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Coping Strategies Used During an Extreme Antarctic Expedition

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Abstract

The present report documents the strategies used to deal with stress during an extreme Antarctic expedition. Coping strategies identified are based on experiences shared by the leader of the Scott Expedition and co-author of the report, Ben Saunders. A variety of problem- and emotion-focused techniques were utilized during the expedition and specific contextual and practical details are provided. Information offered in the article can be used to prepare future Antarctic expedition teams to manage stressors faced while undertaking extreme journeys in the higher latitudes.

Keywords: stress, coping, Antarctica, polar expedition, Scott Expedition

Introduction

Extreme environments are inherently stressful and are characterized by a variety of physical and psychosocial stressors, including, but not limited to, isolation, confinement, social tensions, minimal possibility of medical evacuation, boredom, monotony, and danger (Suedfeld, 2001). Previously, researchers have suggested that individuals and groups operating in extreme conditions must adapt to the environment in order to function optimally and remain healthy (Sandal, Leon, & Palinkas, 2006). One component of the adaptation process is the development and application of effective measures to counteract stress.

The capacity for a person to withstand negative psychological reactions and negate the aforementioned stressors is discussed in terms of their ability to cope. Coping has been expressed in a variety of ways; however, an appealing and widely used definition is that “coping identifies a response whose goal is to reduce physiological disruption of homeostasis and psychological negative affect caused by an environmentally imposed challenge” (Suedfeld, Breic, & Legkaia, 2009, p. 313; Pearlin & Schooler, 1978). Within this definition, coping attempts are aimed at trying to maintain functioning and dealing with the physical and psychological stressors that could impair task performance and mental health.

A variety of studies have been conducted examining coping strategies in extreme environment contexts, including research with submarine personnel (Sandal, Endresen, Vaernes, & Ursin, 2003), astronauts (Suedfeld et al., 2009), military recruits (Sandal et al., 1998; Vickers, Ross, Kolar, & Hervig, 1989), and sailors (Weston, 2011). As a result of the aforementioned research, there is now a good degree of the information regarding the role of coping in extreme settings.

In previous extreme environment studies researchers have tended to focus on higher-order dimensions of coping, which include problem- and emotion-oriented approaches (Suedfeld et al., 2009), task-oriented and disengagement-oriented coping (Nicolas, Sandal, Weiss, & Yusupova, 2013), and active-cognitive, active-behavioral, and avoidance coping methods (Palinkas & Browner, 1995). Consistent with the definition provided above, in the present report we will consider and discuss coping strategies according to instrumental problem-oriented and affective emotion-oriented dimensions (see Table 1 for components of each dimension).

In brief, problem-focused coping efforts are aimed at changing the environment in order to minimize the impact of stress. Emotion-oriented approaches are related to making the environment more tolerable, perhaps by reframing or reinterpreting the situation. Within the broader psychological literature, there is an ongoing debate regarding the organization and labeling of coping strategies; however, both problem-focused and emotion-focused strategies have been consistently correlated with more adaptive responses including behavioral activation (drive and fun), adopting a mastery-focus, and an array of positive traits including hope, prudence, and perspective (Litman, 2006).

Despite the convincing literature related to problem- and emotion-focused coping, previous studies on personnel stationed in Antarctica have highlighted the complexity of applying general coping approaches within such extreme contexts. Specifically, researchers have highlighted the potential barriers to applying coping strategies used in daily life within unique extreme environment settings (Palinkas & Browner, 1995). In addition, and notwithstanding the considerable

Table 1
Dimensions of coping

Coping Dimension	Description
<i>Problem-oriented</i>	
Planful problem-solving	Efforts to change the situation
Confrontation	Attempts to resolve situation through aggression/assertiveness
Seeking social support	Efforts to seek information, support, assistance from others
Escape/avoidance	Behaviors aimed at avoiding the physical problem
Endurance, obedience, effort	Persistence to meet demands
<i>Emotion-oriented</i>	
Distancing	Detaching from the situation emotionally
Self-control	Regulating own thoughts, feelings, and behaviors
Accepting responsibility	Acknowledging role in the situation
Positive reappraisal	Attempts to see the bright side of the situation
Compartmentalization	Isolating or separating the problem from other aspects of life
Denial	Ignoring or underplaying the importance of the problem
Supernatural protection	Using superstitious practices to gain protection
Luck	Reliance on chance

Note. Table adapted from Suedfeld et al. (2009).

body of research on coping in extreme environment conditions (see Palinkas & Suedfeld, 2008; Sandal, 2000), contextual information regarding how coping strategies are operationalized in extreme settings has not been well elaborated.

Within the present report, our aim is to provide specific and detailed examples of coping strategies used to manage environmental and psychological stressors during an extreme Antarctic expedition. The strategies identified are based on a first-hand account given by one of the report authors and should provide valuable practical information to future expedition teams, principally in the Antarctic, but also applicable to other extreme environment settings.

The Antarctic Environment

To date, a plethora of studies have been conducted on personnel operating in Antarctica (e.g., Atlis, Leon, Sandal, & Infante, 2004; Palinkas, Gunderson, Holland, Miller, & Johnson, 2000). Research conducted with individuals and groups in the Antarctic can be broadly split into two. The first consists of those individuals working at scientific bases and overwintering in isolated and confined conditions. The second relates to mobile expedition groups who are usually attempting to complete polar treks, traverses, and in some cases break world-records (Sandal et al., 2006). It is important to distinguish between the two as the physical and psychosocial stressors experienced may be somewhat different. The focus of the present case is on the latter.

During mobile Antarctic expeditions and treks, there are a number of hazards that need to be considered. Not least, the possibility of falling down crevasses, and the likelihood of inclement weather, including whiteouts and severely low temperatures. In addition, expeditioners will often experience a sense of physical exertion, tiredness/fatigue, and

depending on the type of journey, may encounter more severe levels of exhaustion. Alongside the physical and environmental demands, there are a variety of psychological stressors that should be noted. During Antarctic expeditions the individual/group will most likely find themselves isolated, yet, due to the weather conditions and close proximity when sleeping in tents, individuals will have limited privacy and may experience social conflict and interpersonal tensions (Atlis et al., 2004; Palinkas & Suedfeld, 2008; Sandal et al., 2006). There are also issues and challenges associated with being in a low-stimulus environment and the problem of impaired sleep patterns during 24-hour daylight to contend with. Individuals and groups may also have to endure prolonged periods of concentration which may lead to directed attention fatigue (Kaplan & Berman, 2010). Typical stressors experienced during Antarctic expeditions are provided in Table 2.

As we highlighted earlier in the report, the extent to which stressors are dealt with and/or managed plays a considerable role in whether performance is maintained and



Figure 1. Cold temperatures experienced on the expedition.

Table 2
List of potential stressors faced by personnel in the Antarctic

Stressors	Description
Isolation	Being separated from the outside world and days away from external support or medical evacuation
Confinement	Confined habitat with limited privacy, could be at a research station or tent if undertaking a mobile expedition
Fatigue/exhaustion	Tiredness caused by physical exertion over longer periods of time
Low temperatures	Severe low temperatures that hold potential implications for physical health, hypothermia, frostbite etc.
Lack of and/or disrupted sleep	Uncomfortable conditions and change in light can be disruptive to sleep patterns and circadian rhythm
Environmental dangers	Dangers associated with the natural environment, e.g., blizzards, crevasses etc.
Low stimulation	Antarctic environment can be low stimulation, particularly in interior where there is no vegetation or wildlife
Monotony/boredom	Caused by the repetition of mundane tasks
Social tensions	Confined with other individuals for long periods of time can cause interpersonal tensions
Separation from friends/family	Isolation from friends/family and lack of social support

Note. Stressors based on previous research in polar environments summarized in Palinkas and Suedfeld (2008).

expedition objectives are met. In the next section, we will discuss the goals of the Antarctic expedition of interest to this report, before providing specific examples of the coping strategies used to deal with stress. It is hoped that the information provided could be used during pre-expedition planning phases and inform countermeasures to equip individuals with the skills to manage stressors prior to undertaking expeditions in the higher latitudes.

The Scott Expedition Case Report

The expedition of interest in the present report is the Scott Expedition, which began in the autumn of 2013 and concluded in early 2014. The Scott Expedition was led by the 37-year-old polar explorer Ben Saunders who had considerable experience of undertaking expeditions in the higher latitudes. His expedition partner was 34-year-old Tarka L'Herpiniere, also an experienced expeditioner who had previously completed a variety of extreme environment endeavors. Material from the current report was collected as part of a larger research project and received full ethical approval by the institutional review panel at the University of Northampton, UK. Given the public nature of the expedition and the profile of the small expedition team it was unfeasible to retain anonymity. Appropriate information and consent were provided prior to the larger study being undertaken.

Information presented in the report was triangulated from various sources. Online daily diary blog posts written by the expedition leader (report co-author Ben Saunders) were utilized for situational information, in-depth post-expedition interviews were conducted to gain detailed insights from the expedition leader, and biographical and archival information was used to provide context to the findings. Throughout the data collection and analysis process, the expedition leader (third author) was consulted and a member-checking approach was employed. An iterative and reflexive process was followed to ensure that information coded was done so accurately, revisiting the data throughout to ensure trustworthiness and reliability. Initially the first

and second authors (who were not part of the expedition) inductively coded the discrete chunks of data; codes were then discussed with the expedition leader (third author), and a researcher who was independent of the broader project. Following discussions, codes were organized into lower- and higher-order themes and eventually labeled using the coping strategies and stressors identified within Tables 1 and 2 as a guide. The full project findings, discussing pre-, during- and post-expedition psychological factors have been prepared as part of an additional original research paper. The notes presented in the present report focus exclusively on stress and coping strategies used during the expedition.

Expedition Goals and Process

The overriding goal of the Scott Expedition was to complete Captain Robert Falcon Scott's intended journey from the edge of Antarctica to the South Pole and back again on foot. The journey took 105 days from start to finish and required the two team members to ski 1,801 miles whilst man-hauling their gear and food, weighing up to 200 kg and attached to their person via a waist and shoulder harness.

The expedition took approximately 10 years to plan. During the planning phase the composition of the expedition team changed considerably, multiple training expeditions were undertaken, and the expedition leader was required to raise a seven-figure sum to fund the activities (this included securing funding from corporate sponsors, logistics support, and equipment supplies).

On the expedition, the two team members were functioning in temperatures as low as -50 degrees centigrade and burning approximately 11,000 calories per day at peak periods of exertion. Towards the end of the journey, one of the expedition team members became unwell, suffering from hypothermia, and the expedition leader (Ben Saunders) called for an eight-day resupply of food to be dropped by air. The journey was then completed on foot, in the process breaking the record for the longest human-powered polar journey in history.



Figure 2. Antarctic white out conditions.

Stressors and Coping Strategies

Consistent with previous studies on stress and coping in extreme environments, four higher-order and thirteen lower-order challenges/stressors faced on the expedition were identified (see Table 3). Each of the factors will be briefly discussed and the practical coping strategies used to overcome the stressors will be provided.

Environmental Stress

During the expedition there were several key sources of stress. Early on in the journey the terrain was particularly challenging and combined with the heavy sled weights made for slow progress. Of course, inherent to Antarctic expeditions the team faced severely low temperatures (see Figure 1), high windchill, navigational challenges, and experienced prolonged periods of low stimulation as a result of whiteouts (see Figure 2).

A variety of strategies were used to overcome environmental stressors (see Table 3 for examples). Two specific examples are provided below.



Figure 3. Rotating lead position to deal with low stimulation environment.

When commenting on the low-stimulation environment the expedition leader said (see Figure 3 for lead and follow strategy):

We both found it easier following, because then you can focus on the person in front and you've got some color and there are things to look at, but when you're navigating you couldn't focus on anything, it was just like cloud, you know, and you can't tell the difference between the snow and the sky, you can't see a horizon. We had a little bracket that we'd swap over that clips on to the sled harness that holds a compass, so you navigate on a magnetic bearing, but beyond that, there's nothing to look at, and we found it actually really quite demanding, navigating and we'd both get headaches at the end of the day from not being able to focus on anything, you know you get this weird sort of, we both got this weird, almost like sort of vertigo, or kind of motion sickness because there's nothing, there's no horizon, there's no, you know, it's all really, really strange, so it's kind of relief to, every 45 minutes to swap over and to follow someone and to see something, so we had a lot of that, a lot of really grim weather.

During the expedition, the team encountered navigational difficulties due to the terrain and landscape. As a result, the expedition team was required to solve problems and the leader mentions the importance of decision-making in the following excerpt:

...he made some decisions early on, saying, well I think, you know, the bearing originally taken today, he said, I think that looks better, let's go that way and it was great, so I think he started to gain in confidence...we were faster than we thought so the bit of the journey we were actually dreading turned out to be, I don't know if fun's the right word, but quite rewarding and quite, you know, quite exciting. I think because we'd had such a hard time in the four weeks before it, it was actually a sort of pleasant surprise, we were expecting it to be the toughest bit and it was hard but it was kind of fun as well.

The above quotes provide evidence of specific problem-focused coping approaches to overcome environmental stressors. Interestingly, planful problem-solving and making decisions were considered as “empowering” and provided a source of confidence to the expedition team.

Logistical Stress

Undertaking expeditions in Antarctica requires considerable planning and often includes complex logistical challenges. During the expedition, the two-man team faced obstacles related to managing time (e.g., when to take breaks), ensuring appropriate calorific intake, covering the required distances, and finding time for sufficient sleep and rest.

Table 3
Stressors and coping approaches specific to the Scott Expedition

Stressors	Coping strategy
Environmental stress: – Difficult terrain – Low temperatures – Low stimulation – Difficulties with navigation	<p>“...I remember just looking down and just sort of almost counting the paces, like just trying to get, with the skis, you know, sort of the different bits of writing and marks on them, just trying to get, you know, that bit of writing to go past that bit of writing and then thinking, we’ve got like you know 1,800 miles, this is just, you know, here I am thinking I wonder if I can take another five paces, you know, it was just, it was so, really tough, we weren’t very happy at that point.”</p> <p>“I think when it was tough at the start, I think we just tended to kind of shut down and just think as far as the next hour, the next day or the next you know, next little chunk...”</p> <p>“I guess early on we made a decision not to follow Henry’s route and actually to make up our own route which is, we felt was actually probably slightly closer to Shackleton’s original route and looked like the easiest way up the glacier and that was quite, actually felt quite empowering actually, it was like, you know, not only were we on the Beardmore which was the most frightening bit of the whole trip to me, but also we were, you know, sort of forging our own way up it, right OK, we’re going to go this way, that felt quite good.”</p> <p>“...he made some decisions early on, saying, well I think, you know, the bearing originally taken today, he said, I think that looks better, let’s go that way and it was great, so I think he started to gain in confidence...we were faster than we thought so we’d, what, you know, the bit of the journey we were actually dreading turned out to be, I don’t know if fun’s the right word, but quite rewarding and quite, you know, quite exciting. I think because we’d had such a hard time in the sort of four weeks before it, it was actually a sort of pleasant surprise, we were expecting it to be the toughest bit and it was hard but it was kind of fun as well.”</p> <p>“We both found it easier following because then you can focus on the person in front and you’ve got some color and there’s things to look at and you can, you know, but when you’re navigating you couldn’t focus on anything, it was just like cloud, you know, and you can’t tell the difference between the snow and the sky, you can’t see a horizon. We had a little bracket that we’d swap over that clips on, the harness that holds a compass, so you navigate on this bearing, but beyond that, there’s nothing to look at, you know, so, and we found it actually really quite demanding, navigating and we’d both get headaches actually at the end of the day from not being able to focus on anything, you know you get this weird sort of, we both got this weird, almost like sort of vertigo, or kind of motion sickness because there’s nothing, there’s no horizon, there’s no, you know, it’s all really, really strange, so it’s kind of relief to, every 45 minutes to swap over and to follow someone and to see something, so we had a lot of that, a lot of really grim weather.”</p> <p>“For me actually a big thing was writing the blogs, we had this daily, you know, we, so during the day I’d often think, oh shit, what do I write about today because nothing’s happened, no scenery, we’ve just dragged the sledge, you know, so I often start thinking what we can we talk about, what would interest people and kind of build on that and flesh that out, so that was good to have something to sort of mentally chew on.”</p> <p>“We would, I remember, I think it was coming back down the Beardmore, I think we sort of started to run out of things to talk about and then we had to get quite imaginative and we’d ask each other questions at each break that we’d then have the next hour and a half to think about answer to, so they were everything from like top five rock bands of all time to five things about ourselves that would surprise the other person, and you know, that kind of thing and it was quite fun, you know, thinking of questions and we’d take it in turns to ask a question, so just stuff like that to kind of while, because there’s just so little stimulus and so little going on, you know. Trying to think what else we talked about really. I mean anything and everything. There was always quite a lot of fairly dark humor normally like what idiots we were and what a shit place this was, and you know, and we wanted our money back, never going on a trip with you again or, you know, that kind of thing.”</p> <p>“You’re often being carried around with the forces of nature, so I realized then that even though I was trying to reach this very challenging goal and I had to be determined, that I had to also be completely relaxed about the stuff that I couldn’t change, otherwise I’d just go nuts, if you were a control freak, you’d lose it completely you know, in these environments, so that was important.”</p>
Logistical stressors: – Managing time – Food – Distance – Lack of sleep	<p>“...it was amazing having Scott’s diary as a kind of, as a sort of reference point, you know, when we thought we had it tough you remember that they didn’t even have zips on their jackets, they hadn’t been invented yet, they didn’t have thermos flasks, they couldn’t drink during the day if they were thirsty, they had to stop and put the tent up and light the stove and you know...we just stick our tent up, takes five minutes and get in the sleeping bag, and you’re all set so, it was nice having that as a sort of reference point really and as something that stopped us feeling too sorry for ourselves when things were really tough.”</p> <p>“We definitely had to be flexible, I mean the whole time you’ve got a sort of rolling calculation of working how much we’ve got left, where to leave the depots, how many depots, it’s actually quite complex in terms of the sort of mathematics behind it. And we had some help, we had a couple of guys in California who have a, you know, a company that just work out complex equations, they’ve got sort of super computers and even they couldn’t quite figure it out, you know, because you have all these different variables and it’s quite complex you know, because as soon as you leave a depot, the sledge gets lighter so you get faster and then it’s just, you know, but then you’ve got altitude and actually we need more fuel now so the stove’s less efficient at 2,500, 3,000 meters, you know, so it’s just so many variables so that was actually quite, in a way kind of kept us busy so we’re trying to work it all out the whole time and we had no real precedent.”</p> <p>“Bedtime and I had a Kindle so I could read and I used to love reading, just for like ten minutes before I’d go to sleep every night, so that was a real highlight for me.”</p> <p>“...we were starving towards the end, in the last month, just hungry the whole time, so food and thinking of food and talking about food just became a, you know, a recurring theme, couldn’t escape from it, you know, we had to sort of agree that we wouldn’t torment each other too much with our food, sharing our sort of food daydreams, you know. And there were different things, Tarka, we had, just to break up the monotony of all the energy bars we had a bit of chocolate in each day’s ration, dark chocolate, a few squares, and I’d scoff mine halfway through the day to sort of break up the routine, otherwise it’s like six breaks and they’re all pretty much the same apart from a bit of chocolate, bit of [inaudible] so I’d have them in the day and Tarka would save his until the evening and would then like break it up square by square and like suck it, so I’d always, you know [laughs]. And also Tarka was quite good at saving bits of food, I’d just scoff everything, so he used to call me Winnie the Pooh, because there’s a Winnie the Pooh story where Pooh says, like if we eat all our food now we won’t have to carry it and that was kind of how I would think basically, like the sledge is lighter, I’ll just scoff it, whereas Tarka would keep this little bag of stuff that he’d like squirrel away and occasionally he’d pull out an extra bit of chocolate, and I’m like what? So that was, it wasn’t, it was just funny really, it wasn’t, it never got to the point of me being, you know, upset about it. But it also occasionally, you know, he’d be able to like offer me a little bit of chocolate and I’d feel so bad that I didn’t have anything to sort of reciprocate, oh God, you know, so tiny little gestures like that were really important.”</p>

TABLE 3
(Continued)

Stressors	Coping strategy
Psychological stressors: – Team-working – Homesickness	<p>“We would swap over every 45 minutes so we’d take it in turns to lead, so sort of finding a kind of happy medium in that respect was challenging sometimes. We’d basically lead for 45 minutes at a time and then we’d stop every hour and a half after we’d both led a session to eat and drink so you’d sit on the sledges and that’s when you can have a chat basically, so we’d often discuss pace and speed and Tarka’s also very good at maths so he’d always be working out stuff in his head like, you know, how many days food we’ve got left and how many hours we’re doing, you know, so he’d always come up with some new formula that was always quite optimistic.”</p> <p>“...you start developing little sort of catchphrases and little sort of in jokes and things that no one else would really, we’d call each other sir, that was just, I don’t know where that came from, but that was quite funny, just weird little quirks that start to appear after a while.”</p> <p>“I have actually got to find this because this was a ritual, there was one passage in this book, Big Dead Place, that became something that I would, Tarka just would ask me to read out loud. I read it out loud when I first read it, first time around, and then I re-read it probably once a week I think whenever we were finding it hard, let me just see if I can find it in here. The wonders of technology, I can get my Kindle on...[excerpt from Shackleton’s Endurance expedition]... You’d think, well at least we’re not like tying bamboo stakes behind our knees, you know, so that was always our, and that was a ritual, I read that many, many times out loud in the tent on that trip...so that gave us a bit of perspective.”</p> <p>“Also having a phone and being able to talk to, you know, Tarka’s married, I had a girlfriend, talking to parents, talking to friends, family, loved ones, you know, it’s, it’s really hard because in some ways it’s wonderful but in other ways, you can get desperately homesick, you know, having that sort of that connection, that sort of vague connection because it’s not a real connection but it’s just that you just being able to hear their voice, knowing that they’re in a different hemisphere, you know. And especially over sort of Christmas and that kind of thing, we’re down in the tent and Christmas was just another day for us, it was just another like how many kilometers can we crank out, you know. So, in some ways it made it harder, in other ways it was fantastic and I actually really enjoyed being able to write, being able to have this, you know, update the website and have this blog because I’m not really much of a photographer.”</p> <p>“You’re in this genuinely, expanse, you know, sort of twice the size of Australia and you’re in the middle of nowhere, but, you’re spending half the time in a space that is so small it would be illegal to keep prisoners in that, you know, conditions. So-s-so, sooo, erm, and I think because you’re, you know, just two of us, me and Pen, or Tarka, or whoever it is and you don’t see anyone else, or really speak to anyone else, in any great detail for-for so long, erm, the smallest things can become sort of friction points. So, both Tarka and I were aware of that, which actually helped us enormously, and-and right from the outset, we had an understanding where we would be, erm, just really frank and really honest with each other. If there was stuff going on that was annoying us or weren’t happy about then we would, we would broach it, erm, with the kind of mutual understanding that that was, that was f-f-for the sort of, greater good of the, of the expedition and the shared goal.”</p>
Motivation: – Psychological techniques – Monotony – Boredom	<p>“...a big thing for Tarka was in the evening, once we were in the sleeping bag, and we had to be like in the sleeping bags with the stove on, hot drink, you know, and then I’d get, it was this big ceremony, like I’m announcing our score that day and I think getting to 30 kilometers was a big thing, which was, I don’t know, like just before the Beardmore I think we did a 30k day. And then getting, you know, on the plateau itself, getting up, doing, I think we did a few 40k days which [inaudible] so it was quite exciting when the numbers sort of went up and up and up and so that was kind of a highlight of the day actually, the sort of announcing the scores in the evening.”</p> <p>“I mean, all sorts, we both, we had music which was amazing, a Godsend, I mean that was just, you know, Tarka had audio books but I couldn’t, I never got on with them because we had these tiny little iPod Shuffles, they’re a little, so they’ve got no screen or anything on and with gloves, giant mittens, it was very easy to press the wrong, and to skip an entire chapter...”</p> <p>“I’d always imagined the sort of skiing down this last slight slope off the edge of the Ross Ice Shelf and seeing Ross Island and all these landmarks, you’ve got Castle Rock, and then you see the Scott bases, New Zealand [inaudible] base and you’d see the mountains on the horizon and McMurdo Sound and, you know, so I, even though I’d never been there, I knew roughly what it would look like. And I always imagined it was going to be like the best day of my life, like I’d be skiing along in tears, really emotional and probably be high-fiving each other...”</p> <p>“...just having little milestones and normally it was the sort of breaks throughout the day and even though we had exactly the same food every day, we’d always like, you know, just each break and just thinking, right, what am I going to eat the next, can’t wait, that would be so nice, but hungry by that point so food became a bigger and bigger and bigger issue, mentally. So yeah, just having these little milestones became really important.”</p> <p>“I had, I mean towards the end there was, I remember just thinking like every step was just like another little bit closer to the finishing [inaudible] so just each step was you know, progress, it was worth celebrating you know, so that was, not really a mantra so much but I just remember saying that, I just, you know, one step closer.”</p> <p>“I never kind of got into a kind of definite routine with it, but it was actually useful and there were definitely many points in Antarctica where I tried to get into that same sort of state, where you just, I’d just focus on breathing or just focus on something and just, and not and if a thought came to mind, I’d try and let it go again, just focus on being in the present, you know, so that was definitely a useful sort of technique to know and to understand.”</p> <p>“And I think also being able to sort of compartmentalize what’s going on and not, you know, the sort of the overall, overarching goal that we’re trying to achieve is just so massive, that certainly early on it just seemed completely overwhelming and completely, you know, intimidating, so we’d, you know, it was important to have you know, sort of little milestones to aim for and you know, smaller goals along the way.”</p> <p>“...some of the nicest stuff, we’d get hundreds of comments on the blog and we couldn’t read them ourselves but the team in London would go through them and if they felt there were any that we’d enjoy, they would either send them to us in an email or read them out over the phone, and we spoke every night, and some of the stuff, the really small things actually were really, we had a nice message from a couple who both, husband and wife who both within the space of a few months been diagnosed with cancer, totally out of the blue, both fairly young as well, just like they’d had this incredible, and they said that they would read our update every morning over breakfast, you know, and they said it genuinely helped them to sort of keep going when they were finding it tough and stuff like that which is like totally humbling, like [inaudible] like God what we’re [inaudible], we’re both healthy and well and doing something we’ve dreamt of doing and you know, we’re not very, but also knowing that it was, that other people were finding some sort of, whatever, enjoyment, benefit, inspiration in what we were doing.”</p>

When discussing the complexities of distances covered, the expedition leader acknowledged how the team gathered information from a variety of sources and regulated their own thoughts and feelings to maintain a flexible outlook.

We definitely had to be flexible, I mean the whole time you've got a sort of rolling calculation of working how much we've got left, where to leave the depots, how many depots, it's actually quite complex in terms of the sort of mathematics behind it. And we had some help, we had a couple of guys in California who have a company that just work out complex equations, they've got super computers and even they couldn't quite figure it out, you know, because you have all these different variables and it's quite complex, because as soon as you leave a depot, the sledge gets lighter so you get faster, but then you've got the altitude and we need more fuel than as the stove's less efficient at 2,500 or 3,000 meters, so there are just so many variables so that was actually quite, in a way kind of kept us busy so we're trying to work it all out the whole time as we had no real precedent to go on. No one had ever done this before.

In relation to sleep, a key strategy was following a routine and finding time to recover after a hard physical effort. For instance, the expedition leader often read for 10 minutes at the end of each day: *"bedtime and I had a Kindle so I could read and I used to love reading, just for ten minutes before I'd go to sleep every night, so that was a real highlight for me."*

The identified strategies point towards a joint problem- and emotion-focused coping approach that included seeking social support, planful problem-solving, demonstrating effort, and regulating thoughts and feelings.

Psychological Stress

Although the team performed well, there were some small tensions related to pacesetting as well as challenges linked to homesickness, monotony, and boredom. These types of psychological stressor are not uncommon and have been reported in previous polar expedition endeavors.

To overcome psychological stressors, the expedition leader talked about the importance of social support, goal-setting, and viewing the situation optimistically:

We'd basically lead for 45 minutes at a time and then we'd stop every hour and a half after we'd both led a session, to eat and drink, so you'd sit on the sledges and that's when you can have a chat basically, so we'd often discuss pace and speed and Tarka's also very good at maths so he'd always be working out stuff in his head like, you know, how many days food we've got left and how many hours we're doing, you know, so he'd always come up with some new formula that was always quite optimistic.

The team both experienced feelings of homesickness. However, being able to write, update a blog, and communicate with the outside world helped manage these feelings.

Also having a phone and being able to talk to, you know, Tarka's married, I had a girlfriend, talking to parents, talking to friends, family, loved ones, you know, it's really hard because in some ways it's wonderful but in other ways, you can get desperately homesick, you know, having that sort of that connection, that sort of vague connection because it's not a real connection but it's just that you just being able to hear their voice, knowing that they're in a different hemisphere, you know. And especially over sort of Christmas and that kind of thing, we're down in the tent and Christmas was just another day for us, it was just another like how many kilometers can we crank out, you know. So, in some ways it made it harder, in other ways it was fantastic and I actually really enjoyed being able to write, being able to update the website and have this blog because I'm not really much of a photographer.

The importance of being open and honest with each other was also identified as an important part of maintaining group functioning and progressing towards the expedition's objectives.

You're in this genuine, expanse of wilderness, twice the size of Australia and you're in the middle of nowhere, but, you're spending half the time in a space that is so small it would be illegal to keep prisoners in. And I think because you're, you know, just two of us, me and Tarka, and you don't see anyone else, or really speak to anyone else, in any great detail for-for so long, erm, the smallest things can become friction points. So, both Tarka and I were aware of that, which actually helped us enormously, and right from the outset, we had an understanding where we would be, erm, just really frank and really honest with each other. If there was stuff going on



Figure 4. The confined living quarters on the expedition.

that was annoying us or weren't happy about then we would, we would broach it, with the kind of mutual understanding that that was, that was for the greater good of the expedition and the shared goal.

A key psychological stressor in the Antarctic is related to interpersonal challenges. Social challenges would be expected, especially given the amount of time spent with a small number of people and being separated from friends and family. Identifying ways to overcome interpersonal challenges by viewing the situation positively and seeking alternative forms of social support were evident on the present expedition (see Figure 4 for difficult living conditions).

Issues of Motivation

Although motivation is considered a psychological factor, this was mentioned on numerous occasions and warrants a separate category. Sustaining motivation over prolonged periods, especially in difficult conditions, requires a concerted effort and a variety of strategies were used to achieve the expedition goal.

One specific technique that worked for the two-man team and became a ritual was announcing the distances covered at the end of each day, thereby providing a mini-reward.

...a big thing for Tarka was in the evening, once we were in the sleeping bag, and we had to be like in the sleeping bags with the stove on, with a hot drink, you know, and then it was this big ceremony, like I'm announcing our score that day and I think getting to 30 kilometers was a big thing, which was, I don't know, like just before the Beardmore I think we did a 30k day. And then getting, you know, on the plateau itself, getting up, doing, I think we did a few 40k days which [inaudible] so it was quite exciting when the numbers sort of went up and up and up and so that was kind of a highlight of the day actually, announcing the scores in the evening.



Figure 5. Goal-setting was an important part of the expedition.

There was also an attempt to try and keep the expedition in perspective and compartmentalize immediate goals and keep them distinct from overarching expedition goals.

And I think also being able to sort of compartmentalize what's going on and not, you know, the sort of the overall, overarching goal that we're trying to achieve is just so massive, that certainly early on it just seemed completely overwhelming and completely intimidating, so we'd, you know, it was important to have little milestones to aim for and smaller goals along the way (see Figure 5).

There were other strategies such as meditation/mindfulness and visualization used to help the expedition team stay in the present. Being present and focusing on making progress via chunking the journey appeared to be an important strategy. This works by creating small confidence boosts and helping sustain the competence of the team. Finding other ways to remain in control and competent during the expedition should help cope with the strain on motivation and overcome difficulties associated with monotony and boredom.

General Discussion

The aim of the present report was to provide contextual information regarding the stressors faced and coping strategies used during an extreme expedition in the Antarctic. One of the report authors was also the leader of the expedition and in contributing to this report has shared specific details regarding the stressors faced and strategies used to achieve the expedition objectives.

Not surprisingly, the stressors encountered were largely consistent with those identified in previous work (Palinkas & Suedfeld, 2008). A variety of problem- and emotion-focused techniques were employed to overcome the extreme environmental and psychological demands (Suedfeld et al., 2009). Popular coping strategies included planful problem-solving, positive interpretation, and seeking social support. Overall, strategies were mostly approach-focused and tended to try and manage or mitigate, rather than avoid, stressors. In contrast to everyday life, trying to avoid or ignore stress in extreme environments will likely result in severe consequences. For instance, leaving the tent when a teammate is being irritating could quite feasibly result in death. Therefore, identifying appropriate approach-focused (whether problem- or emotion-based) coping strategies is of paramount importance.

Of course, the strategies discussed in the present report are from the perspective of one unique expedition team and mostly identified via the expedition leader. Nevertheless, the contextual information regarding how and when coping strategies were used should prove informative to other individuals planning and undertaking extreme environment

expeditions, particularly in the Antarctic but perhaps relevant to other situations.

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