviously, when money is tight, it's hard to get things approved, and also...it's hard to get time...But I think it's also just a way of trying to come up with more creative ways of doing stuff as well. You don't always need to spend a lot of money and have a lot of time to get a point across or to get an initiative through (Professional - underground)</p>
Need for additional support during redundancies	<p>When guys were offered redundancies, there's no one they could talk to. They couldn't speak to the union, couldn't have union meetings because they were governed by the amount of people, couldn't have union meetings. You couldn't make an appointment to see your superannuation guy because you could only talk to him via the phone or via Zoom, and mate, let's face it, most coal miners aren't very smart when it comes to technology (Trades/frontline – underground).</p>
Physical fitness supporting mental fitness.	<p>Well, a lot of the stuff that we've been telling the guys through the mental health movement's been excellent, because we back it up with dietary and sleep awareness so, have a good diet, make sure you get plenty of sleep (Manager – underground).</p> <p>Physical fitness is a massive key to mental fitness and we had a problem probably five, six years back where a group come down and they ran us through different stretching and exercise programs...So you had all these grown men with beards and dirty old coal miners that are there, touching their toes. It went for two or three minutes before the shift, but everyone was going underground with a smile on their face laughing...I'm not sure why it phased out. (Supervisor – Underground)</p>

RESILIENCE INHIBITING FACTORS

Overall, it was evident that organisational efforts to improve psychological safety were well received, although there are some organisational factors that continue to erode employee resilience. These relate to communication gaps, a disconnect between hierarchical levels, concerns about safety, work patterns and physical conditions, high workloads, uncertainty about the future of the industry and family and financial issues. Several constructive suggestions for managing these issues have been provided by participants.

COMMUNICATION

While participants had concerns about gaps in communication, there were clear signals about how these could be overcome. Suggestions included more regular, informal events where everyone could be updated about the state of the company (rather than relying on social media), ensuring that middle managers are kept abreast of developments, and reinstating panel or workgroup meetings at the start of the shift.

Table 10 - Communication

'State of the nation' talks	We're looking on social media and you see things posted about [how] the company as a whole are going under and that's just stressful thing for people because what's going to happen if they go under? ...Like if we can be more informed, I think like and simple things. Like they have like, they used to do a state of the nations, like a monthly meeting, and they'd give the boys a barbecue and just fill us in and let us know. But that's been stretched out now to every three months or every six months. (Trades/frontline – underground)
Senior managers communication with the workforce	I think the biggest thing that they could do is communicate with people. Get out of the office and actually have one on one or real conversations with people and talk about things that are available and what else do we need and get their feedback. It's all well and good to flick emails and throw flyers on the table and that sort of stuff, but you don't make any impact until you actually have a real conversation with someone (Manager – open cut).
Keeping middle management in the loop	We've had instances in the last two weeks where at a management level I'm sitting here waiting for some communication about what the next steps are and the unions having meetings with all my team telling them all this information that I just can't confirm or deny because I've got nothing (Manager – open cut).

DISCONNECT BETWEEN LEVELS OF THE HIERARCHY

Participants noted that historically the industry has been characterised by a disconnect between frontline employees and managers. Although there are positive signs that “us vs them mentality” is breaking down, more work needs to be done to breach that gap. One participant explained that trust and confidence in management is facilitated when managers clearly have operational or ‘hands-on’ experience.

Table 11 - Disconnect between the hierarchy

Managers with lack of frontline experience	I think there's a very big disconnect between what we as frontline workers do and see and say, and what people in management think is going on. I think there's a lot of people in management, not necessarily [here] ...some at other mines, who have just gone straight through uni, don't have any real hands-on experience, they can't quite get their head around exactly what the real problems are (Trades/frontline – underground).
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Table 11 - Disconnect between the hierarchy

Us vs them mentality but signs of change	I just think that to help breakdown that “us versus them” mentality, there needs to be more of a united, collaborative, communicative relationship. And as I said, I don’t say that thinking, meaning that effort is not made there, but I still think that there could be more work done in that space, just to sort of help continue to break down those barriers of they’re up there and we’re down here....But, as I said, I do feel like that is changing a little bit. There’s been a bit of a changing of the guard in some of those old, really heavily strong unionised people have left the industry, and you’ve got some of the younger guys coming through who may be a bit less focused on that (Professional – underground).
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SAFETY CONCERNS

Our findings highlight the importance connection between team climate, safety and well-being as well as the link between role overload and safety. Past research has found that role overload is associated with more frequent hazardous work events, yet this adverse impact can be reduced by co-worker, supervisor and management support for safety (Turner, Chmiel, Hershcovis, & Walls, 2010). Importantly, one organisation has recognised that “mind not on the job” is a critical safety hazard within the workplace.

Table 12 - Safety concerns

Link between teamwork & safety & wellbeing	It’s massive, yeah, because if you don’t feel part of the crew, or if you’ve got a couple of guys with big egos who just try and boss other people around and stuff like that...It takes your mind off what you’re doing and we work in a really dangerous environment so, you know, your safety comes into it, you take that stuff home so then you might not be sleeping properly. You know, it has a massive impact on your attitude, your wellbeing, everything? (Trades/frontline – underground).
Link between mental health & safety	And one of the hazards identified this year was “mind not on the job”. And I think that shows the level of maturity toward mental health that our leaders and representatives that were in that process to actually identify that as a risk. I mean, we’ve always had the real solid tangible sort of - vehicle interaction, energy isolation - electricity, like the real that those known hard critical hazards. But “mind on the job” people realize that we’ve got to get some focus on that (Manager – open cut)

WORK PATTERNS & PHYSICAL CONDITIONS

Roadway conditions in underground contexts were raised as a cause for concern as this impacted on employees’ attitudes to work at the beginning of the shift. Across both underground and open cut contexts, shift work was implicated as a factor that had the potential to erode physical and mental health; as a result, it was suggested that more support and a more flexible approach to shift patterns is needed.

Table 13 - Work patterns & physical conditions

Underground conditions	It's hard to explain to someone that doesn't work in underground mines but if our roadways are really bad, the guys are bouncing around all the way to the face. They get there and they're just like, "That was horrible." ...but if we could boost up our numbers to get those roads...we've had them like highways and the guys get to the face and they feel happy. (Supervisor – underground).
Shift work	We're constantly talking about how much sleep you've had and what do you do and giving each other tips, because you get to know your body and what your body likes and doesn't like, and yeah, it's, it is difficult though...We've had people come and talk to us about, you know, managing your sleep and stuff like that, which, which is good but we don't get it very often and, and we don't really get a lot of help with the shift work. (Trades/frontline – underground).

WORKLOAD

Research has shown that high workloads contribute to mental fatigue, burnout, poor productivity, psychological illness (e.g. anxiety, depression) and physical illness (e.g. hypertension, diabetes) (Bowling, Alarcon, Bragg, & Hartman, 2015). Whilst some interviewees were cognisant of the current industry downturn and the need to minimise costs, there is a concern that very high workloads are not sustainable.

Table 14 - Workload

Work intensification – long hours	Yeah, so workload is definitely a thing that I think puts a lot of stress on people, and it's not just me. Like, I know other people in other departments, they're in at, like, 5 and 6 in the morning and then when I'm leaving at 4 and 5, they're still there...they're doing massive hours, massive weeks (Administration – Open cut). There is [external pressure to work overtime] but sometimes it's internal, or you think you'll just get a bit more done, and that leads then, that's going to impact your family, you're not home when the kids get home from school or whatever your situation might be (Professional – underground).
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UNCERTAINTY

It was clear that participants were experiencing increased stress due to the volatile nature of the mining industry. This finding supports previous research which has shown that job insecurity is associated with higher levels of psychological distress in coal mine workers (Considine et al., 2017). Participants showed a common understanding that the industry is impacted by international trends and that the boom-bust cycle is inevitable yet difficult to predict. It was also found that perceived employability outside of the mining industry may be low for some workers.

Table 15 - Uncertainty

The future of the industry	<p>Older miners will tell you...that the peaks and troughs used to work in a seven-year cycle. So, the peaks, every seven years, you'd get the peak. You'd get the peak for a couple of years and then it would gradually come back down. The peaks were high. Then you'd get the troughs. But it was a seven-year cycle...Obviously that timeframe's lengthened and that stress period, for most, has increased as well (Administration – underground).</p> <p>I guess it plays on my mind a bit, I know a lot of the guys that I talk to are concerned about what's happening in the mining industry at the moment. So, you know, job security is a little bit on the back of people's minds at this point in time, just because of everything that's happening in China (Administration – open cut)</p>
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FINANCIAL & FAMILY ISSUES

The stress of job insecurity was found to be compounded by the high wages found in the mining sector, where workers become highly leveraged and reliant on the uniquely high salaries and the possibility of job loss brings with it prospect of severe financial strain. This finding is important as prior research has shown that working in the mining industry for financial reasons is associated with higher levels of psychological distress (Considine et al., 2017; James et al., 2018a). There is scope to harness the wisdom of older employees in advising the younger workforce on financial management, or even bringing external expertise such as used in the peer support education programs discussed earlier (e.g. using known personalities such as ex-footballers to broach this subject).

Table 16 - Financial & family issues

Lack of financial literacy & forward planning	<p>So, I think a lot of people's stresses are driven by financial positions that they've put themselves in...Blokes are often, like when these redundancies were happening and COVID come with downturn and that and they started saying that we're going to offload people, people shit themselves because people are in mortgaged up to their ears (Trades/frontline – underground).</p> <p>It's such a volatile industry, so I try to say to the young guys, "Don't go out and buy a million-dollar house and a jet ski and a brand-new car because it could go tomorrow, and then you're going to have a lot of debt you can't pay for." I guess the old saying used to be, "Just live off your base wage. Don't account for your bonus. Don't account for the good times. Just try and live within your means." It is stressful, don't get me wrong. (Supervisor – Underground)</p>
Golden handcuffs	<p>A lot of the guys...they call it the golden handcuffs in mining. They mortgage themselves to the hilt. They just can't do anything else because they can't go and work for a bricklayer and earn 60 grand a year. They need to earn a hundred grand a year and they don't want to be there (Supervisor – underground).</p>

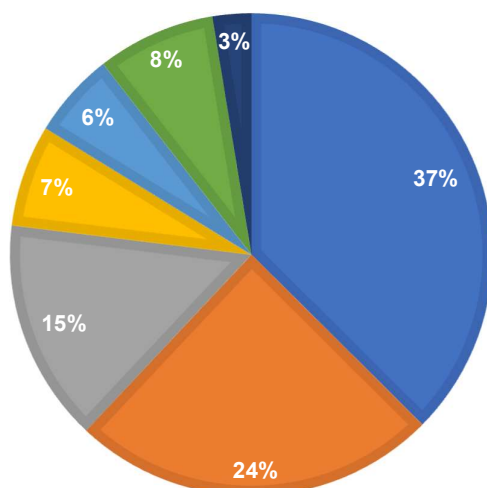
These interview findings, together with our review of the literature, were used to develop and implement a quantitative survey. Details on the method of development, survey contents and method of implementation are provided in the Appendix.

Quantitative Study Findings

A total of 528 participants from New South Wales completed our survey. Additional information on the method and constructs is provided in the Appendix. The survey was constructed in three parts. The first part asked participants to report on their demographic and work characteristics including their role and site. Most participants were reporting from underground coal worksites with half of these from rural areas and the remaining 30% from regional New South Wales. Participants were generally well-positioned to respond to the survey with more than five years of experiences in the industry. The majority of our participants were frontline operators or tradespeople (just over 60%) which fits well with our target group. The following figures depict the main characteristics of our participants.

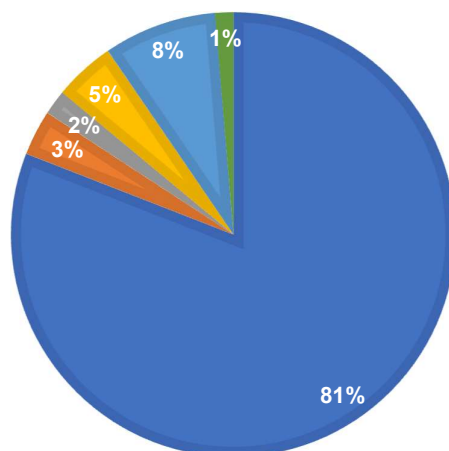
CURRENT ROLE/OCCUPATION

■ Frontline operator ■ Tradesperson ■ Supervisor ■ Professional ■ Manager ■ Administration ■ Other



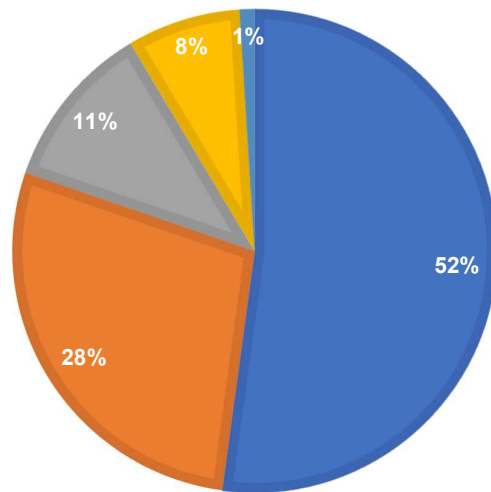
WORKSITE DESCRIPTION

■ Underground ■ Open-cut ■ Coal handling & preparation (CHPP) ■ Site office ■ Corporate office ■ Other



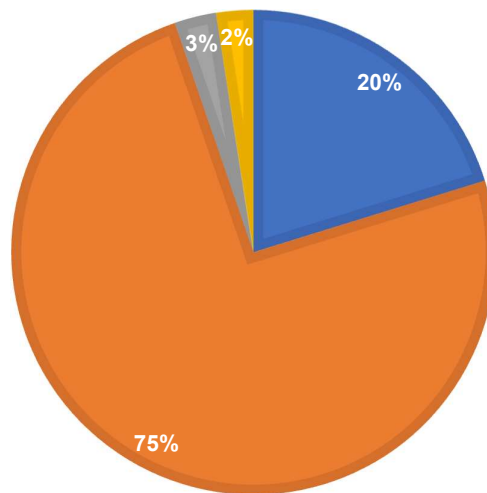
NORMAL SHIFT PATTERN

■ Permanent day work ■ Permanent night shift ■ Permanent afternoon shift ■ Rotating shifts ■ Other



COMMUTE

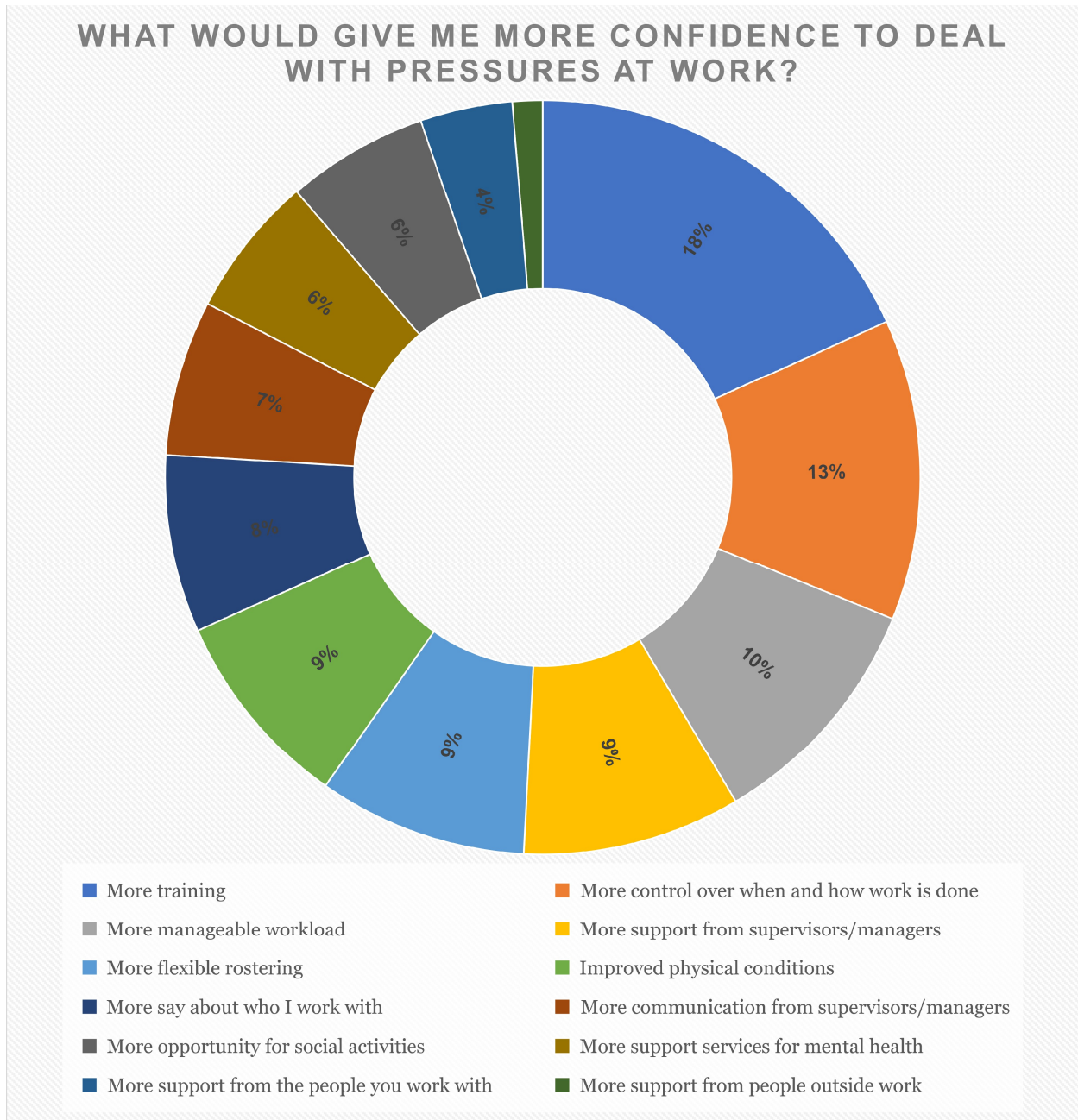
■ FIFO/DIDO ■ Local daily commute ■ Remote residential ■ Remote Work/Other



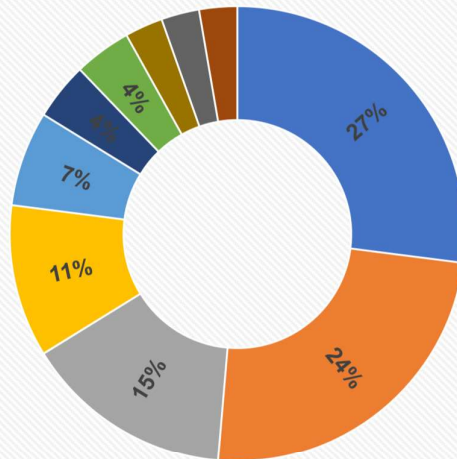
This demographic section was followed by a series of questions that invited participants to provide their input regarding the factors that would:

- Help them feel more supported at work.
- Make the workplace more positive.
- Help them be more resilient.
- Increase their confidence in dealing with work pressures.

They were also asked to provide feedback on the best and worst things about their workplace. For each of these questions, participants were provided with a series of response options and were also provided with space to write their own ideas and opinions.

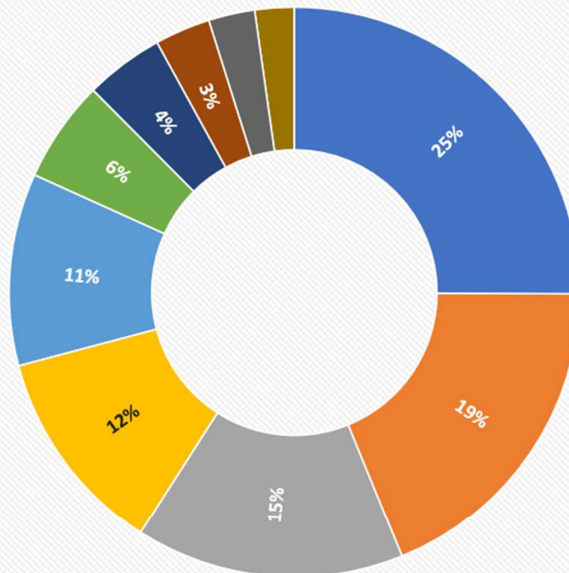


WHAT ARE THE BEST THINGS ABOUT YOUR WORKPLACE?



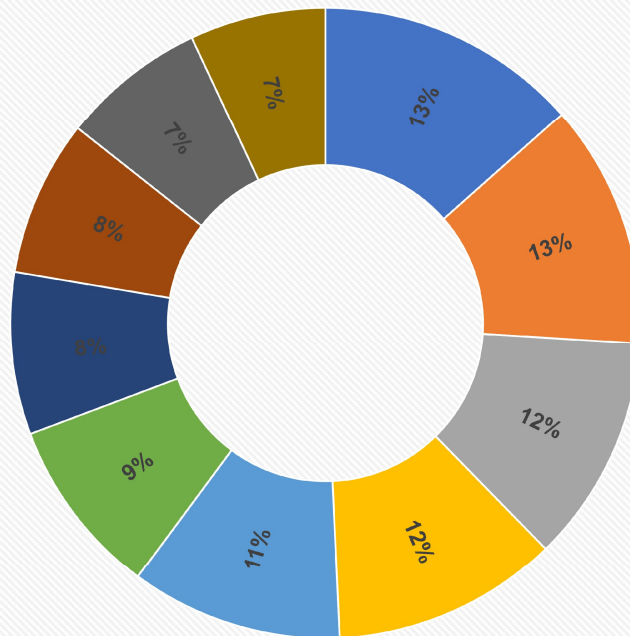
- The team/crew I work with
- Pay and benefits
- Challenging work
- Rostering
- Physical conditions
- Support services for mental health
- Communication from supervisors/managers
- Opportunity for social activities
- Training
- Control over when and how work is done

WHAT ARE THE WORST THINGS ABOUT YOUR WORKPLACE?



- Physical conditions
- Supervisors/managers/other people at work
- Workload
- Control over when and how work is done
- Rostering
- Communication from supervisors/managers
- Feeling trapped - like I have no other options
- Feelings like no one understands me or my situation
- Bullying or Threats
- Training

WHAT WOULD HELP ME BOUNCE BACK IF I HAD A BAD DAY?



- More opportunity for social activities
- More control over when and how work is done
- More manageable workload
- More flexible rostering
- Improved physical conditions
- More say about who I work with
- More training
- More support from supervisors/managers
- More support services for mental health
- More communication from supervisors/managers

In terms of positive factors, it is interesting to note that the mateship and support provided by team/crew members is a very important factor for many respondents – more important than the pay and benefits. Of interest, the influence of team/crew was also perceived as one of the most negative aspects of work for other participants. Somewhat predictably, the physical conditions under which mining employees work and the pace of work are two other negative influences at work.

In terms of factors that would allow participants to bounce back and to cope better with work pressures, we found that social activities were an important suggestion along with training. Of particular note, greater control over how and when work is done was identified as a significant potential contributor to resilience.

Participants were able to include additional comments for each question, and below are some of the main work-related factors that were included as helping them to 'bounce back' after a tough time and increase the positive experience of work.

Planning and Work Pressure

- Planners need better understanding of the processes and frustrations of working in remote areas and working underground.
- Less production pressure - less rush to finish jobs. Achievable targets.
- More workers, crews are short, pay has not changed
- Better short-term operational planning for less stress with the people who execute the work i.e. not having to constantly solve every problem
- Less pressure from managers
- Fewer new starters with no experience
- Crews are short with no planning from the mines to increase. We need more staff.
- Less production pressure - always a rush to finish jobs
- Employ more people to reduce workload.

Training and Communication

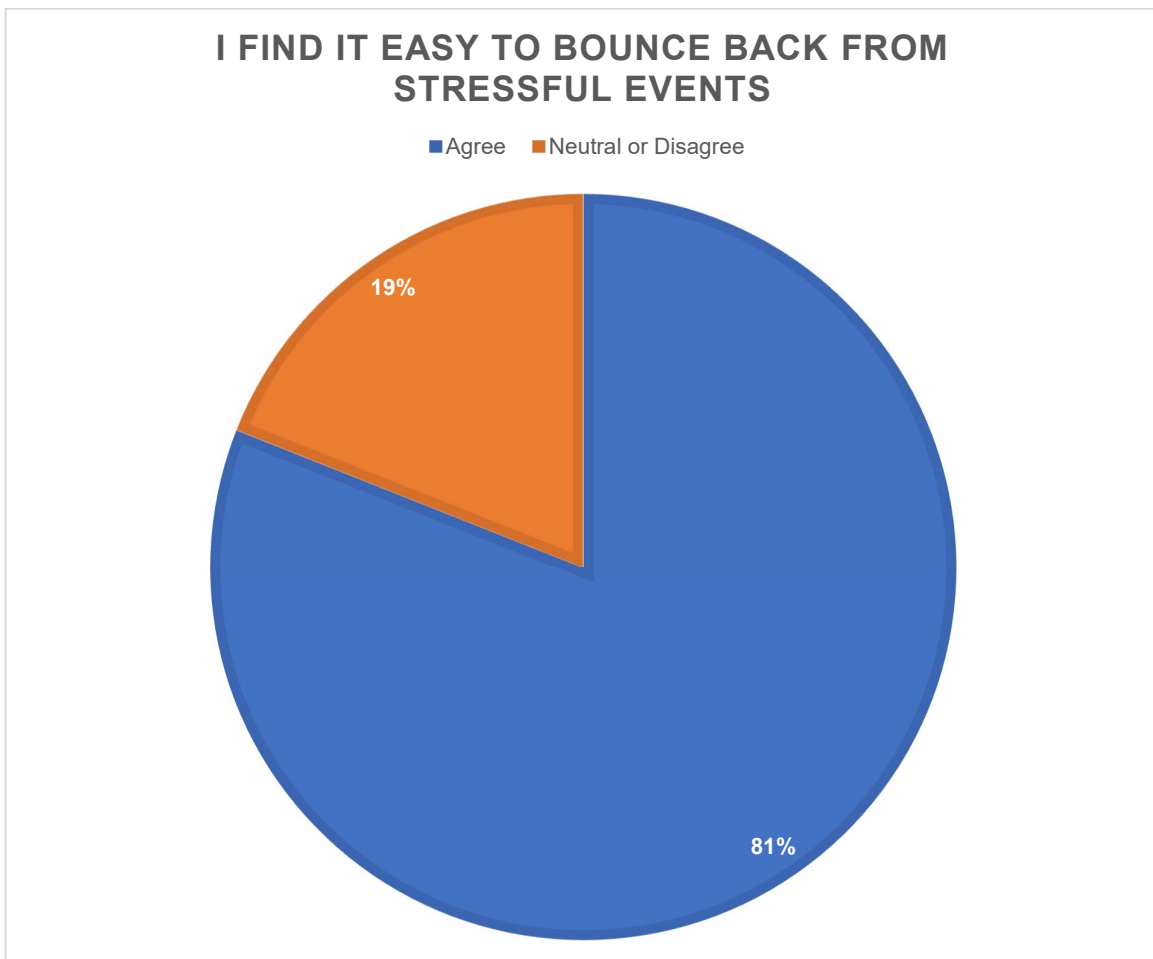
- More onsite and hands-on training. More training on rigs and machines before going underground.
- More training on the right tasks as well as safety.
- Better training for new people. Too many inexperienced workers.
- Better training to help deal with my position
- More feedback and guidance from supervisors. Better communication from managers – being less dictator and more collaborative
- More independence in working tasks and more input into how the tasks are done.
- More gratitude for the hard work.
- Know who you can talk to and trust without Chinese whispers

Participants were keen to engage informally with each other through social activities. These events appeared to be linked to both enhanced interpersonal interactions as well as building morale and cohesiveness. This included more organized social activities and, in particular, more morale boosting activities. Participants also noted benefit in opportunity to discuss matters and chat with their workmates in order to 'vent' and cope better with stressful situations.

- Shift flexibility.
- Changed shift patterns - slightly shorter shifts (12.5 hour shifts plus commute takes a full day with no time for exercise) and longer shifts (3 x 12 hour shifts instead of 4 x 10 for weekday roster).
- Upgraded facilities including toilets and crib rooms. Toilets should not be seen by other people. Cleaner crib rooms with better seating. Better food and eating facilities including hot meals and coffee stations.
- All gear brought down in bulk. Improved road conditions.
- Better work home balance. More rest and recovery. Work with less tired blokes.

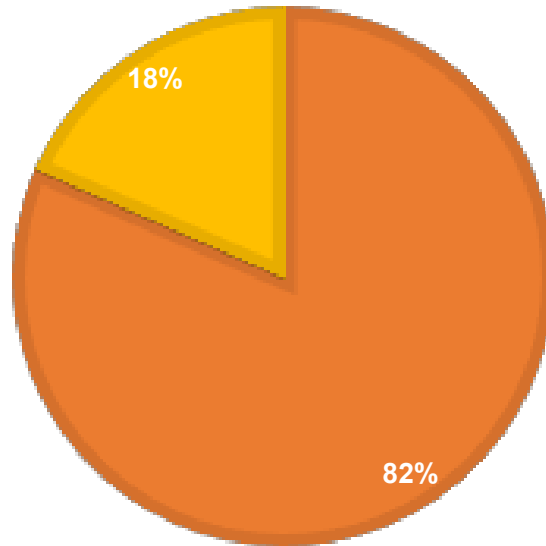
FACTORS THAT CAN INFLUENCE RESILIENCE

The main aim of our survey was to better understand factors that contribute to worker resilience and mental wellbeing in the Australian coal mining sector.



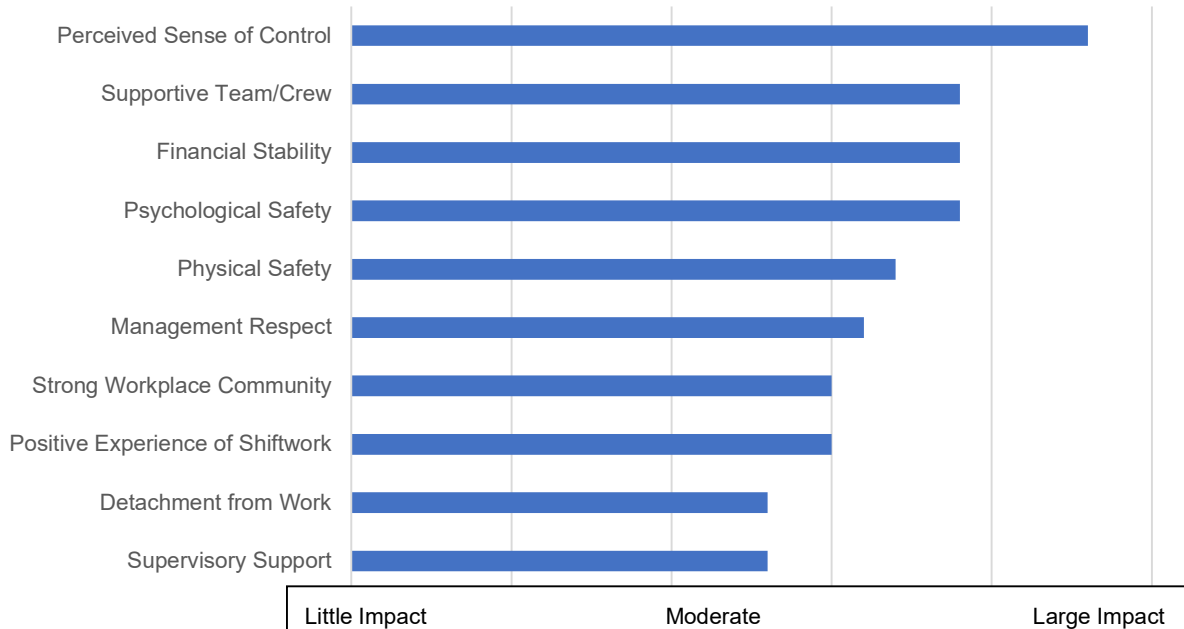
I HAVE A HARD TIME GETTING OVER STRESSFUL EVENTS

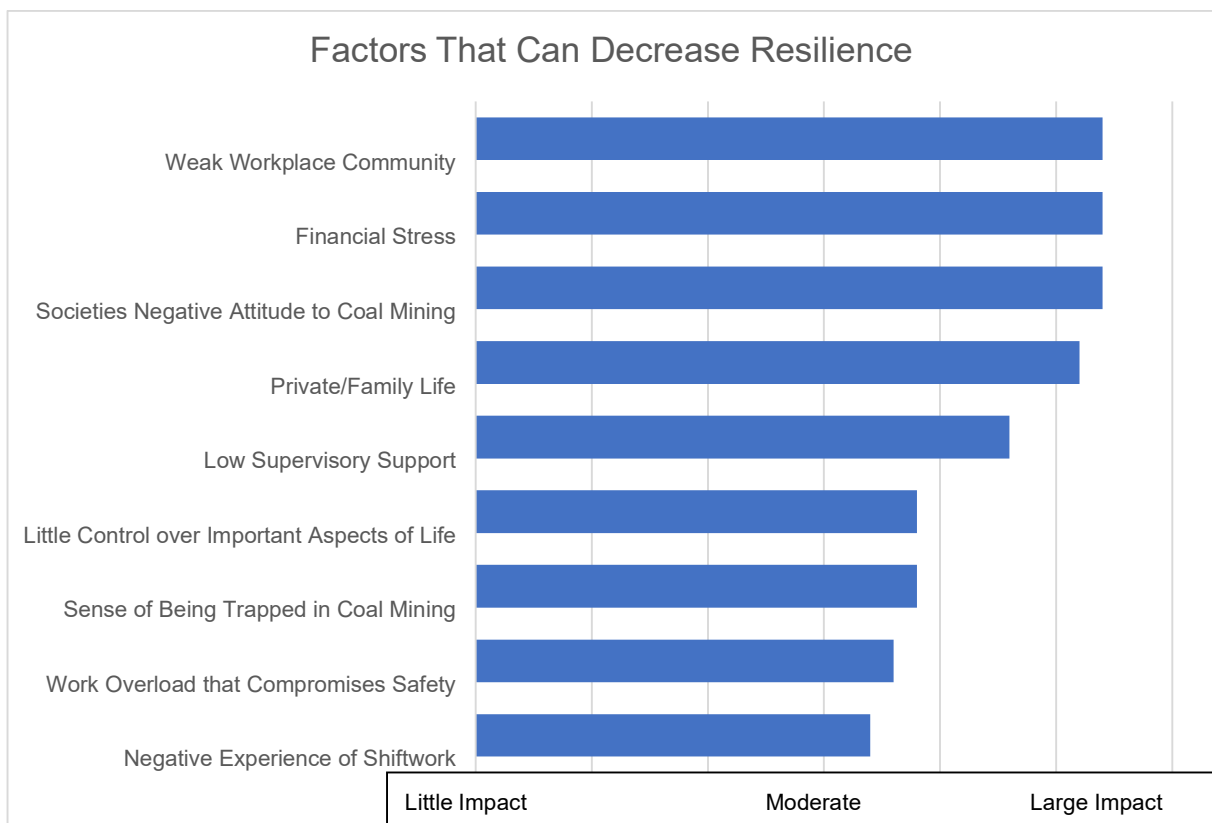
■ Neutral or Disagree ■ Agree



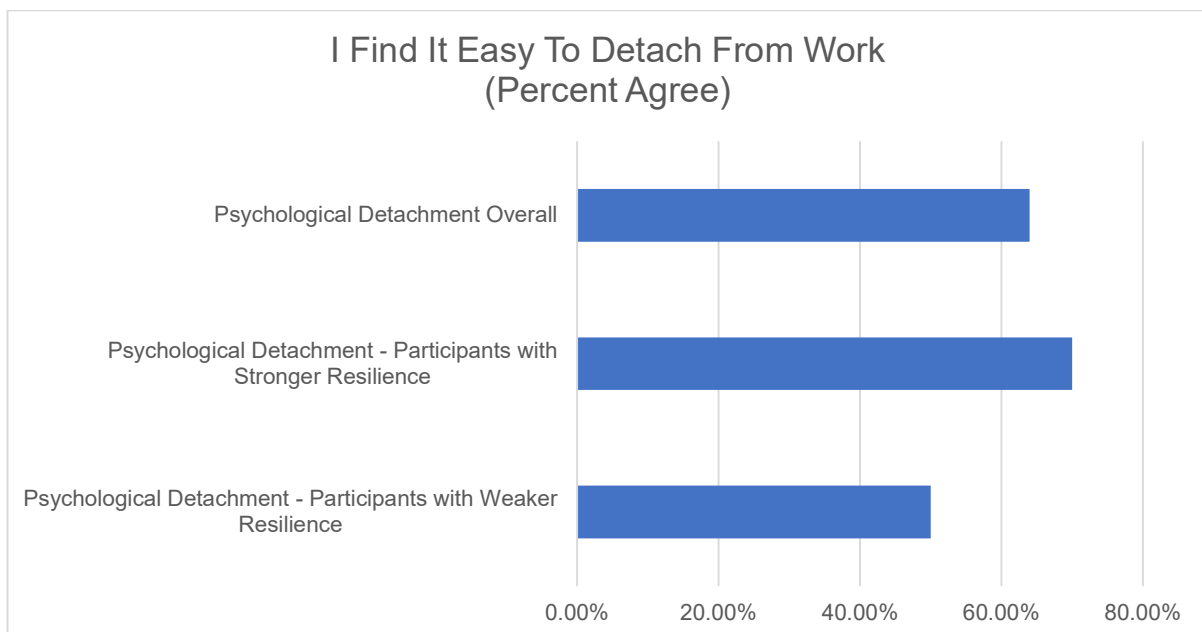
Overall, approximately 18% of our participants rated their resilience as low, that is, they noted that they would have a hard time getting over stressful events and would not bounce back easily. A comparable survey of male adults in Australia suggests that the average resilience score is 4 out of 5 (Smith et al., 2008). Our participants had an average resilience score of less than 3.5 out of 5.

Factors That Can Increase Resilience





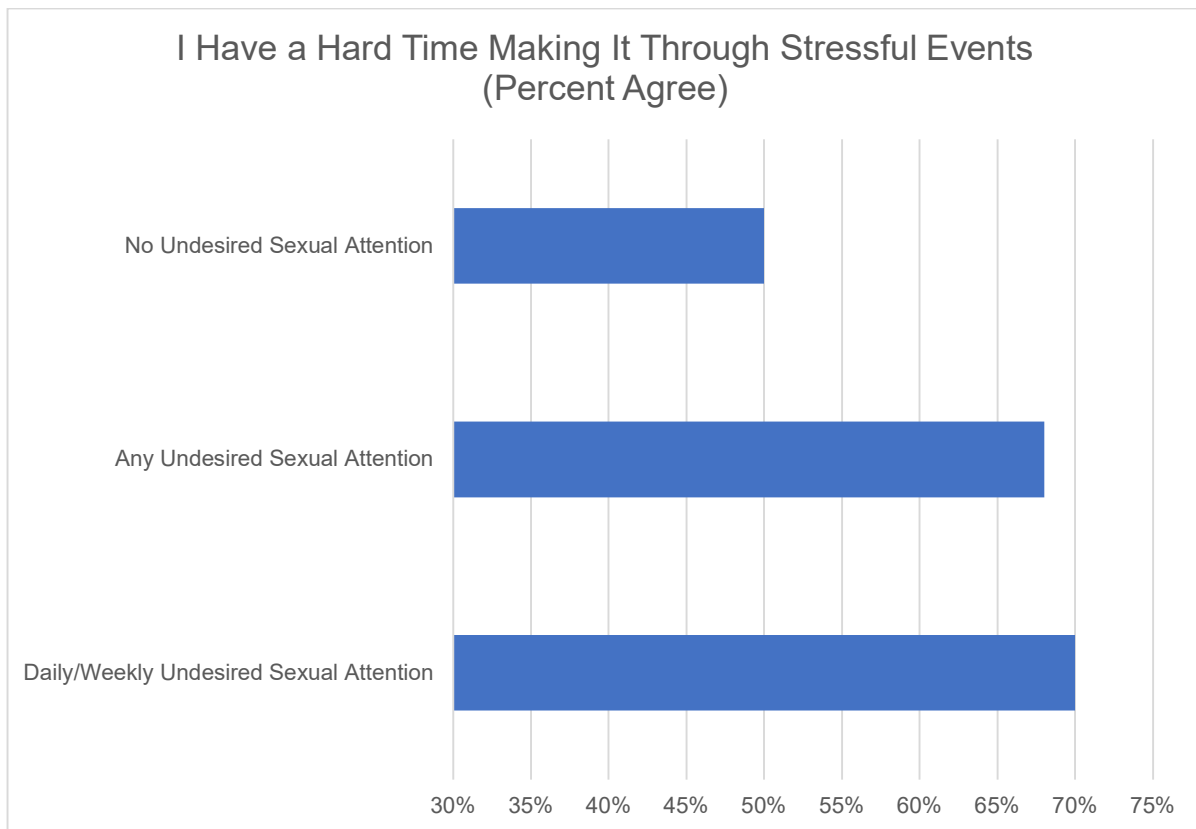
As depicted in the two figures above some of the factors that appear to influence resilience positively are the same as those that can negative influence resilience. It is useful to note that perceiving a high level of control over important aspects of life has a particularly strong positive impact. A sense of community and being able to discuss challenging issues and problems at work is also protective of resilience. The impact of being able to detach from work was significant – more detailed analysis indicated that those with strong resilience were able to easily detach from work.



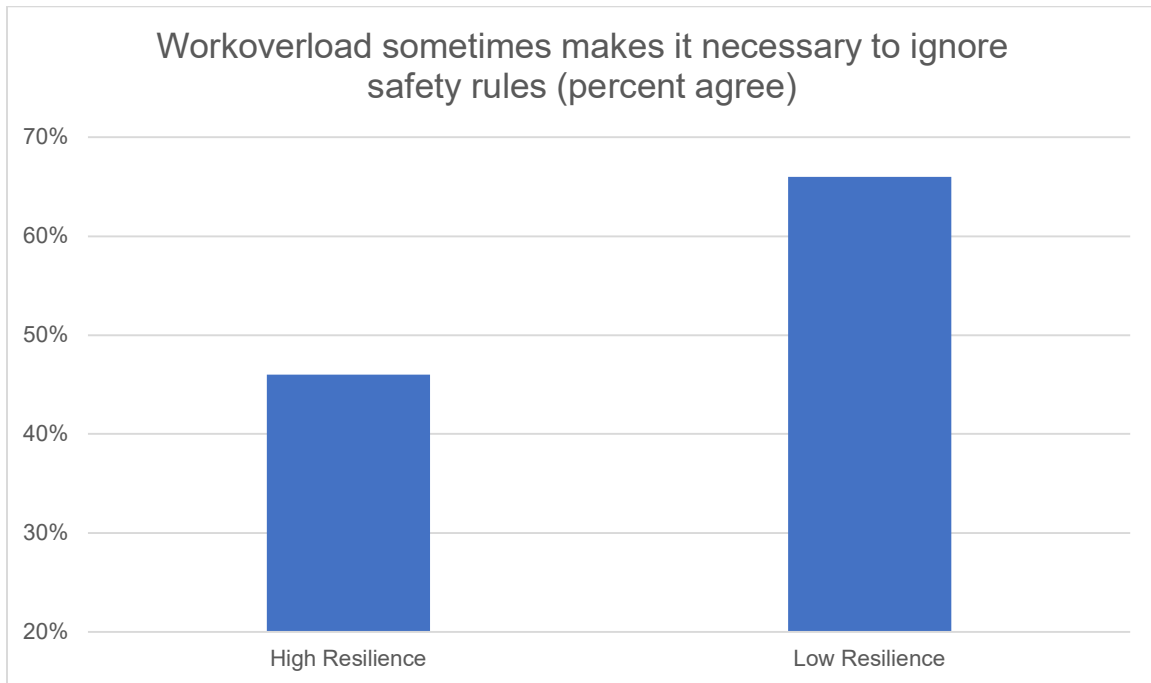
Together with the qualitative data summarised in this report, there is evidence of different and specific factors at play in coal mining. In particular, participants noted several factors that limited their occupational immobility as well as negative societal attitudes to coal mining, contributing to weaker resilience.

We found evidence that, while many of our participants were not exposed to conflict, a substantial proportion (over 50%) were involved in workplace conflicts. A small number, representing only 1% of respondents reported daily conflict. This is worth noting as though the proportion is small, the influence of daily conflict mental health is significant. Ensuring that no employee is involved in workplace conflict on a daily basis is therefore a priority.

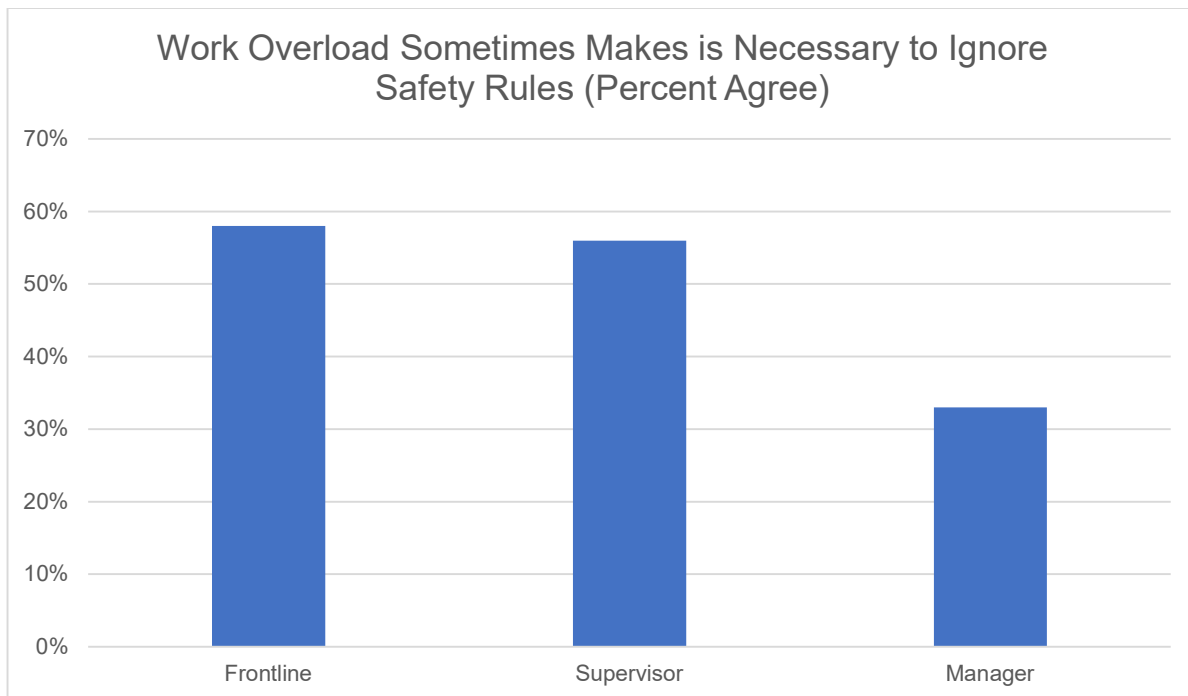
Approximately 36% of participants reporting being picked on and almost 7% experiencing undesired sexual attention in the previous 12 months. Possibly more concerning, we found that 3% of our participants were picked on daily and an additional 3% were picked on at least weekly. Though we found that very few people were exposed to undesired sexual attention frequently, for some 2% this was a daily or weekly occurrence. This is particularly important as, unlike being exposed to conflict or being picked on, we found that undesired sexual attention was strongly linked to resilience as illustrated below.

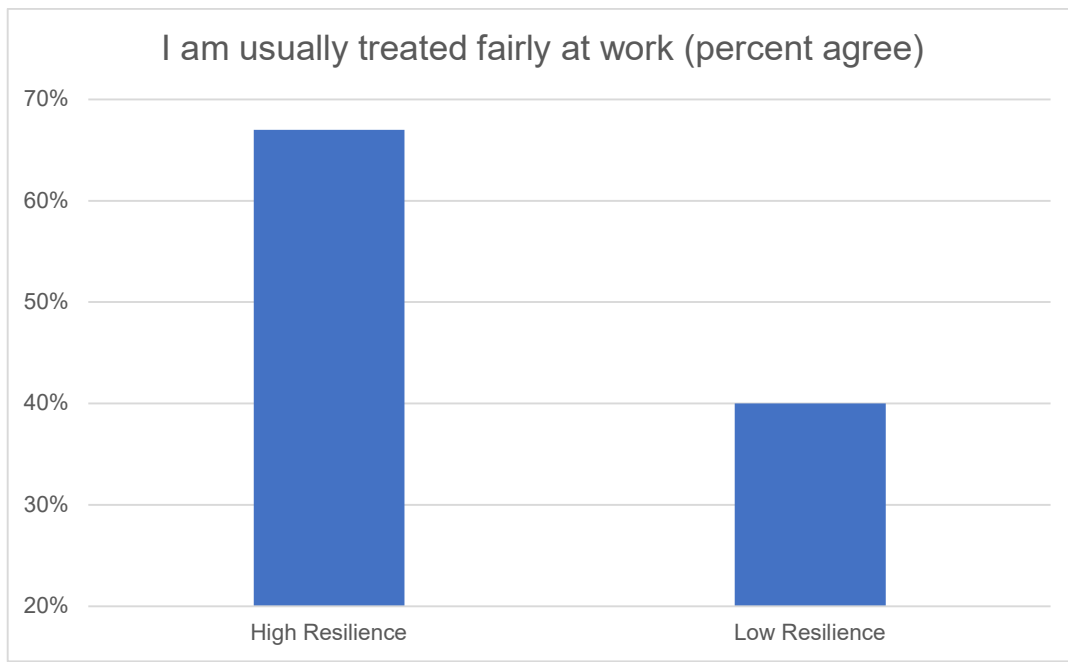


We analysed the difference between people who report low resilience and those who report high resilience against some of the most influential factors at work and outside work.



The figure above points to a difficult situation at work, particularly as this pattern was perceived by most respondents except managers. This suggests that without decreased workload, it is unlikely that perceptions of physical safety will increase.

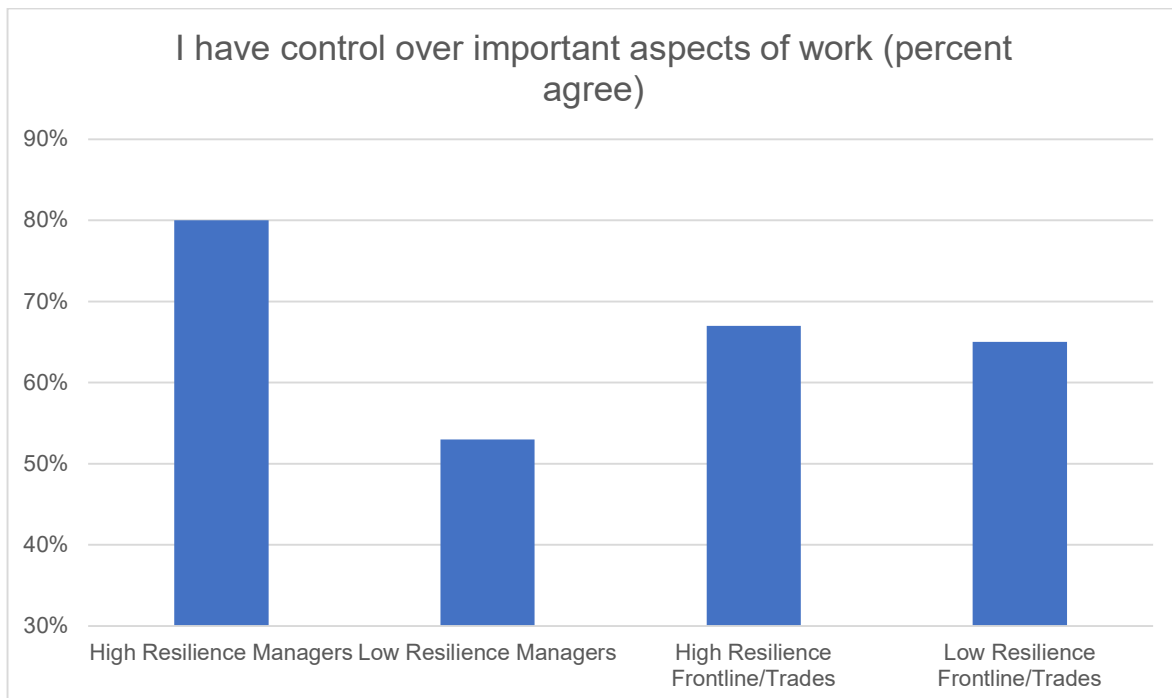




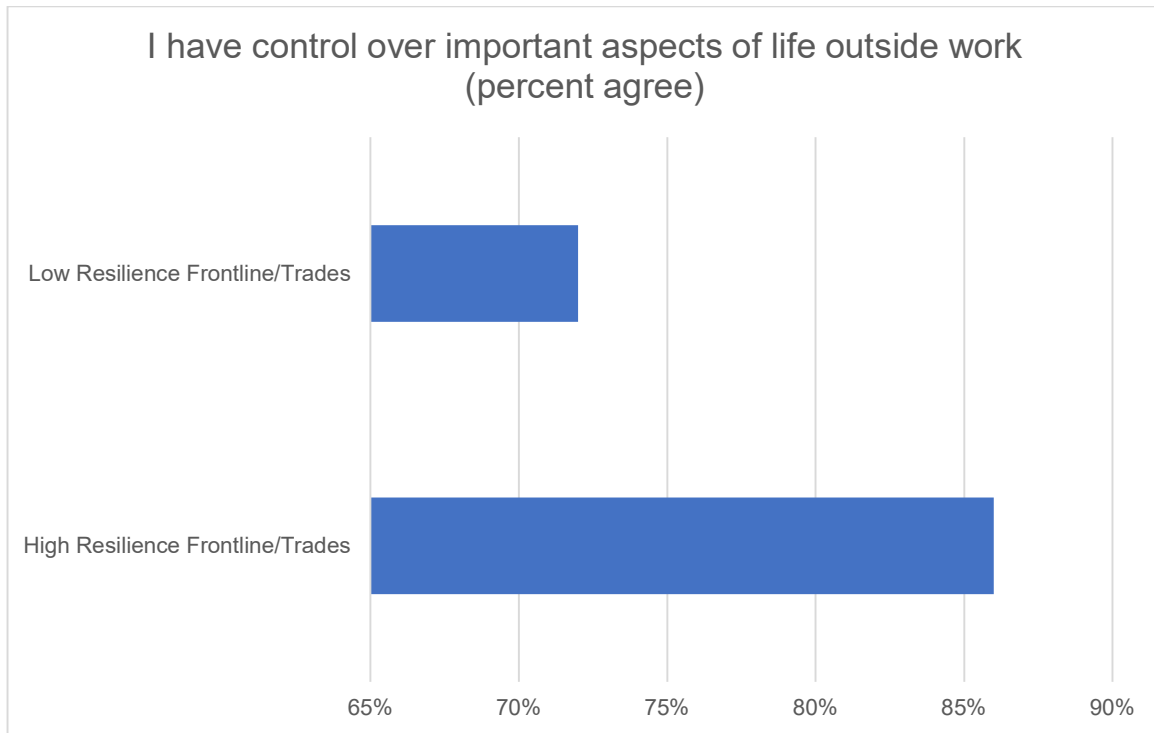
The perception of being treated fairly was relatively lower for those who reported less resilience. Interventions to increase perceived organisational justice and fairness may be useful in increasing resilience.

Unexpectedly, over half of employees have been impacted by the negative societal attitudes relating to coal mining. This figure is significantly higher for those who report lower resilience, suggesting that this might be a contributing factor when employees find it difficult to bounce back from stressful events.

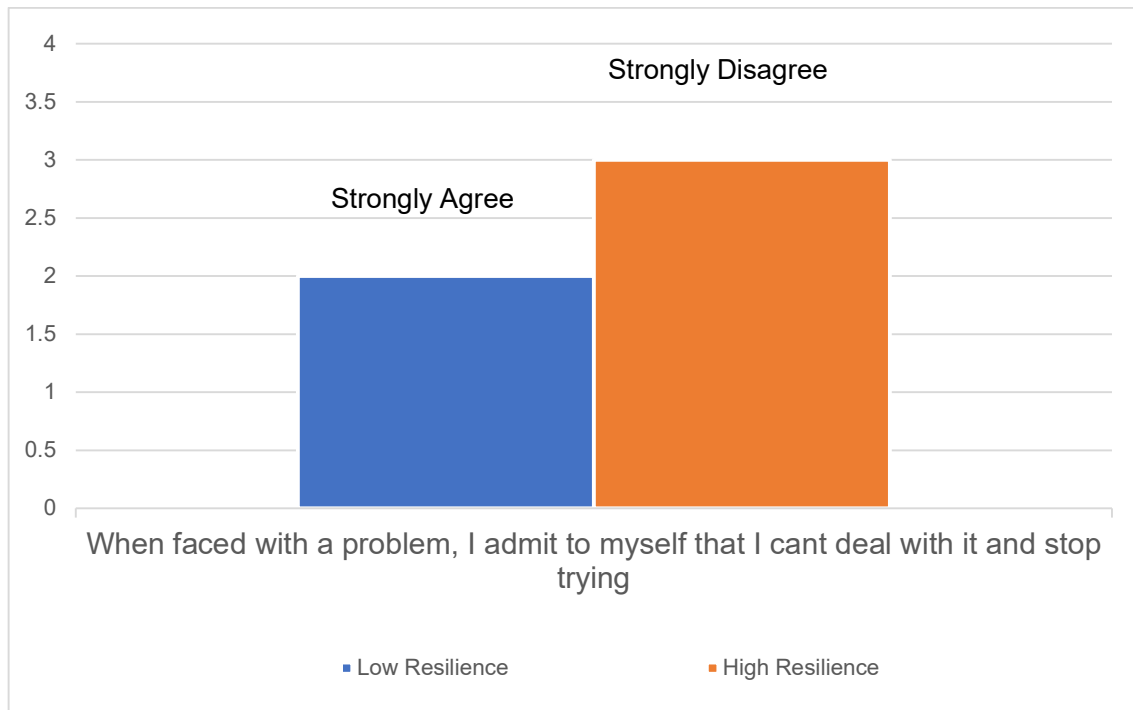
We found that, for some factors, the impact on resilience was specific to types of roles. For example, the amount of control over important aspects of work was highly related to resilience for managers but not for frontline workers or trades.



For frontline and trade employees, the amount of control over important aspects outside work was more protective of resilience.



We also found that the way in which employees approach difficulties has a significant impact on their capacity to deal with stress. This finding is particularly important as training can change the way in which people tend to approach challenging events.



DISCUSSION AND CONCLUSIONS

The Coal Health & Safety Trust provided generous funding to investigate factors that strengthen and those that may undermine resilience and mental health for coal mining employees. The qualitative and quantitative studies undertaken by Macquarie University researchers from the Health & Wellbeing Research Unit fulfil the objectives of this project by providing enhanced understanding of the link between workplace experiences and resilience and by understanding the workplace practices that support resilience. The findings reported in this report provide guidance regarding these practices and the strategies that can be deployed to enhance resilience in coal mining. This is particularly important given links between resilience and mental health as well as implications for turnover, absenteeism and productivity.

Our qualitative study provides considerable insight into the ways in which coal mining employees experience their workplace and the factors that contribute to resilience. We found evidence that employees feel trapped for several reasons including a perceived financial commitment to continue working in mining as well as a perceived inability to secure work with similar pay and conditions elsewhere. Workload and performance pressures were also identified as undermining resilience as were safety concerns and physical conditions. Chief amongst the factors that supported resilience was teamwork and camaraderie as well as contributing to meaningful and important work. Several important insights were also gleaned in relation to the existing mental health supports, with significant barriers to accessing these supports reported.

Our quantitative study provided additional insights into resilience as well as supporting many of our interview findings. As reported, we found that a range of factors were identified as supporting the ability to cope and bounce back including support from supervisors, managers and colleagues. Participants differentiated between factors that would make the workplace more positive and those that would support their resilience, which gives us confidence in the validity of our findings. For example, while increased social activity was not highlighted as an important workplace factor, it was perceived as one of the most important contributors to resilience. We found evidence that some factors were universally impactful while others varied depending on the role of the participant, most notably between managers and frontline workers.

We present this report as a clear evidence base for actions and interventions that will increase resilience in coal mining. We are continuing to collect survey data to broaden our participant characteristics (in particular, to increase the proportion of respondents from open cut mines) however our analysis does not suggest any meaningful differences are likely to emerge. We hope to positively impact the wellbeing and health of all mining professionals in Australia through our scientific endeavour.

APPENDIX

The following table summarises the translation of interview findings into our industry survey. Each interview theme is presented on the left with items designed to capture this theme in the central column. The right column provides a reference for these items. All included items have strong validity and reliability based on previous studies. All scales and items have been subject to face validity analysis by a panel of experts, including mining personnel.

We initially used an online survey that could have been completed via laptop or mobile phone (iPhone and Android) however, this was unsuccessful. The survey procedure moved to a paper-based approach which has increased recruitment exponentially. We sought a minimum sample of 300 participants and exceeded this target. We continue to collect survey data to ensure that a breadth of industry perceptions is reliably captured in our research.

We undertook some checks to ensure that bias (particularly common source bias) did not influence our results to a significant effect. For a subgroup of participants (selected randomly), we administered a second survey, distributed three weeks after the first survey, to assess common method bias. This survey asked participants to report on their resilience, turnover intentions, and mental and physical health. A Harman's Single Factor Test revealed that no one factor accounted for patterns of responses, suggesting that a common source or method did not bias our results (Tehseen, Ramayah, & Sajilan, 2017). We also reviewed our data to ensure that it met the constraints of the Correlation Matrix procedure (Tehseen et al., 2017). This finding provided additional evidence that a common source/method did not bias our results.

INTERVIEW THEMES	ITEM STATEMENT*	REFERENCE
WORK CHARACTERISTICS		
Workload	Do you have to work very fast?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Do you work at a high pace throughout the day?	
Work Patterns	Shiftwork negatively affects your health	Adapted from the <i>Attitudes to Shiftwork Measure</i> (Nachreiner, 1975)
	Working shifts leaves you more time for your family	
Changeable Work (Unpredictability)	Do you know exactly what is expected of you at work?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Are contradictory demands placed on you at work?	
	Do you sometimes have to do things which ought to have been done in a different way?	
Physical conditions & safety concerns	Work overload sometimes makes it necessary to ignore safety rules	(Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2017)
	Safety rules and instructions make it more difficult to achieve production objectives	
	I feel safe at work physically	
	Supervisors help employees to work more safely	
SUPERVISION & LEADERSHIP		
Communication/ Disconnect	At your place of work, are you informed well in advance concerning for example important decisions, changes or plans for the future?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Do you receive all the information you need in order to do your work well?	

INTERVIEW THEMES	ITEM STATEMENT*	REFERENCE
Recognition	Is your work recognized and appreciated by the management?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Does the management at your workplace respect you?	
Supervisory Skills	To what extent would you say that your immediate superior ...	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	...gives high priority to supporting you at work?	
	...is good at solving conflicts?	
ORGANISATIONAL CLIMATE		
Uncertainty	Are you worried about becoming unemployed?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Are you worried about it being difficult for you to find another job if you became unemployed?	
Sense of Community at work	Is there a good atmosphere between you and your colleagues?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Do you feel part of a community at your place of work?	
	Does your workplace provide opportunities for informal and social interaction?	
Belonging/Mateship/ Camaraderie	My crew mates/team support each other	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	My crew mates/team rely on each other	
	I can talk to my crew mates/team members when I'm feeling down.	
Network	How many people at work do you feel at ease with such that you could talk about personal matters?	Lubben et al., 2006
	How many people outside work do you feel at ease with such that you could talk about personal matters?	
	I often feel disconnected from others at work?	
Toxicity	Have you been involved in conflicts at your workplace during the last 12 months?	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	Have you been picked on at your workplace during the last 12 months?	
	Have you been exposed to undesired sexual attention at your workplace during the last 12 months?	
HEALTH & WELLBEING		

INTERVIEW THEMES	ITEM STATEMENT*	REFERENCE
Psychological Detachment	Outside of working hours, I forget about work.	(Sonnentag & Fritz, 2007)
	Outside of working hours, I don't think about work at all.	
Community Attitudes/Stigma	Society's negative attitudes toward coal mining have negatively impacted me.	(Baran et al., 2012; Harvey, 2001)
	Society's negative attitudes toward coal mining have negatively impacted my family.	
	I am proud of the coal industry and what it contributes to society and the community	
	Im concerned that other people don't understand how the coal industry contributes	
FINANCIAL & FAMILY CONCERNS		
Financial and Personal Stress	The pay is the main reason I work in the coal industry	(James et al., 2018b)
	I have financial commitments that mean I have to continue to work in coal mining because of the salary levels.	
	I would prefer to work in another job but can't afford to leave because of my financial commitments.	
	I feel stress about my financial position	
Perceived Control	How would you rate the amount of control you have over your work situation these days?	Survey of Midlife Development in the United States - MIDUS (Johnson & Krueger, 2006)
	How would you rate the amount of control you have important aspects of your life these days?	
Lifestyle, Work-Life Balance	The next four questions concern the ways in which your work affects your private life:	Copenhagen Psychosocial Questionnaire - COPSOQ III (Burr et al., 2019)
	My personal and family life are a source of stress?	
	Talking with someone at home helps you deal with problems at work?	
	My family and personal life affects my work in a positive (negative) way?	
	My work affects my family and personal life in a positive (negative) way?	

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