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# A Pilot Randomized Controlled Trial of Interpersonal Psychotherapy for Sudanese Refugees in Cairo, Egypt

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Approximately one third of a population exposed to mass violence develops posttraumatic stress disorder (PTSD) and approximately half develops depression, yet little is known about how to effectively treat these populations. This study's objective was to examine the impact of interpersonal psychotherapy (IPT) on Sudanese refugees living in Cairo, Egypt, who had symptoms of PTSD. A randomized controlled trial (April–August 2008) with 22 Sudanese refugees in Cairo, Egypt, tested two hypotheses: (1) After IPT, participants will have fewer symptoms of depression and PTSD compared with waitlist controls. (2) After IPT, participants will have less interpersonal violence compared with waitlist controls. Participants were randomly assigned to either 6 sessions of IPT delivered by Sudanese community therapists without previous mental health training or a waitlist control group. Measures taken at baseline and trial conclusion included the Harvard Trauma Questionnaire, the Beck Depression Index—II, the Conflict Tactics Scale, and the State-Trait Anger Inventory, all translated and adapted for local use. The effect sizes of IPT treatment for PTSD symptoms, depression, state anger, trait anger, and Conflict Tactics Scale—Violence Toward Household were  $-2.52$ ,  $-2.38$ ,  $-1.21$ ,  $-1.43$ , and  $-0.84$ , respectively. IPT predicted a significant decrease in symptoms of PTSD, state anger, and depression using a conservative intent-to-treat analysis. This study represents the first randomized controlled trial of IPT to address PTSD, depression, and interpersonal violence in a refugee population. The study's preliminary success has positive implications for development of effective and sustainable mental health interventions to support the recovery of traumatized populations.

*Keywords:* refugee, Sudan, global mental health, PTSD, depression, violence

Although approximately one quarter to one third of a population exposed to extreme stressors such as ethnic conflict develops chronic symptoms of posttraumatic stress disorder (PTSD) causing significant disability, the research and application of behavioral treatments in this context are currently in their infancy (de Jong et al., 2001; Mollica, McInnes, Poole, & Tor, 1998). One of the most

neglected aspects of mental health care in postconflict settings is the impact of psychological trauma on interpersonal relationships. Studies of U.S. combat veterans and U.S. civilian populations found that PTSD symptoms are a risk factor for anger, interpersonal discord, and violence, not only among those who have PTSD but also among their spouses and children (Jakupcak & Tull, 2005;

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Jordan et al., 1992; Swan, Gambone, Fields, Sullivan, & Snow, 2005). This cascading effect of violence from individual pathology to negative interpersonal relationships to interpersonal violence and violent behavior by the spouse/partners and children of those with PTSD points to a very important and destructive “feedback loop” that may be operating in the setting of intrastate conflict. When working with refugee populations that have not only suffered many individual stressors but are also living in fragmented, weakened communities, it is critical that psychiatric understanding of the effects of trauma on the individual are broadened and integrated with a public mental health understanding of how disturbed interpersonal relationships and interpersonal violence operate destructively both between and within conflicting communities.

The ongoing Sudanese genocide, during which Darfur people have been attacked by government-backed militias, has resulted in the displacement of approximately 2 million Darfurians and the deaths of hundreds of thousands. Many Darfurians have fled to the neighboring country of Egypt. Although the United Nations High Commission for Refugees has officially registered approximately 24,000 Darfur refugees, estimates of the total numbers of Darfur refugees in Egypt are hundreds of thousands (Harrell-Bond, 2006). Many Darfuri refugees have undergone intense traumatic exposure, including rape, murder of family members, and narrow escape from death.

We have worked with Sudanese refugee populations for approximately 13 years in locations including South Sudan, the Chad–Darfur border region, and Cairo, Egypt. Previous work in Cairo included a mental health needs assessment and measure adaptation study, which took place in autumn 2006 (Meffert & Marmar, 2009). In that study, we found a range of individual and interpersonal problems, including legal, financial, and social difficulties. Common emotional problems were depression and PTSD symptoms, as well as high levels of anger and family discord or violence. Participants linked their emotional distress to interpersonal problems including conflict, transition/move from Sudan to Cairo, and loss of loved ones. Following review of our data, review of the literature, and discussion with community members and local partners, we selected individual interpersonal psychotherapy (IPT) as the optimal intervention to address gaps in mental health care.

IPT is a time-limited, structured psychotherapy treatment originally developed as a treatment for major depressive disorder by Klerman and Weissman in the 1970s. IPT rests on the premise that attachment difficulties and emotional distress can interfere with maintenance or recruitment of social support, leading to worsened symptoms; and that targeted IPT interventions to improve distressing interpersonal problems (role conflict, role transition, and loss) will lead to greater social support with consequent benefits for mood (Markowitz & Weissman, 2004). The use of IPT for this population draws on practical and observational findings, as well as theoretical models. As discussed above, the community identified depression and PTSD symptoms as common emotional problems (Meffert & Marmar, 2009). IPT is considered a leading psychotherapeutic treatment for depression (Cuijpers, van Straten, Andersson, & van Oppen, 2008; de Mello, de Jesus Mari, Bacaltchuk, Verdelli, & Neugebauer, 2005; Schramm et al., 2008). Prior to this study, IPT had been effectively adapted for the treatment of depression in developing countries (Bolton et al., 2003). There is

emerging evidence that IPT is also successful for the treatment of anxiety disorders, including PTSD. Initial studies of IPT treatment of PTSD have shown success in reducing symptoms of PTSD and comorbid depression and anger and improving interpersonal functioning, social adjustment, and quality of life (Bleiberg & Markowitz, 2005; Campanini et al., 2010; Krupnick et al., 2008; Ray & Webster, 2010).

Despite promising initial findings, the use of IPT for populations with PTSD symptoms remains a novel approach and one to which we gave careful consideration. On a practical level, we understood that the community identified interpersonal conflict, role transition, and loss as major sources of emotional distress, and we hypothesized that IPT would be an appropriate fit because of its focus on improving these particular interpersonal problems as a method of alleviating emotional distress (Meffert & Marmar, 2009). Additional rationale for using IPT in the setting of PTSD symptoms includes the following evidence from psychological and neurobiological studies. Cross-sectional and meta-analytic studies suggest that lack of social support is a risk factor for both the development of PTSD and failure to recover (J. G. Beck, Grant, Clapp, & Palyo, 2008; Brewin et al., 2000; Charuvastra & Cloitre, 2008; Declercq & Palmans, 2006; Guay, Billette, & Marchand, 2006; Johnson & Thompson, 2008; Koenen, Stellman, Stellman, & Sommer, 2003; Marmar et al., 2006; Ozer, Best, Lipsey, & Weiss, 2003; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). The focus of IPT on interpersonal relationships and its demonstrated ability to improve interpersonal functioning and social adjustment are likely to assist patients in recruiting social support critical to recovery from PTSD. Attachment research contextualizes social support findings. Attachment insecurity has been found to correlate with emotion regulation and risk for PTSD (Benoit, Bouthillier, Moss, Rousseau, & Brunet, 2010; Charuvastra & Cloitre, 2008; Declercq & Palmans, 2006; Fraley, Fazzari, Bonanno, & Dekel, 2006; Harari et al., 2009; Pearlman & Courtois, 2005; Sandberg, Suess, & Heaton, 2009; Schore, 2002; Twaite & Rodriguez-Srednicki, 2004). As noted by Markowitz, Milrod, Bleiberg, and Marshall (2009), insecure attachment affects how individuals procure and benefit from social support, providing an explanation for how attachment style affects PTSD development and recovery through social support. The observed relationship between PTSD and social support is consistent with developing neuroscientific understandings. A functional MRI study of female spouses exposed to mild, uncomfortable shocks showed an attenuated response in brain areas associated with affect-related arousal and less activation of brain areas associated with emotion regulation (dorsolateral prefrontal cortex and caudate; Charuvastra & Cloitre, 2008; Coan, Schaefer, & Davidson, 2006). Administration of oxytocin, a hormone associated with social bonding, correlated with a decrease of amygdala activity following exposure to interpersonally threatening visual stimuli (angry or afraid faces; Charuvastra & Cloitre, 2008; Kirsch et al., 2005). The neurobiological underpinnings have not yet been explicated, although both attachment insecurity and PTSD have been found to correlate with low hippocampal cell density (Quirin, Gillath, Pruessner, & Eggert, 2009).

Given cultural differences and tensions between Egyptians and Sudanese refugees, the decision was made to train Sudanese community members to deliver IPT rather than recruit local Egyptian mental health professionals. Sudanese mental health professionals

were not available in Cairo, so community members without previous mental health education were trained to deliver the care. Prior to this study, group IPT had been adapted for the treatment of depression in developing countries using mental health providers without previous mental health training (Bolton et al., 2003).

## Method

The study is a pilot randomized controlled trial of IPT twice a week for 3 weeks to Sudanese refugees living in Cairo versus a waitlist control group, conducted May 2008 through September 2008. Measures of depression and PTSD symptoms as well as anger and interpersonal conflict were taken at baseline and at the termination of the treatment. We trained Sudanese community members in IPT and they delivered the therapy for the study. This pilot study used a small convenience sample. Potential subjects were identified through the research team and collaborator community contacts. Participants provided verbal informed consent for study screening, randomization, and outcome measures. Individuals meeting study criteria were randomly assigned to IPT treatment or a waitlist control group. On completion of IPT with the treatment group, the same IPT was offered to the waitlist control group. The research protocol was approved by the University of California, San Francisco Internal Review Board and by equivalent process through the Board of Trustees of its Cairo-based partner. The research was funded through a grant from the University of California, San Francisco Academic Senate.

## Research Partner

The Cairo-based partner for this work was the Ma'an Organization. Ma'an was founded and is run by Sudanese. Its aim is to raise the health, social, and legal awareness of Sudanese refugees in Cairo through programs that address youth, adolescents, men, and women. Ma'an has been working exclusively with Sudanese refugees in Cairo for 10 years and has extensive expertise with skills training in the community.

## Measures

**Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992).** The HTQ is a checklist developed by the Harvard Program in Refugee Trauma that has been used effectively with many refugee populations. It inquires about a variety of trauma events, as well as the emotional symptoms considered to be uniquely associated with trauma. Part 1 asks about traumatic events. Part 2 is an open-ended question that asks respondents for a subjective description of the most traumatic event(s) they experienced. Part 3 asks about events that may have led to head injury. Part 4 includes 30 trauma symptoms. The first 16 items were derived from the *Diagnostic and Statistical Manual of Mental Disorders* (3rd rev. ed. and 4th ed.) criteria for PTSD. The other 14 items were developed by the Harvard Program in Refugee Trauma to describe symptoms related to specifically refugee trauma. The scale for each question in Part 4 includes four categories of response, rated on a 4-point scale ranging from 1 (*not at all*) to 4 (*extremely*). Part 5 is a 28-item torture history questionnaire. The total score is the sum of the PTSD item scores divided by 16. Cutoff scores for the HTQ have been developed to identify cases and noncases of PTSD. These

cutoffs have been found to have greater than 90% sensitivity and specificity even when used without adaptation for culture differences (Ichikawa, Nakahara, & Wakai, 2006).

**Beck Depression Inventory—II (BDI-II; A. T. Beck & Steer, 1984).** The BDI-II is a 21-item instrument intended to assess the existence and severity of symptoms of depression as listed in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Patients are asked to consider each statement as it relates to the way they have felt for the past 2 weeks. Each of the 21 items corresponding to a symptom of depression is summed to give a single score for the BDI-II. There is a 4-point scale for each item, ranging from 0 to 3. BDI-II has been used for 35 years to identify and assess depressive symptoms and has been reported to be highly reliable regardless of the population. It has a high coefficient alpha (.80), its construct validity has been established, and it is able to differentiate depressed from nondepressed patients.

**Conflict Tactics Scale (CTS; Straus, Hamby, Boney-McCoy, & Sugarman, 1996).** The CTS measures the extent to which partners in a dating, cohabiting, or marital relationship engage in psychological or physical attacks on each other and also their use of reasoning or negotiation to deal with conflicts. The original CTS has 19 items, with scales for violence, verbal aggression, and reasoning. The revised CTS has 39 items and scales were renamed Physical Assault, Psychological Aggression, and Negotiation, with two new scales for Injury and Sexual Coercion. The CTS is a widely used method of identifying intimate partner maltreatment. It has been used in national surveys on the prevalence of family violence in the United States and other countries. These include the National Family Violence Surveys and the National Violence Against Women Survey. For this study, the original CTS was used for the sake of brevity and was modified to include total household violence.

**State-Trait Anger Expression Inventory (STAXI; Spielberger, 1999).** The revised 57-item STAXI-2 consists of six scales, five subscales, and an Anger Expression Index that provides an overall measure of total anger expression. The STAXI-2–State is a 15-item scale that includes three subscales for assessing major components of state anger (feeling angry, feeling like expressing anger verbally, and feeling like expressing anger physically). The STAXI-2–Trait is a 10-item scale with two subscales: Angry Temperament and Angry Reaction. The Angry Temperament subscale measures the disposition of someone to express anger without provocation. The Angry Reaction subscale measures the disposition of someone to express anger when provoked.

**Translation team.** The translation team consisted of four men from Sudan: one from Khartoum, one from Darfur, and two from northern Sudan. They all had extensive experience with Darfur refugees in Cairo through their involvement with psychosocial work and their informal social networks. Two of the team members were certified translators and interpreters from the American University in Cairo. One worked as a full-time interpreter and provided the interpretation for the focus groups and interviews during the mental health care needs assessment. One of the team members was the current Zaghawa (one of the two largest Darfur tribes) community leader in Cairo.

**Translation process.** We used a standardized method of instrument adaptation and translation, as described by the World Health Organization. As discussed above, a bilingual group of experts was established. The conceptual structures of the instruments were examined by the experts. The instruments were trans-

lated from English to Sudanese Arabic separately by two team members. For each item, the two team members were asked to comment on (a) appropriateness of the question for the Sudanese refugee community of Cairo and (b) relevance to the Sudanese refugee community of Cairo. The translation products were compared between the two members and discrepancies were addressed and debated. The completed Sudanese Arabic instrument was then given to the two other translation team members, who separately back-translated the instrument from Arabic to English. The two resulting English versions of the instrument were discussed by the entire four-member team. Discrepancies between the two English versions and the original English instrument were addressed. The appropriateness and relevance for the community were discussed. The Arabic was reviewed and revised to ensure that the language was accessible for all education levels.

### Randomization

Participants were randomly assigned IPT or the waitlist. Pure randomization was used with a random allocation sequence. The longest same-condition sequence was five.

### IPT

As mentioned above, IPT is a brief and highly structured manual-based psychotherapy that was initially developed to address interpersonal issues in depression (Markowitz & Weissman, 2004). IPT aims to intervene specifically in current social functioning with consequent benefits for symptom experience. IPT does not focus on retelling of past traumatic experiences; rather, the goal is to change current relationships to improve mood symptoms. Patient's interpersonal functioning problems are conceptualized as one or more of four areas: interpersonal disputes, role transitions, grief, and interpersonal deficits (International Society for Interpersonal Psychotherapy, n.d.). In this study, the IPT foci were limited to interpersonal disputes, role transitions, or grief. The first two sessions were devoted to obtaining the "interpersonal inventory," an important starting point of IPT. The middle sessions worked through the identified focus (dispute, role transition, or grief) in the manner specified by IPT. The final sessions focused on emotional and interpersonal accomplishments during IPT treatment, as well as goals for the future.

Traditionally, IPT consists of 12 to 16 individual weekly sessions (Stuart, 2006). In this study, the number of IPT sessions was approximately half that of the traditional format and occurred twice per week rather than once per week. The number of sessions was selected to strike a balance between providing a reasonable number of treatment sessions adequate for addressing each of the IPT phases, while not creating such a labor- and resource-intensive treatment that it would have little public health value or relevance for building local mental health care capacity. The frequency of the sessions (twice per week) was selected in light of the principles of research ethics with vulnerable populations. Given the untreated mental health distress of the Sudanese refugee population in Cairo and the paucity of mental health care available to them, it was felt that the length of time that participants were assigned to a waitlist control group should be kept to a minimum (Meffert & Marmar, 2009). Therefore, the frequency of IPT sessions was increased to twice per week, cutting the waitlist time

from 6 weeks to 3 weeks. Therapy sessions were conducted at the Ma'an offices in one of several private rooms. The Ma'an offices were known to Sudanese refugees for their previous community work.

### Waitlist Condition

Individuals assigned to the waitlist condition were offered IPT treatment at the conclusion of the therapy in the intervention group. It was not possible to compute and analyze the follow-up data from the intervention group before offering the same treatment to the waitlist control group. Offering a treatment to a waitlist group prior to completion of data analysis does involve some risk to the waitlist group. However, in this study, it was felt that imposing the waiting period of 3 to 6 months necessary to fully evaluate the IPT results would be more detrimental to the waitlist group than offering IPT prior to full analysis of results. Given that the Sudanese population has high emotional distress and extremely limited mental health care options, there was a concern that waiting for IPT treatment for a protracted period would further increase participant distress and would amount to withholding treatment from a vulnerable population, a violation of the basic principles of global mental health research. Furthermore, the published data available prior to this study indicated a reduction of symptoms with application of IPT and no reports of adverse effects (Bass et al., 2006; Bleiberg & Markowitz, 2005; de Mello et al., 2005; Krupnick et al., 2008; Verdelli et al., 2008). Perhaps most important, both the participants and therapists in the IPT intervention group were carefully monitored for adverse outcomes, with the intention of halting the study and changing IPT treatment plans for the waitlist group should adverse outcomes be detected.

### Therapists

Five members of the Sudanese community without prior mental health training were trained to deliver IPT. As discussed above, cultural differences and tensions between Egyptians and Sudanese refugees informed the decision to use Sudanese to deliver the mental health care rather than recruit local Egyptians. Sudanese mental health professionals were not available in Cairo, so community members without previous mental health education were trained to deliver the care. Two of the community therapists worked previously with the research team during qualitative studies and measure translation/adaptation (Meffert & Marmar, 2009). Four additional community therapists were selected according to the following criteria: Sudanese community member, over the age of 18 years, fluency in oral and written English and Sudanese Arabic, and previous work with refugee populations. The first author's impressions of the candidate therapists' emotional intelligence, interpersonal skills, and interest in learning and applying psychotherapy for traumatized refugees were considered in the therapist selection process. One individual was excluded secondary to impressions of inadequate emotional intelligence and interpersonal skills. The remaining five therapists, two men and three women, were trained in IPT using didactics, written materials, video, and role playing for 1 week. Following the conclusion of IPT training, the therapists were each given one patient. Formal group supervision of IPT cases occurred twice per week, led by the first author. Informal supervision occurred nearly daily, through

interactions related to screening of participants and administration of measures. Therapists were encouraged to contact the first author by telephone with any questions or concerns between supervision times.

## Participants

Sudanese refugees living in Cairo, Egypt, were recruited for the study through preexisting community contacts of the research team and through the contacts of the Ma'an Organization. As such, this pilot randomized controlled trial study used a small convenience sample. Contacts were asked to refer those individuals who had difficulties with their mental health or relationships, particularly those who had severe symptoms or difficulty accessing or benefiting from local psychosocial programs (aimed toward generalized support). Following their referral, subjects were screened according to the following selection criteria: age greater than 18 years, absence of cognitive dysfunction that required a higher level of care or interfered with the ability to participate in IPT, absence of severe thought or mood disorder symptoms that required a higher level of care or interfered with the ability to participate in IPT, absence of drug and alcohol dependence, HTQ score of 2.3 or greater, ability to attend twice-weekly therapy sessions for 3 weeks and return for regular screening, and ability to give verbal informed consent.

Cairo is a large city. Sudanese refugees generally live in marginalized, outlying areas that are often 1 to 2 hr from the city center. Attending screening and therapy sessions at the Ma'an offices represented a significant investment, not only costing participants the price of lengthy public transit but also a day's wages. It was judged unethical not to reimburse participants for their time and travel expenses. Participants were provided with the equivalent of \$5US to compensate for travel expenses and lost wages.

## Procedure

**Measurement administration.** Study personnel were recruited through previous contacts with the Sudanese community of Cairo, as well as the Ma'an Organization, with which this study partnered.

Study personnel administered baseline measurements in a private room at the Ma'an offices. Study participants provided verbal informed consent prior to beginning any screening procedures or baseline measurements. Study subjects were informed that their participation was voluntary and that they could decline to answer questions or request a break at any time. Given varying levels of literacy, all questionnaire items were read to the study participants by study personnel and their responses were recorded. Eligible participants were randomly assigned to IPT or waitlist control groups using a computer-generated random allocation sequence. Participants were not blinded to group status. Given the cultural norms of frequent communication among Sudanese, it was not possible to prevent participants from being aware that they were receiving IPT at two different time points.

**Baseline and outcome measurements.** Participants underwent measurements at two times: prior to beginning IPT and after the IPT group had completed the intervention, prior to offering IPT to the waitlist group. At the first time, the measurements consisted of the HTQ, BDI-II, STAXI (state and trait), CTS. At the second

time point, the measurements consisted of the BDI, STAXI (state and trait), CTS, and Part 4 of the HTQ (symptoms of PTSD). All measures were read to participants and their responses were recorded. The administrators of the measurements were the future (or former) therapists of the participants. Therapists were not blind to group status.

## Data Analysis

The means, standard deviations, and ranges of the variables, as well as the Pearson correlations of the variables of interest were evaluated. The data were analyzed by calculating mean symptom scores of the IPT and waitlist control groups before and after treatment. Change scores were then calculated for IPT and waitlist groups. Effect size was determined by dividing mean change scores by the standard deviation of the change scores. Linear regression was used to assess the relative predictive value of baseline measures and group assignment. Because the sample size was small and scores on most of the outcome measures were not normally distributed, we used nonparametric bootstrap resampling to estimate regression standard errors and *p* values (Efron & Tibshirani, 1993). Results using the bootstrap were not substantially different from ordinary normal-theory standard errors. Five separate regressions were run, one for each of the five outcome variables. A significance level of .025 was chosen to adjust for multiple comparisons using a Bonferroni procedure, with an adjustment for correlated outcomes, based on a mean intercorrelation of  $r = .57$  among our five outcome variables (Sankoh, Huque, & Dubey, 1997). To address the effects of missing data, dropouts, and the one case lost to follow-up, we completed a last observation carried forward (LOCF) analysis. This LOCF analysis allowed for evaluation of those cases that were randomized to receive treatment (intent to treat) but did not complete treatment.

## Results

Twenty-five participants were screened, with 22 meeting selection criteria and randomized to the IPT or waitlist control group (Figure 1). Study inclusion criteria required that participants meet or exceed an average score of 2.3 on the first 16 items of Part 4 of the HTQ (PTSD symptoms). Two individuals did not meet the HTQ score cutoff, and one individual was found to be in need of a higher level of mental health care. Eighty-one percent of participants were women and 19% were men. Participants ranged from 21 to 42 years of age. The mean age was 31.0 years. Thirty-eight percent of the participants were from Darfur and 62% were from other conflict zones of Sudan. The age of the IPT intervention group ranged from 21 to 42 years, with a mean of 31.3 years. The gender of the IPT intervention group was 83% women. The age of the waitlist control group ranged from 24 to 39 years, with a mean of 30.4 years. The gender of the waitlist group was 78% women. Among the 22 randomized, 20 completed the protocol. There were no adverse events. One participant withdrew because her husband forbade her to continue. One dropped out secondary to time constraints.

For the enrolled participants, the scores on this section of the HTQ varied from 2.3 to 4.0, with a mean of 3.0. The BDI-II total scores ranged from 6 to 48, with a mean of 28.3. The state anger total scores varied from 11 to 41, with a mean of 21.6. The trait

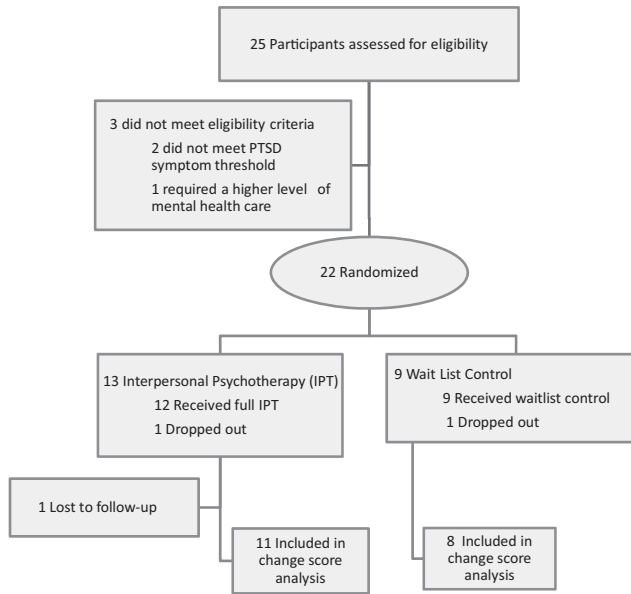


Figure 1. Flow of study participants. PTSD = posttraumatic stress disorder.

anger total scores varied from 13 to 40, with a mean of 26. The CTS—Violence Toward Household scores ranged from 0 to 49, with a mean of 12.4.

Bivariate analyses (see Table 1) showed significant baseline relationships between PTSD symptoms and trait anger, as well as PTSD symptoms and depression symptoms. Greater baseline depression symptoms were associated with greater age, being from the Darfur region of Sudan, and trait anger. Baseline state anger was significantly correlated with trait anger and violence of the respondent toward members of the household. Baseline trait anger was significantly correlated with greater age, state anger, and violence of the respondent toward members of the household. Violence of the participant toward household members was significantly associated with greater age, being from Darfur, trait anger, and state anger.

**Change Scores and Effect Sizes**

Change scores and effect sizes are presented in Table 2. For the IPT group, mean PTSD symptoms on the HTQ decreased by

approximately 40%, compared with a decrease of approximately 9% in the waitlist control group. The effect size of IPT treatment for mean PTSD symptoms on the HTQ was  $-2.52$ . Mean depression symptoms on the BDI–II decreased by 17.1 points, or 63% in the IPT treatment group, compared with a decrease of 4.25 points, or 16%, in the waitlist control group. The effect size of IPT treatment for mean depression symptoms on the BDI–II was  $-2.38$ . Mean state anger on the STAXI decreased by 7.36 points in the IPT treatment group, compared with a decrease of 4.57 points in the waitlist control group. The effect size of IPT treatment for mean state anger symptoms on the STAXI was  $-1.21$ . Mean trait anger on the STAXI decreased by 5.18 points in the IPT treatment group, compared with a decrease of 2.86 points in the waitlist control group. The effect size of IPT treatment for mean trait anger symptoms on the STAXI was  $-1.43$ . Mean violence of the study participants toward their household on the modified CTS decreased by 7.09 points in the IPT treatment group, compared with 8.75 points in the waitlist control group. The effect size for IPT treatment for mean violence toward household on the CTS was  $-0.84$ .

**Linear Regression**

Results of the linear regressions are presented in Table 3. Separate regressions were run for each of the five outcome variables of interest. After controlling for baseline symptoms, IPT group assignment was significantly associated with a decrease in symptoms of PTSD, depression, and state anger in the completer analysis. Although these findings were not substantially changed by an intent-to-treat analysis, the effect of IPT on depression symptoms was slightly above the Bonferroni-adjusted significance level (.025) in the LOCF analysis.

**Discussion**

As reflected in both the change scores and the regression models, IPT was successful in decreasing symptoms of PTSD, depression, and state anger with this population of Sudanese refugees living in Cairo, Egypt. The IPT group also showed a trend toward decreased violent behavior toward household members, with an effect size of  $-0.84$ .

Our hypothesis that the IPT treatment group would experience greater improvements in PTSD and anger than the waitlist controls was confirmed. Our hypothesis that the IPT treatment group would

Table 1  
Intercorrelations Between Study Variables at Baseline (n = 21)

Study measure	1	2	3	4	5	6	7	8
1. Age	—	.23	-.01	.27	.32*	.29	.37*	.38*
2. Gender		—	.01	-.08	-.03	.07	.10	.04
3. Darfur			—	.16	.41*	.22	.30	.35*
4. HTQ PTSD				—	.79**	.10	.70*	.18
5. BDI–II					—	.04	.72**	.26
6. State anger						—	.35*	.78**
7. Trait anger							—	.49**
8. Violence toward household								—

Note. HTQ = Harvard Trauma Questionnaire; PTSD = posttraumatic stress disorder; BDI–II = Beck Depression Inventory—II.  
\*  $p < .05$ . \*\*  $p < .01$ .

Table 2  
Change Score Effect Sizes ( $n = 18$ )

Variable	Baseline <i>M (SD)</i>	Posttreatment <i>M (SD)</i>	Change score <i>(SD)</i>	Effect size for IPT group change score
HTQ IPT	2.92 (0.44)	1.76 (0.49)	-1.16 (0.46)	-2.52
HTQ WL	2.88 (0.55)	2.60 (0.63)	-.27 (0.36)	-0.75
BDI-II IPT	28.64 (12.00)	10.00 (9.15)	-17.10 (7.17)	-2.38
BDI-II WL	26.75 (8.81)	22.50 (7.71)	-4.25 (9.11)	-0.47
STAXIS IPT	20.55 (8.62)	13.18 (3.19)	-7.36 (6.10)	-1.21
STAXIS WL	24.43 (9.13)	19.13 (6.03)	-4.57 (11.15)	-0.41
STAXIT IPT	23.63 (8.36)	18.45 (7.34)	-5.18 (3.63)	-1.43
STAXIT WL	28.29 (6.42)	24.38 (8.12)	-2.86 (8.99)	-0.32
CTSYVL IPT	9.27 (14.14)	2.18 (6.27)	-7.09 (8.43)	-0.84
CTSYVL WL	16.00 (17.67)	7.25 (10.04)	-8.75 (16.50)	-0.53

Note. IPT = interpersonal psychotherapy; HTQ = Harvard Trauma Questionnaire; WL = waitlist; BDI-II = Beck Depression Inventory—II; STAXIS = State Anger Scale; STAXIT = Trait Anger Scale; CTSYVL = Conflict Tactics Scale—Violence Toward Household.

have greater reduction of depressive symptoms than the waitlist controls was confirmed in the completer analysis and narrowly missed significance in the LOCF analysis with Bonferroni correction. In a study design using only pretreatment and posttreatment measures, the LOCF analysis is a particularly conservative test, as it uses the case's pretreatment symptom level to fill a missing posttreatment value. The success of IPT with depression symptoms is consistent with previous studies, including those with refugee populations (Bass et al., 2006; de Mello et al., 2005). This study is the first of which we are aware that shows efficacy of IPT for treatment of PTSD symptoms and depression symptoms in refugee populations and expands on the small number of studies that have shown IPT to be effective for PTSD symptoms in Euro-American populations (Bleiberg & Markowitz, 2005; Krupnick et al., 2008).

The finding that IPT resulted in a large effect size for the reduction of PTSD and depression symptoms in a postconflict population has implications for the field of global mental health in general and refugee mental health in particular. Not only was IPT found to be effective for symptoms of the two major mental illnesses affecting refugee populations—PTSD and depression—but it was delivered in an economical and potentially empowering

manner using local previously untrained community therapists. Such characteristics are essential as the field moves toward a standard of mental health care for postconflict populations.

The fact that IPT was found to be effective for PTSD symptoms when delivered by community members without previous mental health care experience is hopeful in several regards. In contrast to the exposure therapies traditionally used for PTSD symptoms, IPT does not involve detailed recounts of traumatic memories. In this respect, IPT may have a larger safety margin for delivery by lay therapists and paraprofessionals in postconflict communities because it may be less likely to trigger trauma symptoms in patients than exposure therapies. In addition, IPT may be safer than exposure therapy for community therapists in postconflict settings, who may have experienced traumatic events similar to those of their patients and who may therefore be susceptible to secondary trauma from their patients.

Our second hypothesis, that those in the IPT group would have lower levels of interpersonal violence than those in the waitlist control at the end of the intervention, was not confirmed. With this small sample size, we did not see a statistically significant effect of group assignment on household violence in the regression analysis

Table 3  
Linear Regression Models Predicting Scores at End of Interpersonal Psychotherapy Intervention

Outcome variable	Predictor	Complete cases				LOCF			
		<i>B</i>	<i>t</i>	<i>n</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>n</i>	<i>p</i>
HTQ	Baseline HTQ	0.76	3.68	19	.00	0.97	4.29	21	.00
	Group (IPT or WL)	-0.88	-4.53		.00	-0.82	-3.81		.00
BDI-II	Baseline BDI-II	0.54	3.32	18	.01	0.79	3.86	20	.00
	Group (IPT or WL)	-12.69	-3.99		.00	-9.47	-2.24		.04
STAXIS	Baseline STAXIS	0.18	1.47	18	.16	0.20	1.79	20	.09
	Group (IPT or WL)	-5.97	-2.76		.02	-5.31	-2.72		.01
STAXIT	Baseline STAXIT	0.67	3.52	18	.00	0.77	4.52	20	.00
	Group (IPT or WL)	-3.86	-1.30		.21	-2.77	-1.03		.32
CTSYVL	Baseline CTSYVL	0.32	2.69	19	.017	0.34	2.70	20	.02
	Age	-0.00	0.00		1.0	0.02	0.04		.97
	Group (IPT or WL)	-2.92	-0.91		.38	-1.71	-0.51		.62

Note. LOCF = last observation carried forward; HTQ = Harvard Trauma Questionnaire; IPT = interpersonal psychotherapy; WL = waitlist; BDI-II = Beck Depression Inventory—II; STAXIS = State Anger Scale; STAXIT = Trait Anger Scale; CTSYVL = Conflict Tactics Scale—Violence Toward Household.



(see Table 3). However, IPT did have a substantial Cohen's *d* effect size of  $-0.84$  on household violence when evaluating change scores (see Table 2). Furthermore, IPT was associated with a decrease in state anger in the complete cases analysis and narrowly missed significance in the LOCF analysis. State anger, particularly in combination with PTSD symptoms, has been found to be a powerful predictor of violence (Babcock, Roseman, Green, & Ross, 2008; Jakupcak & Tull, 2005; Jordan et al., 1992; Swan et al., 2005). The decrease in state anger with IPT treatment supports the idea that violence may be reduced in future studies with larger sample sizes.

The association of IPT treatment with decreased state anger relative to controls also has important physical health implications. Anger has been associated with numerous health problems, including the development of cardiac disease over time and acute cardiac events (Krantz et al., 2006; Tennant & McLean, 2001). Elevated anger has been linked to decrements in social and occupational functioning (Evans, Giosan, Patt, Spielman, & Difede, 2006).

Finally, this is the first study that shows that refugee community members without prior mental health care training can effectively deliver individual IPT for the treatment of PTSD and depression symptoms. It builds on previous work showing that community therapists can be trained to effectively deliver group IPT for depression symptoms in a rural Ugandan population (Bass et al., 2006) and studies showing that narrative exposure therapy for PTSD symptoms can be effectively delivered by trained lay counselors to Rwandan and Somali refugees (Neuner et al., 2008). Progress in effectively adapting, teaching, and testing evidence-based psychotherapy in diverse communities is an essential part of addressing the enormous global burden of mental health disease (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006).

### Limitations

Although the effect sizes are large, this study is limited by the small number of participants, which may impact the ability to detect the more nuanced benefits of IPT, including its full impact on household aggression and violence. This study is further limited by the lack of long-term follow-up to determine whether the benefits of IPT treatment are sustained over time. It is important to note that neither the participants nor the therapists could be blinded to group status given the nature of the intervention. Related is the fact that the therapists administered measures to their own (future or past) patients. It is possible that both the participants and the therapists would have a bias toward appearing improved at the conclusion of IPT treatment or that both therapists and participants could have a bias toward reporting more symptoms prior to beginning IPT. Some of this bias could have been alleviated by using an independent clinical evaluator who was blind to treatment status. However, the marginalization of the Sudanese refugee community of Cairo, the difficulty and expense of travel in Cairo, and the chaos that many Sudanese refugees experience in their lives on a daily basis made it impractical to arrange an additional set of meetings for separate personnel to evaluate each participant in this pilot study. Finally, it might be argued that the observed decrease of symptoms in the IPT treatment group was secondary not to the specifics of IPT but rather to generic aspects of mental health therapy, such as social contact, support, and empathy. Although this is certainly a possibility, larger studies in other

refugee populations that have compared the relative efficacy of social support, psychoeducation, and flexible trauma therapy with more sophisticated psychotherapies have found a differential positive effect of the latter on target symptoms (Neuner et al., 2008; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004).

### Conclusions

The results of this study are encouraging in several regards. For the first time, these data provide preliminary support for IPT as an effective treatment for symptoms of depression, PTSD, and anger in a postconflict population. These symptoms are likely to be critical targets for stemming the spread of both inter- and intra-group violence in populations exposed to armed conflict. This study is also the first of which we are aware showing that community members without prior mental health care experience can deliver effective individual IPT with a brief period of training and continued supervision, building on previous results with group IPT for depression and narrative exposure therapy for PTSD (Bass et al., 2006; Neuner et al., 2008).

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