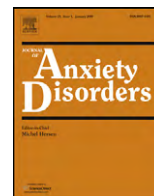




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## Journal of Anxiety Disorders



# A randomized controlled evaluation of a spiritually integrated treatment for subclinical anxiety in the Jewish community, delivered via the Internet

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### ABSTRACT

**Objective:** This study evaluated the efficacy of a spiritually integrated treatment (SIT) for subclinical anxiety in the Jewish community.

**Method:** One hundred and twenty-five self-reported religious Jewish individuals with elevated levels of stress and worry received SIT ( $n = 36$ ), progressive muscle relaxation (PMR,  $n = 42$ ), or a waitlist control condition (WLC,  $n = 47$ ). SIT and PMR participants accessed Internet-based treatment on a daily basis for a period of 2 weeks. All participants completed self-report assessments at pre-treatment (T1), post-treatment (T2), and 6–8-week follow-up (T3).

**Results:** SIT participants reported large improvements in primary (stress and worry) and secondary (depression and intolerance of uncertainty) outcomes, and moderate improvements in spiritual outcomes (positive/negative religious coping; trust/mistrust in God). SIT participants reported greater belief in treatment credibility, greater expectancies from treatment and greater treatment satisfaction than PMR participants. SIT participants also reported better improvements in both primary outcomes (stress and worry), one of two secondary outcomes (intolerance of uncertainty), and two of four spiritual outcomes (positive religious coping and mistrust in God) compared to the WLC group, whereas PMR and WLC participants did not differ on most outcomes.

**Conclusions:** Results of this investigation offer initial support for the efficacy of SIT for the treatment of subclinical anxiety symptoms among religious Jews. Results further suggest that it is important to incorporate spiritual content into treatment to help facilitate the delivery of psychotherapy to religious individuals.

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## 1. Introduction

Chronic anxiety, even at subclinical levels, has been identified as a risk factor for a number of major health problems including hypertension (McEwen, 1998), asthma (Sandberg et al., 2000), diabetes (Soo & Lam, 2009), pain (Beesdo et al., 2009) and cardiovascular disease (Brosschot, Van Dijk, & Thayer, 2007). Fortunately, strong empirical evidence supports cognitive behavioral techniques such as progressive muscle relaxation (PMR) as clinically efficacious in reducing symptoms of stress and worry (Borkovec, Newman, Pincus, & Lytle, 2002). However, while PMR is used widely in clinical and health psychology settings (Pluess, Conrad, & Wilhelm, 2009), religious individuals tend to be reluctant to access conventional psychological services due to a preference for spiritually

integrated care (Lindgren & Coursey, 1995; Puchalski, Larson, & Lu, 2001). Furthermore, considerable evidence suggests that religion can be both a significant resource for people in times of distress (Pargament, 1997), and a source of struggle and strain (Exline, Yali, & Sanderson, 2000). These facts have led to the development of several spiritually integrated treatments (SITs) in recent years to provide religious communities with culturally appropriate services (Pargament, 2007). Spiritually integrated treatments are similar to conventional psychotherapy except that the rationale for treatment may be presented in a spiritual framework, maladaptive spiritual beliefs are targeted explicitly, and spiritual/religious practices can be purposefully included as behavioral activation strategies with the intention of increasing positive emotions such as gratitude and hope (Paukert et al., 2009; Rosmarin, Pargament, & Robb, 2010).

While research on SITs is still in its early stages, more than 30 clinical trials have been conducted, including several prominent randomized controlled studies (e.g., Oman, Hedberg, & Thoresen, 2006; Propst, Ostrom, Watkins, Dean, & Mashburn, 1992; Rye et al., 2005; Wachholtz & Pargament, 2009). One meta-analysis found that religion-accommodative and conventional treatments were equally effective in reducing depressive symptomatology

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(McCullough, 1999), suggesting that SITs can be offered when preferred by clients without compromising treatment efficacy. Another more recent meta-analysis by Smith, Bartz, and Richards (2007) found that SITs were more effective than conventional treatments, with a between-groups effect size of 0.51 among 24 studies. These latter finding should be interpreted cautiously, however, because the majority of studies reviewed in this meta-analysis did not use manualized treatments or employ fidelity checks. Nevertheless, available evidence suggests that SITs can be effective and particularly appealing to religious populations (Hook et al., 2009). However, SITs remain largely unavailable. In particular, no SITs for practicing Jewish individuals have been developed or evaluated to date, a fact that is especially unfortunate as there are numerous barriers to the dissemination of psychotherapy in the Jewish community. Specifically, consultation and collaboration with religious leaders is often a prerequisite for religious Jews entering treatment (Greenberg, 1991), and stigma is often present, posing a barrier to treatment seeking (Paradis, Friedman, Hatch, & Ackerman, 1997; Pirutinsky, Rosmarin, & Pargament, 2009).

One spiritual construct that could be integrated into a treatment program for Jews is trust/mistrust in God. Trust in God has its origins in traditional Jewish thought (Ibn Pekuda, 1996) and involves the conviction that God takes care of one's best interests. By contrast, some religious individuals may develop mistrust in God, involving the belief that God is intentionally ignorant or malevolent and a sense that God cannot or will not provide for one's wellbeing (Rosmarin, Pargament, & Mahoney, 2009). In two recent investigations with large community samples of believers, trust in God was associated with less anxiety and depression, whereas mistrust in God was associated with higher levels of symptoms (Rosmarin, Krumrei, & Andersson, 2009; Rosmarin, Pargament, & Mahoney, 2009). Moreover, several psychological processes may tie trust/mistrust in God to stress and worry. Perceptions of adversity may be shaped by the beliefs associated with trust in God. A worldview in which God is wholly knowledgeable, powerful, and good may generate positive appraisals and prevent or reduce negative appraisals of stressful life events. The core beliefs of trust in God may further mitigate intolerance to uncontrollability and unpredictability, two cognitive factors that have been identified as important in maintaining worry (Behar, Dobrow-DiMarco, Hekler, Mohlman, & Staples, 2009). Trust in God may also contribute to positive religious coping (Pargament, 1997) and act as a psychological resource in times of stress by promoting spiritual support, a sense of connectedness with a transcendent force, and/or positive spiritual emotions such as inspiration, meaning, hope, and gratitude. By contrast, belief in a malevolent God may engender negative perceptions of threat and increase appraisals of danger, especially in situations that are uncontrollable or unpredictable. Mistrust in God may further exacerbate stress and worry by promoting spiritual struggles involving fundamental questions, doubts, conflicts and with the Divine.

One promising format for delivery of SITs to religious communities involves the use of electronic therapy (e-therapy). Clinical researchers could collaborate with spiritual/religious leaders to incorporate spiritual content into e-therapy protocols at the design level. Additionally, by enabling religious individuals to participate in treatment in a private setting such as their home, spiritually integrated e-therapies may help to facilitate dissemination despite stigma. Furthermore, recent research suggests that Internet use has become increasingly accepted in religious Jewish communities, even among more cloistered sects (Hack, 2007). This is particularly the case when Internet use for specific purposes is explicitly sanctioned by community leaders. While we are unaware of any previous attempts to integrate spiritual or religious content into e-therapy, in recent years, the efficacy of Internet-based interventions has been established in the treatment of a variety of

difficulties including social phobia (Andersson et al., 2006), insomnia (Strom, Pettersson, & Andersson, 2004), and eating disorders (Winzelberg et al., 2000).

The present study therefore evaluated efficacy of a short-term SIT for subclinical anxiety among Jews, delivered via the Internet. To this end, a spiritually based audio/video treatment program was developed through extensive consultation with ultra-Orthodox Jewish religious leaders and teachers. To test the relative efficacy of this program, we administered progressive muscle relaxation (PMR) in similar electronic format to a comparison group, and a third group was randomized to a waitlist control (WLC) and received no treatment. We proposed the following hypotheses:

- (1) SIT participants would report higher levels of belief in treatment credibility, have higher expectations of treatment, report more treatment satisfaction, and be more likely to complete treatment than PMR participants.
- (2) Primary (stress and worry) and secondary (depression and intolerance of uncertainty) treatment gains would be greater for SIT participants compared to PMR and WLC participants at post-treatment and follow-up.
- (3) Spiritual treatment gains (trust/mistrust in God and positive/negative religious coping) would be greater for SIT participants than PMR and WLC participants at post-treatment and follow-up.
- (4) Treatment effects for SIT and PMR participants would be moderated by pre-existing Jewish religiousness (i.e., Orthodox Jews would be more likely to benefit from SIT than PMR).

## 2. Method

### 2.1. Participants and procedure

See Fig. 1 for a CONSORT flowchart of participant enrolment and attrition. A total of 486 individuals expressed an interest in the study, of which 225 were not eligible (see criteria below). The remaining 261 participants were randomized to the SIT ( $n=83$ ), PMR ( $n=106$ ) and WLC groups ( $n=72$ ). Contact was lost with 65 participants who did not complete the pre-treatment (T1) assessment. Of the remaining 196 participants, 71 participants did not complete the post-treatment assessment, and an additional 29 participants did not complete the follow-up assessment. Thus, analyses were conducted on an intention to treat basis (i.e., independent of the number of treatment sessions completed) with all available data from 125 participants who completed the pre- (T1) and post-treatment (T2) assessments, and 96 participants who also completed the follow-up assessment (T3). It should be noted that the dropout rate in this study was similar to other trials of Internet-based interventions which did not involve any therapist contact (e.g., Strom et al., 2000).

Demographic characteristics of the study sample ( $n=125$ ) are presented in Table 1. Religious affiliation in the sample was distributed as follows: 5.6% Hassidic ( $n=7$ ); 26.4% Yeshiva Orthodox ( $n=33$ ); 33.6% Modern Orthodox ( $n=42$ ); 16.0% Conservative ( $n=20$ ); 8.8% Reform ( $n=11$ ); and 9.6% other Jewish affiliation (i.e., not Orthodox, Conservative or Reform,  $n=12$ ). Thus, 65.6% of the sample reported affiliation with Orthodoxy, of which 48.4% were ultra-Orthodox.

All study procedures (informed consent, screening, administration of assessments, randomization, administration of treatment, and communication) were conducted on-line between September 2008 and June 2009. All information and treatment was presented in the English language. Prior to screening for eligibility, participants were required to provide and confirm a working e-mail address to facilitate communication however participants

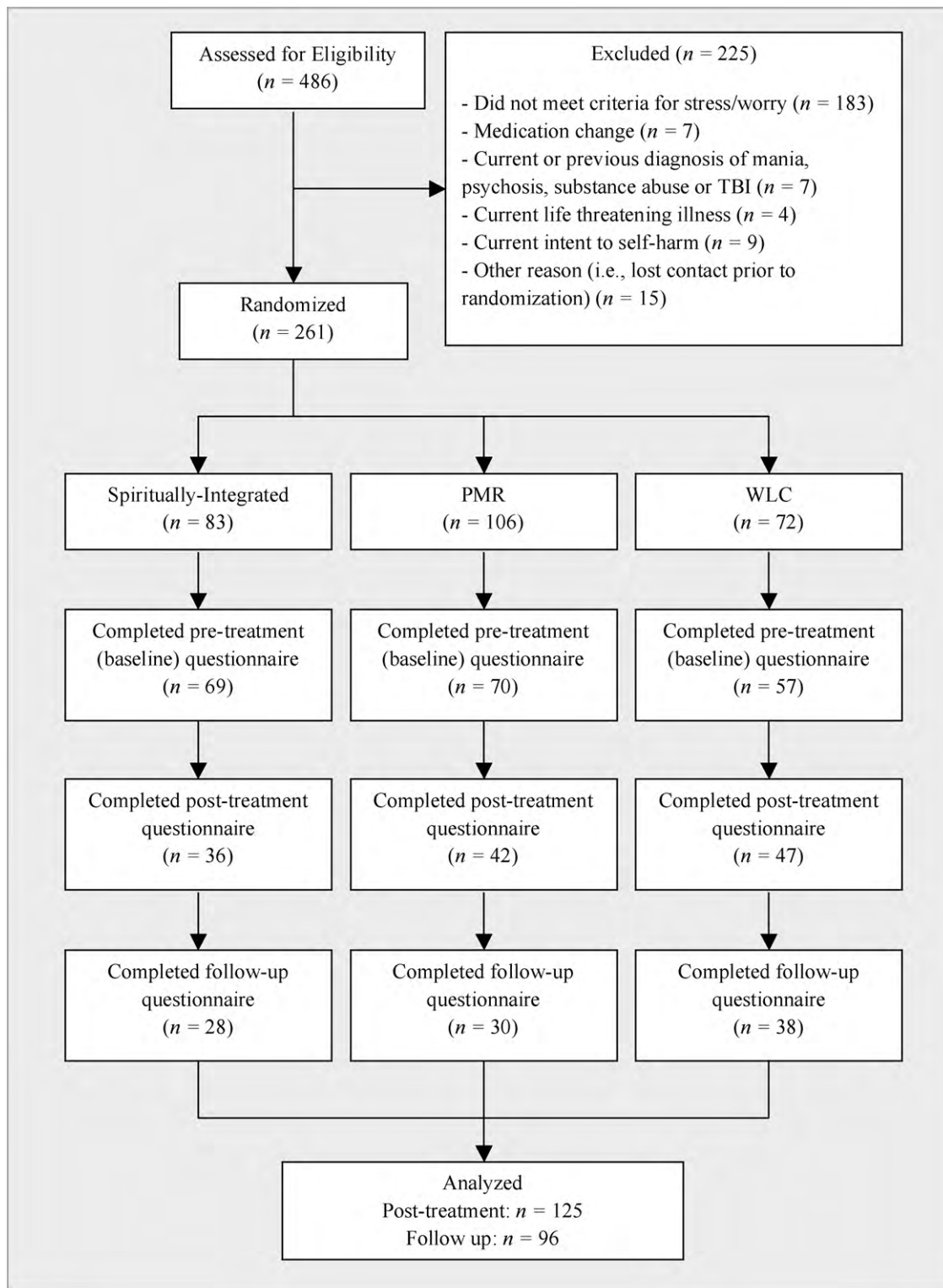


Fig. 1. Flowchart of study participants.

were given the option to use an alias e-mail address to maintain anonymity. Eligible participants were randomized to one of the three study conditions using a computer-generated allocation sequence; no blocking or stratification rules were utilized. Subsequently, eligible participants were informed via e-mail of which condition they were randomized to, and non-eligible participants were provided with a list of alternative psychological and spiritual resources. Eligible participants were re-directed to the study web-

site and asked to complete the pre-treatment assessment. After completing the pre-treatment assessment, PMR and SIT participants were required to view a 10-min orientation video (described below) and subsequently complete measures assessing for treatment credibility and expectancies. The treatment period lasted 2 weeks (14 days) in duration. SIT and PMR participants were asked to visit the study website and participate in their treatment once each calendar day (12:00 am to 11:59 pm, Eastern Time), and

**Table 1**  
Demographic and religious characteristics of the study sample ( $n = 125$ ) by treatment group.

Variable	SIT ( $n = 36$ )	PMR ( $n = 42$ )	WLC ( $n = 47$ )	Total ( $n = 125$ )
Age	39.7 (13.6)	42.0 (14.3)	43.2 (12.9)	41.8 (13.6)
Gender				
Female (%)	69.4	76.2	82.6	76.6
Marital status				
Single (%)	27.8	26.2	13.0	21.8
Divorced (%)	5.6	19.0	19.6	15.3
Widowed (%)	2.8	4.8	0.0	2.4
Married (%)	63.9	47.6	65.2	58.9
Other (%)	0.0	2.4	2.2	1.6
Number of children	1.6 (1.5)	1.5 (1.4)	2.4 (1.7)	1.9 (1.6)
College degree or higher (%)	84.5	82.4	81.7	82.9
Employed (%)	36.1	35.7	39.1	37.1
Income <sup>a</sup>	2.3 (1.8)	1.9 (1.8)	2.4 (1.8)	2.2 (1.8)
Life change <sup>b</sup>	4.2 (2.4)	4.3 (2.6)	4.7 (2.8)	4.4 (2.6)
Orthodox affiliation (%)	62.9	58.3	71.7	63.9
General religiousness <sup>b</sup>	29.6 (5.7)	26.8 (6.6)	28.2 (6.2)	28.2 (6.2)

Notes: Groups were equivalent on all variables within each row ( $p > .05$ ); all values taken from baseline (pre-treatment) assessment.

<sup>a</sup> Coded as 0 = less than \$25,000, 1 = \$25,001–50,000, 2 = \$50,001–75,000, 3 = \$75,001–100,000, 4 = \$100,001–130,000, 5 = more than \$130,000.

<sup>b</sup> See text for scoring information.

completion of treatment sessions was tracked electronically. To encourage participation in the treatment programs, SIT and PMR participants received a daily e-mail message reminding them about their treatment period. During the treatment period, WLC participants did not receive any contact. At the end of the treatment period, all participants were prompted via e-mail to complete the post-treatment assessment, and 6 weeks later all participants were prompted again via e-mail to complete the follow-up assessment. Participants were not compensated monetarily and completed all study assessments on a volunteer basis. However, subsequent to completing the follow-up assessment, all participants were provided with unlimited access to both the SIT and PMR programs for 1 year.

## 2.2. Recruitment and eligibility

To facilitate recruitment, care was taken to obtain approbation of ultra-Orthodox community leaders for the study and share this information prominently on the study website. Participants were recruited from Jewish communities around the world via the following means: (1) solicitation of Jewish mental health organizations to distribute information about the study (e.g., Jewish Family & Child Services [United States and Canada]; The Jewish Association for the Mentally Ill [London, England]; The Jewish Mental Health Network [Australia]; Relief Resources [New York and Toronto]; and NEFESH: The international network of Orthodox Jewish Mental Health Professionals); (2) solicitation of Jewish community organizations to distribute information about the study; (3) posting of e-mail and electronic flyers to Jewish community e-mail lists and Internet bulletin boards; (4) paid advertisements on Jewish websites; (5) posting of a 60-s web-based video advertisement for the study, and (6) posting of paper-flyers on Jewish community bulletin boards. Additionally, study participants were encouraged to solicit their Jewish friends and family members.

Eligible participants reported: (1) a minimal level of stress and worry, defined by a score of 27 or higher on the Perceived Stress Scale and 54 or higher on the Penn State Worry Questionnaire (corresponding to 1 SD above the mean of community norms, Cohen & Williamson, 1988; Gillis, Haaga, & Ford, 1995); (2) identification with the Jewish religion; (3) 18 years of age or older; (4) no changes in psychotropic medication type or dosage in the previous 8 weeks; (5) no current intent to self-harm; (6) no past or current diagnosis of mania, schizophrenia, substance abuse, or a traumatic brain injury; and (7) no current life threatening illnesses. Additionally, participants who engaged in additional psychotherapy or made any

changes to type or dosage of psychotropic medications during the treatment period were withdrawn from the study.

## 2.3. Interventions

In order to minimize possible confounds associated with treatment delivery, both the SIT and PMR programs were of approximately equal length (25–30 min). Additionally, the orientation videos for each treatment utilized the same actor.

### 2.3.1. SIT

The SIT program was developed by the study authors in conjunction with Jewish community leaders and teachers. Initially, two ultra-Orthodox rabbis were approached to identify Jewish spiritual strategies for coping with stress and worry. Two principal categories of strategies were identified: cognitive (e.g., reading inspiring stories and excerpts from Jewish religious literature) and behavioral (e.g., spiritual exercises to increase gratitude, and prayer). From these initial discussions, a guided audio–video program was created on a series of Microsoft PowerPoint® slides containing the identified strategies as well as an introductory segment explaining the rationale for the program and describing its contents. These slides were then reviewed by one of the rabbinic consultants and extensive feedback was solicited. All suggestions for revision were incorporated into the program. Upon finalization, the slides were then transferred to video and over-dubbed with an audio overlay (an actor's voice) so that the instructions and content were presented both visually and audibly.<sup>2</sup>

The program contains the following four segments (see Fig. 2, for an overview): (1) In the introduction to the program, participants are informed that the purpose of the program is to strengthen the perspective that God is completely knowing, powerful, kind, and loving. Participants are then asked to try to be open to and enjoy the activities even if they seem unfamiliar. (2) In the second segment of the program, participants are first presented with stories adapted from classic Jewish sources and folk tales as well as modern anecdotes. Every 2 days throughout the 2-week treatment period participants are presented with a different story. Participants are also presented with a series of four short passages adapted from the words of Jewish sages and teachers written over the past 2000 years. After each passage, a bulleted summary of the reading is presented and participants are asked to read each line out loud. (3) In

<sup>2</sup> The program script is available upon request via the first author.

<u>Component</u>	<u>Description</u>
<i>Introduction</i>	Information about the purpose of the program (to increase trust in God) and an overview of the components
<i>Stories</i>	Inspiring anecdotes highlighting the core beliefs of trust in God and suggesting that perceived stressors may be blessings in disguise
<i>Passages</i>	Four short passages adapted from the words of Jewish sages and teachers that were written over the past 2000 years that describe and define trust in God and its core beliefs
<i>Exercise #1</i>	Picturing a person you trust and trying to imagine that they were sent by God as a messenger to provide help
<i>Exercise #2</i>	Thinking of a precious item you value dearly (e.g., a body part, a family member) and try to imagine that it is a gift from God
<i>Exercise #3</i>	Thinking about a stressful time in the past when things turned out better than expected, and then contemplating God’s role in the event.
<i>Exercise #4</i>	Thinking about God’s role when engaging in daily activities (e.g., going to the refrigerator, standing up)
<i>Prayer</i>	Praying for help in increasing your level of trust in God using words that feel comfortable and meaningful

Fig. 2. Overview of the SIT program.

the third segment of the program, participants are led through a series of four spiritual exercises. (4) And finally, in the fourth segment of the program, participants are encouraged to pray briefly for increased trust in God using their own words. It should be noted that study participants were asked to practice the spiritual exercises throughout their daily life, particularly when feeling anxious. To encourage this, participants were provided with a link to download and print a single sheet of paper (Microsoft Word® and Adobe Acrobat® formats), which summarized the exercises.

To facilitate informed consent and orient participants to the SIT program, a 10-min information-orientation video was prepared. This video explained how spirituality may be tied to anxiety and stress, described the program content, and outlined the potential risks and benefits of the program. Consistent with the orientation video utilized for the PMR program (described below), patients were encouraged to actively participate and engage in the program (e.g., to not just sit and watch the video but try to contemplate its content and practice the exercises daily).

### 2.3.2. PMR

We employed the PMR program of Bernstein and Borkovec (1973), which involves tensing and relaxing of 16 different muscle groups. Since we are aware of only one previous study that has demonstrated efficacy of Internet-based administration of relaxation (Trautmann & Kroner-Herwig, 2010) we implemented safeguards to increase the likelihood of correct use of PMR based on the counsel of Dr. Thomas Borkovec (personal communication, November 2007). Specifically, PMR instructions were presented audibly only (i.e., no video component was utilized), and during the introduction to the program participants were asked to sit in a quiet place where disturbances would be unlikely to occur, to

turn off or away from their computer monitor, and to close their eyes while engaging in the program. Consistent with standard clinical practice of PMR, study participants were asked to practice the tensing and relaxing of muscle groups throughout their daily life, particularly when experiencing stress and worry. To encourage this, participants were provided with a link to download and print a single sheet of paper (Microsoft Word® and Adobe Acrobat® formats), which summarized the PMR program. A 10-min video was prepared to inform and orient participants to the PMR program. In this video, an actor presented an introduction to and rationale for PMR based on the guidelines of Bernstein and Borkovec (1973) and Bernstein and Carlson (1993). All participants randomized to the PMR group viewed this video prior to commencing treatment.

### 2.4. Measures

#### 2.4.1. Sample descriptives

2.4.1.1. *Demographics.* Participants completed single items assessing for age, gender, marital status, number of children, highest level of education attained, current employment status, and family income.

2.4.1.2. *General religiousness.* At the pre-treatment assessment, participants completed a series of 10 single items measuring the following aspects of global Jewish religiousness: belief in God (anchors: no, yes); synagogue membership (anchors: no, yes); level of religiousness (anchors ranging from not at all to very); level of spirituality (anchors ranging from not at all to very); importance of religion (anchors ranging from not at all to very); changes in level of religious activity over the past 5 years (anchors ranging from decreased substantially to increased substantially); feelings about

being Jewish (anchors ranging from very negative to very positive); frequency of private/public prayer (anchors ranging from never to several times a day), frequency of synagogue attendance (anchors ranging from never to several times a day) and frequency of religious study (anchors ranging from never to several times a day). To provide a composite measure of general religiousness, these items were summed with higher values denoting higher reported levels of each item (e.g., *greater* importance of religion, *increases* in religious activity over past 5 years). This measure demonstrated a satisfactory level of internal consistency in the sample ( $\alpha = .73$ ).

**2.4.1.3. Life change.** At the pre-treatment assessment, participants completed the Indices of Life Change Events subscale from the Health and Daily Living Form (Moos, Cronkite, & Finney, 1990), assessing for the experience of 30 stressful life events in the past 12 months.

#### 2.4.2. Primary outcomes

**2.4.2.1. Stress.** Stress was measured by the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), a commonly utilized 14-item measure of an individual's appraisal of stress. This measure asks respondents to indicate the frequency which they have experienced a series of 14 specific stressful thoughts and feelings over the past month using a 5-point Likert-type scale (ranging from "Never" to "Very Often"). For the purposes of this study the scale instructions were revised to assess perceived stress *over the past week*. Higher scores on the scale indicate higher levels of stress. Previous analyses have yielded satisfactory levels of reliability and validity for the scale (Cohen & Williamson, 1988), and internal consistency was high in the sample ( $\alpha$  ranging from .86 to .92).

**2.4.2.2. Worry.** Worry was assessed with the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). This measure asks respondents to indicate the degree to which a series of 16 statements about worry are characteristic of them in general. The PSWQ is scored using a 5-point Likert-type scale ranging from 1 (not at all typical) to 5 (very typical), and higher scores on the inventory indicate higher levels of worry. For the purposes of this study, scale instructions were revised to assess worry *over the past week*. The PSWQ has well established norms and psychometric properties in both clinical and community samples; it has been found to possess high internal consistency, good test-retest reliability, and good concurrent validity (Brown, 2003). Internal consistency of the scale was high in the sample ( $\alpha$ s ranging from .91 to .94).

#### 2.4.3. Secondary outcomes

**2.4.3.1. Depression.** Depressive symptoms were assessed using the Center for Epidemiological Studies Depression (CES-D; Radloff, 1977) scale. The CES-D contains 20 items describing symptoms of depression. Respondents are asked to rate indicate how frequently each symptom was experienced over the past month on a 4-point Likert-type scale (ranging from "Rarely or none of the time" to "Most or all of the time"). For the purposes of this study the scale instructions were revised to assess for depression *over the past week*. Higher scores on the scale indicate higher levels of depression. The CES-D has been validated extensively in community settings as a measure of general depressive symptomatology (Orme, Reis, & Herz, 1986), and internal consistency in the sample was satisfactory ( $\alpha$ s ranging from .71 to .76).

**2.4.3.2. Intolerance of uncertainty.** A short version of the Intolerance of Uncertainty Scale was utilized (IUS-12; Carleton, Norton, & Asmundson, 2007). This measure asks respondents to rate the degree to which 12 statements reflecting intolerance of uncertainty are characteristic of them in general using a 5-point Likert-type

scale (ranging from "Not at all characteristic of me" to "Entirely characteristic of me"). For the purposes of this study the scale instructions were revised to assess intolerance of uncertainty over the past week. The measure has demonstrated a stable 2-factor structure representing both anxious and avoidant components of this construct, and exemplary internal consistency (Carleton et al., 2007). The internal consistency of the two subscales in this sample was high ( $\alpha$ s ranging from .89 to .91).

#### 2.4.4. Spiritual outcomes

**2.4.4.1. Trust and mistrust in God.** To assess for trust and mistrust in God, we utilized 24 items from a previous measure (Rosmarin, Krumrei, et al., 2009). However scale instructions were revised to assess for these variables *over the past week*. Participants' pre-treatment responses to these items were subjected to a principal components factor analysis with Direct Oblimin (oblique) rotation. Four factors with eigenvalues greater than 1.0 emerged accounting for 67.9% of the scale variance, however an examination of the scree plot evidenced three factors based on a parallel analysis using a computer-generated permutation of the dataset (O'Connor, 2000). Based on the emerging pattern matrix, four items with low factor loadings (<.40) were dropped. Consistent with previous research (Rosmarin, Krumrei, et al., 2009), all of the remaining trust in God items (e.g., God attends to my needs; God watches over me) loaded on the first factor, whereas the mistrust in God items were divided between the two remaining factors. These two latter factors related to beliefs about God's ignorance/malevolence (e.g., God ignores me; God hates me), and impotence (e.g., Bad things happen despite God's will), respectively. To provide a parsimonious and clinically relevant evaluation of mistrust in God, the two mistrust factors were combined into a single subscale. Both the 11-item trust in God (TIG) and 9-item mistrust in God (MIG) subscales demonstrated moderate to high levels of internal consistency (TIG,  $\alpha = .94$ ; MIG,  $\alpha = .80$ ).

**2.4.4.2. Jewish religious coping.** We utilized the 16-item JCOPE (Rosmarin, Pargament, Krumrei, & Flannelly, 2009), to assess for the use of Jewish religious coping strategies in the sample. The JCOPE contains two subscales measuring positive (12 items) and negative (4 items) forms of religious coping among Jews. Respondents are asked to rate how frequently they generally engage in religious coping when facing stressful problems on a 5-point Likert-type scale (anchors ranging from "Never" to "Always"). Scale instructions were revised to assess religious coping over the past week.

#### 2.4.5. Perceptions of treatment

**2.4.5.1. Credibility and expectations.** After viewing the orientation video but prior to commencing treatment, participants in the active treatment groups (SIT and PMR) completed the Treatment Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000). This 6-item measure contains 2 subscales measuring participants' beliefs about treatment credibility, and expectations for improvement of symptoms during treatment.

**2.4.5.2. Treatment satisfaction.** At the posttest assessment (T2) SIT and PMR participants completed the 8-item Client Satisfaction Questionnaire (CSQ-8; Attkisson & Greenfield, 1999).

#### 2.5. Analytic plan

First, to determine whether treatment groups were equivalent at pre-treatment, we compared socio-demographic, religious, and levels of primary, secondary and spiritual outcome variables across all three study groups at T1. Second, we examined treatment completion rates and demographic/religious differences between SIT and PMR treatment completers and non-completers to determine

potential biases due to attrition. Third, we compared treatment credibility and expectations at T1, and treatment satisfaction at T2 between the SIT and PMR groups. Fourth, to assess for within and between-group differences in primary, secondary, and spiritual treatment outcomes, we conducted a series of mixed design, 3 (group) by 2 (time: pre- to post-treatment, and pre-treatment to follow-up) repeated measures ANOVAs (Analyses of Variance). Significant group  $\times$  time interactions were followed up with one-way, between group ANCOVAs (Analyses of Covariance) and post hoc tests on post-treatment and follow-up scores, controlling for pre-treatment scores. Finally, we conducted additional analyses to examine whether primary treatment outcomes in the SIT and PMR groups were impacted by Orthodox affiliation. Bonferroni corrections were applied to multiple comparisons.

### 3. Results

#### 3.1. Statistical power

A calculation of achieved power was conducted using the computer software program G\*Power (Faul, Erdfelder, Lang, & Buchner, 2007). For the main outcome analyses (repeated measures ANOVAs over three points of time with three treatment groups) power in the study sample ( $n = 125$ ) was calculated to be 1.00 to detect effects of  $d = .50$  at  $p < .01$ . Power did not decrease on the basis of sample size at the follow-up assessment ( $n = 96$ ).

#### 3.2. Demographic characteristics and baseline values of treatment groups

Socio-demographic variables (age, income, gender, marital status, college degree or higher education, current employment), general religiousness, and recent life stressors were equivalent at T1 in all three study groups except that WLC participants had more children than PMR participants ( $p < .05$ ). Pre-treatment levels of primary (stress and worry), secondary (depression, intolerance of uncertainty) and spiritual (trust/mistrust in God, positive/negative religious coping) outcome variables were also equivalent.

It was noted that mean pre-treatment levels of stress and worry in the sample as a whole were greater than 2 SD above community norms (Cohen & Williamson, 1988; Gillis et al., 1995), indicating near-clinical levels of anxiety that are commonly associated with significant social and occupational impairment and high rates of psychiatric comorbidity (Kessler, Walters, & Wittchen, 2004).

#### 3.3. Comparison of treatment completers and non-completers

SIT and PMR participants who completed more than half of their respective treatment programs (seven or more sessions) were considered to be treatment completers. There were a greater number of treatment completers in the SIT group ( $n = 28/36$ ) compared to the PMR group ( $n = 21/42$ ) ( $\chi^2(1) = 6.4, p = .01$ ), however the mean number of treatment sessions overall was not statistically different between the two groups ( $M = 8.72, SD = 3.17$  for SIT;  $M = 6.74, SD = 4.26$  for PMR;  $\chi^2(12) = 19.5, ns$ ). Completers and non-completers reported equivalent levels of all demographic variables ( $t(76)$  ranging from .04 to 4.64,  $ns$ , for age, number of children, income, and life changes;  $\chi^2(1)$  ranging from .22 to 2.56,  $ns$ , for gender, marital status, college degree or higher education, and current employment). Pre-treatment levels of stress, worry, intolerance of uncertainty, trust/mistrust in God, positive and negative religious coping were also equivalent ( $t(76)$  ranging from .58 to 6.61,  $ns$ ), however non-completers reported higher levels of depression ( $t(76) = 9.53, p < .01$ ). Additional analyses revealed that these differences in depression were unique to the PMR group ( $t(40) = 12.21, p < .001$ ); pre-treatment levels of depression were

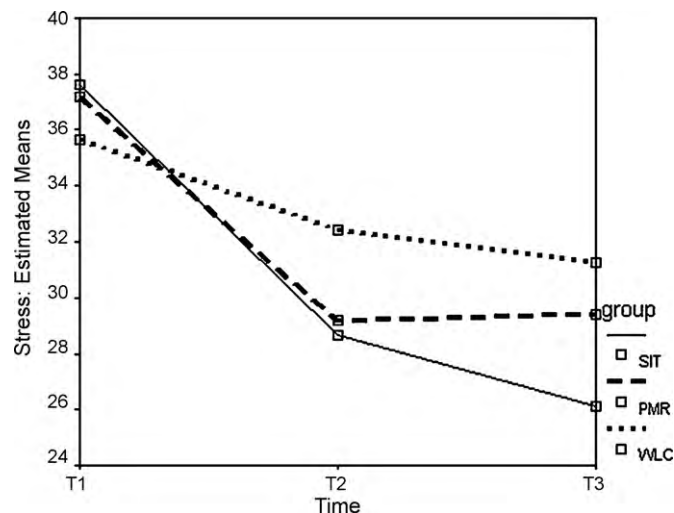


Fig. 3. Primary treatment outcomes: stress.

unrelated to treatment completion in the SIT group. Completers and non-completers were also equivalent in terms of Orthodox affiliation ( $\chi^2(1) = .66, ns$ ), but completers reported slightly higher levels of general religiousness ( $t(76) = 4.44, p < .05$ ). Differences in general religiousness were found among both SIT and PMR participants.

#### 3.4. Treatment credibility, expectancy, and satisfaction: SIT vs. PMR

At T1, SIT participants reported higher levels of belief in the program's credibility ( $t(116) = 2.7, p < .01$ ) and higher expectations that treatment would be helpful ( $t(119) = 2.7, p < .01$ ) compared to the PMR group. At T2, the SIT group reported higher levels of treatment satisfaction than the PMR group ( $t(73) = 3.9, p < .001$ ).

#### 3.5. Treatment outcome analyses

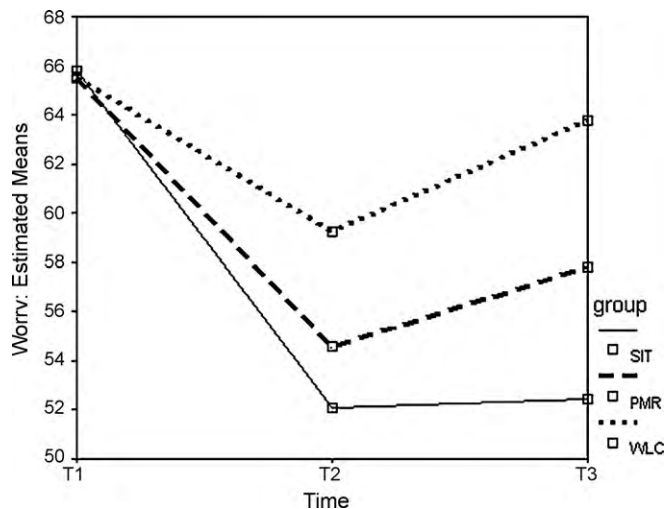
For the main treatment outcome analyses, a series of mixed design, 3 (group) by 2 (time: T1–T2 and T1–T3) repeated measures ANOVAs were conducted. To identify sources of significant interaction effects, a series of one-way ANCOVAs and Bonferroni post hoc tests were conducted on T2 and T3 scores controlling for T1 scores. Pre-treatment, post-treatment and follow-up means, standard deviations and effect sizes for all study variables are presented in Table 2 and primary treatment outcomes are presented graphically in Figs. 3 and 4. No adverse events were reported during the study ( $>1$  SD change in primary treatment outcomes); one WLC participant reported an increase in stress from pre- to post-treatment but returned to baseline by T3.

From T1 to T2, significant group  $\times$  time interactions emerged for stress ( $F(2, 121) = 3.73, p < .05, \eta^2 = .06$ ), worry ( $F(2, 118) = 7.20, p < .001, \eta^2 = .11$ ), intolerance of uncertainty ( $F(2, 117) = 6.90, p < .001, \eta^2 = .11$ ), mistrust in God ( $F(2, 117) = 3.79, p < .05, \eta^2 = .06$ ), and positive religious coping ( $F(2, 117) = 3.61, p < .05, \eta^2 = .06$ ). At T2, the groups did not significantly differ with regard to stress however the SIT group reported lower levels of worry than the WLC group ( $p < .01$ ) whereas the PMR and WLC groups were equivalent. The SIT group also reported lower levels of intolerance of uncertainty than both the PMR ( $p < .05$ ) and WLC groups ( $p < .001$ ), lower levels of mistrust in God than the PMR group ( $p < .001$ ), and higher levels of positive religious coping than both the PMR ( $p < .01$ ) and WLC ( $p < .05$ ) groups. The remaining group  $\times$  time interactions were not significant, however main effects were significant such that depression ( $F(2, 117) = 18.63, p < .001, \eta^2 = .14$ ) and negative

**Table 2**  
Pre-treatment, post-treatment, follow-up values and effect sizes.

Variable	SIT			PMR			WLC		
	Time 1 (n = 36)	Time 2 (n = 36)	Time 3 (n = 26)	Time 1 (n = 42)	Time 2 (n = 42)	Time 3 (n = 29)	Time 1 (n = 47)	Time 2 (n = 47)	Time 3 (n = 37)
<b>Primary outcomes</b>									
Stress	36.8 (5.6)	29.1 (6.8)–1.37	26.1 (9.7)–1.90	37.4 (6.7)	29.5 (7.3)–1.12	29.4 (9.0)–1.10	36.0 (5.7)	31.9 (7.1)–0.77	31.3 (6.1)–0.88
Worry	66.8 (7.7)	52.3 (10.3)–1.83	52.4 (11.8)–1.90	66.2 (10.0)	54.5 (9.3)–1.12	57.8 (10.2)–1.10	64.4 (10.5)	57.3 (11.8)–0.70	63.9 (11.3)–0.04
<b>Secondary outcomes</b>									
Depression	27.4 (7.8)	21.9 (8.3)–0.81	21.3 (9.1)–0.89	27.0 (9.7)	23.8 (9.4)–0.48	22.2 (7.0)–0.65	26.4 (6.4)	24.9 (7.0)–0.35	22.9 (6.9)–0.65
IU	28.6 (7.5)	19.0 (7.6)–1.36	18.7 (8.7)–1.40	29.4 (10.5)	23.7 (9.8)–0.49	23.9 (8.5)–0.47	25.9 (10.0)	23.3 (7.6)–0.35	23.1 (9.2)–0.39
<b>Spiritual outcomes</b>									
TIG	33.5 (9.0)	37.3 (7.9)0.61	36.8 (10.0)0.56	29.5 (11.2)	31.0 (11.3)0.08	29.1 (12.0)–0.07	32.7 (9.1)	33.1 (10.5)0.30	32.6 (10.4)0.08
MIG	6.1 (5.4)	4.1 (4.3)–0.52	4.2 (5.2)–0.51	7.6 (6.7)	8.6 (7.3)0.20	8.5 (6.5)0.20	5.9 (5.4)	6.2 (5.0)–0.07	4.7 (4.2)–0.35
P-JCOPE	40.6 (9.1)	36.7 (5.9)–0.09	43.5 (8.9)0.60	38.9 (8.4)	31.8 (7.0)–0.78	36.8 (8.4)–0.24	42.4 (7.6)	34.3 (6.7)–0.89	41.4 (7.8)–0.05
N-JCOPE	8.7 (3.5)	7.7 (2.7)–0.36	7.0 (3.3)–0.55	10.7 (4.5)	9.8 (4.1)–0.05	9.1 (3.8)–0.20	8.8 (3.8)	8.0 (3.5)–0.33	8.2 (2.7)–0.28

Notes: Means are followed by SDs in parentheses, and within-group effect sizes (Cohen's d) IU: intolerance of uncertainty; TIC: trust in God; MIG: mistrust in God; P-JCOPE: positive religious coping; N-JCOPE: negative religious coping.



**Fig. 4.** Primary treatment outcomes: worry.

religious coping ( $F(2, 117) = 15.30, p < .001, \eta^2 = .12$ ) decreased, and trust in God ( $F(2, 117) = 8.73, p < .005, \eta^2 = .07$ ) increased equally for all groups.

From T1 to T3, group  $\times$  time interactions remained significant for stress ( $F(2, 92) = 5.82, p < .005, \eta^2 = .11$ ), worry ( $F(2, 91) = 12.15, p < .001, \eta^2 = .21$ ), intolerance to uncertainty ( $F(2, 87) = 3.72, p < .05, \eta^2 = .08$ ) and positive religious coping ( $F(2, 87) = 3.39, p < .05, \eta^2 = .07$ ). At T3, the SIT group reported lower levels of stress than the WLC group ( $p < .01$ ). Levels of worry were lower in the SIT ( $p < .001$ ) and PMR ( $p < .05$ ) groups compared to the WLC group; the difference between SIT and PMR groups approached significance ( $p = .06$ ) with the SIT group reporting less worry. The SIT group also reported lower levels of intolerance of uncertainty ( $p < .05$ ) than the WLC group, lower levels of mistrust in God ( $p < .05$ ) than the PMR group, and higher levels of positive religious coping than the WLC group ( $p < .01$ ). Main effects for time remained significant for depression ( $F(2, 89) = 25.88, p < .001, \eta^2 = .23$ ), and negative religious coping ( $F(2, 87) = 22.26, p < .001, \eta^2 = .20$ ).

### 3.6. Religion as a predictor of treatment outcomes

To examine whether Orthodox affiliation was related to treatment outcomes in the SIT and PMR groups, moderation analyses (Aiken & West, 1991) were conducted using hierarchical regression. In each analysis, pre-treatment values were entered as predictors in Model 1, Orthodoxy and treatment group were dummy coded and entered as predictors in Model 2, and the multiplicative interaction of these two variables was added in Model 3. The interaction of Orthodoxy and group was not a significant predictor of post-treatment stress or worry in any of these analyses ( $r^2$  change ranging from .00 to .02). Thus, Orthodox and non-Orthodox participants were equally likely to report treatment gains in the SIT and PMR groups.

## 4. Discussion

In this study, efficacy of a SIT program in targeting was examined in a large sample of religious Jews suffering from elevated levels of stress and worry. To our knowledge, this is the first study to investigate efficacy of a SIT in the Jewish community, and the first study to evaluate a SIT delivered in an electronic format. Results of this investigation offer initial support for the efficacy of SIT for the treatment of anxiety symptoms among religious Jews. Participants in the SIT group reported significant reductions stress, worry,



depression, and intolerance to uncertainty. SIT participants further reported significantly increased trust in God and use of positive religious coping, and decreased mistrust in God and use of negative religious coping. Effect sizes were large for primary and secondary outcomes and moderate for spiritual outcomes. Symptom improvement was clinically significant; at pre-treatment, participants in the SIT group reported near-clinical levels of stress and worry (>2 SD above community norms) and at post-treatment and 6–8-week follow-up reported levels were in the normal range (<1 SD above community norms). Furthermore, the SIT group reported greater treatment gains in both primary outcomes (stress and worry), one of two secondary outcomes (intolerance of uncertainty), and two of four spiritual outcomes (positive religious coping and mistrust in God) compared to WLC participants. Surprisingly, PMR and WLC participants did not differ on most outcomes.

It is noteworthy that SIT participants reported higher levels of belief in treatment credibility, had greater expectations from treatment and were more likely to complete treatment than PMR participants. While this was predicted in the current study and is consistent with previous research suggesting that religious individuals prefer spiritually integrated to conventional treatment (Puchalski et al., 2001), it is possible that treatment credibility and expectancies drove the differences in treatment effects in the current study. Thus, while SIT may not be appropriate for some individuals within the Jewish community, these findings suggest that it is an important treatment option for Jewish individuals who consider SITs to be credible a priori. It is also interesting that Orthodox affiliation was not a predictor of treatment outcomes in the SIT group. As stated above, SIT is likely not appropriate for all Jewish individuals. Nevertheless, this surprising finding suggests that interest in SITs among Jews extends beyond the Orthodox community.

Results of this investigation have a number of general implications for the provision of spiritually integrated treatment. First, the SIT described in this study was tailored to the needs and interests of a sub-population through extensive collaboration with community leaders. Incorporation of culturally salient idioms and practices may have contributed to subjective preference for SIT over PMR. Cultural sensitivity may further have increased participant interest and motivation and thus helped to facilitate treatment completion. Second, it is notable that the SIT group reported a greater decrease in mistrust in God and intolerance to uncertainty in this study compared to PMR and WLC participants. It is possible that targeting the maladaptive core religious beliefs associated with mistrust in God may have led to a decrease in intolerance to uncertainty by reducing perceptions of threat and appraisals of danger. This underscores the importance of directly assessing for and addressing cognitions across spiritual as well as intrapersonal, interpersonal, and global domains when practicing treatment religious individuals. Third, the results of this study further suggest that it is possible to use a skill-based approach to restructure maladaptive spiritual beliefs within a relatively short (2-week) time-limited treatment program. Finally, despite the utilization of a fairly minimal grass-roots solicitation strategy and the lack of any monetary or other tangible compensation in this study, over 450 Jewish individuals from around the globe visited the study website to determine their eligibility to participate in the study. This level of interest indicates a desire from within the Jewish community for treatments that target stress and worry, and further suggests that greater sensitivity to spirituality may assist in disseminating empirically supported treatments to religious populations.

This study has a number of important limitations. While it was imperative to utilize Internet-based assessment in order to overcome barriers related to stigma and protect anonymity, this necessitated sole reliance on self-report and therefore clinician-administered and observational measures of symptoms were not

obtainable. Furthermore, generalizability of findings to clinical populations and to face-to-face implementation of SITs is not known. It is possible that symptom severity, therapist religiousness or other factors may impact effective use of SITs in the Jewish community in a clinical setting. Future research should investigate the implementation of SITs in clinical populations and examine its comparative efficacy to a broader set of treatment options. In the meantime, this study offers initial evidence to suggest that SITs are a suitable alternative to PMR for the relief of subclinical anxiety among religious Jews. More broadly speaking, this study suggests that SITs are deserving of our attention and worthy of further investigation.

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