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Shorter communication

## Brief cognitive-behavioral phone-based intervention targeting anxiety about the threat of attack: a pilot study

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### Abstract

A brief, cognitive-behavioral, phone-based intervention was employed with an Israeli sample experiencing anticipatory anxiety about potential war-related attacks. In this quasi-experimental controlled pilot study, the cognitive-behavioral therapy intervention (diaphragmatic breathing and a modified cognitive-restructuring technique) was compared with the standard hotline care administered when worried citizens called a mental health emergency hotline in Israel. Individuals ( $n = 32$ ) were administered anxiety and worry measures pre-intervention, post-intervention, and three days post-intervention. The results indicated that anxiety levels decreased for the experimental and control group immediately post-intervention; however, three days later, the levels of anxiety in the CBT group continued to decline, while anxiety levels in the control group reached pre-intervention levels on two of the three outcome measures. These results suggest that CBT can be effectively delivered by paraprofessionals over the phone, which is cost-effective and efficient. Limitations are considered, and implications for treating individuals coping with the threat of terrorism are discussed.

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*Keywords:* Phone-based cognitive behavioral therapy; Israel; Potential threat; Worry

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## 1. Introduction

During the 1991 Gulf War, Iraq dropped 39 SCUD missiles, causing extensive destruction of Israeli homes. At first, air-raid sirens sounded about two minutes before the SCUD attacks, not allowing enough time for people to seek shelter (Klingman, 1992). Arguably, this may have perpetuated Israelis' fears about being sufficiently warned should another act of terror occur in the future. The possibility of a chemical or biological attack was particularly horrifying due to the possibility of mass destruction. In addition, many citizens felt particularly vulnerable and anxious because the threat of poisonous gassing was reminiscent of the fate of the Jews in concentration camps during World War II (Somer, Keinan, & Carmil, 1996).

During the first SCUD attack in 1991, 55% of Israelis reported moderate to high anxiety, increased cardiac activity, and difficulty breathing (Ben-Zur & Zeidner, 1991). In another study, it was estimated that 50% of Israel's population reported difficulty sleeping before and after the 1991 SCUD attacks (Dayan, 1991). Some had difficulty wearing gas masks because of tremulousness or hyperventilation.

When the United States went to war against Iraq in 2003, once again, many Israelis were anxious, worried, and unsure about their survival if Iraq attacked with weapons of mass destruction. In Israel, mental health hotlines are used extensively nationwide for support and advice pertaining to stress and anxiety from the fear of attacks. To date, no evidence-based psychosocial interventions have been employed or studied to help people cope with the threat of attacks or terrorism. In this pilot study, we examined the efficacy of brief cognitive-behavioral intervention provided over a telephone hotline, designed to minimize anxieties prior to the US invasion of Iraq.

There is good reason to expect that certain vulnerable individuals will be functionally impaired by anticipatory anxiety and worry stemming from possible attacks in Israel and may need mental health assistance. Perceived threat, which lies on a continuum and varies with the degree of imminence, is conceptualized in models of anxiety as a pathway to anxious apprehension and arousal. According to Craske (1999), there are three levels of threat that have different emotional sequelae. *Potential threat* results in an emotional reaction of worry, and consequent preparation and readiness. *Approaching threat* results in anticipatory anxiety, and consequent mobilization and vigilance. When a threat is *imminent*, individuals react with fear and panic and the concomitant hyperactivation of the fight or flight response. The threats that Israel citizens faced at the outset of the Iraq War were *potential threats* in Craske's scheme.

Pathological responding in the face of ambiguous potential threat is the result of a synergy of individual differences in interpretive style, selective attention, and the nature of the threat context (e.g., Barlow, 2002; Paunovic, Lundh, & Oest, 2002; Stanford et al., 2001). Worry can be reinforcing because it provides the illusion of control (Craske, 1999) and worriers overestimate subjective risk of harm. In the case of the threat of terrorism, we argue that prior history of imminent threat through exposure to trauma is also a determinant of worry (e.g., Maguen & Litz, in press).

In the framework of terrorism, it is unclear what constitutes normative reactions to perceived potential threat. The severity of worry and any resulting functional impairment is likely to vary considerably (Maguen & Litz, in press). It is unclear what constitutes a level of anxiety and impairment that necessitates intervention, especially given that even in the face of imminent terror

and the threat of subsequent terrorism, most anxiety symptoms dissipate over time (Toren, Wolmer, Weizman, Magal-Vardi, & Laor, 2002). We argue that in the face of terror, individuals who experience acute worry and anxiety resulting in functional impairment would benefit from a stress management intervention, even though these symptoms may dissipate over time, because the intervention may enhance functioning and potentially carry-over to the next potential terror-related threat.

Although there are no formal outcome studies targeting terrorism-related worry, cognitive-behavioral therapy (CBT) has been used extensively to treat individuals with worry and anticipatory anxiety. For example, CBT techniques such as anxiety and stress management training (e.g., relaxation, LeBouf & Lodge, 1980) and cognitive restructuring and imagery exposure (Borkovec & Costello, 1993) have been shown to reduce symptoms of generalized anxiety disorder. Moreover, a large part of the CBT for social anxiety entails training in anxiety management in preparation for social demands (e.g., Hope & Heimberg, 1993).

There is precedence for using the telephone to provide CBT. For example, phone-based CBT trials have successfully targeted depression (Mohr et al., 2000; Osgood-Hynes et al., 1998) and obsessive-compulsive disorder (Bachofen et al., 1999; Greist et al., 2002; Nakagawa et al., 2000). Phone interventions of this type provide a convenient and stigma-reducing vehicle to promote self-management (Gega, Marks, & Mataix-Cols, 2004).

We hypothesized that under a security threat, callers that participated in a CBT intervention would report less anxiety at the end of the intervention and 3 days later, compared to callers who received standard, supportive phone counseling. We used *Eran: Israeli Association for Emotional First Aid by Telephone*, a crisis intervention hotline established in 1971. In Israel, *Eran* responds to approximately 100,000 calls per year. Hotline calls are received at a central office and then randomly allocated to multiple regional call centers in Israel. In this study, we used the Haifa center exclusively, which receives approximately 24 calls per day.

## 2. Method

### 2.1. Participants

Forty-one callers were eligible because they identified SCUD-related distress as the reason for their call. To maximize external validity, there were no exclusion criteria. Thirty-two of the 41 qualified individuals (78%) provided informed consent and were assigned to one of the treatment groups. No information is available concerning individuals who refused to participate or their reasons for declining participation. One participant declined to respond to post-intervention data collection and was not included in this study. No repeat calls were included.

The CBT group consisted of 17 participants (2 men and 15 women), and the control group had 14 callers (2 men and 12 women). To guarantee privacy and to ensure callers' confidence about anonymity, *Eran's* policy encourages collection of minimal identifying information. If callers do not identify their age spontaneously when asked to describe themselves, they are normally invited to identify one of five age groups within which their age falls. The age distribution of participants in each group is outlined in Table 1.

Table 1  
Distribution of age by group

Age	Experimental group		Control group	
	<i>N</i>	%	<i>N</i>	%
Under 18	2	11.8	2	14.3
18–25	3	17.6	4	28.6
25–35	6	35.3	5	35.7
35–50	5	29.4	3	21.4
50+	1	5.9	0	0
Total	17	100	14	1

## 2.2. Procedure

We used a quasi-experimental method of assigning callers to condition; successive callers were assigned to alternating conditions. The two conditions were a CBT condition and the standard hotline counseling provided by *Eran*.

The protocol began on the day the UN inspectors were instructed to leave Iraq (3/17/03). Data were collected before the intervention, immediately following the intervention, and three days later (the second day of the war; 3/20/03). The decision to collect follow-up data 3 days following the intervention was made due to budgetary constraints and because after the UN inspectors left Iraq, it quickly became apparent that SCUD missiles would not be dropped and thus, anxieties decreased naturally over time. Given this, we wanted to make sure individuals were followed up within a period where there were still concerns about the possibility of SCUD use.

Ten experienced hotline volunteers from *Eran's* Haifa branch received training in CBT techniques designed to assist callers troubled by worry and anxiety. The hotline volunteers received a 5-h workshop prior to administering CBT. Ten additional *Eran* paraprofessionals received a shorter version of the training workshop designed to motivate them to identify the callers worried about the pending war, to provide the standard hotline care (the control intervention), and to refer these callers for data collection after the intervention was completed. All study volunteers were required to attend a rigorous 8-month training course in crisis intervention and client-centered counseling, had at least 1 year of hotline experience, and participated in compulsory monthly continued education and training.

The standard care entailed a client-centered approach involving supportive unconditional positive regard, empathetic listening, validation, and social support. The CBT intervention consisted of a rationale for deep diaphragmatic breathing and a modified cognitive-restructuring procedure, instructions on how to employ these techniques, and in vivo practice. Diaphragmatic breathing and cognitive-restructuring were presented sequentially.

Callers in the CBT group were told that experiencing stress is a normal response to threat, and they were taught that deep and slow diaphragmatic breathing can reduce stress and help them cope. Individuals were then instructed on how to breathe using their diaphragm. First, they were told to expand the diaphragm by pushing the navel outwards when inhaling, and to hold this

position for 3 s. At the same time, they were instructed to clench their fists and imagine that all their worries flowed into the fist. Next, they were told to exhale, release their fist, and repeat the word “calm” to themselves. They were told to repeat this process ten times and then take a 2-min break. Next, they were told to repeat the diaphragmatic breathing five times or until reaching the desired level of relaxation. After this explanation, participants practiced this procedure on the phone. They were instructed to practice the procedure on a daily basis.

Individuals in the CBT intervention also received specific instructions pertaining to the modified cognitive-restructuring procedure. Participants received psychoeducation about worry and were taught about the relationship between thoughts and resulting emotions. Participants were told that the goal of the exercise would be to learn to better control stress and worry-producing thoughts and to substitute these with more positive, calming “inner talk.” Participants were instructed to use adaptive self-talk (as in stress inoculation training; Meichenbaum, 1985), and to interrupt the free-floating worry process by scheduling worry time (e.g., Borkovec, Wilkinson, Folensbee, & Lerman, 1983)—callers were instructed to allow themselves to worry for no more than half an hour a day, during a scheduled time determined collaboratively with the hotline volunteer. In addition, individuals were told that whenever a stress, anxiety, or worry producing thought entered their minds, they should respond by saying to themselves, “enough!” (repeating this should the thought return). The latter element is an Israeli culture-specific method of attention control. Callers also were taught to replace worry-producing thoughts with ones of a pleasant situation (e.g., favorite hobby, pleasant vacation, etc.) and to provide self-reinforcement (e.g., “a job well done”). Participants were asked to try the thought-replacement exercise with the hotline volunteer for two different SCUD-attack-related thoughts, provide a context in which the negative thoughts were most likely, and imagine themselves in these contexts. Callers were instructed to practice the technique at home whenever an unpleasant attack-related thought occurred. In the control condition, callers were instructed to continue to think about the help they had just received and to employ pre-existing coping strategies whenever unpleasant or worrisome thoughts occurred.

All participating callers provided informed consent. For individuals under 18 years ( $n = 4$ ), consent was provided from both the participant and at least one parent. At the end of each call, participants were referred to a research assistant for further data collection. The length of each telephone conversation was recorded. The average CBT phone call lasted 15.7 min ( $SD = 5.2$ ) and the average control group call was 16.9 min long ( $SD = 6.3$ ). There were no significant differences in length of phone call between the two groups ( $t = .55$ , NS).

To ensure fidelity, the interventions were audio recorded for every fifth call. Two trained psychologists later independently assessed the extent to which each intervention had met the descriptive criteria of either the CBT protocol or the hotline’s standard practice. All evaluated interventions were correctly classified as either CBT or control, and raters’ classifications demonstrated 100% inter-rater agreement. Analysis of the raters’ responses revealed that all the CBT interventions provided at least 9 out of 10 criteria established for the CBT intervention. The hotline volunteers in the CBT condition were also asked to assess the degree of fidelity of their interventions to the written protocol using a 5-point Likert-type scale, with 1 representing the lowest fidelity and 5 representing complete fidelity. The mean self-rated fidelity score was 4.4. Fidelity ratings for the control group revealed that only one of the calls in the control condition included one aspect of the CBT criteria (i.e., choosing a distracting situation).

### 2.3. Measures

Individuals provided oral responses to the following at each measurement interval: pre (time 1), immediately following the intervention (time 2), and three days later (time 3):

*State-trait anxiety inventory* (STAI; Spielberger, Gorsuch, & Lushnc, 1969): The STAI is a 40-item measure with each item rated on a four-point Likert scale. The STAI has been previously translated into Hebrew and validated with a Hebrew-speaking sample (see Zeidner & Ben-Zur, 1989). The measure consists of two factors, one measuring the temporary and acute condition of “state anxiety” (e.g., “I feel at ease”) and the second measuring trait anxiety (e.g., “I am a steady person”). The STAI assesses feelings of apprehension, tension, nervousness, and worry. We used the state anxiety portion only. The Cronbach alpha for this sample was .87.

*Subjective units of distress scale* (SUDS, Wolpe, 1958): The SUDS is a self-rating scale that measures intensity of subjective distress in response to a particular stimulus. A score of zero indicates the lowest level or absence of distress, while a score of 100 indicates the highest level of anxiety distress. The SUDS is widely used and correlates with indicators of physiological stress (e.g., Thyer, Papsdorf, Davis, & Vallecorsa, 1984).

*Missile Attack Worry Inventory* (MAWI): The MAWI is a 13-item measure in which participants are asked to indicate to what extent a given statement reflects their belief about a particular worry (e.g., “I feel personally threatened by Saddam’s missiles,” “I am confident I will manage if Israel is attacked,” and “I don’t know how to help my family in case of war”). The MAWI uses a five-point Likert scale, ranging from (1) “not at all” to (5) “very much.” The Cronbach alpha reliability for this sample was .87.

The content validity for the MAWI was ensured by employing items generated from a focus group facilitated by the first author with ten Israeli citizens (ages 26–58 years) concerning their worries about the anticipated war in Iraq. The final items comprising the MAWI included the following most salient worry themes that emerged in the focus-group: *not being able to get into the sealed room in time, safety of the sealed room, inability to control nervousness, claustrophobia due to the gas mask, claustrophobia due to the sealed room, mistrust of the military’s capacity to protect the population from the danger of a missile attack, general worry about personal performance during a missile attack, specific catastrophic worrying, lack of soothing and calming skills, pessimistic thinking, worry about ability to function well enough to protect and lead the family under extreme circumstances.*

To determine construct validity, we calculated Pearson correlation coefficients between the MAWI and the other two anxiety measures. The correlations between the MAWI and the SUDS, and the MAWI and the STAI were .53 and .48, respectively. The correlation between the SUDS and STAI was .78.

### 3. Results

We compared the groups on several demographic variables. There were no significant differences between the two groups in the distributions of gender, age and type of call (new vs. repeat callers). Eighty-eight percent of callers in the experimental group were women and 86% of the callers in the control group were women ( $\chi^2 = .04$ , N.S.). Age was recorded by using the

hotline's standard information sheet. The callers' ages were, thus, sorted into 5 age categories. Since this information was presented on an ordinal scale,  $\chi^2$  analysis was employed, demonstrating that there were no significant differences in the distribution of age groups. For example, 12% of the callers in the experimental group were under the age of 18, as compared to 14% of those in the control group ( $\chi^2 = 3.46$ , N.S.). Furthermore, 30% of callers in the experimental group were new callers, as compared to 28% in the control group ( $\chi^2 = 2.80$ , N.S.).

The means and standard deviation for each outcome variable is presented in Table 2. Because by chance the CBT group had higher baseline scores on two of the three outcomes (MAWI and STAI), we modeled the data using GLM repeated-measure analysis of covariance (MANCOVA) for each dependent measure separately using the respective baseline scores as a covariate. In these analyses, change over time is represented by difference scores, specifically:  $\text{diff1} = \text{time2} - \text{time1}$  (baseline) and  $\text{diff2} = \text{time3} - \text{time1}$ .

*SUDS*: There was a significant effect of baseline scores ( $F(2, 27) = 7.83$ ,  $p = .002$ ,  $ES = .36$ ), and group ( $F(2, 27) = 12.56$ ,  $p = .0001$ ,  $ES = .48$ ) on the change in measures over time. Interaction of baseline and group was not significant ( $F(2, 26) = .46$ ,  $p = .64$ ), so it was excluded from the model. To examine the differences between groups we conducted a regression of both  $\text{diff1}$  and  $\text{diff2}$  against baseline and group. The CBT group had a significantly greater decrease in mean SUDS scores (controlling for baseline) than the control group in both  $\text{diff1}$  ( $F(1, 28) = 8.71$ ,  $p = .006$ ,  $B = 19.1$ , partial  $R^2 = .24$ ) and  $\text{diff2}$  ( $F(1, 28) = 26$ ,  $p = .0001$ ,  $B = 3.3$ , partial  $R^2 = .48$ ). The mean difference between groups was substantially higher in  $\text{diff2}$  than in  $\text{diff1}$  (19.08 in  $\text{diff1}$  and 3.3 in  $\text{diff2}$ , in scale score units).

*STAI*: There was a significant effect of baseline scores ( $F(2, 26) = 7.31$ ,  $p = .003$ ,  $ES = .36$ ) and group ( $F(2, 26) = 17.4$ ,  $p = .0001$ ;  $ES = .57$ ) on the change in measures over time. The interaction of baseline and group was not significant ( $F(2, 25) = .91$ ,  $p = .41$ ), so it was excluded from the model. To examine the differences between groups we conducted a regression of both  $\text{diff1}$  and  $\text{diff2}$  against baseline and group. The CBT group had a significantly greater decrease in mean

Table 2  
Means and standard deviations of the outcome variables by group and time

Time	Experimental group		Control group	
	Mean	SD	Mean	SD
<i>SUDS</i>				
Pre-intervention	76.07	24.79	72.05	26.96
Post-intervention	40.35	20.42	56.94	26.34
3-Day followup	34.28	24.64	62.47	18.11
<i>STAI</i>				
Pre-intervention	64.46	14.22	44.91	18.25
Post-intervention	40.09	16.57	36.01	14.72
3-Day followup	23.72	13.22	49.66	16.34
<i>MAWI</i>				
Pre-intervention	64.01	16.75	43.26	10.50
Post-intervention	47.16	13.74	40.00	11.84
3-Day followup	33.64	14.56	44.54	11.28

STAI scores (controlling for baseline) than the control group in both diff1 ( $F(1,28) = 7.35$ ,  $p = .01$ ,  $B = 11.1$ , partial  $R^2 = .21$ ) and diff2 ( $F(1,28) = 34.9$ ,  $p = .0001$ ,  $B = 34.9$ , partial  $R^2 = .56$ ). The mean difference between groups was substantially higher in diff2 than in diff1 (11.13 in diff1 and 34.8 in diff2).

*MAWI*: There was a significant effect of baseline scores ( $F(2,27) = 5.13$ ,  $p = .013$ ; eta squared;  $ES = .27$ ) and group ( $F(2,27) = 12.86$ ,  $p = .0001$ ;  $ES = .48$ ). The interaction of baseline and group was not significant ( $F(2,26) = 1.35$ ,  $p = .27$ ), so it was excluded from the model. To examine the differences between groups, we conducted a regression of both diff1 and diff2 against baseline and group. The CBT group had a significantly greater decrease in mean MAWI scores (controlling for baseline) than the control group in both diff1 ( $F(1,28) = 9.72$ ,  $p = .004$ ,  $B = 9.2$ , partial  $R^2 = .26$ ) and diff2 ( $F(1,28) = 26.0$ ,  $p = .0001$ ,  $B = 22.7$ , partial  $R^2 = .48$ ). The mean difference between groups was substantially higher in diff2 than in diff1 (9.2 in diff1 and 22.75 in diff2; in scale score units).

#### 4. Discussion

The CBT intervention was associated with a decline in all measures of distress, anxiety, and worry immediately following the phone call, and over the next 3 days. The mean differences and the effect sizes were quite substantial, particularly when contrasting baseline scores with scores 3 days later. The standard supportive hotline intervention also led to an immediate, post-call anxiety reduction; however, after 3 days, the levels of anxiety increased and two of the outcome measures (i.e. excluding SUDS) reached pre-intervention levels.

Although these results are preliminary, to our knowledge, this is the first quasi-randomized controlled trial employing a cognitive behavioral coping approach to assist anxious and worried citizens facing a potential attack. The results suggest that very brief CBT provided by paraprofessionals via the phone can assist people with worry and associated functional impairment resulting from potential threat, in this case, mass violence attacks. This form of hotline-based care may be particularly useful for individuals who have difficulty accessing healthcare or would avoid seeking formal care because of stigma. The key change agents responsible for the efficacy of CBT in this context are unclear. It could be that the CBT intervention provided individuals with concrete skills to manage worry and tension; alternatively, it could be that the practices provided a distraction method that indirectly reduced worry.

There are several limitations to this pilot study. First, future studies should replicate the procedures with larger samples employing a truly randomized approach. Second, we followed participants for only three days after the intervention. While this was necessary due to the unique situation at hand (i.e., it soon became clear that SCUD missiles would not be used), the follow-up interval says nothing about the temporal stability of changes or how much the skill-sets will be used in future contexts. It is possible that participants may practice the stress management strategies less frequently over time. As a result, reports of worry and anxiety might rise over time and the strength of stress management habits may not be very strong. Thus, during the next threat, a participant may not use the new skills. It is likely that in order to be effective, CBT interventions for anxiety and worry related to future attacks (or the threat of terrorism) would

require follow-up booster calls, didactic and homework materials sent via the mail, and compliance checks. Third, due to the strict rules of confidentiality advocated by the hotline, only minimal demographic and history variables were collected. As a result, it is unclear whether important third variable differences exist between the two conditions (e.g., psychiatric history, prior trauma exposure, proximity to previous attack sites, socioeconomic factors, employment status, etc.). Fourth, responder bias is also a possible confound due to the fact that no independent diagnostic evaluations were made. Fifth, individuals collecting the outcome data were not blind to treatment condition. This problem was reduced somewhat by the nature of the data collected (self-report). Finally, this study was conducted in Israel with an Israeli sample and may not generalize to different cultures. Israel faces unparalleled national security threats and people in Israel have unique exposure to war, terrorist actions, and other lifespan traumas (e.g., the holocaust). As a result, the level of anxiety experienced by Israelis and the potential for functional impairment secondary to anxiety may not be generalizable to other individuals facing national emergencies.

It is worth speculating about the implications of this research for assisting individuals who are anxious about the threat of terrorism. By definition, terrorism creates a ripple of lingering worry and anxiety. Even in those who have never been directly impacted by a terrorist act, terrorism creates varying degrees of anticipatory anxiety, fears of future harm to oneself or loved ones, and functional impairments (e.g., refusal to ride public transportation). Individuals and families who have experienced the horrors of terrorism directly are likely to be impacted even more severely over their life-course (e.g., Desivilya, Gal, & Ayalon, 1996; Laor, Wolmer, & Cohen, 2001). For example, terrorism on 9-11-01 negatively impacted individuals' mental health and increased fears of future attacks. For example, Piotrkowski and Brannen (2002) surveyed New York City residents after 9-11 and found that 85% of individuals reported some degree of worry about another terrorist attack, while 43% reported a great deal of worry. As a sure sign that the attacks on 9-11 created the intended goal of general fear in the population, approximately two-thirds of Americans reported fears of future terrorism (Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). After 6 months passed with no subsequent terrorist attack, 41% of individuals in the US still reported fear of harm to their families as a result of future terrorism (Silver et al., 2002). To date, no one has considered interventions to assist people who are coping very poorly with the threat of terrorism (e.g., they no longer fly on airplanes). Our results suggest that it is prudent to conduct future research on a brief CBT intervention to assist people who face uncontrollable and unpredictable national threats such as terrorist actions.

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