Markers of Distress Among Behavioral and Physical Health Evacuees Prior to Emergency Departure from Antarctica

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Abstract

Although incidences of psychological crises occurring during space flight are reportedly rare, such events remain a distinct possibility and potential threat to future long-duration missions (e.g., a Mars mission). Extended residence in Antarctica offers an ideal setting for examining high-risk profiles for psychological crises. We therefore utilized data from a nine-month longitudinal study conducted at the McMurdo station to examine baseline and monthly reports of psychological and physical symptoms among four emergency evacuees compared to the remaining McMurdo sample (n = 84). Emergency evacuation occurred for medical reasons (n = 2) or for psychiatric reasons (n = 2). Evacuees were White, between 29 and 47 years of age, and mostly male (n = 1 female). There were few differences in evacuees' baseline scores compared to the full sample. Monthly assessments showed elevated anxiety symptoms to be most common among all evacuees. Elevated physical symptoms were also apparent among a psychiatric and a medical evacuee in the months prior to evacuation. For one psychiatric evacuee, declines in positive emotions preceded increased problems with self-regulation before evacuation. While preliminary, findings contribute to sparse information about the symptoms that precede emergency evacuations from extreme environments and underscore the importance of regular, structured self-report assessments.

Keywords: *Mental Health; Physical Symptoms; Anxiety; Spaceflight; Extreme Environments; Emotion Regulation*

1. Introduction

Although the incidence of psychological crises occurring during space flight are reportedly rare, such events remain a distinct possibility for future missions of long duration (e.g., a Mars mission). The isolated, confined, and extreme (ICE) environment of space poses significant psychological risk for humans based on the range of extreme stressors present, such as social isolation, confinement, communication delays, altered photoperiods, monotony of environmental stimuli, limited privacy, and microgravity [1,2]. Indeed, since evacuation during long duration space exploration (LDSE) is impossible, there is a crucial need to understand and reliably identify early warning signs and symptoms that signal psychological distress among crew members.

Extended residence in Antarctica offers an ideal analog setting for this purpose. With one of the harshest climates on earth, Antarctic crews are exposed to a range of stressors that mimic those found in space, including isolation and confinement, limited sensory stimulation, and protracted periods of darkness [3]. Accordingly, numerous studies have documented negative impacts on cognitive, emotional, social and physiological functioning [4,5,6,7]. For example, among crew member at the South Pole and McMurdo stations, Alfano et al. [4] recently reported significant changes in mental health functioning over a 9-month period. Based on monthly self-reports on the Mental Health Checklist (MHCL; [8]), decreases in positive adaptation scores (e.g., feeling in full control, inspired, determined) and increases in poor-self regulation scores (e.g., restless/fidgety, inattentive, sleepy) were found across mission. Conversely, another longitudinal study found that crewmembers maintained low negative affect scores on the Positive and Negative Affect Schedule (PANAS) throughout the entire mission [9], suggesting that responses to such extreme environment are variable, and context and measure dependent.

Examining group-based psychological health among large Antarctic crews can help to uncover salient risk and resilience processes operating in ICE settings, but such designs inevitably mask precise markers of distress among crew members who experience the most extreme psychological reactions. Although occasional reports of psychiatric emergencies necessitating evacuation from polar environments can be found in the extant literature (e.g., [10,11]) descriptive data are highly rare. In one such recent report, Temp and colleagues [11] described the case of a young adult who developed 'severe psychological distress' during the course of a winterover stay at the Polish Polar Station, Svalbard. Based on both qualitative and quantitative assessments, the crew member evidenced greater depressive symptoms, lower levels of vigor, confusion, anxiety and decreased appetite compared to other crew members and a community control group. These data exemplify the importance of understanding individual symptoms and markers of deterioration in mental health that precede emergency evacuation [11].

In the current paper, we utilize data from a nine-month longitudinal study conducted at the McMurdo Antarctic station [4] to examine monthly changes in mental and physical health symptoms among four participants during the months prior to their evacuation. Two participants were evacuated for psychiatric/behavioral health reasons and two were evacuated for medical/physical health reasons. We compared monthly outcomes among psychiatric/behavioral health evacuees and medical/physical health evacuees to the remaining McMurdo sample in an attempt to identify unique indicators of distress in the months prior to evacuation. We also examined and compared scores on several trait-based mental health questionnaires administered at baseline.

2. Methods

2.1 Participants

A total of 110 participants were enrolled in the original study [4] which was conducted from February through October at coastal (McMurdo) and inland (South Pole) Antarctic stations. The current study includes participants at the McMurdo station only (N = 88) from which evacuation is possible during the winter months. All on-station personnel were eligible to participate in the study. Demographic characteristics of evacuees compared to the remaining McMurdo sample are displayed in Table 1.

Over the course of the 9-month study, a total of seven participants underwent emergency evacuation from the McMurdo station. Of the seven evacuees, five were evacuated for medical/physical health reasons and two were evacuated for psychiatric/behavioral health reasons. Our research team was not provided with any other evacuation details in order to protect participant privacy. Three of the five medical/physical health evacuees completed the initial/baseline assessment only (i.e., no monthly scores were available) and so were not used in analyses. The remaining four evacuees completed between 2 and 5 monthly assessments prior to their evacuation. The two participants evacuated for psychiatric/behavioral health reasons are referred to hereafter as ‘Frank’ and ‘Sarah’ and the two participants evacuated for medical/physical health reasons are referred to as ‘Adam’ and ‘Jack’ (pseudonyms to protect participants’ identities).

2.1.1 McMurdo Station

McMurdo Station is a coastal scientific research base located on the southernmost tip of Ross Island, operated by the US Antarctic Program. It contains the largest community in Antarctica, including approximately 1,000 personnel during peak summer season (December and January) and 250 people during winter (July-September). Given its proximity to the sea, transportation to and from the station is readily available, making evacuation possible even

during the coldest months. Average daily temperature ranges from -3°C (27°F) in summer to -27°C (-17°F) in winter.

2.2 Baseline and Monthly Measures

2.2.2 Baseline Measures

Demographics Questionnaire. Demographic information was collected at baseline including information about sex, age, race/ethnicity, educational level, marital status, prior military service, and previous Antarctic experience.

Anxiety Sensitivity Index-III (ASI-III; [12]). The ASI-III is an 18-item measure in which respondents indicate the extent to which they are concerned about possible negative consequences of anxiety-related symptoms (e.g., "It scares me when my heart beats rapidly"). Responses are summed to create a total score. A high ASI score has been shown to be a powerful and unique predictor of panic attacks, post-traumatic stress, and fear. The ASI-III has strong psychometric properties [12]. In this sample the full-scale reliability was good (α =.86).

Difficulties in Emotion Regulation Scale (DERS; [13]). Emotion regulation refers to the ability to modulate the intensity and duration of an emotional response [14]. Deficits in emotion regulation have been found to underlie a broad range of affective problems and disorders. The DERS is a multi-faceted measure of emotion regulation that specifically evaluates deficits in the ability to regulate negative emotions. The 36-item measure yields a total score as well as several subscales. The DERS has been shown to have good test-retest reliability and high internal consistency. In the current sample, the full scale and subscales provided good reliability (α's = .80-.92).

2.3 Monthly Measures

The Mental Health Checklist (MHCL). The MHCL is a 23-item, self-report questionnaire created for use in ICE settings [8]. The measure requires respondents to rate of each item on an 11-point Likert scale from 0 ("never") to 10 ("always"). The MHCL yields three subscale scores: *positive adaptation* (e.g., in full control, inspired, determined), *poor self-regulation* (e.g., restless/fidgety, inattentive, sleepy) and *anxious apprehension* (e.g., worried, obsessional/stuck on things). Items were presented in a random order at each time point to prevent practice effects. The measure's psychometric properties have been examined in two community samples [8] and the original Antarctic sample [4] and reliability for all subscales was excellent.

Physical Symptoms Checklist (PSC). A list of physical symptoms was generated for the current study using the same procedures described for the MHCL. A final list of 29 items including common symptoms experienced in extreme environments was created for use in the current study. The PSC was completed monthly during the same session as the MHCL measures. Each item was rated on a 0 to 10-point visual analogue scale (similar to MHCL items). Physical symptoms scores examined in this study were calculated by totaling the number of physical symptoms endorsed at a 3 or higher.

2.4 Procedures

Participants were invited via posters, information sessions, and snowball sampling to participate in a study assessing neurobehavioral functioning during the austral Antarctic winter. See Alfano et al. [4] for full study details and procedures. All participants completed baseline questionnaires upon study enrolment. During each subsequent month, participants completed the MHCL and PSC (during working hours). All procedures were approved by the National

Aeronautics and Space Administration (NASA) and University of Houston Institutional Review Boards.

2.5 Data Analysis

We utilized the *Singlims_ES.exe* program by Crawford et al. [15] to compare individual evacuees' monthly scores on each MHCL subscale and the PSC to the mean score of the remaining McMurdo sample (comparison group) at the same time point. The program calculates an effect size which estimates the average difference of an individual's score compared to a comparison group (in units of SD), as well as a t-score, one-tailed significance test, and 95% confidence interval [16].

3. Results

3.1 Evacuee Characteristics

All evacuees were White, most were male (n = 1 female) and aged between 29 to 47 years with college or advanced degrees, representative of the full McMurdo sample (Table 1). Days on station prior to the baseline assessment ranged widely from 15 to 206 days.

3.2 Baseline Trait-based Measures

Baseline scores on the ASI and DERS for each evacuee and the full sample are presented in Table 2. Only one significant difference was detected: Adam (*Medical Evacuee 1*) reported a significantly higher score on the ASI compared to the full McMurdo sample.

3.3 Monthly Measures

Frank *(Psychiatric Evacuee 1)* was evacuated after two months of data collection. We found a significant difference in MHCL anxious apprehension scores at month 2 (the month prior to his evacuation) indicating he experienced elevated anxious apprehension at this time point compared to the total sample. All four items on the anxious apprehension scale were endorsed at

a moderate level or higher (rating of 5 or above) including: overwhelmed (5), worried (6), obsessional/stuck on things (6) and anxious/nervous (5). Frank did not report physical symptoms that differed significantly from the full sample during month 1 or month 2 of participation. See Tables 3 and 6.

Sarah *(Psychiatric Evacuee 2)* : Sarah was evacuated after five months of data collection. There was a significant difference in MHCL positive adaptation and anxious apprehension scores during month 2 indicating she experienced lower levels of positive emotions and greater anxiety at this time point compared to the total sample. At month 4, Sarah evidenced significantly elevated MHCL poor self-regulation and anxious apprehension scores compared to the full sample. In terms of anxious apprehension prior to evacuation (month 4), three of four items on the scale were endorsed at a moderate to high level including: overwhelmed (5), obsessional/stuck on things (6) and anxious/nervous (8). See Tables 3, 4, and 5.

Sarah also reported significantly greater physical symptoms at month 4 compared to the full sample (Table 6). Examination of specific physical symptoms she endorsed at a moderate or higher level included: sleepiness (7), loss of appetite (6), stomachaches/ gastrointestinal distress (5), loose stool/diarrhea (5), ringing/popping in ears (5) and chills/goose bumps (5).

Adam *(Medical Evacuee 1)*: Adam, who was evacuated after four months of data collection, reported significantly higher MHCL anxious apprehension score at month 3 compared to the total McMurdo sample. Anxious apprehension items endorsed at a moderate to high level included overwhelmed (5), worried (8), and obsessional/stuck on things (9). Adam did not report physical symptoms that differed significantly from the full sample during months 1 through 4 of participation. See Tables 3 and 6.

Jack *(Medical Evacuee 2)*: No significant differences in any MHCL scores were observed for Jack, who was evacuated after 5 months of participation. However, Jack reported elevated physical symptoms at month 5 (prior to departure) compared to the full sample at this time point (Table 6). Examination of specific physical symptoms endorsed at a rating of 5 (moderate) or above included physically fatigued/exhausted (5) only.

4. General Discussion

The ability to reliably detect and counter adverse psychological reactions during extended stay in extreme environments – including long duration space exploration – is critical. Compared to space, from which evacuation is not possible, a small proportion of Antarctic personnel are evacuated each year due to medical or psychological emergencies (e.g., [10,17]). Examination of emergent symptoms and complaints among evacuees during the weeks and months prior to evacuation could inform assessment procedures and content as well as counter-measure development. Using data from a nine-month Antarctic analog study, we examined self-reported psychological and physical symptoms monthly among crew members stationed at McMurdo, including four emergency evacuees. Although specific details were unavailable (in order to protect participant privacy), two of these evacuees developed adverse psychological reactions and two were evacuated for medical reasons. An additional three participants were evacuated for medical reasons, but only completed the baseline measures and were therefore not included in the current study. Overall, the rate of evacuation observed in our study is similar to that reported in prior Antarctic cohorts (e.g., [10]).

Compared to the full McMurdo cohort, both psychological evacuees and one of the medical evacuees reported significant elevations in MHCL anxious apprehension scores during the months leading up to emergency departure. In the other medical evacuee, elevated anxiety

sensitivity symptoms compared to the full sample were reported at baseline. While extant data for evacuees are limited, Bell and Garthwaite [17] previously noted that two out of three men who terminated their Antarctic deployment early experienced high levels of anxiety-related symptoms. Temp and colleagues [11] described an evacuee from the Polish Polar Station, Svalbard as experiencing increased anxiety and worry compared to other crew members. Studies of changes in anxiety among Antarctic cohorts have commonly found low, relatively stable anxiety symptoms across mission [18, 19] and both trait and state anxiety scores that are similar to or lower to community comparison groups [20]. These findings are not necessarily surprising in light of selection procedures for Antarctic deployment. Together with findings from the current study, significant elevations in anxiety either at baseline or during mission may serve as a potent predictor of individual distress. Regular/ongoing assessment of anxiety (particularly feelings of being overwhelmed and/or obsessional/stuck on things) based on validated measures, such as the MHCL [8] is recommended for assessment during extended stays in ICE environments.

In addition to increased anxious apprehension, Sarah also reported reduced positive adaptation and increased poor self-regulation in comparison to the rest of the cohort. This aligns with findings reported by Temp et al. [11], who noted that their evacuee reported low mood, feelings of confusion, and perceptions of reduced cognitive ability. In our study, Sarah reported a significant reduction in positive adaptation prior (in month 2) to a significant increase in poor self-regulation (in month 4). Reductions in positive adaptation reflect declines in positive emotions, including cheerfulness, enthusiasm, pride, and inspiration, whereas higher poor self-regulation scores are indicative of greater problems with racing thoughts, inattentiveness, forgetfulness, restlessness, and sleepiness. Prior research has demonstrated declines in positive

emotion predict subsequent mood problems [21], with theoretical models underscoring the role of abnormalities in behavioral activation and inhibition systems as causal factors in the development of depression [22]. This pattern of symptoms was not observed in either medical evacuee. Unfortunately, since only 2 months of data were available for the other psychiatric evacuee in our study, it was not possible to examine whether a similar temporal relationship of symptoms might have been present. This nonetheless remains an important question for future research.

We also examined the occurrence of physical/somatic complaints in our study given findings from our previous study indicating elevations in physical symptoms during mission predicted end of mission anxious apprehension and poor self-regulation [4]. Sarah reported significantly elevated levels of physical symptoms across all months of data collection, but most profoundly during the month prior to their departure. Symptoms endorsed with the greatest severity included sleepiness, loss of appetite, stomachaches/gastrointestinal distress, loose stool/diarrhea, ringing/popping in ears, and chills/goose bumps. Although physical symptoms were not systematically assessed, Temp et al. [11] also described decreased appetite in their case study of a psychiatric Arctic evacuee. We also observed elevated physical symptoms during the month prior to departure in one medical evacuee as well, though physical symptoms of at least moderate severity were far fewer and less severe. This is somewhat surprising given the nature of this evacuation (i.e., for a medical reason). Still, for both evacuees, significant elevation in physical complaints was endorsed only during the month prior to evacuation, suggesting that impairing levels of distress might already be present at the point at which crew members voice of somatic complaints. Evaluation of physical symptoms/complaints could therefore be of considerable value for detecting serious, adverse reactions in ICE environments.

5. Limitations

While the current study provides novel information, it is not without limitations. To protect participant privacy, we were unable to obtain specific diagnoses/problems/circumstances associated with evacuations. This, combined with our limited number of evacuees, makes it difficult to ascertain nuanced relationships and specific symptom profiles. At the same time, in light of the range of stressors present in ICE environments, precise diagnoses and circumstances surrounding emergency evacuation are likely less meaningful than the ability to detect and manage adverse reactions. Indeed, psychological symptoms and physical complaints are transdiagnostic and co-occur with a wide range of mental health concerns, and may therefore provide better insight into mitigating risk. It should also be noted that symptom endorsements came from self-report measures rather than assessments conducted by a physician or mental health clinician, and the extent to which different types of assessment practices yield similar or discrepant information is unclear. Lastly, a wide range of factors impacting both psychological and physical health were not considered in our study including on-station roles, work schedules/patterns, and interpersonal dynamics and interactions among crew members, any or all of which might have elevated (or buffered against) levels of distress.

6. Conclusion

The current study provides novel and informative findings regarding changes in mental and physical health symptoms during the months prior to emergency evacuation from Antarctica, which may have relevance for risk-detection and mitigation during LDSE. Results suggest elevations in anxiety symptoms to be the most common and robust indicator of distress across all evacuees, followed by physical complaints. Thus, ongoing assessment of these domains is recommended in ICE environments. Repeated assessment also allows for understanding of the

time course of symptom manifestation. Because one psychiatric evacuee reported reductions in positive adaptation preceding declines in self-regulation, this particular symptom pattern may be important to monitor in extreme, high-risk environments. Overall, these findings contribute to a sparse amount of literature documenting specific symptom profiles among Antarctic emergency evacuees, generating several important questions for future research.

Acknowledgement

This paper was supported by a research grant from the National Aeronautics and Space Administration (NASA; # NNX15AC13G) awarded to C. Alfano and R. Simpson.

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Table 1

Sample Characteristics and Baseline Measures at McMurdo Antarctic Station's Full Sample and Evacuees

	McMurdo Sample (N = 84)	Frank	Sarah	Adam	Jack
Age *(M/SD)*	38.8 (12.5)	47	35	29	37
Female *(%/n)*	25% (21)	.	X	.	.
Race *(%/n)*					
White	94% (79)	X	X	X	X
Asian	1.1% (1)	---	---	---	---
Latino	2.4% (2)	---	---	---	---
Mixed	1.1% (1)	---	---	---	---
Other	1.1% (1)	---	---	---	---
Missing	---	---	---	---	---
Education *(%/n)*					
High School	8.3% (7)	---	---	---	---
Some College	30.9% (26)	---	---	---	---
Bachelor's degree	48.8% (41)	X	X	---	---
Advanced degree	8.3% (7)	---	---	X	X
Other/Missing	3.6% (3)	---	---	---	---
Days on ice prior to BL	69.4(72.3)	15	150	206	43
BL Measures					
DERS	64.23 (16.29)	66.00	81.00	76.00	56.00
ASI	8.50 (7.85)	8.00	14.00	0.00	30.00*

Note: Frank = psychological/behavioral evacuee 1; Sarah = psychological/behavioral evacuee 2; Adam = medical evacuee 1; Jack = medical evacuee 2; BL = baseline assessment; DERS = Difficulties in Emotion Regulation Scale; ASI = Anxiety Sensitivity Index-III; * = score differed from full sample mean at $p < .01$

Table 2

Means and Standard Deviations for Self-Report Measures at McMurdo Station in the Full Sample and Evacuees x Month.

	Month 1 (N=84)	**Month 2 (N=78)**	**Month 3 (N=69)**	**Month 4 (N=54)**	**Month 5 (N=44)**	**Month 6 (N=40)**
Mental Health Checklist						
***M*(*SD*)**						
Positive Adaptation						
Frank	79.00	61.00				
Sarah	82.00	43.00*	79.00	94.00		
Adam	90.00	76.00	45.00	62.00	104.00	83.00
Jack	59.00	81.00	69.00	69.00	61.00	53.00
McMurdo Sample	80.85 (16.70)	74.60 (15.33)	69.78 (15.18)	68.40 (18.40)	65.43 (18.42)	64.38 (21.06)
Poor Self- Regulation						
Frank	14.00	29.00				
Sarah	21.00	29.00	28.00	33.00*		
Adam	23.00	22.00	25.00	21.00	14.00	18.00
Jack	14.00	22.00	15.00	15.00	16.00	14.00
McMurdo Sample	16.07 (8.06)	18.59 (9.02)	19.00 (8.30)	17.45 (8.22)	18.09 (9.56)	18.76 (9.50)
Anxious Apprehension						
Frank	12.00	22.00*				
Sarah	19.00	28.00*	18.00	23.00*		
Adam	14.00	13.00	26.00*	13.00	9.00	12.00
Jack	8.00	11.00	6.00	8.00	11.00	12.00
McMurdo Sample	10.88 (6.91)	11.42 (5.73)	11.18 (5.92)	10.38 (5.55)	9.67 (5.33)	10.09 (5.68)

Physical Symptoms Checklist					
***M*(*SD*)**					
Frank	0.00	8.00			
Sarah	8.00	9.00	7.00	10.00*	7.00
Adam	4.00	4.00	5.00	4.00	
Jack	3.00	3.00	1.00	1.00	8.00*
McMurdo Sample	3.14 (3.03)	4.08 (3.65)	3.74 (3.73)	3.11 (3.03)	2.58 (2.60)
Baseline Trait-based Measures					
***DERS Total M*(*SD*)**					
Frank	58.00				
Sarah	81.00				
Adam	46.00				
Jack	56.00				
McMurdo Sample	64.62 (18.99)				
ASI Total					
***M*(*SD*)**					
Frank	8.00				
Sarah	14.00				
Adam	30.00*				
Jack	0.00				
McMurdo Sample	8.50 (7.85)				

Note: Frank = psychological/behavioral evacuee 1; Sarah = psychological/behavioral evacuee 2; Adam = medical evacuee 1; Jack = medical evacuee 2

*$p < .05$, **$p < .01$, ***$p < .001$ = scores differed from full sample mean

Table 3 MHCL Anxious Apprehension

		Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Frank	*t* value	0.16	1.83	---	---	---	---
	p value	0.44	0.035*	---	---	---	---
	EP Below	56.38%	96.47%	---	---	---	---
	95% CI Low	47.86%	93.02	---	---	---	---
	95% CI High	64.69%	98.65%	---	---	---	---
Sarah	*t* value	1.18	2.88	1.15	2.27	---	---
	p value	0.12	0.003***	0.13	0.014*	---	---
	EP Below	87.96%	99.74%	87.18%	98.63%	---	---
	95% CI Low	81.76%	99.14%	79.86%	96.20%	---	---
	95% CI High	92.87%	99.97%	92.86%	99.75%	---	---
Adam	*t* value	0.45	0.27	2.49	0.47	---	---
	p value	0.33	0.39	0.008***	0.32	---	---
	EP Below	67.26%	60.75%	99.23%	67.95%	---	---
	95% CI Low	58.92%	51.94%	97.77%	57.43%	---	---
	95% CI High	75.00%	69.18%	99.87%	77.50%	---	---
Jack	*t* value	-0.41	-0.07	-0.87	-0.42	0.25	0.33
	p value	0.34	0.47	0.19	0.34	0.40	0.37
	EP Below	33.99%	47.11%	19.38%	33.67%	59.77%	62.94%
	95% CI Low	26.15%	38.39%	12.29%	23.97%	47.73%	49.59%
	95% CI High	42.36%	55.93%	27.84%	44.26%	71.15%	75.22%

Note. Frank = psychological/behavioral evacuee 1. Sarah = psychological/behavioral evacuee 2. Adam = medical evacuee 1. Jack = medical evacuee 2. EP Below = Estimated percentage of the total sample obtaining a lower score than the evacuee's score.
*$p < .05$, **$p < .01$, ***$p < .001$

Table 4 MHCL Positive Adaptation Comparisons

		Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Frank	*t* value	-0.11	-0.88	---	---	---	---
	p value	0.46	0.19	---	---	---	---
	EP Below	45.65%	19.02%	---	---	---	---
	95% CI Low	37.28%	12.55%	---	---	---	---
	95% CI High	54.17%	26.66%	---	---	---	---
Sarah	*t* value	0.07	-2.05	0.60	1.38	---	---
	p value	0.47	0.022*	0.27	0.09	---	---
	EP Below	52.74%	2.19%	72.57%	91.30%	---	---
	95% CI Low	44.24%	0.07%	63.34%	84.35%	---	---
	95% CI High	61.16%	4.78%	80.80%	96.14%	---	---
Adam	*t* value	0.55	0.09	-1.62	-0.34	---	---
	p value	0.29	0.46	0.06	0.37	---	---
	EP Below	70.65%	53.61%	5.50%	36.61%	---	---
	95% CI Low	62.46%	44.78%	2.26%	26.66%	---	---
	95% CI High	78.13%	62.30%	10.42%	47.27%	---	---
Jack	*t* value	-1.28	0.42	-0.05	0.03	-0.24	-0.53
	p value	0.10	0.34	0.48	0.49	0.41	0.30
	EP Below	10.17%	66.06%	47.97%	51.30%	40.69%	29.89%
	95% CI Low	5.73%	57.36%	38.42%	40.66%	29.28%	18.47%
	95% CI High	15.92%	74.17%	57.61%	61.88%	52.72%	42.99%

Note. Frank = psychological/behavioral evacuee 1. Sarah = psychological/behavioral evacuee 2. Adam = medical evacuee 1. Jack = medical evacuee 2. EP Below = Estimated percentage of the total sample obtaining a lower score than the evacuee's score.
*p < .05, **p < .01, ***p < .001

Table 5 MHCL Poor Self-Regulation

		Month 1	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**
Frank	*t* value	-0.26	1.15	---	---	---	---
	p value	0.40	0.13	---	---	---	---
	EP Below	39.94%	87.28%	---	---	---	---
	95% CI Low	31.78%	80.68%	---	---	---	---
	95% CI High	48.44%	92.51%	---	---	---	---
Sarah	*t* value	0.61	1.16	1.08	1.87	---	---
	p value	0.27	0.13	0.14	0.033*	---	---
	EP Below	72.78%	87.48%	85.70%	96.67%	---	---
	95% CI Low	64.72%	90.92%	78.07%	92.46%	---	---
	95% CI High	80.07%	92.66%	91.75%	99.04%	---	---
Adam	*t* value	0.86	0.35	0.72	0.43	---	---
	p value	0.20	0.71	0.24	0.34	---	---
	EP Below	80.27%	64.61%	76.21%	66.47%	---	---
	95% CI Low	72.85%	55.87%	67.27%	55.89%	---	---
	95% CI High	86.64%	72.82%	83.99%	76.17%	---	---
Jack	*t* value	-0.26	0.38	-0.48	-0.30	-0.22	-0.49
	p value	0.40	0.35	0.32	0.38	0.42	0.31
	EP Below	39.94%	64.65%	31.70%	38.45%	41.50%	31.23%
	95% CI Low	31.78%	55.91%	23.05%	28.37%	30.03%	19.63%
	95% CI High	48.44%	72.85%	41.17%	49.14%	53.54%	44.41%

Note. Frank = psychological/behavioral evacuee 1. Sarah = psychological/behavioral evacuee 2. Adam = medical evacuee 1. Jack = medical evacuee 2. EP Below = Estimated percentage of the total sample obtaining a lower score than the evacuee's score.
*$p < .05$, **$p < .01$, ***$p < .001$

Table 6 Physical Symptoms

		Month 1	Month 2	Month 3	Month 4	Month 5
Frank	*t* value	-1.03	1.07	---	---	---
	p value	0.15	0.14	---	---	---
	EP Below	15.30%	85.60%	---	---	---
	95% CI Low	9.68%	78.67%	---	---	---
	95% CI High	22.10%	91.21%	---	---	---
Sarah	*t* value	1.59	1.34	0.87	2.26	---
	p value	0.06	0.09	0.20	0.014*	---
	EP Below	94.26%	90.82%	80.54%	98.60%	---
	95% CI Low	89.92%	85.10%	72.07%	96.12%	---
	95% CI High	97.29%	95.11%	87.64%	99.74%	---
Adam	*t* value	0.28	-0.02	0.34	0.29	---
	p value	0.39	0.49	0.37	0.39	---
	EP Below	61.07%	49.24%	63.17%	61.43%	---
	95% CI Low	52.59%	40.48%	53.55%	50.73%	---
	95% CI High	69.19%	58.04%	72.22%	71.51%	---
Jack	*t* value	-0.05	-0.29	-0.73	-0.69	2.05
	p value	0.48	0.39	0.24	0.25	0.025*
	EP Below	48.17%	38.58%	23.51%	24.60%	97.55%
	95% CI Low	39.74%	30.19%	15.78%	15.95%	92.60%
	95% CI High	56.67%	47.39%	32.44%	34.63%	99.66%

Note. Frank = psychological/behavioral evacuee 1. Sarah = psychological/behavioral evacuee 2. Adam = medical evacuee 1. Jack = medical evacuee 2. EP Below = Estimated percentage of the total sample obtaining a lower score than the evacuee's score.
*$p < .05$, **$p < .01$, ***$p < .001$