

# Who should work in Antarctica? An exploration of the individual, social and cultural aspects of expeditioner recruitment

MEREDITH NASH 

*Australian National University, College of Engineering and Computer Science, Acton, ACT 2601, Australia  
Meredith.Nash@anu.edu.au*

**Abstract:** Drawing on qualitative interview data, this article explores past and current Australian Antarctic Program expeditioners' perceptions of the personal qualities of expeditioners alongside their views of Antarctic station culture and expeditioner recruitment procedures. The findings reveal study participants shared similar views about expeditioner personal qualities. However, the findings also suggest that the current demographic similarity of expeditioners (e.g. the overrepresentation of white men) is perhaps much more important for assessing organizational fit than the Program might be selecting for. Participants described the ways in which interpersonal interactions and the social environment can deeply affect an expeditioner's experience of the station culture. Women in this study pointed to the connection between the overrepresentation of men in the expeditioner population and a potential male bias in station culture. These results extend the existing literature on person-culture fit in Antarctica. To conclude, I provide recommendations for diversifying the expeditioner applicant pool in Antarctica that can also be applied to the selection of other workforces in isolated, confined and extreme work environments, including space missions.

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## Introduction

This article uses a qualitative sociological approach to explore some of the individual, interpersonal and organizational aspects of expeditioner selection, using the Australian Antarctic Program (AAP) as a case study. Specifically, I am interested in how expeditioners' perceptions of high performance in Antarctica compare to their first-hand experiences of station culture and the extent to which gender plays a role in these considerations.

The exploration of this topic is timely because it is well known that National Antarctic Programs (NAPs) - the government agencies that manage national Antarctic activities - rely on selecting expeditioners based on various predictors of performance and cultural fit in Antarctica (defined here to include the Antarctic continent, sub-Antarctic Islands and the Southern Ocean). Yet, to my knowledge, there is little published research or publicly available information that illuminates precisely how NAPs select expeditioners and/or how these procedures change over time (e.g. Grant *et al.* 2007).

There are also few studies discussing expeditioner selection and its relationship to the broader organizational culture of an Antarctic station or how different kinds of diversity influence team performance in extreme

environments or organizational outcomes (e.g. Sarris 2017). Sarris (2006) is one of few scholars to explore these topics in her retrospective studies of person-culture fit in the AAP. Sarris' research is pioneering because it moves beyond the focus on individual characteristics in selection that is present in the bulk of the psychological literature. Rather, she shows why and how expeditioners have a better experience in Antarctica when they see themselves as fitting in with station norms (Sarris & Kirby 2007). Here, demographic similarity is strongly linked to cultural fit - men generally report fitting in better with station culture and are more likely to return for a subsequent season.

In this article, I build on and expand Sarris' (2006) work by bringing together the established psychological literature on expeditioner selection with a growing body of feminist social science research on the experiences of women in Antarctica (e.g. Rothblum 1998, Nash *et al.* 2019). Feminist research has uniquely illuminated how robust the gendered regimes of Antarctic stations are, how women interact with these cultures and how this might reflect on NAP selection procedures. I draw on interviews with past and current expeditioners in the AAP to argue that demographic diversity remains undervalued and that it still matters in Antarctic selection in NAPs and other extreme communities, especially as it relates to increasing the representation of

women and those from other historically excluded groups (e.g. people of colour, LGBTQIA+, etc.) in the polar workforce.

To advance these arguments, in the forthcoming sections, I provide an overview of the relevant literature and outline the details of this study. I move on to a discussion of findings, focusing on three themes, including: 1) how AAP study participants described the ideal personal qualities (PQs) of an expeditioner, 2) their perceptions of the station culture and 3) the challenges/limitations of expeditioner selection processes. To conclude, I provide recommendations for how NAPs can connect with a more diverse talent pool and address some of the issues surrounding a masculine workplace culture. While the study is focused on the AAP, the findings are highly applicable to NAPs broadly and to other extreme communities (e.g. space, submarines, the Arctic, military, etc.) in relation to developing more robust selection procedures and inclusive organizational cultures.

#### *Living and working in an isolated, confined and extreme environment*

Antarctica is the coldest, driest, windiest and remotest place on Earth, making it one of the most difficult places to live and work (Cassano 2013) - it is an isolated, confined and extreme (ICE) environment. Isolation is the experience of physical separation from others and one's typical social network. For example, expeditioners live and work in Antarctica for an extended period depending on their role (e.g. multiple weeks, months or years) and can experience varying levels of emotional and cognitive deprivation. Confinement is defined by restricted physical mobility due to the dangerous conditions in the working environment. For instance, expeditioners on vessels or on stations live in confined quarters with limited physical space and privacy. There is little separation between work and leisure. During winter, it is difficult to leave the station to escape this confinement given the conditions. On a vessel, it is impossible to leave at any time. Thus, expeditioners and others working in ICE environments must cope emotionally in these situations (Picket & Hofmans 2019). The extreme environment itself poses a constant stressor despite improvements in living conditions on stations/vessels over time (Palinkas 2003).

Expeditioners contend with extreme light/dark cycles as well as exposure to extreme cold and altitude. The environment can disrupt circadian rhythms and result in various physiological responses (Arendt & Middleton 2018). Changes in the physical environment can also contribute to seasonal syndromes such as 'winter-over' syndrome, characterized by symptoms including depression, anxiety, sleep disturbance, difficulty

concentrating, mild hypnotic states and interpersonal tension (Palinkas & Suedfeld 2021). The consequences of living with the psychological stressors associated with ICE environments are not limited to individuals: interdependent teams can also 'catch' each other's emotions - referred to as 'emotional contagion' (Wagstaff & Weston 2014). There is also a large body of scholarship discussing the salutogenic effects of Antarctic employment (e.g. Blight & Norris 2018), including a sense of personal achievement, increased self-esteem, resilience and improved health (Palinkas 2008).

Extreme environments such as Antarctica are defined along physical, technological, social and psychological parameters (Suedfeld 1991). Physical parameters refer to the challenges posed by the physical environment that impact survivability. As noted above, in Antarctica, this refers to the risk of injury or death from cold, wind or environmental hazards such as crevasses. Technological parameters refer to the degree to which technology - such as communications, transport and heating - is required to support life in the environment. Social parameters refer to the degree to which people can experience social novelty and choice and manage interpersonal interactions - factors that are inhibited within Antarctic contexts. Finally, psychological parameters encompass the impacts of adapting to and coping with the impacts of the other parameters across cognitive, behavioural and emotional/affective domains. Researchers have consistently demonstrated that psychological factors, followed by social factors, have the greatest impacts on expeditioner health, well-being and performance and as such need to be prioritized by organizations when considering proactive prevention and intervention management approaches (Norris *et al.* 2010). Given the parallels between the physical, technological, social and psychological experiences, Antarctica is an established analogue for long-duration space missions (Leon *et al.* 2011). Therefore, polar and space personnel selection procedures are similar.

#### *Overview of Antarctic expeditioner selection procedures*

NAPs carefully choose who will work in Antarctica because expeditioners often do dangerous jobs and medical evacuations are extremely expensive and logistically complex (Décamps & Rosnet 2005). Antarctic overwinterers undergo rigorous physical and psychological testing to ensure they are optimally healthy and can live in close quarters for long periods of time with few people, including only one doctor and limited medical supplies. Thus, expeditioner selection is an important area of research and is the core of polar psychology, especially studies exploring the characteristics that predict individual and group performance in Antarctica (e.g. Gunderson 1974, Steel *et al.* 1997, Steel 2015).

In the Heroic Era, expeditioners were typically chosen by their leaders (Taylor 1987). Antarctic leaders chose men who they knew or who had 'proven themselves' and in accordance with the leaders' personal preferences (Smith 1961). Scott (1905, p. 72) prioritized 'youth' and 'diversity of experience' in his British Antarctic party, whereas Shackleton (1909) relied on recommendations from his friends for his 1914–1916 expedition. Mawson, leader of the Australian Antarctic Expedition 1911–1914, selected older men with sound 'moral' quality. In this way, selection was based on qualities that experience had taught leaders are the most desirable in an 'expedition man'. Women were excluded from most expeditions, and in the first half of the 20th century they mainly travelled 'South' as wives and partners (Collis 2009). Women were not only seen as being ill-suited to the extreme environment, they were also perceived to be a distraction to men (Taylor *et al.* 1969).

As new research stations were being built in Antarctica following the International Geophysical Year (1957–1958), it became necessary to reconsider how expeditioners were selected. As Taylor observes, whereas the British continued to rely on intuitive methods and personal networks for their expeditioner selection, the USA was considering how to adapt more objective military screening methods (Taylor 1987). Thus, expeditioner selection criteria were developed throughout the 1960s and 1970s (e.g. Gunderson 1974).

In addition to physical condition, maturity and masculinity were key psychological criteria used for selecting expeditioners for 'cold weather isolation' (Dudek 1963). Taylor (1969, p. 82) reports that, in the 1960s, New Zealand 'sought men who gave them the impression of being quiet, intelligent, alert, good-humoured, tolerant, hard-working, experienced in life, yet moderate in their habits'. In one of the few studies highlighting the perspectives of expeditioners, Taylor (1969, p. 83) interviewed men who over-wintered in 1967–1968 at New Zealand's Scott Base, and these expeditioners agreed that they would select only those men '... who were technically qualified, well educated, physically fit, adaptable, tolerant and self-sufficient with spare-time interests'. They said that they would reject those who were introverts, selfish, heavy drinkers, bad-tempered 'know-all's', perpetually discontented and 'personally troubled' (Taylor 1969, p. 87).

Philip Law, Director of the Australian National Antarctic Research Expeditions (ANARE) from 1947 to 1966, noted the importance of intelligence and education as well as outdoors experience in selecting Australian expeditioners (Law 1960). However, Law (1960) also observed the difficulty in picking a high-performing expeditioner given the small pool of applicants for each position. He cited the need to, at times, compromise on expeditioner quality to ensure the national programme was uninterrupted. Whilst Law noted the importance of selecting out the highly

psychologically unsuitable candidates, in the early 1960s the Australian programme grappled with introducing a psychological assessment that would not increase costs. Like New Zealand, Australia was assessing Antarctic expeditioner candidates using a medical examination, preliminary questionnaire and referee reports commenting on the candidates' personalities and qualifications, followed by interview with an experienced panel who made subjective assessments of suitability (Owens 1962).

The ANARE approached Colonel George Owens from the Army Psychology Corps to develop a psychological assessment process. In the early 1960s, Owens developed a scale that was applied by the Station Leader (Officer-In-Charge; OIC) to assess each expeditioner. The first part of the OIC report comprised a rating of the candidate on several traits and the OIC's overall judgement on whether they would like to have the expeditioner on a subsequent expedition. The second part of the assessment required an outline of the expeditioner's strengths and weaknesses (Owens 1962, 1966). The Sixteen Personality Factors Test was eventually introduced alongside an interview with Army Psychology Corps psychologists (Ord 1987). This was intended as a negative screening procedure to identify unsuitable candidates. Since 2011, the AAP has used an in-house psychologist to manage psychological assessment and debriefing.

Most NAPs use psychological criteria to select winter expeditioners (e.g. the USA, France, Chile, Australia) alongside pre-employment medical checks and interviews. These procedures vary depending on factors such as the number of applications, institutional resources and time constraints around training. Historically, the purpose of NAP selection procedures has been to select 'out' unsuitable candidates with a former or current psychiatric/personality disorder or those who are at risk for developing one (Grant *et al.* 2007). Once those candidates are selected out, NAPs can select 'in' the remaining candidates who possess the characteristics necessary to thrive in Antarctica individually and as part of a group. It is the process of selecting 'in' that has proven to be the most difficult, as the composition of a 'polar personality' has been extensively studied, but with mixed success (Steel 2015). The British Antarctic Survey does not use psychological evaluations in expeditioner selection. Rather, selection continues to be based on the judgement of experienced Antarctic staff in conjunction with interviews and a medical assessment (Grant *et al.* 2007).

## Theoretical background

### *Individual and group performance in Antarctica*

There is a large multi-disciplinary body of literature published over a period of 50 years discussing the range

of psycho-social issues faced by polar expeditioners and astronauts (e.g. Sandal *et al.* 2006, Suedfeld 2018) as well as those in other types of ICE environments (e.g. submarines; see Brasher *et al.* 2010) and small group/team dynamics (e.g. Sarris 2017). There is also a growing body of research focusing on the organizational culture of groups in ICE environments (e.g. Sarris & Kirby 2007). While a detailed examination of this literature is beyond the scope of this article, I provide highlights from the performance in ICE environments literature below (for more detail, see Palinkas & Suedfeld 2008, Norris *et al.* 2010). I focus on performance here because predicting how a person will perform (individually and in a group) is key to their selection as an expeditioner. Performance is primarily assessed on whether someone possesses a certain mix of personality traits that will allow them to adapt well to Antarctic life (see Suedfeld 1991).

The most robust findings on individual Antarctic performance focus on three abilities (e.g. Taylor 1969, 1987). These include task ability (motivation to do one's job and performance of assigned duties), emotional stability (few mood swings) and sociability (ability to interact well with others, especially in small groups). Following Gunderson & Nelson (1963), polar psychologists attempted to correlate these three abilities with various other traits to describe a 'polar personality', with mixed success (Steel 2015).

Many studies over several decades have identified various personality traits that are better at predicting performance in Antarctica using tools such as the NEO Five-Factor Inventory (FFI; e.g. Steel *et al.* 1997, Grant *et al.* 2007). The NEO-FFI is based on a five-factor model of personality (neuroticism, extraversion, openness to experience, agreeableness and conscientiousness) - also known as 'the Big Five'. However, some of the individual characteristics that have been studied have led to contradictory outcomes. For instance, high extraversion has been shown to be both a desirable (Sarris 2006) and undesirable personality trait (Rosnet *et al.* 2000).

In a systematic review of 120 studies, Palinkas *et al.* (2011) found that only 20% of major personality traits are strong predictors of performance. For example, personality characteristics that predict for high task ability include low neuroticism (Owens 1975), low extraversion (Rosnet *et al.* 2000), low boredom (Palinkas *et al.* 2000) and high perceived fit with station culture (Sarris 2006), among many others (for a detailed discussion, see Palinkas *et al.* 2011). Personal characteristics that predict for emotional stability include low neuroticism and low need for affection (Palinkas *et al.* 2000). Characteristics that predict for high sociability include low measures of openness to experience and high agreeableness (Rose *et al.* 1994), tolerance (World Health Organization 1985) and flexibility (World Health Organization 1985), low need for affection

(Palinkas *et al.* 2000) and high levels of mutual respect (Leon & Sandal 2000).

The most important predictors of overall performance appear to be personality characteristics reflecting high motivation, high job satisfaction, high adaptability and low boredom (e.g. Suedfeld & Steel 2000, Palinkas *et al.* 2011). However, what may be adaptive in one situation or with one group may not be so in others (Leon *et al.* 2011). Some of these traits are more important in longer-duration/over-wintering contexts versus short-duration summer expeditions (Palinkas & Suedfeld 2008). Moreover, much of the existing research on personality and adaptation has drawn on expeditioner data from the Anglosphere (e.g. the USA, the UK, New Zealand). However, there is now an emerging literature focusing on expeditioners from other nationalities (e.g. China; see Chen *et al.* 2016).

#### *Person-culture fit*

There is a complementary body of research noting the problems inherent in focusing solely on individual personality traits given the variety of features of the physical and social environment that can influence human performance in Antarctica (e.g. Palinkas 2003, Sarris 2006). This scholarship refers to the person-environment fit - or the interactions between individual personality traits and the unique features of the work environment. In the case of Antarctica, this most commonly refers to confinement and isolation (Jaksic 2018). This scholarship is a key area of inquiry in Antarctic adaptation studies (Kulik *et al.* 1987). With advances in communication technology and transportation as well as decreased exposure to occupational hazards, some of the physical and psycho-social issues that have been significant for people in ICE environments in the past are not as significant today (e.g. keeping in touch with friends and family; see Palinkas & Suedfeld 2021). Moreover, the composition of stations has changed, as more women now work in Antarctica and the stations themselves are more multicultural and diverse given advances in intracontinental transport and increased interactions between NAPs through science projects (Sarris 2017).

Person-culture or person-organization fit refers to the congruence of values between an individual and the organization (Sarris & Kirby 2005). Several studies have documented that organizational culture is a powerful force affecting an organization's well-being and effectiveness (Harrison & Baird 2015). Most scholars agree that the key characteristics of 'organizational culture' include that it is holistic, 'soft' with respect to influencing behaviour by nurturing people to commit to their jobs, difficult to change, has a historical basis and is socially constructed (Hofstede *et al.* 1990). Organizational culture is deeply held and shared (Alvesson 2002). Therefore, organizational culture serves as a frame of



reference (Alvesson 2002) that allows members to make sense of their environment and their experiences and to share these experiences with others (Gabriel 2002).

Culture or social context is an important factor in determining the development of an individual's psychological contract with the organization. Psychological contracts are defined as 'the individual beliefs, shaped by the organisation, regarding terms of an exchange agreement between individuals and their organisation' (Rousseau 1995, p. 2). Individuals form beliefs about whether their psychological contracts have been fulfilled or breached based on the organizational culture, and specifically their direct interactions with other employees. If an employee perceives that the organization has fulfilled the psychological contract, the employee will have strengthened affective and emotional ties to the organization (Robinson & Morrison 2000). Individuals are more likely to feel like their psychological contract has been breached when the organization is performing poorly, when they have not experienced a formal process of socialization or when they have little interaction with other employees before they are hired (Robinson & Morrison 2000).

The organizational diversity literature shows that surface-level diversity or the high-visibility attributes of an individual (e.g. gender, race/ethnicity) can impact experiences of organizational culture and perceptions of cultural fit. For instance, whether employees are demographically like their co-workers can play a role in job satisfaction and perceptions of cultural fit. Relational demography refers to the idea that individuals use demographic characteristics (e.g. gender, race/ethnicity, sexuality, age) as sources of information about social identity (Harrison & Baird 2015). People tend to form relationships with people who are like themselves, and employees who are different from the group are often excluded (e.g. through cliques). Heightened similarity with co-workers often results in perceptions of a supportive working environment and increased job satisfaction. In contrast, demographically dissimilar employees may feel more alienated from the working environment and may be more inclined to leave their job as a result. For others, being demographically dissimilar may force them to conform to the behaviour of others to avoid identity threat (David *et al.* 2015). Whether a demographically dissimilar employee leaves the job or not depends, in part, on co-worker behaviours in that context (Bamberger & Biron 2007). In other words, the social context determines whether someone is inclined to leave their job or not. As a result, organizations often become more homogeneous over time to attract and retain people who fit in with the existing culture.

The effects of relational demography in relation to Antarctic expeditioner selection have been explored, but with mixed results (Palinkas *et al.* 2011). One of the more robust associations in Antarctic performance is the

homogeneity of expeditioners in relation to demographic characteristics, culture and personality (Palinkas *et al.* 2011). However, in general, demographic details (e.g. gender) have been relatively poor predictors of individual and group Antarctic performance (Palinkas *et al.* 2011). For example, some studies suggest that men have better task ability whereas women perform better overall (Palinkas *et al.* 2011). In this way, like personality, the effect of surface-level diversity is probably largely context dependent (e.g. station culture). The inconsistency of the research is perhaps one reason why NAPs have tended to focus more heavily on deep-level forms of diversity in expeditioner selection (e.g. psychological features like personality traits, values, experience) as opposed to demographic diversity. However, the mixed effects of relational demography as described may also emerge from a failure to consider station culture closely enough or to consider the behaviours of other expeditioners as a moderating factor for group cohesion on station (David *et al.* 2015).

Sarris is one of the few researchers to have explored person-culture fit and questions of relational demography in the AAP (e.g. Sarris 2006, 2007, 2017, Sarris & Kirby 2005, 2007). Sarris' (2006) study focused on 115 past AAP expeditioners who worked on station between 1950 and 2000. Using a mixture of demographic questionnaires and psychological scales (e.g. NEO-FFI), Sarris (2006) found that personality traits were not predictive of adaptation (with the exception of extraversion). Predictability became more accurate when looking at personality as well as the station's organizational culture. Sarris demonstrated that there is a relationship between expeditioner perceptions of organizational culture (e.g. behavioural norms) and their job satisfaction (Sarris 2007). Sarris & Kirby (2007) found that men reported a better 'fit' with the AAP organizational culture and observed the possibility of a male-dominated station culture (Sarris 2017). Indeed, Nash *et al.* (2019) explore the experiences of women working in the AAP and highlight several persistent gendered barriers for women in Antarctic research and fieldwork. Thus, demographic differences and experiences of station culture are important because when expeditioners feel positively about the culture, they are more likely to recommend Antarctica as a good place to work. This has obvious implications for retention and recruitment in NAPs (especially women).

### **Australian Antarctic Division and the Australian Antarctic Program**

The Australian Antarctic Division (AAD) is part of the Australian Government's Department of Climate Change, Energy, the Environment, and Water. Based in

Tasmania, the AAD leads and delivers the AAP. The AAD workforce is split between the head office in Tasmania and Antarctica. Expeditioners are people who work in Antarctica in a variety of roles. All expeditioners are trained and equipped at the AAD. There are ~300 staff at the AAD head office in Hobart undertaking operational, medical, science, policy and support functions.

Australia's activities in Antarctica are coordinated through the AAP. Australia maintains three year-round research stations (Casey, Davis and Mawson) and one on sub-Antarctic Macquarie Island. Each station is like a small town, featuring station leaders, tradespeople, scientists, doctors, chefs and communications experts. There are also people supporting shipping and aviation activities. Expeditioners travel to station by ship or plane. Expeditioners employed in winter jobs will complete both a winter and summer season in Antarctica. Summer expeditioners usually start work in September or October and are employed for between 4 and 6 months with a return to Australia in March or April of the following year. Winter expeditioners can start as early as July or as late as January the next year depending on which station they will go to. In a typical season, 500 expeditioners usually travel south with the AAP. Women have been working in Antarctica with the AAP for nearly four decades. However, AAP expeditioners generally remain mostly white and male - 24% of expeditioners are women compared to 31% and 33% in the British and US Antarctic programmes, respectively (Maree Riley, personal communication 10 June 2021). Moreover, most expeditioners are in their late 30s or early 40s (Maree Riley, personal communication 10 June 2021).

#### *AAP expeditioner selection and personal qualities*

AAP expeditioners undergo a rigorous selection process to ensure that they can spend up to 15 months in Antarctica in a group of people who are not of one's choosing, with limited access to their typical social supports and few or no opportunities to return to Australia during the period of employment (Norris *et al.* 2020). AAP expeditioner recruitment is a demanding and resource-intensive multi-stage process that can take up to 8 months to ensure that expeditioners with the desired mix of technical and social skills are selected (especially for over-winterers; Australian National Audit Office 2016). Given the investment in training, historically the AAP has relied on at least 40% of expeditioners returning for a subsequent season (Australian National Audit Office 2016). Returning expeditioners understand the long-term projects on station and can help new expeditioners to adapt to station life. To assist with future planning, the AAP offers some expeditioners multi-year contracts to retain certain skillsets and ensure

that expeditioners can return without having to reapply every season. It is particularly important to select people with the requisite skills for their primary roles but who also have secondary and tertiary skills that can be employed as needed. For example, the AAP trains some of the expeditioners in trades roles to serve as lay surgical assistants to support the single station doctor in an emergency. The selection process only applies to winter station support (e.g. electricians), management roles (e.g. station leaders) and Bureau of Meteorology staff. Scientists and polar medical officers are not selected via this process.

In the first stage of recruitment, potential expeditioners submit an online application in which they respond to selection criteria and provide evidence of any qualifications or certifications relevant to the job. Next, technical experts assess the applications against the advertised technical requirements of the job. Shortlisted applicants are asked for a medical history and assessed by the Polar Medical Unit. This first stage is focused on 'selecting out' people who are unsuitable (Suedfeld & Steel 2000). Successful applicants proceed to Stage 2, which is focused on 'selecting in' those people who are the best of the candidate pool. For instance, candidates will undergo a technical interview to further assess their technical skills and experience. They will also attend an Assessment Centre where PQs are assessed.

PQs assess applicants from an environment and culture perspective and target deep-level diversity. It is important to note that although they overlap, PQs and personality traits are different. PQs are specific to AAP expeditioners and their unique work/community environment, whereas personality traits (such as the Big Five) are more general. When this study was undertaken, the AAD employed the following PQs to select expeditioners (Australian Antarctic Division 2021):

- 1) A strong work ethic (e.g. effective, productive)
- 2) Ability to make a positive contribution to community and team (e.g. resilient, tolerant, good social skills, responsible use of alcohol)
- 3) Respect for authority and a willingness to comply with the law, legislative requirements and AAD policies and procedures (e.g. commitment to compliance)
- 4) A commitment to AAP-specific requirements (e.g. willingness to undertake shared duties)

At Assessment Centres, applicants participate in a range of activities, including small and large group discussions, which are designed to assess whether they have the PQs required of an expeditioner. It is important to note that diversity - cognitive or identity - has not been an important criterion for selecting expeditioners. Rather, PQs are meant to be useful in selecting complementary people who will mix well on station. The AAP uses panels of assessors to observe behaviour and identify any

concerns about the applicant's suitability for station life. Assessment Centre assessments are conducted over a 24 hour period that includes an overnight stay. In Stage 2, applicants also undergo relevant medical and psychological assessments. If applicants are selected, they receive an offer of employment (generally between 4 and 15 months depending on the role and season). Employment contracts include a period of mandatory pre-departure training in Hobart for between 2 and 10 weeks depending on the role.

## Methodology

The data in this article are drawn from a broader commissioned study examining individual attitudes and expectations of AAD organizational culture. Key research questions in the study included:

- 1) What are the attitudes and experiences of AAD employees?
- 2) What are AAD employees' perceptions of organizational leadership?
- 3) How can the organizational culture of the AAD be improved?

Recruitment occurred indirectly by means of a general email approved by the Director of the AAD and Chief Scientist and sent to all employees in Tasmania and Antarctica. Participants self-selected into the study by contacting me directly to protect confidentiality of participation. Sixty-three staff volunteered to participate. I used a sampling matrix to purposively select participants based on occupational role, employment status/career point, features of social identity (e.g. race, gender, sexuality, age) and geographical location (Tasmania or Antarctica). Those who agreed to participate submitted consent forms.

Employer-based recruitment offers many benefits but can raise ethical issues. To address these, participants were assured that this research was being independently conducted, and all informed consent documents indicated that participation would have no bearing on their employment or benefits. AAD supervisors did not directly recruit participants and were discouraged from discussing the research with potential participants. Participants were assured that participation was confidential and that the AAD would not have access to raw/identifiable data. This is particularly important in small, closed communities such as Antarctica and the accompanying risks associated with not being able to return in a future season.

I conducted one semi-structured interview of up to 2 hours with each participant ( $n = 22$  interviews) online or by phone between March and May 2021. Participants comprised AAD head office staff ( $n = 13$ ) in Tasmania, expeditioners currently in Antarctica at study commencement ( $n = 5$ ) as well as

recently returned expeditioners (within 6 months of study commencement;  $n = 4$ ). Head office staff included people working in every branch of the organization (e.g. Science; Assets and Infrastructure; Technology and Innovation; Policy and International; Antarctic Operations and Safety; and Strategy and Communications). Expeditioners comprised all positions represented in AAP expeditions including station/voyage leaders, medical practitioners, field training officers, cooks/chefs, technicians, tradespeople and communications personnel. The sample comprised 13 women and 9 men.

I used an interview guide with open-ended questions drawn from themes in the relevant literature (e.g. Sarris 2007). Participants were asked questions about themselves (e.g. age, gender, race/ethnicity, postcode, education, income, employment) as well as questions focusing on how they perceive the AAD's organizational culture in Tasmania and/or Antarctica, their perceptions of AAD leadership, their suggestions for how to improve the organizational culture as well as the PQs for expeditioners.

As evident in the research questions noted previously, expeditioner selection was not the primary focus of the commissioned study. My interest in expeditioner selection and its relationship to the broader culture of Antarctic stations emerged when I was analysing the interview data. At this time, the AAD started to revise their PQs for selection and to reconsider aspects of the expeditioner recruitment process, so I was analysing interview data during a period of renewed organizational focus on selection. I became interested in a subset of research questions related to the broader study, namely how expeditioners' perceptions of high performance in Antarctica compared to their first-hand experiences of station culture and the extent to which the gender of the expeditioner played a role in these considerations. Thus, this article focuses exclusively on the data collected from a subset of study participants who were in Antarctica during the research period or who had been there in the past ( $n = 17$ ) and in relation to their responses to interview questions about the PQs of expeditioners and AAP recruitment and selection. All interviews were recorded with consent and transcribed verbatim.

Interview analysis was based on grounded theory - a qualitative methodology that emphasizes a systematic inductive approach to data collection and analysis focusing on building theory from data rather than hypotheses (Corbin & Strauss 1990). Grounded theory was chosen because its inductive principles align with the exploratory aims of this research, allowing me to generate new insights into expeditioner selection, where little previous research exists. Following the grounded theory method, I analysed the data by open coding, or surface reading transcripts, taking note of any striking words, phrases or themes arising from the data. Once

common themes were identified, thematic categories were created, and relevant data were coded to those categories. I conducted additional analysis of my initial interpretation of the data. This study was approved by the University of Tasmania Human Research Ethics Committee.

Data have been de-identified and pseudonyms are used throughout. The community of AAD employees in Australia is small. I have provided little individual identifying information in the quoted extracts to protect the confidentiality of the participants. People in historically excluded groups (e.g. women, people of colour) are easily identifiable given the dominance of white men in Antarctic jobs in the AAP and in most other NAPs.

Participants in this study are aged between 30 and 66 years, with a mean age of 46 years. They come from seven different countries mainly in the Anglosphere, with the majority (68%) born in Australia. Most expeditioners worked on fixed-term contracts given the seasonal nature of the work. All participants were positioned occupationally as middle class based on their yearly household incomes (on average AUD 125,000–150,000). More than half (60%) of participants had a postgraduate degree and 86% of participants were white.

## Results

In this section, I discuss three key themes, including how expeditioners described the ideal PQs of an expeditioner, their perceptions of the station culture and the challenges/limitations of the expeditioner selection processes.

### *Personal qualities of an expeditioner*

In response to the question of what PQs make a good expeditioner, study participants identified several qualities, including resilience and flexibility as well as being likeable, open-minded and a creative thinker. Participants specifically flagged the uncertainty of the environment and the necessity of being able to accommodate rapidly changing conditions. They also noted the benefits of having a good mix of people on station.

Someone that's really flexible, so they cannot have a mindset that will not bend ... I like people that think laterally too, so that they can come to solutions by different routes ... you've got all these resources back in Australia ... but you still do need it for those occasions where it's the middle of the night, it's a blizzard, you've still got to get to another building because there's an alarm going off. That's when those people come into their own ... (P4, female)

You have to be someone that doesn't want the normal things ... You know, people who are fine without

having a stable relationship and - I guess you have to be fairly compliant and like rules and you've got to be able to get along with everyone well and be accepting ... But you've got to be super resilient, like it's really hard. It's super hard ... you have to be quite tough to do it [be an expeditioner] ... (P6, female)

[Good expeditioners] are resilient to constant change ... Just that openness and easy-going-ness to swap in and out ... I think having a really nice mix of new and old [expeditioners] is great. But also identifying that people are not set in their ways about how things should be done ... I'd like to see more women ... (P22, female)

You've got to be driven to your work, but - pretty relaxed, things often aren't going to go the way you wanted them to, so being able to understand that ... I think you do need a bit of confidence because you have to do things that you're not directly trained to do, but then obviously, you're not too overconfident ... There are quiet people and sociable people and it's good to have a mixture there. (P3, male)

Someone who - I'd probably, knows how to compromise and knows how to - probably a 'cup is half full' person ... I think being able to be quite flexible ... There's so many aspects of people's work down [there] that's going to be new just because of the context or ... the environment is different ... I think you can teach people all that stuff, but it's really hard to teach someone how to not be a dickhead. (P14, female)

If you're not willing to blend in or you're not willing to assimilate, don't bother, like don't bring your stand-up personality, it just doesn't work there. So you really have to learn to compromise. You can't stand firmly, you can't be stubborn. (P11, male)

Participant 14 made an interesting point about PQs as implicit in noting that you can teach expeditioners a lot of skills but 'it's really hard to teach someone how not to be a dickhead'. This suggests that people cannot be taught how to 'fit in'. Overall, participant views largely aligned with the AAP's PQs regarding work ethic and community, and there did not appear to be strong gender differences in participant perceptions (Australian Antarctic Division 2021).

### *The culture(s) of stations*

Compared to their perceptions of the key individual expeditioner PQs, participants had mixed views about station culture. It is important to note that station cultures are all slightly different given their locations and



mixes of expeditioners. However, to ensure the confidentiality of participants I have provided a general overview of participant views. For example, although participants did not refer to demographics in relation to PQs in the previous section, the gender of participants strongly influenced how they discussed station cultures.

I think the more women there are on station, the better [the culture] is ... there is still an element of blokey-ness. I find that when I'm the only woman I swear more, because there's that peer pressure to just go along with the status quo ... Even one woman on station makes a difference. It modifies behaviour, it takes away aggression. There's all those things that tend to build up the more men there are, just in my experience. (P4, female)

I've never worked in a place that was so ... soft and inclusive. In the mine sites and generally construction sites, they're hard-arse places where you've got to be pretty tough, whereas [on station] it's a much, much more inclusive sort of environment ... It attracts people who are probably a bit broader-minded, maybe, but predominantly if you were to say, 'What do I need to do to be a part of a team?' - your only currency here is your skills and your willingness to contribute those skills. (P12, male)

I think it's [the culture] generally quite positive. We only have [a few] women ... There's a definite feel of like 'tradies will be tradies' so a lot of swearing in the workplace. Alcohol especially. I guess people swear at work ... which is easy, I guess, in an all-male workplace when everyone's doing it ... if you had more diversity, then it probably wouldn't happen. (P3, male)

[The culture] is really blokey ... When women arrive [on station], it's very predatory. (P6, female)

[A recent expedition] was the most testosterone jocks' base I'd come across. And the heroics and the ... I was really disappointed at the Ocker, tradie vibe ... (P1, female)

When I walk [around on station] I feel like there's a lot of eyes on me. That makes me very nervous ... I feel very attractive in Antarctica ... I see these problems like sexual harassment and disrespect [towards women], but for some reason ... [I'm] in this elite group of women that don't get that. I'm just lucky ... because it's so common. [On a previous trip, another expeditioner] had a man just lurch on to her and kiss her unexpectedly. They were doing work and then all of a sudden - she was totally blindsided ... (P22, female)

Mostly it's a pretty good culture, people want to get in and help ... but there is still a drinking culture. I'm not a huge drinker. I do feel uncomfortable when you get people that drunk excessively on the station ... I know someone who went was accosted by a man. She didn't say anything because she wanted to go down South again and she didn't think people would believe her. (P20, female)

I've certainly had to get used to some things to a certain extent, or just learn to let some things wash over me where I probably wouldn't have in other work settings. So, things like the use of language and words that I don't necessarily find acceptable ... It's just rough. It's just so much rougher than I'm used to. (P14, female)

Gender played a strong role in how expeditioners perceived the organizational culture of stations (see Sarris 2017). Women overwhelmingly described stations as 'blokey' - a term describing an Australian cultural archetype of the average (white, heterosexual) Australian man. Whilst 'blokey' is generally a more neutral descriptor (Waling 2019), Participant 1 described the station culture specifically as 'Ocker', an Australian colloquialism to describe uncultivated, working-class Australian men. Women also described the culture as 'predatory' and objectifying (see Nash *et al.* 2019), whereas men rarely referenced a lack of fit with the culture. In contrast, Participant 12 observed that the culture was 'too soft and inclusive' for him compared to his previous work environments. This view is unsurprising given that hard work and the denial of bodily comforts are well regarded in some trades such as mining. Both male and female participants did, however, identify that when women are present on station, the culture is more positive with less aggression and swearing.

As Participant 14 observed, working on station requires getting comfortable with people whom one might not interact with voluntarily at home - she had to adjust to a much 'rougher' (male-dominated) culture. There is a strong gender and social class component to this comment as swearing is tied to both men and a working-class culture. Swearing especially signals solidarity in all-male work groups and is not always negative but rather a form of social/psychological solidarity. Participants also observed that guidelines for behaviour changed according to the composition of the group (Suedfeld & Steel 2000). For example, Participant 4 noted that in this type of environment she swears more. Women might do this to fit in with a masculine group identity or to assert their presence verbally in the all-male group (Baruch & Jenkins 2007).

Similarly, several participants noted the drinking culture on stations. Alcohol is well known to be used to

relieve boredom and anxiety in Antarctica, and in some Australian stations the bar is a primary site for building social relationships. However, the drinking culture generally was seen as problematic. The 'blokey' station culture coupled with the numerical dominance of men and drinking culture is unsafe for women because it can create a more permissive environment for sexual harassment (Nash & Nielsen 2020, Nash 2021). Sexual harassment and violence are often ways for men to police the threat of women's presence in such an environment. Several women in the study had either experienced harassment or knew other women who had been harassed on station at some point in their careers (see Nash *et al.* 2019).

### *Selecting for sameness*

Participant perspectives on expeditioner PQs coupled with their experiences of the station culture raise some interesting questions in relation to expeditioner selection procedures. Several participants pointed out that the selection process can be problematic because it (unintentionally) seems to value a certain type of expeditioner and sameness over difference when it comes to cultural fit.

We've got this tendency now to mainstream people and everyone's quite the same [on station] and I think that's also made it a bit more complicated on stations in some ways because you've got similar personalities. So, I think some diversity and some quirkiness is good. I think those quirky people often do very well on station ... But when anyone is slightly off radar, and I'm guilty of it too - I'm on those selection centres as well - it's like 'Oh, is that going to work?' It puts a question over them. But when you're actually on station, those people really hold it together ... (P13, female)

I always find interesting the people [determining PQs for expeditioners] haven't been South. The way I go into [selection centres] is how would I be with this person on station, how do I see them interacting with the noisiest, the most annoying person on station, are they going to drive that person to a point where it's this really big conflict, or how do they interact with the quietest people on station that are just as valuable to station and contribute just as much? How does that dynamic all work? The big one for me is how would they make me feel on station? You know how you get sometimes with some people you automatically feel they're just not going to work or there's something about them in my gut that just doesn't sit right, and it's not so much looks or anything it's sometimes what they say or how they've

said it ... there's these little triggers ... It doesn't mean I exclude them from the process but it's more which part of our personal qualities does that not fit into, and for me that'd be the safety aspect which is important. (P20, female)

You can select for what you think will be an ideal expeditioner and you can have that idea in your mind of a white male and because you are selecting personality types - I think [discrimination] can really easily arise in the selection process here and all the unconscious bias, there's nothing to filter that out because you openly say that you're looking for your idea of an expeditioner. (P3, male)

Whilst expeditioners are formally evaluated against a set of PQs, these extracts make it apparent that selection bias does perhaps contribute to how individual panel members assess candidates regarding job and culture 'fit'. Given that most of the AAP workforce is white and male (in both Head Office and expeditioner roles), it is possible that various forms of bias could emerge. For example, selecting expeditioners for trades roles (which are dominated by men generally in Australia) can produce more negative performance expectations for women. Indeed, the research suggests that whether a position is male gender-typed or not has a strong effect on the incidence of gender bias in selection (Heilman *et al.* 2015). Moreover, most selection panels are composed of white people interviewing other white people given the demographic composition of the AAP. The Assessment Centres may also contribute to this if the evaluative criteria are vague or ill-defined and therefore provide more leeway for panel members to select expeditioners based on their own judgement or experiences. To illustrate, Participant 20 described judging candidates from her 'gut', based on how they would make her feel on station. In addition, the group activities and dialogues in Assessment Centres perhaps make the source of a candidate's performance more ambiguous in a team setting *vs* an individual one. Therefore, it may mean that more extroverted candidates stand out compared to those who are more introverted or that women or people of colour are judged differently from white men.

### **Discussion**

This article explored expeditioners' perceptions of the PQs necessary to be a successful AAP expeditioner, their perceptions of station culture and expeditioner selection and how gender features in these perceptions. This study uniquely contributes to the existing literature by providing rich qualitative data on the individual, interpersonal and organizational aspects of recruitment

that have not yet been covered in depth in the literature. This study is also unique methodologically because the existing literature on adaptation and expeditioner recruitment is mainly drawn from psychology and has been developed primarily from data that researchers and NAPs have generated on expeditioners (Leon *et al.* 2011). To my knowledge, this is one of the few studies to draw on the voices of current and past expeditioners directly.

For the most part, study participants shared similar views about the qualities that comprise a good expeditioner and these aligned with the AAP's expeditioner PQs. These qualities include flexibility, resilience and being sociable in a small group, among many others. In general, participant's views were highly sensitized to the ICE environment in which expeditioners are working. Participants were able to discuss behaviours that contribute positively to the station community (e.g. open-mindedness) as well as contraindicators of performance (e.g. overconfidence). Participants made apparent that the purpose of selection was to recruit people with complementary skills and to contribute to the diversity of the team on station.

However, the findings also suggest that that demographic similarity of expeditioners (e.g. the overrepresentation of white men) is perhaps much more important for assessing organizational fit than the AAP perhaps might be selecting for through its PQs. Participants described the ways in the which interpersonal interactions and the social environment can deeply affect an expeditioner's experience of the station culture. Despite increasing numbers of women working in Antarctica, women still comprise < 25% of AAP expeditioners. Thus, most of the women in this study pointed to the connection between the overrepresentation of men in the AAP and a potential male bias in station culture. Social interactions on station take place in a confined environment with a group of people who are not of one's choosing. Participants described how the small numbers of expeditioners on station (especially in winter) amplified gender imbalances and the socio-cultural peculiarities of the ICE environment. As a result, several women referenced the challenges associated with navigating a 'blokey' culture where male power is firmly entrenched. Men in this study pointed to the lack of women on station but rarely referenced the culture explicitly. This is because men are deeply embedded in the network in which power is shared and experienced. Practices such as drinking alcohol and swearing excessively are notable features of masculine station environments. More alarmingly, these types of masculine work environments have a high anecdotal incidence of sexual harassment.

The Assessment Centre has been a mainstay in AAP recruitment historically and, for the most part, this has been a powerful way to select expeditioners who will adapt to living and working in Antarctica. Yet, to date,

there has been little research exploring how selection decisions are made in NAPs. Findings from this study provide much-needed insight into the heretofore unobservable interpersonal and cultural fit aspects of NAP selection. The PQs describe the ideal AAP expeditioner; however, how cultural similarity is defined and prioritized in the PQs may have unintended consequences, and these could be used to guide future research.

Indeed, the findings reveal how decisions on candidates might be made in Assessment Centres and the subtle factors such as cultural similarities that may (unintentionally) contribute to selection outcomes. For example, cultural similarity, to some degree, has represented recruitment 'success' for NAPs. It is important to select people who will work together as a team on station. However, as participants suggested, the structure of the Assessment Centres may lend themselves to the potential for selection bias when certain stereotypes or cultural fit expectations are activated in the process. Giving panel members too much flexibility in evaluating PQs can result in the selection of expeditioners who fit the panel members' own image of an expeditioner based on their personal experiences. In other words, they hire for themselves and not for the NAP. For example, the findings suggest that demographic similarity (e.g. race/ethnicity, gender, etc.) is potentially a proxy for shared culture or ideas about cultural fit on station in addition to the PQs. Participants in this study described how they were not only looking for candidates who were competent, but also who might be culturally like themselves in terms of experiences or social background. Although most study participants identified that having a diverse mix of people on station is preferable, diversity (of varying types) has not been a well-defined feature of Antarctic selection. For instance, cognitive diversity is related to different ways of thinking that may emerge from different education and work backgrounds. Identity diversity refers to all aspects of social identity that shape your experience of the world (e.g. gender, race, class, sexuality, religion, age, etc.). The emphasis on ensuring that a sufficient proportion of expeditioners return each season means that the AAP is selecting from a narrower pool. As a result, white men remain overrepresented as expeditioners, and this raises various cultural issues on station. Ensuring that expeditioner assessment panels and Antarctic expeditioner teams on station are curated to reflect various forms of diversity will significantly improve cultural outcomes on station.

Selecting expeditioners to fit within existing AAP station cultures does not appear to be a desirable outcome, and recruitment and selection processes need to adjust to build a more diverse candidate pool and inclusive station culture. Drawing on participant



**Fig. 1.** Conceptual model for building a diverse workforce and inclusive station culture. PQ = personal quality.

narratives and conceptualized through grounded theory methodology, I have developed a unique conceptual model for building a diverse polar workforce and inclusive station culture that has many practical applications for NAPs and other extreme communities. In this model, PQs are positioned as the 'golden thread' that ties together the individual and contextual factors identified above in relation to expeditioner selection as well as the cultural aspects of Antarctic stations (Fig. 1).

The AAP has perhaps underestimated the value of expeditioner selection in terms of transmitting large amounts of information to candidates about the programme and setting expectations about how they are to conduct themselves on station. PQs assess expeditioners from an environment and culture perspective - embedding them more deeply in all aspects of recruitment, selection and pre-expedition training will probably have a profound effect on the diversity and quality of expeditioner applicants and result in improved station cultures.

Another important aspect of diversifying the applicant pool is the revision of NAP job advertisements and

recruitment imagery to make Antarctic jobs more appealing to broader groups of people. NAP advertising in the Anglosphere has traditionally featured white men posing on the ice, reprising nostalgic imagery of Antarctica as a masculine space and with a focus on adventure and risk. The continued reliance on heroic imagery is problematic because it sits in stark contrast to the reality of the (often) mundane work that people do on station and can lead to unrealistic expectations, especially for first-time expeditioners (see Nielsen & Jaksic 2018). A different approach might include marketing Antarctic jobs around a strong employee value proposition centred on demonstrating certain desired behaviours (e.g. PQs), contributing to a diverse and inclusive community and offering pathways for professional development and career progression. This may attract people who were unlikely to apply previously.

Indeed, differences in cultural values and socialization are important considerations as to why people in historically excluded groups are not currently attracted to the polar workforce. It is essential that the NAPs



dispel the stereotypes associated with Antarctic expeditioners. When people in historically excluded groups can see themselves in the job, they are more likely to be open to new work experiences and modify previously held beliefs and attitudes about their perceived lack of fit as expeditioners.

It is important to note that since I collected the data for this study, the AAP has taken several positive steps in terms of recognizing gender equity as a key organizational priority, refreshing the PQs and all aspects of the recruitment process, including ensuring Assessment Centres are aligned with the PQs. The AAP has also embedded new processes of cultural change to develop a diverse polar workforce for the future (see Dunlevie 2021). For example, the AAP is engaged in various processes to support the development of PQs in expeditioners throughout their employment cycle as well as improved pre-expedition training and the outsourcing of some aspects of candidate selection to reduce ambiguity or potential bias. Further research will be necessary to evaluate the effectiveness of these measures.

## Conclusion

My analysis, based on expeditioners' own experiences and conceptualized through grounded theory methodology, has produced a model for diversifying the expeditioner applicant pool and building more inclusive station cultures with practical applications for NAPs and other extreme communities (e.g. space, submarines, mining, etc.). Recruitment involves more than just the individual features of candidates; organizational cultural factors play an important role in the interpersonal/social aspects of working in an extreme environment. In Antarctica, organizational culture on station has probably been hampering progress in terms of recruiting women and other historically excluded groups to the workforce. Future qualitative research might explore other NAP recruitment processes to highlight the range of mechanisms that may influence who gets recruited and how this intersects with the organizational culture of stations and various other extreme workplaces.

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## Author contributions

The author was solely responsible for the conceptualization, data acquisition, analysis, writing, reviewing and editing of the manuscript.

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