

Post-mission mental health of expatriates at Médecins Sans Frontières Amsterdam

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Abstract

Humanitarian aid workers are exposed to many psychological stressors during deployment. In this work, we assessed the impact of various factors on the reported mental health of humanitarian aid workers returning from the field. A quarter of the respondents reported feeling worse than usual and experiencing high levels of psychological distress. The confidence respondents felt in regards to their job was affected by the context in which their deployment took place and what kind of population they worked with. Additionally, greater mission experience showed a positive effect on overall health and exhaustion. Finally, the number of days since leaving the mission showed the most significant effects on mental health outcomes such as overall health, overall distress, anxiety, and depression. A number of suggestions were given, both methodological and psychological, to improve the identification of mental health problems in expatriate aid workers in future assessments.

“Once you've thrown out a placenta in a dirty bin, assessed kids dying of measles, put in an IV in a hot, dark, sweaty mud hut crowded with coughing tuberculosis patients and asked a gunshot victim to wait 'a few' more weeks for a plane, it's pretty hard to complain about the hot nights, the fly hole toilet and the lack of fresh food” (T. S., nurse in southern Sudan).

Médecins Sans Frontières (MSF) offers emergency medical aid to people in over 80 countries worldwide, across borders of religion, race, gender and nationality. The organization is an international non-governmental humanitarian organization, first founded in France in 1971. In times of war, natural disaster and epidemics, the organization delivers help by providing medical assistance to victims both with first response and long-term assistance. For this mission, the organization sends its own teams of doctors, nurses and other specialists, tasked to coordinate with local staff, to support the local population based on individualized needs.

MSF aid workers face a number of psychological stressors when deployed internationally. In addition to living and working conditions that may differ vastly from those to which they are accustomed, there is also the risk of secondary traumatization by exposure to victims of trauma, as well as the possibility of experiencing a traumatic event firsthand (Bilal, Rana, Rahim & Ali, 2007; Connorton, Perry, Hemenway & Miller, 2012; Ehrenreich & Elliott, 2004). Because exposure to trauma can have substantial effects on the mental health of these expatriate aid workers, the Psycho-Social Care Unit (PSCU) at MSF Amsterdam offers psychological support to staff upon deployment and return from the field.

General physical and psychological effects of humanitarian relief work

Several psychological studies have assessed the general effects of humanitarian relief work on the mental health of aid workers living in various global contexts. Conceptual models have illustrated the interrelationship of exposure to traumatic stressors, support and coping, and personal

history (Olf, Langeland & Gersons, 2005). Secondary traumatic exposure has been associated with negative mental health outcomes in expatriate aid workers (Eriksson, VandeKemp, Gorsuch, Hoke & Foy, 2001; Shah, Garland & Katz, 2007). In addition to exposure to stressors during deployment, several personal characteristics of humanitarian workers have been associated with negative mental health as well. Youth, gender, previous psychiatric history (Lopes Cardozo et al., 2005) and exposure to prior traumatic loss (Putman et al., 2009) have all been associated with distress in samples of expatriate and national aid workers.

In addition to effects on general mental health, several studies have found that individuals with exposure to traumatic stressors during humanitarian aid work exhibit certain characteristic psychological problems, including depression, avoidance/intrusion, anxiety, and post traumatic stress disorder (PTSD) (Elhai, North & Frueh, 2005; Näätänen, Kanninen, Qouta & Punamäki, 2002). Because of the known risk factors for these conditions, MSF Amsterdam has collected questionnaires from 2009 to 2012 to screen their aid workers returning from the field and to assess possible interventions to prevent negative mental health outcomes in the future. This comprehensive questionnaire specifically addresses indices for overall (somatic) health, burnout and overall distress (combined anxiety and depression). The scores on these indices are the subject of the analysis presented in this work. In the following paragraphs, we review the research literature on each of these psychological factors.

Physical effects, burnout, anxiety, and depression

Many studies have observed that aid workers exposed to trauma may experience physical stress reactions (Brewin, Andrews & Valentine, 2000; Herman, 1997). One study on rescue workers following the Enschede fireworks depot explosion showed that in some cases, post-disaster musculoskeletal and respiratory conditions endured for up to three years (Morren, Dirkzwager & Kessels, 2007). After the 2010 earthquake in Haiti, there were several reports of physical illness in

humanitarian aid workers (Gray, 2010). Finally, humanitarian workers often work in physically challenging situations, which could cause chronic fatigue (Ehrenreich & Elliott, 2004). As these studies show, the demanding situations encountered by expatriate aid workers can result in physical problems, either caused by the clearly demanding situations or prolonged psychological stress.

The challenges of humanitarian aid work may also result in burnout (Eriksson et al., 2009; Eriksson et al., 2001; Lopes Cardozo et al., 2005). Maslach, Jackson, and Leiter (1996) conceptualized *burnout* as involving “emotional exhaustion, a sense of depersonalization and a lack of personal accomplishment in the workplace”. Because aid workers are deployed in international disaster and (post-)war settings, they are at risk of chronic exposure to traumatic events and organizational stress, both of which may lead to job burnout (Eriksson et al., 2009; Lopes Cardozo & Salama, 2002). Of humanitarian aid workers in Darfur, 16% reported high levels of work stress and burnout (Musa & Hamid, 2008). During deployment following an earthquake in Northern Pakistan in 2005, 8% of expatriate aid workers reported high levels of burnout (Ehring, Razik & Emmelkamp, 2011). Moreover, among trauma counsellors, relief workers, and police, which represent large and well-studied professional organizations, burnout has also been consistently observed, indicating that secondary traumatization and organizational stress are important considerations for burnout in aid workers (Eriksson et al., 2009). Further, in a study by Eriksson on mental health in aid workers, 40% reported a high risk on one or more types of burnout and young age was associated significantly with higher levels of burnout (Eriksson et al., 2009). Taken together, these findings from the psychological literature provide clear indications for the importance of considering burnout within the context of humanitarian aid work.

In addition to physical symptoms and burnout, humanitarian workers may also experience elevated levels of overall distress, depression and anxiety (Connorton et al., 2012). A study by Palm, Polusny, and Follette (2004) showed that staff assisting in an acute phase of a major incident often display anxiety and hyperarousal. Lack of support from within the organization and younger

age have been associated with depression (Lopes Cardozo et al., 2005; Lopes Cardozo & Salama, 2002). Studies have also identified that the frequency of direct exposure to life-threatening traumatic events on the humanitarian field is associated with symptoms of depression, as well as with inadequate communication with friends and family. After a 1999 earthquake took place in Taiwan, 15% of the aid workers reported depression (Liao, Lee & Lee, 2002). In Kosovo, 17.2% of expatriates showed symptoms of depression and 8.8% showed symptoms of anxiety. It must be noted, however, that Kosovar national staff exhibited even higher symptoms of depression in comparison with expatriates (Lopes Cardozo et al., 2005), which may represent a frequent but often overlooked trend. In a study on PTSD in humanitarian aid workers, symptoms of depression and anxiety exceeded symptoms of PTSD (Holtz, Salama, Lopes Cardozo and Gotway, 2002). In this study, 8.6% showed symptoms of depression and 17.1% showed symptoms of anxiety. The anxiety rate was especially high amongst expatriate workers who witnessed an armed attack and for those who were deployed for more than half a year. In this case, only men exhibited elevated symptoms of depression. In a study by Musa and Hamid (2008) in Sudan, 25% of their workers reported high levels of secondary traumatic stress, with youth being an additional factor. Interestingly again, local aid workers experienced a higher rate of secondary traumatic stress than expatriates.

Deployment factors: Context, function, number of missions, days since leaving the mission

In addition to the psychological assessment in the MSF questionnaire, returning expatriate aid workers were also asked specific questions concerning the nature of their deployment. These questions included the country in which deployment took place, the occupational role during deployment (function), number of missions undertaken, and the number of days intervening between return and response to the questionnaire. The country in which the mission took place was used to identify the context of the mission, with respect to the degree of political instability, violence, and nature of the population encountered during the time of deployment. The role of the

individual within the organization, specifically whether engaged in a medical, paramedical, or nonmedical setting, was taken into account in order to consider whether individuals in certain occupations exhibit different risks for work-related psychological distress. Additionally, the number of missions undertaken by an individual was taken into account to consider the effect of repeated deployments on mental health. Finally, the number of days since leaving the mission was reported, in order to assess whether time passed since return effects an individual's reported mental health scores.

The *context of the humanitarian mission* may predispose individual aid workers to various risks for primary and secondary traumatic events. For example, as demonstrated throughout the psychological literature, the frequency of life-threatening traumatic events in the humanitarian field is associated with negative mental health outcomes. Within our analysis of the responses to the MSF questionnaire, the context for individual missions was divided into working during armed conflict, immediately after a conflict, in a context internally instable but with low intensity of violence, and in stable situations. Studies show that those who experienced local hostility or an armed attack were at increased risk of anxiety (Holtz et al., 2002). Exposure to violence was significantly related to depression and anxiety, except when workers had social support (Eriksson et al., 2012). Violence-exposed individuals are at risk of developing depression and anxiety symptoms because they experience physical and emotional stress reactions (Eriksson et al., 2009). Finally, whether the local *population* encountered during the mission was constituted mainly of displaced people or general population was taken into account to understand the effect of working with refugees on workers' mental health.

Only a few studies have been conducted concerning the effect of *occupational role* on mental health in humanitarian aid workers. It is clear, however, that primary witnesses of trauma or victims of violence will exhibit increased risk for developing secondary traumatic stress. In comparison with other emergency service workers, ambulance workers exhibit higher risks for

negative health effects (Marmar, Weiss, Metzler, Ronfeidt & Foreman, 1996) and nurses have greater risk of mental health consequences as opposed to logistic workers and doctors (Armagan, Engindeniz, Devay, Erdur & Ozcakil, 2006). Additional socioeconomic factors may play a role in risk for psychological conditions in aid workers as observed by Shah et al. (2007). Lower socioeconomic status was related to higher trauma scores. Furthermore, some studies suggest that volunteers are more prone to develop mental health problems compared to trained staff (Dyregrov, Kristoffersen, Gjestad, 1996; Hahg-Shenas, Goodazi, Dehbozorgi & Farahsbandi, 2005). Volunteers in disaster zones, however, may report more positive outcomes, because of the purposeful aspect affiliated with volunteer status (Eidelson, D'Alessio, & Eidelson, 2003).

While an individual's mission experience could be expected to be an important factor in the development of their coping strategies, it has been suggested that those with *previous disaster experience* were more severely affected (Armagan et al., 2006). Individuals exposed to trauma may become sensitized toward later mental problems; here, age is perhaps an additional confounding factor. Individuals who have served longer than 6 months have been observed to exhibit increased risk for anxiety (Holtz et al., 2002). On the other hand, it has been shown that young expatriates (who may be reasonably expected to have less mission experience) are at higher risk for burnout (Eriksson et al., 2009). Importantly, Lopes Cardozo et al. (2005) observe that "expatriates going on their first mission score high on depression, and that scores decrease after that to peak with five or more assignments."

Finally, one variable taken into account by the questionnaire is *time since leaving the mission* at the moment of filling out the survey. While there is little research in the psychological literature on this topic, it may be that reported mental health status and, thus, the results of the questionnaire depend upon the time between mission return and questionnaire response. While, again, there is little research to support this hypothesis, physical health problems are known to persist for years in disaster aid workers (Morren et al., 2007). It can be expected, however, that

certain reported mental health problems will lessen the longer expatriates have been out of the field.

Hypotheses

In this paper, data collected by PSCU from 2009 to 2012 are studied to explore which factors may contribute to poor mental health in expatriate aid workers from MSF Amsterdam. Here, mental health is defined as the scores on overall (somatic) health, burnout, and overall distress. In this study, the following questions will be addressed:

Q1) Does the context in which expatriates work (armed conflict, post conflict, internal instable/low intensity of violence, stable) impact scores on mental health?

Q2) Does the function of expatriates (medical staff, paramedical staff, nonmedical staff, coordinating staff) have an impact on mental health scores?

Q3) Does the number of missions an expatriate has undertaken (1 mission, 2-4 missions, 5 or more missions) have an impact on scores of mental health?

Q4) Does the number of days since an expatriate has left the mission and filled out the questionnaire (<6 days, 6-14 days, 15-30 days, >30 days) have an impact on scores of mental health?

For these questions, our hypotheses are:

H1) Working with populations during and post conflict will have high scores for mental health problems.

H2) Medical staff will exhibit the highest scores for mental health problems.

H3) More mission experience will be associated with higher scores for mental health problems, except for burnout and depression. For burnout rate, we expect younger

people, and thus people who probably have gone on fewer missions, to score higher.

We expect high depression scores following individuals' first deployments, and after five or more missions. We expect lower scores on 2 to 4 missions.

H4) Lastly, we expect higher scores for mental health problems when filling out the questionnaire fewer days after an expatriate has left the mission.

Methods

Data collection

The Psycho/Social Care Unit of MSF in Amsterdam has distributed an anonymous questionnaire to returned staff while on debriefing at the MSF office. The questionnaire is titled '*Well Being Questionnaire*' and was developed in November 2009 (De Jong & Koeman). The aim of the questionnaire is to investigate which factors might contribute to poor mental health in expatriates. Data were collected from end of 2009 until 2012 at the MSF centre in Amsterdam. While most staff return to the office fairly shortly after their mission, there are cases where staff has to go home elsewhere before returning to Amsterdam for debriefing, usually when visa problems are involved. In such instances, questionnaires may be returned with a delay after return from a mission. There is no data on non-response.

Instruments

In this study, self-report questionnaires have been used with the aim of psychological screening. The survey is divided in three parts: first, the somatic symptoms section of the General Health Questionnaire (GHQ-28), assessing overall somatic health, second, the Maslach Burnout-Inventory-General Survey (MBI-GS), measuring burnout, and third, the Hopkins Symptom Checklist-25 (HSCL-25), assessing anxiety, depression and overall distress.

The General Health Questionnaire-28 is a screening tool to measure mental health problems and consists of four domains, from which only the somatic symptoms part is used in this survey. This section focuses on the recent physical health of the respondent. The questionnaire poses seven questions in total, with the overall health score being the average over all items (Goldberg & Williams, 2000). Examples of questions are '*Have you recently been feeling perfectly well and in good health?*' and '*Have you recently been getting a feeling of tightness of pressure in your head?*'. Respondents can choose one of the following answers: 'Better than usual (0) – Same as usual (0) – Worse than usual (1) – Much worse than usual (1)'.

The Maslach Burnout Inventory-General Survey consists of sixteen questions related to attitudes towards work (Maslach et al., 1996). Questions are for example: '*I do my work well*' and '*At the end of the day I feel empty*'. Response alternatives are: 'Never (0) – Hardly ever (1) – Sometimes (2) – Regularly (3) – Often (4) – Very often (5) – Always (6)'. The MBI-GS consists of three domains, namely Exhaustion, Distanced and Competence. *Exhaustion* (items 1, 3, 5, 11, 14) “refers to feelings of being over-extended and drained from one's emotional resources” (Schutte, Toppinen, Kalimo & Schaufeli, 2000). The total score on the items divided by 5 is the Exhaustion score (Very low $\leq .20$, Low $.21 \leq \text{score} \leq .80$, Average $.81 \leq \text{score} \leq 2.20$, High $2.21 \leq \text{score} \leq 3.60$, Very high > 3.60). *Distanced* (items 2, 7, 8, 13, 15) “refers to negative, cynical, detached, and impersonal attitudes and feelings towards other people” (Schutte et al., 2000). The total score on the items divided by 5 is the Distanced score (Very low 0.0, Low $0.1 \leq \text{score} \leq .80$, Average $.81 \leq \text{score} \leq 2.20$, High $2.21 \leq \text{score} \leq 3.40$, Very high > 3.40). The third scale, *Competence* (items 4, 6, 9, 10, 12, 16) refers to feeling confident and competent in one's job (Schutte et al., 2000). The total score on the items divided by 6 is the Competence score (Very low ≤ 2.50 , Low $2.51 \leq \text{score} \leq 3.50$, Average $3.51 \leq \text{score} \leq 4.83$, High $4.84 \leq \text{score} \leq 5.50$, Very high > 5.50). We define a burnout as the coexistence of (very) high scores on Exhaustion and Distancing with a (very) low score on Competence.

Lastly, the HSCL-25 holds two scales measuring complaints suffered in the last seven days: a ten-item subscale for anxiety (items 1 – 10) and a 15-item subscale for depression (items 11 – 25) (Derogatis & Lipman, 1974). Questions that are asked are for example '*Spells of terror or panic*' and '*Worrying or stewing about things*', with answer possibilities: 'Not at all (1) – Rarely (2) – Sometimes (3) – Often (4)'. The total score on all items divided by 25 is the score on 'Overall distress'. A cut-off mean score of 1.75 is used for either sub-scale and for overall distress, indicating elevated clinical symptoms.

Reliability of the different parts of the questionnaire was assessed with Cronbach's alpha reliability coefficient. For the GHQ-28 somatic symptoms part, $\alpha=.76$ when all 7 items were included. For the MBI-GS, $\alpha=.64$ when all 16 items were included. Reliability of the individual exhaustion, distanced and competence scales of MBI-GS are $\alpha=.76$, $\alpha=.67$ and $\alpha=.81$, respectively. Cronbach's Alpha for the HSCL-25 is $\alpha=.92$ when all 25 items are included, $\alpha=.81$ for the anxiety scale and $\alpha=.89$ for the depression scale.

In addition, we collected data on the function of the expatriate, the number of missions including this one, which country the mission was in; and thus in which context and with what kind of population one has worked, and how many days it has been since one left the mission at the moment of filling in the survey.

Respondents

A total of 1212 surveys has been gathered between 2009 and 2012, with the respondents all being staff members working on behalf of MSF in humanitarian aid situations.

Demographic factors. To preserve anonymity, the respondents' age, gender, cultural background, and nationality are not included in data from the questionnaire.

Function. Respondents were divided into four groups to clarify their function (n = 1196): Medical staff (18.5%; n = 221), Paramedical staff (29.4%; n = 352), Nonmedical staff (26.4%; n =

316), Coordinating staff (25.6%; n = 307).

Number of missions. A total of 34.5% (n = 417) of the respondents completed the questionnaire after returning from their first mission; 42.6 % (n = 514) of the respondents experienced 2 – 4 missions and 22.9% (n = 276) of the respondents went on 5 missions or more (total n = 1207). The average number of missions someone undertook is 3.

Days since returning from mission. In total 66.2% of the respondents (n = 775) returned the questionnaire within 5 days after having left the mission; 17.1% of the respondents 6 – 14 days after leaving (n = 208), 11.5% respondents 15 – 30 days after they left (n = 139) and 5.2% respondents left the mission more than 30 days before answering the questionnaire (n = 63) with a total number of n = 1185. The average number of days since the respondent left the mission when the questionnaire was returned is 11.

Context. In regards to to the context in which one was working, 42.7% of the group was working in a situation of armed conflict in the past 12 months (n = 497), 3.7% was based in a post conflict area (n = 43), 43.2% was based in an area where it was internal instable with a low intensity of violence (n = 502), and 10.4% was working in a stable area (n = 121).

Population. Concerning what kind of population one worked with we made a distinction between working with displaced people or refugees (5.7%; n = 66), general population (61.6%, n = 716), and a combination of displaced and general population (32.7%, n=380). There was also a fourth group, namely victims of natural disaster. In this study none of the respondents worked with this particular population.

Data analysis

To analyze the dataset, the computer program 'Statistical Package for the Social Sciences 21' (SPSS) was used.

Results

Instruments

Descriptives of the three self-report questionnaires are reported in Table 1, showing the total items, minimum and maximum score, mean, standard deviation and Cronbach's alpha of the scales. Here we show GHQ-somatic, MBI-GS with its three sub-scales (exhaustion, distanced, and competence), and HSCL-25 total score and its sub-scales (anxiety and depression). Reliability within the different questionnaires is generally high, indicating these instruments produce consistent measurements.

Table 1

Descriptives: GHQ-somatic, MBI-GS, HSCL-25, and Cronbach's α

	Total items	Min score	Max score	<i>M</i>	<i>SD</i>	α
GHQ-somatic	7	0.00	1.00	.183	.239	.76
MBI-GS						
Exhaustion	5	0.00	5.80	1.433	.949	.76
Distanced	5	0.00	5.60	1.434	.858	.67
Competence	6	0.00	6.00	4.622	1.100	.81
HSCL-25						
Anxiety	10	1.00	3.44	1.393	.418	.81
Depression	15	1.00	3.90	1.601	.496	.89

M=mean, *SD*=Standard Deviation, α =Cronbach's alpha

To investigate the relation between questionnaires and its sub-scales, we carried out a Pearson correlation. Results shown in Table 2 show that all correlations are significant at a level of $p < .001$ with the highest correlation being between overall distress (HSCL-25) and both anxiety and depression. A negative correlation exists between competence and the other variables.

Table 2

Correlations: GHQ-somatic, MBI-exhaustion, MBI-distanced, MBI-competence, Anxiety, Depression and HSCL-25

	1	2	3	4	5	6	7
1. GHQ-somatic	-	.44*	.33*	-.09*	.46*	.43*	.48*
2. Exhaustion	-	-	.60*	-.11*	.44*	.52*	.53*
3. Distanced	-	-	-	-.19*	.37*	.47*	.47*
4. Competence	-	-	-	-	-.14*	-.22*	-.20*
5. Anxiety	-	-	-	-	-	.70*	.87*
6. Depression	-	-	-	-	-	-	.96*
7. HSCL-25	-	-	-	-	-	-	-

(*significant $p < .001$)

Somatic symptoms, burnout and overall distress

Of all respondents, 24.5% answered that they were feeling worse or much worse than usual as an answer to the first item of the somatic health part of GHQ ("*Have you recently (last few weeks) been feeling perfectly well and in good health?*"). Furthermore, 2.6% of the respondents had a (very) high score on Exhaustion and Distanced combined with a (very) low score on Competence, meeting the criteria to be diagnosed with a burnout. Of the respondents, 26.4% scored above the cut-off score of 1.75, indicating a high level of psychological distress.

Context

To answer the question whether the context in which expatriates work (armed conflict, post conflict, internal instable / low intensity of violence, or stable) impacted scores on mental health, we analyzed data using a One Way Analysis of Variance (ANOVA). Context had no statistically significant effect on the following mental health outcomes: overall somatic health ($F(3, 1159) = 1.56, p = .20$); burnout ($F(3,1159) = .57, p = .64$), and overall distress ($F(3,1152) = .25, p = .86$). Furthermore, we looked at the different sub-scales of the MBI-GS and HSCL-25. There was no

statistically significant effect on exhaustion ($F(3,1156) = .55, p = .65$) or distanced ($F(3,1159) = .86, p = .46$). Context had a statistically significant effect on competence ($F(3,1157) = 3.71, p < .05$) using one way ANOVA, illustrating that the level of conflict in the given environment has a clear effect on a workers relationship to the mission.

Noting unequal variances and sample sizes in the analyzed data, we used the Games-Howell procedure for post-hoc testing, which showed no statistical significant differences. While the true means likely differ (see Figure 1A in Annex), this post-hoc test could not identify significant differences with sufficient confidence.

In further ANOVA testing, there were no statistically significant effects found on anxiety ($F(3, 1149) = .75, p = .52$) and depression ($F(3, 1152) = .08, p = .97$).

Function

Using one way ANOVA to address effects of job function (medical, paramedical, nonmedical, and coordinating staff) on mental health scores, we found no significant effects on overall somatic health ($F(3, 1192) = .16, p = .93$), burnout, ($F(3, 1193) = .41, p = .75$), or overall distress ($F(3, 1186) = .35, p = .79$). Function also did not have statistically significant effects on sub-scales of burnout and overall distress: exhaustion ($F(3, 1190) = .30, p = .83$), distanced ($F(3, 1193) = 1.84, p = .14$), competence ($F(3, 1191) = .92, p = .43$), anxiety ($F(3, 1183) = .97, p = .40$) and depression ($F(3, 1186) = .06, p = .98$).

Number of missions

We found a statistically significant effect of number of missions on overall (somatic) health ($F(2, 1203) = 3.56, p < .05$). Games-Howell post-hoc tests at the $p = .05$ level showed a significant difference between means of 5 or more missions ($M = .1493, SD = .22$) and 2 to 4 missions ($M = .1930, SD = .24$). They also showed a significant difference between means of 5 or more missions

and those that went on 1 mission ($M = .1931, SD = .25$; see Fig. 1B for means). These results demonstrate a significant effect of a large number of missions on the overall health of expatriate relief workers, indicating better overall somatic health. The number of missions, however, had no statistically significant effect on burnout ($F(2, 1204) = .72, p = .49$) or overall distress ($F(2, 1197) = .65, p = .53$), illustrating the existence of a physical effect in the absence of reported psychological problems. While we observed a significant effect of number of missions on exhaustion in one way ANOVA ($F(2, 1201) = 3.19, p < .05$; Fig. 1C), no significant differences were observed in post-hoc tests (Games-Howell). There was no significant effect on distanced ($F(2, 1204) = .22, p = .80$), competence ($F(2, 1202) = 2.58, p = .08$), anxiety ($F(2, 1194) = .50, p = .60$) or depression ($F(2, 1197) = .85, p = .43$).

Days since leaving the mission

A one way ANOVA showed that days since leaving the mission had a significant effect on overall somatic health ($F(3, 1179) = 6.34, p < .05$), on overall distress ($F(3, 1174) = 5.06, p < .05$), on anxiety ($F(3, 1171) = 4.24, p < .05$), and on depression ($F(3, 1174) = 5.15, p < .05$). Games-Howell post-hoc tests showed significant differences in means on overall somatic health scores between less than 6 ($M = .1983, SD = .25$) and 15 to 30 days since leaving the mission ($M = .1254, SD = .19$), between less than 6 ($M = .1983, SD = .25$) and more than 30 days since leaving the mission ($M = .1015, SD = .16$), and between 6 to 14 days ($M = .1938, SD = .25$) and 15 to 30 days since leaving the mission ($M = .1254, SD = .19$; Fig. 1D). Furthermore, post-hoc testing showed significant differences in means for overall distress between less than 6 days ($M = 1.5496, SD = .44$) and 15 to 30 days since leaving the mission ($M = 1.4131, SD = .38$; Fig. 1E). For anxiety, Games Howell post-hoc tests showed differences between less than 6 days ($M = 1.4221, SD = .43$) and more than 30 days since leaving the mission ($M = 1.2750, SD = .30$; Fig. 1F). For depression, means are significantly different between less than 6 days ($M = 1.6355, SD = .50$) and 15 to 30 days

($M = 1.4642$, $SD = .43$; Fig. 1G). There was no significant effect on burnout ($F(3, 1180) = .91$, $p = .44$), exhaustion ($F(3, 1177) = .90$, $p = .44$), distanced ($F(3, 1180) = .25$, $p = .86$) or on competence ($F(3, 1178) = .28$, $p = .84$). The results from this analysis are surprising, as this variable showed the largest number of significant effects of any analyzed in this work.

Population

Results for population type showed no significant effect on overall health ($F(2, 1159) = .31$, $p = .74$), burnout ($F(2, 1159) = 1.08$, $p = .34$) or overall distress ($F(2, 1152) = 1.25$, $p = .29$). There was also no significant effect on exhaustion ($F(2, 1156) = 2.44$, $p = .09$) and distanced ($F(2, 1159) = 1.47$, $p = .23$). On competence, however, a statistically significant effect was observed ($F(2, 1157) = 3.62$, $p < .05$). Games-Howell post-hoc tests showed a significant difference between means of those working with the general population ($M = 4.6879$, $SD = .110$) and those working with a combination of displaced and general population ($M = 4.5054$, $SD = 1.11$; Fig. 1H). No significant effect was found on the HSCL-25 sub-scales anxiety ($F(2, 1149) = 2.44$, $p = .09$) and depression ($F(2, 1152) = .59$, $p = .55$).

Discussion

In this study, we examined possible predictors for poor mental health in expatriate aid workers. MSF expatriates were asked to fill in a questionnaire which measured mental health via three self-report questionnaires. Overall (somatic) health was measured with the somatic symptoms section of the GHQ-28. Psychological burnout was measured using the MBI-GS with exhaustion, distanced, and competence sub-scales. Overall distress was assessed using the HSCL-25 with anxiety and depression sub-scales. Factors taken into account here included context, function, number of missions, days since leaving the mission, and population type. In the questionnaire, roughly a quarter of the respondents reported feeling worse or much worse than usual or experiencing a high

level of psychological distress. Through an analysis of factors influencing the experience of the aid workers during deployment, we aim here to uncover the causes of this work-related distress.

The context in which the aid worker participated in the MSF mission was observed to have a statistically significant effect on the scores of competence, indicating that the environment surrounding the aid worker during deployment plays a role in how aid workers engage with their job, though post-hoc testing could not identify with confidence the exact nature of this trend on the scale established from conflict to stable environments. While the scale used here ranges quite naturally across classifications of different levels of internal strife within the deployment zone (conflict in the past 12 months, post conflict, internal stability, and stable), the means of reported competence scores did not show a simple trend. The variation across this scale suggests that while a trend may indeed exist, this classification scheme may not adequately capture the range of psychological experience across working environments. Finally, that the lowest mean competence was observed in the stable condition is surprising. However, such an observation may reflect that workers in more demanding conditions may express a higher level of confidence in their job functions. The absence of significant associations of the context factor with other mental health outcomes, are interesting in light of the previous analyses of work context in humanitarian workers, in which the possibility of work-related harm was consistently associated with significant negative mental health outcomes (such as anxiety or depression, as reported in Holtz et al. 2002; Eriksson et al.. 2012).

With respect to overall (somatic) health, the number of missions undertaken by humanitarian aid workers in fact was observed to decrease reported somatic health problems, in contrast to our initial hypothesis concerning mission experience. This effect was also observed to be statistically significant in the case of exhaustion, though post-hoc testing could not identify exactly which means differed. These results suggest that aid workers may gain some psychological protection through their work experience, in contrast to the sensitizing effect suggested by Armagan et al.

(2006). Noted must be that in our study none of the respondents worked with victims of natural disasters as was the case in the study by Armagan et al. (2006). Perhaps a difference in coping could be shown in future studies between those working in (post-)conflict zones and those working in a context of natural disaster. Further, greater mission experience could play a salient role in developing specific coping strategies beneficial during subsequent deployments. No effect of the number of missions was observed on depression, however, in contrast with our initial hypothesis that humanitarian aid workers would exhibit high scores on depression after their first mission and after five or more (in accordance with the effects observed by Lopes Cardozo et al. 2005). The absence of an effect of mission experience was observed for scores on burnout, as well. The absence of associations for these measures could partly be explained by our initial assumption that less mission experience would be associated with workers' youth, which has previously been observed to be a risk factor for negative mental health outcomes concerning burnout in humanitarian workers (Eriksson, et al., 2009; Musa and Hamid, 2008). Collecting demographic information, such as participant age at the time of deployment, would allow refinement of hypotheses such as this in future analyses, and would facilitate comparison of results with the wider psychological literature.

Humanitarian aid workers interacting with the general population reported higher level of confidence about their job and greater feelings of positive contribution, as measured with scores on competence, in comparison to those working with a combination of displaced and general population. Interestingly, however, this result was not preserved when comparing those working with the general population to those working exclusively with refugees or displaced peoples, though a similar trend was exhibited in the means. With further study, a refinement of categories in this analysis could lead to a clearer picture of the variation in this measure.

One of the most prevalent significant effects observed throughout the analysis concerns the methodology and suggests several improvements for future assessment of mental health effects

from relief work. Specifically, in this analysis we observed a significant effect of the time since leaving the mission on a number of psychological metrics, including overall (somatic) health, overall distress, anxiety and depression. These effects almost universally exhibit a decrease in reported physical and psychological health effects with time, and offer grounds for a major methodological concern in future statistical analyses of mental well-being in MSF workers. To alleviate such concerns in future studies, online questionnaires could perhaps provide the flexibility necessary to reach returning aid workers within a more narrow time frame. Further, both pre- and post-mission screening (and possibly even during) could help to provide a useful point of comparison for assessing the level of mental health trauma associated with aid work, beyond simple comparison to a randomly selected control population which may not exhibit the same characteristics of those who chose to engage in relief work. Finally, as it was noted above that self-reported physical symptoms appeared to be present in the absence of reported psychological effects, a phenomenon not generally observed in the wider literature, it may be suggested that the self-assessment questionnaire format may not be optimal for detecting psychological distress. To address this, it could be suggested that a semi-structured interview with a trained psychological professional may provide an assessment with higher statistical power.

Further methodological points for the assessment of mental health effects of humanitarian aid work include the amount of data made available for analysis. Basic demographic information about each aid worker, such as age, gender or cultural background, could refine future analyses with respect to known differences among these categories in the literature. One important variable to take into account could be the length of the mission from which an aid worker has returned, which has been observed to be a risk factor for anxiety (Holtz et al., 2002). Also, in this study function did not have an effect on mental health outcomes. Further refinement of medical function could add to future studies, as it has been shown that nurses exhibited higher risk of psychological distress than doctors (Armagan et al., 2006) as well as ambulance personnel (Marmar et al., 1996). Finally, it

must be noted that several items on this questionnaire could be stated in a clearer fashion (e.g. item 2 of GHQ-somatic: *Have you recently been feeling in need of a good tonic?* and item 18 of HSCL-25: *Feeling blue*).

In conclusion, our analyses have provided a look into an array of possible factors influencing the mental health state of aid workers returning from missions in the field. While general psychological distress was prevalent in the returning population, in accordance with known literature (Connorton, et al., 2012), certain other effects were observed to exhibit trends opposite from those reported in previous work (competence x context, overall health x number of missions, exhaustion x number of missions). It remains to be seen in future work at MSF Amsterdam whether these differences from reported work are due to features of the specific population of aid workers studied here, or due to confounding methodological artifacts. With further refinement of the questionnaire-based assessment strategy analyzed in this work, the answers to such questions will be able to identify salient risk factors for the mental health of those expatriates put at risk for the sake of humanitarian aid.

Literature

- Armagan, E., Engindeniz, Z., Devay, A.O., Erdur, B., & Ozcakil, A. (2006). Frequency of post-traumatic stress disorder among relief force workers after the tsunami in Asia: do rescuers become victims? *Prehospital and Disaster Medicine, 21*, 168-172.
- Bilal, M.S., Rana, M.H., Rahim, S., & Ali, S. (2007). Psychological trauma in a relief worker – a case report from earthquake-struck areas of north Pakistan. *Prehospital and Disaster Medicine, 22*, 458-461.
- Brewin, C.R., Andrews, B., Valentine, J.D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*, 748-766.
- Connorton, E., Perry, M. J., Hemenway, D., & Miller, D. (2012). Humanitarian relief workers and trauma-related mental illness. *Epidemiologic Reviews, 34*, 145-155.
- Derogatis, L.D., R.S. Lipman (1974) ' The Hopkins symptom checklist (HSCL): a self-report inventory'. *Behavioral Science. 19*. 1-15.
- Dyregrov, A., Kristoffersen, J. I., & Gjestad, R. (1996). Voluntary and professional disaster-workers: Similarities and differences in reactions. *Journal of Traumatic Stress, 9*, 541-555.
- Ehrenreich, J.H., & Elliott, T.L. (2004). Managing stress in humanitarian aid workers: a survey of humanitarian aid agencies' psychosocial training and support of staff. *Peace and conflict: Journal of Peace Psychology, 10*, 53-66.
- Ehring, T., Razik, S., Emmelkamp, P.M. (2011). Prevalence and predictors of posttraumatic stress disorder, anxiety, depression, and burnout in Pakistani earthquake recovery workers. *Psychiatry Research, 185*, 161-166
- Eidelson, R.J., D'Alessio, G.R., & Eidelson, J.I. (2003). The impact of September 11 on psychologists. *Professional Psychology: Research and Practice, 34*, 144-150.

- Elhai, J.D., North, T.C., & Frueh, B.C. (2005). Health service use predictors among trauma survivors: a critical review. *Psychological Services, 2*, 3-19.
- Eriksson, C.B., Bjork, J.P., Larson, L.C., Walling, S.M., Trice, G.A., Fawcett, J., Abernethy, A.D., & Foy, D.W. (2009). Social support, organisational support, and religious support in relation to burnout in expatriate humanitarian aid workers. *Mental Health, Religion & Culture, 12*, 671-686.
- Eriksson, C. B., Vande Kemp, H., Gorsuch, R., Hoke, S., & Foy, D. W. (2001). Trauma exposure and PTSD symptoms in international relief and development personnel. *Journal of Traumatic Stress, 14*, 205-212.
- Eriksson, C. B., Lopes Cardozo, B., Foy, D. W., Sabin, M., Ager, A., Snider, L., Scholte, W. F., Kaiser, R., Olf, M., Rijnen, B., Gotway Crawford, C., Zhu, J., & Simon, W. (2012). Predeployment Mental Health and Trauma Exposure of Expatriate Humanitarian Aid Workers: Risk and Resilience Factors. *Traumatology, 20*, 1-8.
- Goldberg, D., & Williams, P. (2000). General health questionnaire (GHQ). *Swindon, Wiltshire, UK: nferNelson*.
- Gray, A. (2010). Staff support in Haiti. *Intervention, 8*, 255-262.
- Herman, J.L. (1997). *Trauma and Recovery: The Aftermath of violence - From domestic abuse to political terror*. New York, NY: Basic Books.
- Holtz, T.H., Salama, P., Lopes Cardozo, B., & Gotway, C.A. (2002). Mental health status of human rights workers, Kosovo, June 2000. *Journal of Traumatic Stress, 15*, 389-395.
- Liao, S.C., Lee, M.B., & Lee, Y.J. (2002). Association of psychological distress with psychological factors in rescue workers within two months after a major earthquake. *Journal of the Formosan Medical Association, 101*, 169-176.
- Lopes Cardozo, B., Holtz, T. H., Kaiser, R., Gotway, C. A., Ghitis, F., Toomey, E., & Salama, P. (2005). The mental health of expatriate and Kosovar Albanian humanitarian aid workers.

Disasters, 29, 152-170.

- Lopes Cardozo, B., & Salama, P. (2002). Mental health of humanitarian aid workers in complex emergencies. In Y. Danieli (Ed.), *Sharing the front line and the back hills: International protectors and providers: peacekeepers, humanitarian aid workers and the media in the midst of crisis* (pp. 242-255). Amityville, NY: Baywood.
- Marmar, C.R., Weiss, D.S., Metzler, T.J., Ronfeldt, H.M., & Foreman, C. (1996). Stress responses of emergency services personnel to the Loma Prieta earthquake Interstate 880 freeway collapse and control traumatic incidents. *Journal of Traumatic Stress*, 9, 541-555.
- Maslach, C., Jackson, S.E., & Leiter, M.P. (1996). *Maslach Burnout Inventory Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Morren, M., Dirkzwager, A. J. E., & Kessels, F. J. M. (2007). The influence of a disaster on the health of rescue workers: a longitudinal study. *Canadian Medical Association Journal*, 177, 1279-1283.
- Musa, S. A., & Hamid, A. R. M. (2008). Psychological problems among aid workers operating in Darfur. *Social Behavior and Personality*, 36, 407-416.
- Näätänen, P., Kanninen, K., Qouta, S., & Punamäki, R. (2002). Trauma-related emotional patterns and their association with post-traumatic and somatic symptoms. *Anxiety Stress and Coping*, 15, 75-94.
- Olf, M., Langeland, W., & Gersons, B. P. R. (2005). Effects of appraisal and coping on the neuroendocrine response to extreme stress. *Neuroscience and Biobehavioral Review*, 29, 457-467.
- Palm, K.M., Polusny, M.A., & Follette, V.M. (2004). Vicarious traumatization: Potential hazards and interventions for disaster and trauma workers. *Prehospital and Disaster Medicine*, 19, 73-78.
- Putman, K. M., Townsend, C., Lantz, J., Roberts, R., Gallegos, A., Potts, A., Eriksson, C. B., & Foy,

D. W. (2009). Reports of community violence exposure, traumatic loss, posttraumatic stress disorder and complicated grief among Guatemalan aid workers. *Journal of Traumatology*, *14*, 40-47.

Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. (2000). The factorial validity of the Maslach Burnout Inventory - General Survey (MBI - GS) across occupational groups and nations. *Journal of Occupational and Organizational psychology*, *73*(1), 53-66.

Shah, S., Garland, E., & Katz, C. (2007). Secondary traumatic stress: Prevalence in humanitarian aid workers in India. *Traumatology*, *13*, 59-70.

Annex

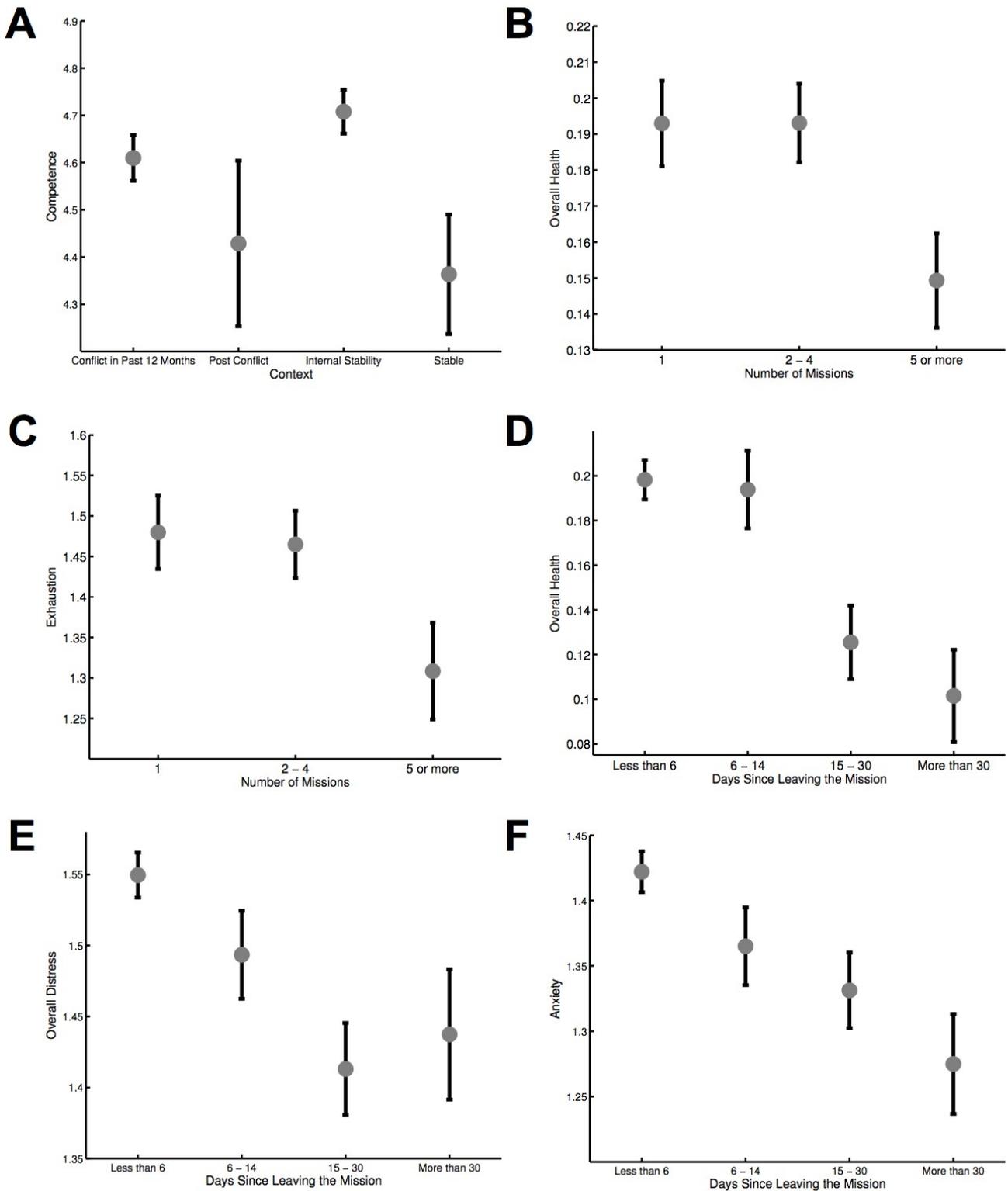


Figure 1. Visualization of trends for statistically significant one-way analysis of variance comparisons. Shown are mean (grey dots) and standard error (black bars). **A:** competence x context; **B:** overall health x number of missions; **C:** exhaustion x number of missions; **D:** overall health x days since leaving the mission; **E:** overall distress x days since leaving the mission; **F:** anxiety x days since leaving the mission

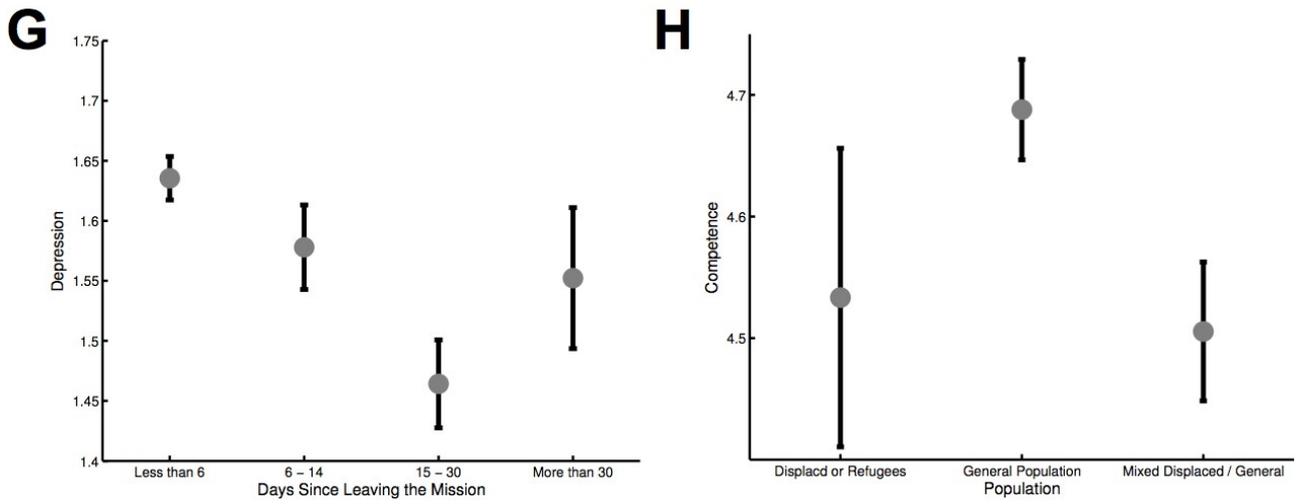


Figure 1 (continued). Visualization of trends for statistically significant one-way analysis of variance comparisons. Shown are mean (grey dots) and standard error (black bars). **G**: depression x days since leaving the mission; **H**: competence x population