



Regular Article

COVID-19 and offshore oil and gas workers: The role of personality

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ARTICLE INFO

Keywords:

Personality

Big five personality model

Psychosocial stress

Offshore oil and gas

ABSTRACT

This qualitative study aimed to identify mental health hazards in the offshore oil and gas industry, as well as the role of the personality types of the Five Factor Model (FFM) in coping with these stressors. A focus group with 8 participants and a pilot study with 5 participants were conducted. Results showed that several stressors are currently present for Australian offshore oil and gas employees, in particular COVID-19 and the resulting negative effects on rosters, working hours, job security and time spent away from home. Other stressors revealed by participants were lack of space, working in a high-risk environment, stigma, helicopter travel and pressure to keep up with production. Poor safety behaviours were associated with neuroticism, extraversion and openness, while risk avoidance appear to be associated with agreeableness and conscientiousness. Tolerance to shift work was positively related to extraversion, yet negatively associated to neuroticism. Furthermore, neuroticism showed a negative association with help-seeking and productivity, as well as higher levels of concern relating to COVID-19 and job uncertainty. As personality traits are enduring throughout life, it is vital that employees are managed effectively through workplace interventions so that they are able to cope effectively, particularly during stressful events.

1. Introduction

Evidence shows that personality, along with motivation and attitude, is of major interest to employers (Green et al., 1998). It is unlikely that personality traits change drastically after early adulthood (Cubel et al., 2016) and after 30 years of age there is very little change (McCrae & Costa, 1994). Any change appears to be gradual and influenced mainly by physiological development rather than life events and experiences (McCrae & Costa, 1999). It is vital to understand the impact of personality traits and their effects on several aspects of individuals' work life. For example, personality has been found to have as much of an effect on earnings as cognitive abilities (Cubel et al., 2016), suggesting that it can independently predict income.

When considering employee health, mental wellbeing must be taken into account along with physical wellness. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)'s guidance notice was issued in 2021 in response to the increasing psychosocial hazards for oil and gas workers employed on

offshore facilities. Additionally, the war in Ukraine has driven oil and gas prices upward, resulting in a focus on increasing the oil and gas supply from non-Russian countries such as Australia. Furthermore, as the COVID-19 pandemic continues, the resulting issues that have affected offshore oil and gas workers are brought to light from the results of a small focus group and pilot study. Research has shown that personality traits often predict health-related behaviours (Airaksinen et al., 2021). Recently, there has been research examining the effects of COVID-19 on offshore oil and gas workers. This article aimed to highlight the importance of how personality traits can affect mental health and aspects of work, particularly in high stress environments. Travel restrictions and border closures due to COVID-19 have worsened job security and uncertainty around employment is significantly associated with moderate to very high levels of mental distress (James et al., 2018). The integration of personality in considering job-person fit in industry in order to promote favourable mental health outcomes is important. For example, there is evidence that certain personalities are more suited to shift work (Berthelsen et al., 2015; Parkes, 2002; Saksvik et al., 2011;

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Tamagawa et al., 2007) and are more susceptible to poor sleep and sleep disturbances (Hennig et al., 1998; Parkes, 1993, 2002). Personality traits have also been linked to help seeking and coping behaviours. (Beus et al., 2015; Parkes, 1986). This article investigates personality traits of the FFM (Costa & McCrae, 1992) in relation to safety behaviours, productivity, accident involvement, shift work and sleep and management by reviewing the relevant existing literature. It also examines the possible role of personality in coping with the effects of the COVID-19 pandemic.

2. Research aim/purpose

The aim of the literature review was to determine the role of personality, in particular the personality types of the FFM, in coping with these stressors. The aim of the focus group and pilot study research was to identify mental health hazards in the offshore industry.

3. Method

3.1. Procedure

A literature review was carried out to locate articles on personality, COVID-19 and the offshore oil and gas working environment. This was followed by the recruitment of participants via purposive sampling for the focus group study, which involved approaching the relevant representatives of government and regulatory bodies as well as offshore energy companies. Two of the employees were permanent workers, one was a casual worker and one was a contractor. The pilot study involved 5 participants and asked questions formulated from the themes which emerged during the exploratory nature of the focus group.

The combination of these methods of analysis aimed to increase validity in the findings (Greenwood et al., 2017). Both the focus group and pilot study participants were recruited through purposive sampling (Creswell, 2012). Ethics approval to conduct this research was granted by the university Human Research Ethics Committee (HREC) (Ethics Approval number HRE2021-0512). Participants' identities were protected through the allocation of a number between #1 to #13. Likewise, no organisations were identified in either the focus group or pilot study.

The focus group session was recorded and transcribed. Each participant's transcript was read several times and sent back to respondents for their review and comment, ensuring the validity of analysed data and that it was genuinely representative of the phenomena the study was proposing to measure (Birt et al., 2016; Long & Johnson, 2000), adding to the study's credibility (Ramsook, 2018). Results for the focus group were analysed through NVivo software. The qualitative data was separated according to questions asked within the session. Each of these then created main themes and patterns. Word clouds showed the most frequently mentioned words for each question, which helped to form an idea of the commonly-held thoughts and experiences of the participants and enhanced the validity of the research findings.

3.2. Literature review

The narrative systematic review of literature was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist (Moher et al., 2009) and conducted through a university library catalogue. Further articles were located through the recommendations of the journals and through reviewing the reference lists of identified articles. A total of 357 articles were reviewed and 68 of these publications were deemed the most suitable to be included.

3.3. Focus group

To provide insights (van Manen, 1990) and investigate psychosocial hazards on offshore oil and gas facilities, a focus group session was

conducted. Focus groups aim to provide researchers with the opportunity to consider the experiences of multiple voices at one time (Smith et al., 2009) and are able to be used alone as a method of analysis (Flick, 2007). Furthermore, as qualitative research requires a group of varied and diverse individuals, a focus group method was selected to fulfill quality criteria (Flick, 2007). Individuals with specialist knowledge of the phenomena under investigation were recruited (Creswell, 2012). Recruitment of participants was based on their employment position. There were two male representatives of industry authorities: one Manager of a regulatory body and one Inspector of a government agency. Other participants were a male Health, Safety, Security and Environment (HSSE) Advisor, a female Offshore and Maintenance Crewing Manager, one male casual worker, one male contract worker and two male permanent employees. For the pilot study, five Western Australian offshore oil and gas workers took part in one-to-one interviews via video link. Interviews took between 15 and 45 minutes.

The group session was held over Microsoft Teams, affording greater privacy to participants, thereby facilitating a reduction in personal discomfort (Liamputtong, 2011). The questions asked within the focus group aimed to gather information to enable the formulation of further questions for a wider study. Questions were semi-structured and open-ended, providing a more holistic picture than a questionnaire (Brannen, 2005). Keeping within the recommendations of several researchers (Creswell, 1998; Crouch & McKenzie, 2006; Morse, 1994; Smith & Osborn, 2008), a sample size of eight participants was used. NVivo software was used to identify emerging themes from the focus group, a recommended method of analysis for semi-structured interviews and interpretative methods of investigation. Data was able to be sorted through categorical classification via coding and sub coding, assisting the generation of emerging themes. Findings were then compared with the literature review results for similarities, which formed the questions for the pilot study. Focus group questions are presented in Appendix 1.

3.4. Pilot study

The interview questions formed on the basis of the literature review and focus group findings aimed to address a number of psychosocial risk factors identified during these processes. There were four male participants and one female participant. Two male respondents were engineers, one was a General Service Operator and one was an Operations Representative. The female participant was a Graduate Engineer. All respondents were permanent employees. Ages ranged between 26 and 55 years of age. Length of experience range was 2–20 years. A human-centric approach was utilised in the analysis of qualitative data to provide a richer and more profound understanding of how personal and extraneous factors influence the mental health of offshore oil and gas workers. Pilot study questions are in Appendix 2.

4. Results

4.1. Summary

The FFM organises personality traits along the fundamental dimensions of Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Openness refers to broadmindedness, intelligence and curiosity. Conscientious individuals abide by rules, are thorough and responsible, and endeavour to avoid risk. Extraversion is characterised by sociability, cheerfulness and enthusiasm and agreeableness refers to cooperation, selflessness and prosocial behaviours. Individuals high in this trait seek to facilitate and protect interpersonal relationships (McCrae & Costa, 1987). Finally, neuroticism is characterised by emotionality, anger, irritability (Lahey, 2009), excitability (Buck, 2011) and a proneness to anxiety and stress (McCrae & Costa, 1987).

Barrick and Mount (1991) consider the FFM to be robust enough to provide a relevant framework to develop and examine theories of

personalities and how they relate to a diverse range of measures in the field of organisational psychology, particularly the selection of personnel, performance reviews and training and development programs. Findings from the literature review are summarised in Table 1 and in Fig. 1.

4.2. COVID-19

COVID-19 was a strong theme in the interviews, particularly in the pilot study. Participant #12 lamented the difficulty in being able to return home due to the quarantine requirements at the beginning of the pandemic:

'A number of people that were away from their homes and their families and even beyond that, the vaccination debate and things like that ... that came into it. But more so, you asked the question about myself, I spent 7 months away from home last year, due to the borders being put up'

Table 1
Personality traits and their association with work stressors.

Personality Trait	Effect	Author
Big 5 personality types		
Neuroticism	Belief they cannot control their environment	Buck (2011)
	Less able to complete tasks	Buck (2011)
	Easily distracted by stimuli/preoccupied with external stressors	Buck (2011); Eysenck (1962)
	Poor safety behaviours	Beus et al. (2015); Gao et al. (2020)
	Less able to form constructive interpersonal relationships	Beus et al. (2015)
	Sleep problems and poor sleep quality	Hennig (1998); Parkes (2002)
	Poor adaption to circadian disturbances	Hennig (1998)
	Negative emotions (e.g., anger)	Beus et al. (2015)
	Less able to use effective coping strategies	Beus et al. (2015); Lahey (2009)
	Intolerance to shiftwork	Beus et al. (2015); McCrae & Costa (1986); Parkes (1986)
	Making irrational decisions	Tamagawa et al. (2007)
	Detrimental to productivity	Beus et al. (2015) Cubel et al. (2016) Chen and Chen (2013)
	Extraversion	Poor safety behaviours
Involvement in accidents		Clarke and Robertson (2008)
Openness to experience	Easily distracted	Buck et al. (2011)
	Higher tolerance of shift work	Saksvik et al. (2011)
	Frustration with safety procedures	Beus et al. (2015)
Conscientiousness	More likely to engage in deviant work behaviours	Beus et al. (2015)
	Broad-minded	Barrick and Mount (1991) Buck et al. (2011)
Agreeableness	Lower rates of accident involvement	Beus et al. (2015); Gao et al. (2020)
	Risk avoidance	Beus et al. (2015); Gao et al. (2020) Breivik et al. (2020)
	Predicts compliant safety behaviour	Breivik et al. (2020)
	Achievement-oriented	Cubel et al. (2016)
	Lower rates of accident involvement	Buck et al. (2011)
	Risk avoidance	Beus et al. (2015); Gao et al. (2020) Breivik et al. (2020)
	Unlikely to engage in risky safety behaviours	Breivik et al. (2020)
	Motivated to get along with others	Beus et al. (2015); Buck (2011) Judge et al. (2002)

Given that nearly 80% of over 5000 participants in Newby et al.'s (2020) Australian study on mental health impacts of the pandemic reported moderate to severe uncertainty about the future, and that the oil and gas industry in particular has been significantly impacted by uncertainty and economic decline (Feringa & Wentzel, 2021), it is not surprising that a major theme emerging from both the focus group session and pilot study interviews was job insecurity and uncertainty. Participant #11 expressed anxiety around job security and permanence:

'I think like most people, you start to feel less comfortable in your position, you start to question your longevity in your job. I think in engineering, you start questioning, you know, what place we might have and for how long. It can be a little bit scary'

Similar to Newby et al.'s (2020) findings, concerns around employment continuity and financial status add to anxiety levels. Participant #12 stated:

'There's been a general anxiety about the work and your ability to go to work, and that situation that I've described to you before ... there's a level of anxiety - you have to apply for a pass or if people come home, would I be able to go back to work again? You know, there was people off for extended periods of time and that whole sorta 6 or 7 months away in a totally different environment to your home environment and then readjusting back into your home environment, there's been an impact there'

When asked whether the COVID-19 pandemic had impacted their mental health, participant #11 explained that the past two and a half years had created concerns about the future of oil and gas and the ability to continue to provide service and expertise as an engineer:

'Absolutely, it is scary. And you know I'm the first one to not downplay that because it's stressful for everyone, you know, if you're studying, if you've just finished studying, if you've been in the industry for like 15 years like me it's still scary. It's a worrying time for a lot of people, a lot of families, a lot of mums and dads, a lot of professionals, it's a scary time'

In addition, it emerged that the global instability from the war in Ukraine was a cause for concern about the oil and gas industry's longevity for this participant. Being unable to travel internationally to work on different facilities was a comment made by participant #8. In the early days of the pandemic, quarantining for two weeks had been particularly difficult.

4.3. Interpersonal

One of the themes which emerged from the research data was the lack of personal space on offshore facilities. Shared accommodation was mentioned by participants #12 and #13, the latter describing the living space as 'less than favourable'. Participant #12 stated:

'I think it's a close environment that we work in, so on the facility that I'm in is that quite often you'll have to share a cabin. That environment where you just you haven't got somewhere to go of a night, like you're sharing your cabin with another person, the mess room is full, it's quite confined living space. You go to the gym at any particular time, it's only a small gym, there's any number of people that are there that are climbing over the top of each other. There's a lack of real estate to put a decent sized gym in and to have your own cabin, or to have an extended TV room'

Similarly, participant #10 drew attention to the constraint felt by offshore surroundings, speaking about the differences between offshore and onshore FIFO work:

'You're on board and it can be rough and it can be windy and wild and it's not like you can just ... we spoke about it before ... that confinement. You're on a mine site, I've never worked on a mine site, I'm sure they're quite confined as well but you can go for a walk for a couple of hundred metres and chill out'

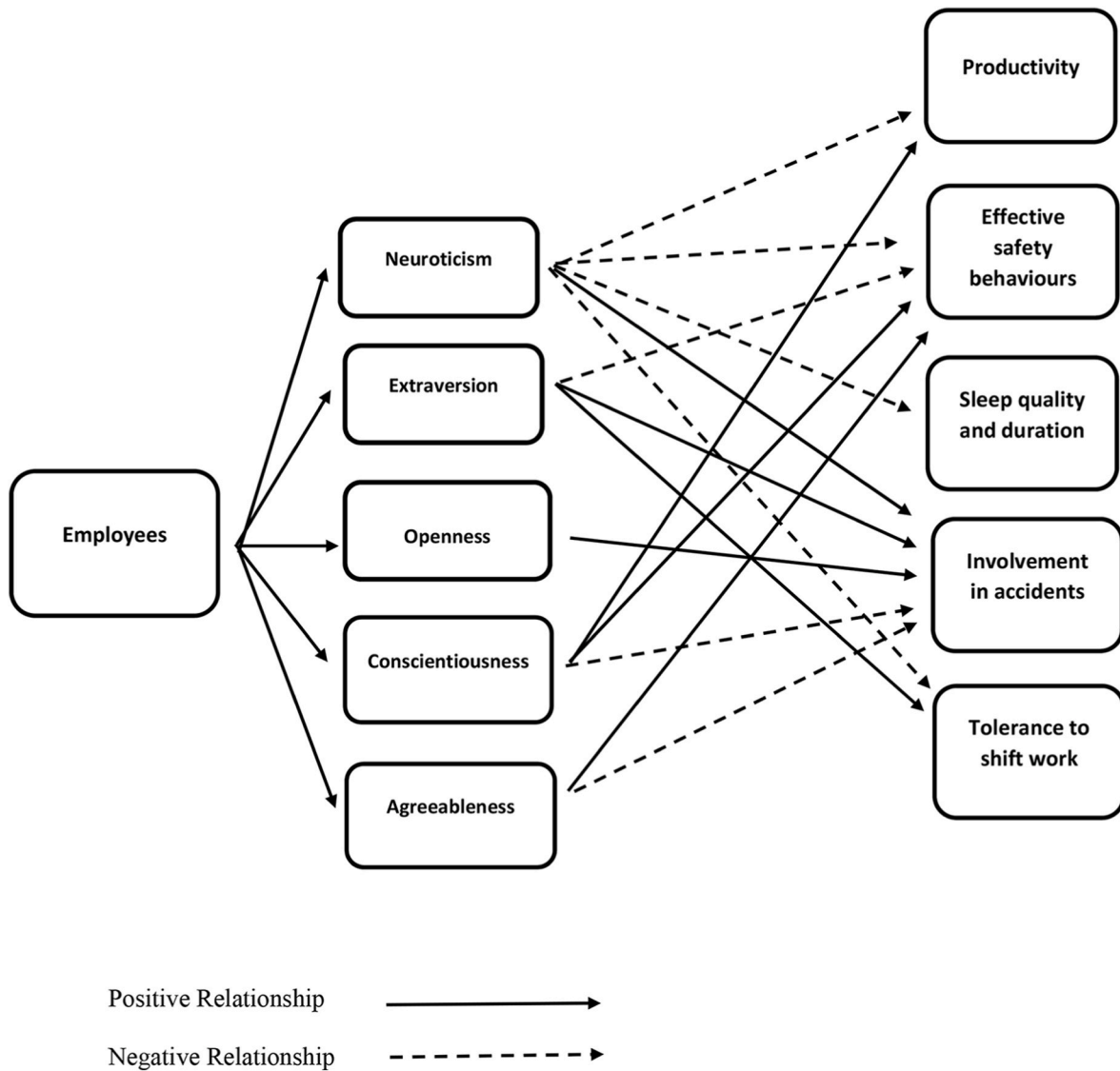


Fig. 1. Big 5 personality traits and their relationship with work.

Note: Adapted from “Mediation models including region-level Big Five sub-facets for the prediction of regional differences in well-being and personality traits related to psychological adversity”, by M. Obschonka et al., 2018, *Journal of Personality and Social Psychology*, 115(5), 903. <https://mpr.aub.uni-muenchen.de/89645/>.

4.4. Shifts and sleep

Early in the pandemic, travel and quarantine requirements meant that longer hours and compacted rosters were introduced for offshore workers. In 2020, NOPSEMA were compelled to release an official Safety Alert regarding adverse effects on the mental health of employees, including fatigue and an increased risk of involvement in major accidents. As participant #13 stressed, the offshore oil and gas industry is a highly stressful working environment:

‘There is this perception of overall stress associated with work with a major hazard facility. I think, yeah, just some level of stress associated with the constant use of more hazardous ways of transport, like helicopters and in general being present all the time and the major hazard facilities. It’s noisy. And when you go to all the trainings and inductions, they constantly remind you that it can end with a crash. And I think when people constantly tell you about that, then it takes the toll’

Participant #5 explained the impacts the pandemic had on rosters:

‘You’ve got longer hours, longer shifts. I’ve spoken to some people who are doing 5 weeks on five weeks off and then during that five weeks off they’ll

still get a call going we need you out for a couple of weeks and they would get compensated for that additional work that they do’

Similarly, participant #1 drew attention to the impact of roster changes:

‘We’ve had a lot of people having to do over cycle, and hence maintaining that roster, they’ll need to minimize their time at home - if they’re able to get home at all. A large portion of our workforce is from the Eastern states, so they’ve had to have incentives to either move over to Western Australia to be able to mobilise back offshore or they’ve needed to stay in Perth away from their families, you know for months and months at a time, you know 9–10 months because of that border closure’

Participant # 10 noted the long working hours:

‘I mean, you know, usually work a 12-hour day. I’ve been largely white collar in supervising or managing, so you can actually spend a lot more hours. You know you can be there 12–14, you know, 15 hours a day’

4.5. Help seeking

Help-seeking behaviours are influenced by several factors, including stigma and a lack of support (Gardner et al., 2018). At the present time, it is of particular importance that employees are comfortable with seeking help. Taking into account the role of personality and how it affects mental health during the COVID-19 pandemic can help to personalise treatments for mental health issues (Proto & Zhang, 2021). The willingness to seek help or support can be influenced by many factors. The culture of a workplace and attitudes of colleagues, particularly in a male-dominated environment, can thwart the process of seeking help for psychological issues (Henry et al., 2013; Ross et al., 2019). Extraverted and optimistic individuals have been found to be more likely to seek support, whereas individuals with high levels of pessimism tend to use avoidance coping strategies rather than problem solving resources. What is concerning is that Kulip et al. (2022) found both problem-oriented and emotion-oriented coping styles appeared to significantly predict fear around COVID-19.

Help-seeking behaviour for stressors which affect the family have been associated with lower family-work interference (Thompson et al., 2007). For direct coping, extraverts actively uphold adaptive coping strategies, while those high in neuroticism tend to employ reality-distorting strategies, as well as withdrawing and self-blaming (Parkes, 1986). In general, individuals with high levels of neuroticism are generally less able to use effective coping strategies (Parkes, 1986). Being unable to cope, or not finding the right ways in which to cope, was mentioned by participant #10, in some cases with devastating consequences:

'I hear a lot, lot more suicides so, you know ultimately, yeah, mental health untreated and people give up and end up, you know, becoming suicidal and killing themselves so ... it's surprising how many people still, you know, take their lives 'cause you know they don't find any avenues to better cope with it so' ...

Consistent with research findings that FIFO workers are at increased risk of suicide (Parker et al., 2018; Western Australia State Government, 2015), participant #12 went on to reveal that they had been personally affected by suicide:

'And we've experienced, you know ... we've had guys that have worked out there, you know, like one bloke that I know of, he was a rough n' tough scaffolder back in the day who took his life, you know and I'm in a job because a bloke, the person that had the job that I had took his life. So, it's a live topic out there'

In this study, participant statements echo Ross et al.'s (2020) findings, who reported that 65% of the participants in their study knew someone who had attempted to end their life. Furthermore, 69% of the participants had known someone who had actually died by suicide and 2% of respondents had experienced recent thoughts of suicide. Examining the GAT (General Awareness Training) component of MATES in Energy, Ross et al. (2020) found a significant increase in suicide awareness and literacy, knowledge, and improvements in attitudes to help-seeking and help-giving. Participant #12, who worked for a large oil and gas company, stated that there was an online learning module related to mental health that the company had provided access to. However, this participant strongly believed that Mental Health First Aid should be compulsory and specifically tailored to the oil and gas working environment:

'I think in industry, in the oil and gas industry we need to be getting, like it's compulsory for me to do my 1st Aid ... St. John's. I think it should be compulsory to do Mental Health 1st Aid. Some people might argue that it's not their cup of tea or they haven't got the skill set for it or whatever, that's fine. Further to that, we started to put programs in place where you'd have people come and visit the workplace, they'd roll out a program, they'd do some video or have a discussion and we've got to

reinvigorate some of that stuff that's particular to the oil and gas industry, if you like. Because even the program that we had, that was tailored for the mining industry. So I think something which is tailored for oil and gas needs to happen'

Participant #12 confirmed that they were referring to the Mates in Mining program, which has its roots in Mates in Construction. The program was created to address the high rates of suicide in the construction industry and has successfully branched into other industries and includes Mates in Energy (Ross et al., 2020), a multi-level intervention aimed at preventing suicide in the energy industry.

A mental health first aid program brought in to address the risks for offshore workers on the Hibernia platform off the coast of Newfoundland, Canada has been successful in promoting positive mental health and wellbeing for offshore workers, training workers in mental health first aid. The program's effectiveness is due to valuable input from workers, rather than being fully devised by management and has been instrumental in enabling conversations around mental health to take place (Boyko, 2017).

4.6. Productivity

Neuroticism has a significant negative effect on productivity (Cubel et al., 2016), compromising performance by undermining the ability to concentrate on tasks, particularly when under time constraints. Employees with higher levels of conscientiousness appear to perform better on these tasks. Barrick and Mount's (1991) study of a variety of occupational groups included professionals (such as engineers), managers (from foremen to chief executives) and skilled/semi-skilled workers. Conscientiousness was found by the researchers to be the strongest predictor of performance at work across occupations, implying it to be a desirable trait in organisational leaders. They also found that extraversion was a predictor of job performance, likely due to higher levels of interpersonal skills found in extraverts.

As noted by participant #1, maintaining productivity has remained central to organisational strategies in managing possible economic losses:

'I think given the sense that businesses need to, they have their businesses make sure that we're continuing to produce and recognizing things that come in from total left field, like COVID, then you have to sometime manage that and get back to steady operations as best you can'

However, through compliance monitoring, NOPSEMA (2021) identified several concerns at the operational level, including the misuse of management of change practices which aimed to minimise risks to the organisation instead of managing risks to employees, potentially indicating the prioritisation of reducing economic risk rather than giving precedence to safety. For example, prioritising operations that lead to an increase in production in place of routine maintenance which lead to unsatisfactory deterioration and corrosion. Pressure to fulfill performance outcomes was stated as being a major stressor by participant #8:

'I would argue that possibly, controversially, that a lot of the perceived pressure, which I should point out which is real, is absolutely an important part of how a lot of accidents happen. People perceive that they have to get their job done. They don't want to speak up, they want to get after it. They want to be as fast as they can, as quick as they can. They don't realize we really, that's secondary people not getting hurt, but that comes from lump sum contracts. The companies are letting lump sum contracts and the contractors that bid on them as cheap as possible and the faster they go the more money they make'

4.7. Management

Managers not only have to find the right worker for the position but must also consider how to manage employees in a contextual sense.

What may be beneficial in one situation may not be useful in another, yet effective leadership must also be sustainable across cultural backgrounds and situations (Kaluza et al., 2012). Organisational management must ensure that adequate steps are taken to address stigma around mental health issues, as negative attitudes regarding poor mental health and help seeking are a significant source of psychological distress (Bowers et al., 2018) and affect help-seeking behaviours (Bowers et al., 2018), particularly in a predominantly male environment, which is linked to a higher suicide risk (Ross et al., 2020), and where asking for help might be viewed negatively (Henry et al., 2013). A statement by participant #7 supported this finding:

'I think education's one of the big ones. And getting rid of the stigma. That's probably one of the biggest things, especially with men, is not just recognizing mental health, but dealing with it. Nobody wants to talk about it. It's the troll under the bridge isn't it?'

Perceived stigma has also been associated with suicidal risk (Parker et al., 2018). Consistent with findings from Bowers et al. (2018), who found that 38.5 percent of their study participants found a lack of available help to be a cause of stress; concerns around where to go and who to speak to for help were a further source of stress for workers:

'I think there's still a stigma of mental health and who to approach. What if you approached like the wrong person and you say everything or how you're feeling and they don't care, you know?' (Participant #9)

Further suggestions for reducing stigma were made by participant #1:

'I think there just needs to be some well thought out practical messages. Things that I guess ... ideas that can be shared out here. Practical thoughts, as in to help people control potentially their anxiety, their emotion. Sure, we have, you know, psychologists who can provide that, but oftentimes it's important to be able to recognize when you are in a state that you might need to catch yourself and reframe your thoughts, because oftentimes it's the individual and they may not be willing to actually share that. So if you have, I guess we need some guidance material or something to be able to, you know, help manage our own and then obviously have a have another course of action to speak with someone, should we, you know, need additional assistance but yes, some practical ideas, I think to help you know, recognize when there is a problem'

This was supported by participant #5, who agreed that the promotion of self-awareness and training individuals to recognise the signs of poor or worsening mental health, as well as what action to take, would help to address the issue. At an organisational level, participant #6 recommended the need to focus on a risk-based approach to the management of psychosocial risk factors and hazards:

'What's the likelihood of exposure to these psychosocial hazards that have the potential impact on people's mental health and then ensuring that we've got higher order controls that are established that our primary and preventative in nature so that we're not waiting till after someone's been exposed to a hazard and then providing the psychological support, for example. So, it's an organizational, risk focused approach in addition to the work that we can do at an individual level around education, resilience, providing those additional EAP psychological supports as well'

5. Discussion

Airaksinen et al. (2021) linked personality to levels of precautions taken against COVID-19, finding that higher levels of conscientiousness, openness and neuroticism predicted precautionary health behaviours in older adults. Individuals with high levels of neuroticism have a higher likelihood of holding fears about COVID-19 than other Big 5 personalities (Aschwanden et al., 2021) and experienced higher levels of stress throughout the pandemic (Iterbeke & De Witte, 2021; Liu et al., 2020).

Aschwanden et al. (2021) also found that neuroticism was associated with higher levels of uncertainty during the pandemic. Coping and resilience in the face of stressful events follows a similar pattern, where high levels of openness, extraversion, conscientiousness and agreeableness and low levels of neuroticism have been linked to more favourable outcomes (Oshio et al., 2018). The anxiety and worry that manifest as part of the neuroticism trait are not conducive to the nature of resilient individuals. The COVID-19 pandemic adds additional challenges to other personality traits of the FFM. Extraverts may have struggled with isolation requirements and lack of social contact, experiencing a marked decrease in mood during the progress of the pandemic. Improved mood was found amongst individuals high in agreeableness and conscientiousness, with the latter being significantly positively related to higher involvement in health-focused activities during the outbreak (Rettew et al., 2021).

Individuals high in agreeableness seek to facilitate and protect interpersonal relationships (McCrae & Costa, 1987) and are unlikely to compromise group cohesion by engaging in risky safety behaviours (Beus et al., 2015; Buck, 2011). Furthermore, high levels of agreeableness are associated with the motivation to foster meaningful interpersonal relationships (Judge et al., 2002). Individuals high in neuroticism are more prone to self-consciousness, hostility and vulnerability (Lahey, 2009). They are less able to successfully complete work tasks and less able to form constructive interpersonal relationships, particularly in stressful environments or situations (Beus et al., 2015). The ability to create and maintain harmonious working relationships and fulfill tasks would be facilitated by the act of working safely, yet this is more difficult to achieve for those high in neuroticism due to a preoccupation with external stressors and negative thoughts, which ultimately place strain on interpersonal relationships at work and result in distracted thought processes. Consequently, this affects safety outcomes, a finding previously identified in Eysenck's (1962) research, where 'attention to task' may mediate the relationship between neuroticism and accidents (cited in Hansen, 1989). However, Chen and Chen (2013) emphasise the lack of positive research into neuroticism in the workplace, particularly from a psychophysical perspective. While employees with high levels of neuroticism have a heightened response to negative physical stimuli, this can nevertheless be successfully managed in the workplace. In fact, neurotic personalities can potentially benefit organisations. Leung et al.'s (2014) study found that those classed as innately neurotic reacted to problems with more creative solutions when they had remembered a distressing event. However, in Clarke and Robertson's (2008) study, while neuroticism was associated with accident involvement, there was evidence that this relationship varied across situations. Barlow et al. (2014) suggest the potential of neuroticism as an emotional condition, raising the possibility that workers with high levels of this trait may be more manageable than previously considered. This suggests that they may be more receptive to direct treatment, implying there may be a significant impact at a public-health level, a concern which Lahey (2009) considers to be of top priority in research. Mindfulness-based cognitive therapy research by Armstrong and Rimes (2016) further supports the theory of neuroticism as malleable and responsive to intervention.

Positive associations have been found between extraversion and neuroticism and accidents (Lajunen, 2001). However, it must be noted that Clarke and Robertson (2005) found that extraversion was only linked to traffic and not occupational accidents and Henning et al. (2009) found this trait to be positively linked to safety attitudes. Nevertheless, both these traits have been linked to risky safety behaviours (Beus et al., 2015; Gao et al., 2020). Given that neuroticism is strongly associated with many mental and physical disorders, identifying the root causes and means through which these disorders are connected to neuroticism may assist in the development of strategies for intervention, (Chen & Chen, 2013).

Conscientiousness and agreeableness are associated with lower rates of occupational accidents. Buck (2011) suggests this may be because

individuals high in these traits have the ability to focus on tasks and are not as easily distracted as those high in neuroticism and extraversion or with low levels of agreeableness. Because cautiousness is a facet of conscientiousness (Costa & McCrae, 1992), conscientious individuals are more likely to follow rules and attempt to avoid mistakes (Henning et al., 2009). Clarke and Robertson (2008) found that low agreeableness was a valid predictor of accidents, and Bogg and Roberts (2013) suggest the inclusion of conscientiousness in future medical and public health research in order to understand how this trait might facilitate improved health outcomes. Beus et al. (2015) found that conscientiousness and agreeableness were negatively linked to risky safety behaviours, a finding echoed by other researchers (Gao et al., 2020). Likewise, both Beus et al. (2015) and Gao et al. (2020) found that neuroticism and extraversion held the opposite relationship with safety behaviour. There are other researchers, however, that have found either no relationship or a negative relationship between neuroticism and risk (Borghans et al., 2008).

Individuals high in openness tend to be curious, independent, imaginative and artistic (Buck, 2011). While these are all generally healthy traits, those with high levels of openness to experience can become frustrated with routine and rules and are more likely to seek greater control in response to their lack of autonomy. Engaging in risky safety behaviours conflicts with this because in a high-risk environment safety procedures must be strictly adhered to (Beus et al., 2015). The excitement seeking aspect of extraversion has been linked to unsafe behaviours (Beus et al., 2015). A possible explanation for this may be an extravert's lower levels of vigilance (Eysenck, 1962), which could affect focused attention and the ability to perform tasks safely. Openness can also be considered along these lines, whereas agreeableness and conscientiousness are linked to risk avoidance (Breivik et al., 2020).

Those working long, uneven and revolving shift patterns are particularly at risk of developing anxiety (Berthelsen et al., 2015; Pavičić Žeželj et al., 2019; Torquati et al., 2019) and depression (Berthelsen et al., 2015; Torquati et al., 2019). Furthermore, night shift work is linked to higher levels of irritability and an elevated risk of suicide (Parker et al., 2018; Sutherland & Cooper, 1996; Torquati et al., 2019).

A link between shift patterns and neuroticism was found in Berthelsen et al.'s (2015) cross-sectional study, where revolving shift workers exhibited higher levels of the trait. Tamagawa et al. (2007) found that personality traits, in particular neuroticism, were significantly associated with shift work tolerance. Their results showed that sleep on night shifts was negatively associated with trait anxiety, whereas fatigue for those on rotating shifts was positively related to trait anxiety. As trait anxiety is part of the neuroticism dimension, this further points to the importance of incorporating this personality trait when considering shift workers and disruptions in sleep. Neuroticism has been linked to poor adaptation to circadian disturbances (Hennig et al., 1998). Parkes (1993) reported significant associations between neuroticism and sleep quality, where those with higher levels of neuroticism slept for shorter periods, particularly when on night shifts. Similarly, low neuroticism and high extraversion scores are associated with a higher tolerance of shift work (Saksvik et al., 2011). Sleep quality can be affected by factors such as permanent noise, hampering effective communication and disrupting sleep quality and duration (Mette et al., 2018).

Mental Health First Aid programs are designed in a similar manner to physical First Aid programs, and aim to help others understand and recognise when an individual is suffering from poor mental health (Atanda et al., 2020), with the objective of providing assistance until specialist help is available (Boyko, 2017). It is estimated that between 68 and 88% of those trained in Mental Health First Aid have utilised their knowledge to assist someone suffering from poor mental health (Atanda et al., 2020). Minihan et al. (2020) refer to this as 'psychological First Aid' (p. 259).

6. Limitations

Although the FFM is robust, there are several limitations that must be considered. Personality traits may moderate each other. For example, conscientiousness is positively related to job performance (Barrick & Mount, 1991), yet if a conscientious individual is low on agreeableness, they may be seen by others as demanding, inflexible, rude, difficult, with a tendency to micromanage others. Furthermore, they are viewed by supervisors to have lower levels of performance than conscientious workers with higher agreeableness levels (Witt et al., 2002). There may also be further biases, such as failure to control for factors such as employee engagement and task familiarity.

A semi-structured interview technique was used to avoid limitations on the generation of understanding participant experiences. The only limitations in the interviews were the time constraint during the focus group and the multiple, sometimes overlapping, voices of participants, which were both overcome by asking the participants to add anything during member checking that they felt was important or had been missed in the interviews.

7. Conclusions and recommendations

The ongoing COVID-19 pandemic has brought mental health to the forefront, particularly in the context of work. The offshore oil and gas industry, which is more mobile than the average workforce, has experienced severe negative impacts due to compacted and extended rosters, quarantine, and isolation requirements during travel and job insecurity. The results of the focus group and pilot study show the clear impact of the COVID-19 pandemic on offshore employees and their families, as well as revealing heightened job insecurity in this cohort. In particular, neuroticism was found to be negatively associated with productivity and seeking help for poor mental health, along with fears concerning COVID-19. As health-related behaviour is frequently predicted by personality traits, the addition of personality factors from the recent literature provides further insight into managing individuals in terms of responses to stressors such as COVID-19, shift work, coping and help-seeking, stigma and isolation. Although research into how individual personalities affect responses to major stressors are widely researched, considering that investigation into the role of personality during the COVID-19 pandemic is very recent, more research is needed, particularly in isolated environments such as the offshore oil and gas industry. The combined results of the literature review, focus group and pilot study contribute new knowledge in the field of offshore work and provide a foundation for future research.

Funding

Funding: This research was supported by an Australian Government Research Training Program (RTP) Scholarship.

CRediT authorship contribution statement

Emma D'Antoine: Conceptualization, Methodology, Software, Data curation, Writing – original draft. **Janis Jansz:** Advising on study design, ethical issues, data analysis approach, content advice, editing, and proof-reading, Supervision. **Ahmed Barifcani:** Supervision. **Sherilyn Shaw-Mills:** Supervision. **Mark Harris:** Supervision. **Christopher Lagat:** Supervision.

Declaration of competing interest

None.

Acknowledgements

All work in this article was completed by the above authors.

Appendix 1

Focus Group Questions

Positioning statement: The offshore oil and gas working environment is unique and may hold many psychological stressors for employees. When considered together, these factors may pose a greater than average risk to employees' mental health and wellbeing. This discussion aims to facilitate the development of effective interview questions for the research participants of the study *Identifying Western Australian Offshore Oil and Gas Workers Mental Health Hazards and Risk Control Measures*.

Exploratory Questions:

1. In your experience are there any management practices or work organization practices that affect mining industry employees' mental health? If so please explain.
2. Do you know of any psychosocial obstacles for employees when returning to work following a work-related injury or ill health and if so how do you think that these can be mitigated?
3. What do you think are the main types of, and causes of, mental health stressors for offshore oil and gas workers? What risk control measures do employers use for these mental health stressors and how effective do you think they are?
4. If employees have poor mental health, how does this impact on offshore employees' health and their safety?
5. Do you know of any economic effects on organisations when employees have to deal with psychosocial issues and/or poor mental health? If so, what are the economic effects?
6. What do you think are the economic effects of having good employee mental health practices implemented by the company?
7. Regarding best practice, what do you find gives the best outcomes for promoting positive mental health for employees in the workplace?
8. Where do you think that there are opportunities for improvement in promoting positive mental health practices for contractors and workers with ongoing employment in the offshore oil and gas industry?

Exit statement:

Is there anything else that you would like to add to the discussion, or anything that you feel was missed?

Appendix 2

INTERVIEW QUESTIONS

Positioning statement: It has been identified that the offshore oil and gas working environment can be stressful for workers, particularly when considering mental health and wellbeing so it is necessary to investigate the psychosocial stressors which present themselves to employees in this environment and examine the personal, organisational and economic implications of poor mental health caused by these stressors. A work-related mental health hazard is defined as work demands that do not match the workers to their knowledge and abilities or the resources that they have available to do the work. The response can be cognitive, physical, behavioural or emotional. Work related mental health hazards include, but are not limited to, physically and/or cognitively demanding work, aggression, bullying, interpersonal conflict, under-supervision, over-supervision, lack of constructive feedback, lack of support, lack of respect, work overload, lack of role clarity, poor organisational change management, unplanned work events (e.g., over-time, call-outs), awkward roster design (e.g. mid-swing rotations, working night shifts after traveling during the day), extreme weather conditions, suboptimal

living and sleeping conditions (e.g. vibration, restricted living area, high levels of ambient noise, lack of privacy), poor organisational justice, fatigue, burnout, experiencing dangerous occurrences, exposure to trauma, and emergency management. Further, being physically or socially isolated from friends and family may be an additional burden (DMIRS, 2021; ISO, 2021; NOPSEMA, 2021).

The aim of this interview is to identify mental health hazards and possible solutions to these stressors and inform organisations and policy makers of best practices for preventing, identifying and improving poor mental health in the offshore working environment.

Demographic information

What is your role in the oil and gas industry?

Do you work for a large (more than 200 employees) or small company (less than 200 employees)?

What best defines your work status? You may agree to more than one.

- Permanent
- Contractor
- Part of a service company
- Casual

Length of experience in the offshore oil and gas industry?

- Less than 5 years
- 6–10 years
- 11–15 years
- 16–20 years
- 21–25 years
- 26–30 years
- 30+ years

Which age group do you belong to?

- Under 25
- 26-30
- 31-35
- 36-40
- 41-45
- 46-50
- 51-55
- 56-60
- 60+

Exploratory questions

- What are your rostered hours of work and for how many days/weeks at a time are you at a time rostered to work offshore?
- How do you feel about this?
- Have you experienced any management or work organisation factors that have caused you stress? If yes, please explain how this affected your mental health.
- Have you had any time off work due to stress?
- Are there any environmental factors that have affected your mental health when working offshore? If yes, please explain.
- What do you perceive to be the main work-related mental health hazards?
- Have you experienced any psychosocial stressors? If yes, please explain.
- If you have experienced returning to work after an illness or injury, how were your mental health needs considered in your return-to-work plan?
- How does the workplace culture affect whether someone will seek help for stress or poor mental health?

- Does stigma seem to affect poor mental health help-seeking and reporting?
- Have you ever had a psychological illness or suffered from poor mental health?
 - oIf 'Yes':
 - oHas having a psychological illness or poor mental health had an effect on you financially?
- Have there been any economic effects on your employer or its employees from a worker being stressed or from having poor mental health? If yes, describe the effects.
- Does your employer provide mental health education? If yes, please describe the education provided.
- Does your employer implement any other strategies for mental health promotion or support? If yes, please describe these strategies.
- What interventions or approaches does the company have to develop employee resilience? Resilience is the capacity of a person to recover quickly from difficult situations through having good problem-solving skills that enable the person to cope when there are difficulties.
- In your experience, what have you found most beneficial for improving employee mental health?
- Has the COVID-19 pandemic had any effect on your mental health? If so why?

Exit statement:

Is there anything else that you would like to tell me about psychosocial stressors or mental health hazards, what is done well to manage these hazards and if there are opportunities for improvement in managing employee mental health in the offshore oil and gas industry?

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