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Educational Materials and Image Induction Increase Treatment Credibility

by

Zi Ling Fiona Low

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Abstract

Patient-perceived treatment credibility is linked to important outcome measures including symptom reduction, therapeutic alliance, patient satisfaction, and attrition rates. However, few studies have tested strategies to enhance treatment credibility. The present study investigates the effect of brief, written educational materials and the use of an image induction prime on perceptions of credibility for cognitive behavioral therapy and psilocybin-assisted therapy for depression. Participants (N = 493) rated the perceived credibility of depression treatments before and after reading brief educational materials. Half of the participants were asked an image induction question priming the construct of open-mindedness. Results indicate that brief educational materials of about 300 words significantly increased perceived treatment credibility for both therapies, with a large effect size (Cohen’s d = .91). The use of an image induction prime further increased perceived credibility for psilocybin-assisted therapy for depression (Cohen’s d = .38). These strategies offer an efficient and cost-effective way to enhance treatment credibility. Future studies testing variations of the image induction prime might prove fruitful for optimizing the technique.

Keywords: depression, treatment, credibility, psychoeducation, psilocybin
**Introduction**

Major depressive disorder, a prevalent and debilitating condition, affects one in five adults in the United States at some point in their lives (Hasin et al., 2018). Over 320 million people are affected globally (WHO, 2017). Over the past three decades, incidence rates have increased almost 50% (Liu et al., 2020). Depression is now the leading cause of disability worldwide as well as a major contributor to death by suicide (WHO, 2017). The condition is associated with impaired functioning in work performance, communication, daily living skills, and socialization (Nagata et al., 2020; Park & Jung, 2019), as well as a lower quality of life (Saarni et al., 2007). In the United States, the annual economic burden of depression was estimated at $210 billion in 2010 (Greenberg et al., 2015), although inflation has likely increased this figure today.

Cognitive behavioral therapy (CBT) is the most researched psychological treatment for depression. In CBT, therapists identify, challenge, and modify a client’s dysfunctional thoughts to enhance adaptive behavior and improve functioning (Cuijpers et al., 2008). Out-of-session activities help clients learn new ways of responding to stress. Behavioral activation, social skills training, and relaxation techniques are often employed, too. Meta-analyses indicate that CBT’s efficacy is comparable to pharmacotherapy in the short-term (Cuijpers et al., 2013), and superior to pharmacotherapy in reducing relapse in the longer-term (Vittengl et al., 2007). CBT performs similarly to other manualized non-pharmacological treatments including problem-solving therapy, interpersonal therapy, and nondirective supportive therapy (Cuijpers et al., 2013). However, these therapies help only about one third to half of patients (Cuijpers, 2017).

Investigations of psilocybin-assisted therapy (PAT) suggest that the plant-derived indoleamine produced by many mushrooms might hold promise in the treatment of depression.
PAT typically involves three steps: 1) preparation, 2) administration, and 3) integration (Reiff et al., 2020; Schenberg, 2018). In the preparation stage, the clinician establishes a therapeutic relationship with the client by gathering information about their problems, discussing meaningful aspects of their lives, explaining the process, and setting expectations (Johnson et al., 2008; Rucker et al., 2016). Psilocybin is ingested in the administration stage. Trained professionals monitor and support clients in accordance with established safety protocols. Sessions take place in comfortable and safe environs where clients wear eyeshades and listen to relaxing, instrumental music. An accompanying clinician encourages clients to attend to the thoughts, feelings, and memories that surface, while offering support and reassurance during any challenging moments (Johnson et al., 2008). Integration sessions take place after the psychoactive effects have subsided. These sessions aim to make sense of the psychedelic experience in a way that inspires novel insights and subsequent corrective behaviors (Earleywine et al., 2022). Symptom reduction with moderate to large effect sizes have been detected following psilocybin administration in conjunction with supportive psychotherapy (Carhart-Harris et al., 2016; Davis et al., 2021; Griffiths et al., 2016; Ross et al., 2016). Follow-ups show enduring benefits at the six- to twelve-month mark, and an absence of lasting adverse effects (Carhart-Harris et al., 2018; Griffiths et al., 2016; Gukasyan et al., 2022; Ross et al., 2016). A comparison of PAT and the antidepressant escitalopram found comparable changes in patient improvement (Carhart-Harris et al., 2021). Furthermore, the low toxicity ratio of psilocybin and lack of dependence effects (Gable, 2004; Rucker et al., 2016) makes PAT a potentially viable alternative to existing treatments for depressed individuals.

**Treatment Credibility**
Treatment credibility is defined as a patient’s perception of a treatment’s logicalness, suitability, and efficaciousness (Devilly & Borkovec, 2000). Prior studies link perceptions of treatment credibility with important treatment-related factors and outcomes. Among adult depressed patients, higher perceptions of credibility are associated with stronger therapeutic alliance, with a large effect size (Söchting et al., 2016). These results were replicated in a sample of youths with anxiety disorders (Fjermestad et al., 2018). Higher perceptions of credibility also predict greater treatment satisfaction among patients receiving CBT for chronic back pain (Smeets et al., 2008), and lower rates of premature treatment termination in a sample of women with anorexia nervosa (Jordan et al., 2017). A meta-analysis of the association between treatment credibility and patient outcomes indicate a small, but significant positive effect (Constantino et al., 2018).

Importantly, evidence suggests that perceptions of credibility are malleable and can be influenced by written materials. In a sample of individuals endorsing symptoms of disordered eating, psychoeducation materials presenting contrasting models of disease etiology impacted treatment credibility differentially (Farrell et al., 2015). In a non-clinical sample, the provision of a brief description outlining the treatment rationale and process increased perceived credibility for CBT for depression (Beshai et al., 2019). Furnishing participants with research evidence of a treatment’s efficacy also increased the perceived credibility of behavioral activation for depression (Curley et al., 2019). However, studies investigating the effects of brief, written educational materials on treatment credibility are limited and none to our knowledge have examined the impact on PAT for depression. Moreover, given the potential importance of patient-perceived treatment credibility on factors related to patient outcomes, other approaches for enhancing credibility are needed.
Image Induction

Social psychology suggests that individuals behave in a manner consistent with their self-identity. Research in this area demonstrates that manipulating an individual’s self-image can influence subsequent behavior, often with the goal of increasing desirable conduct. Applying a trait label that identifies the reason for a behavior as one that stems from an internal disposition produces subsequent action that is consistent with the labeled trait. For example, children who were labeled as “patient” demonstrate more self-control on a subsequent delayed-gratification task (Toner et al., 1980). Similar results appear in adult samples (Goldman et al., 1982; Kraut, 1973), and when other labels such as “charitable”, “tidy”, and “helpful” were used (Grusec & Redler, 1980; Kraut, 1973; Miller et al., 1975). One prevalent theory that accounts for this phenomenon concerns cognitive dissonance, which posits that an internal conflict occurs when one’s beliefs and actions do not align (Festinger, 1957). The individual thus modifies their behavior to resolve the cognitive dissonance. Several researchers assert that the temporality factor of such identity-based interventions is critical to success (Cialdini, 2016; Lequin et al., 2019). Recent activation of a specific identity likely has a larger effect on behavior. Thus, making a target identity salient immediately prior to the opportunity for the desired behavior likely creates the largest impact.

While experiments have typically manipulated self-image via labeling from an external source (e.g., a teacher commending a student for being tidy), one study had participants themselves affirm a targeted self-image through the use of a single question (Bulkan & Andersen, 2009). In a series of experiments, researchers asked passersby if they considered themselves to be helpful before asking if they were willing to take part in a lengthy survey. The image induction question proved effective in increasing compliance rates compared to a control
group. Results replicated when researchers used a written question instead of a verbal inquiry (Bolkan & Andersen, 2009). We posit that a similar method of priming might increase perceptions of treatment credibility if used in conjunction with the provision of educational materials. Those who endorse that they view themselves as “open-minded” likely will respond to educational materials with more dramatic changes in relevant attitudes.

**Current Study**

The aims of the present study are two-fold. First, we investigated the effect of brief, written educational materials on perceptions of credibility for two treatments (CBT and PAT) for depression. Based on previous work (Beshai et al., 2019; Curley et al., 2019), we included a brief description of the treatment rationale and process, as well as empirical evidence of the treatment’s efficacy. Second, we examined the effect of an image induction prime when the prime was applied before the provision of educational materials to determine if this intervention would further enhance perceptions of credibility. Specifically, we primed participants with a question related to the construct of open-mindedness. We asked: “Do you see yourself as open-minded?” We predict that perceptions of credibility will increase for both CBT and PAT following the provision of educational materials. Given the conceptual novelty of PAT for depression as well as the potential stigma regarding psychedelic substances, we predict that the image induction prime related to the construct of open-mindedness will further increase perceptions of credibility for PAT, but not for CBT.

**Methods**

**Participants**

Undergraduates from a university in the Northeastern United States participated. The University at Albany’s Institutional Review Board provided ethics approval. Participants earned
0.5 credits for participation, which could be used towards fulfilment of an academic requirement.

Data were generated initially by 604 participants. Of these, 53 participants did not provide consent or were under 18 years of age, 21 participants failed the attention check question embedded in the survey, and 37 participants failed more than one of the three test questions used to ascertain that the educational materials were read and understood. A final sample of 493 participants were included for data analysis. Most participants were female (72.0%; N = 355), 27.8% (N = 137) were male, and 0.2% (N = 1) did not report their biological sex. Participants ranged from 18 to 30 years and the mean age was 18.66 (SD = 1.25). Most participants identified as White (46.2%; N = 228), 21.1% (N = 104) identified as Black or African American, 17.6% (N = 87) identified as Hispanic or Latinx, 7.3% (N = 36) identified as Asian, 5.3% (N = 26) identified as multiracial, 1.2% (N = 6) identified as other ethnicity, 0.8% (N = 4) identified as Native Hawaiian or Pacific Islander, 0.2% (N = 1) identified as American Indian or Alaska Native, and 0.2% (N =1) did not report their ethnicity.

**Procedure**

Participants were randomly assigned to one of two treatment conditions (CBT or PAT) and one of two manipulation conditions (image induction condition or control condition). Thus, there were four groups: 1) CBT with image induction, 2) CBT with control, 3) PAT with image induction, and 4) PAT with control. Participants first rated their baseline familiarity with the treatment type (CBT or PAT) and their perceptions of its credibility. Participants were then presented with an image induction question or a control question. Following which, participants read brief educational materials about the treatment type, as detailed below. (Please see Appendix A and B.) Finally, participants rated their perceptions of credibility about the treatment
type again. Participants also reported demographic information, current depression symptoms, prior treatment history and prior psychedelic use.

**Measures**

**Treatment Familiarity.** One item was used to assess participants’ baseline familiarity with the treatment type: “How familiar are you with cognitive behavioral therapy / psilocybin therapy for depression?” Participants rated their familiarity on a scale from 0 (not familiar) to 100 (very familiar). Mean familiarity scores for CBT was 33.63 (SD = 31.72, range = 0-100), and mean familiarity scores for PAT was 19.91 (SD = 27.32, range = 0-100).

**Perceptions of Credibility.** Perceptions of credibility was measured with three items from the treatment credibility subscale of the Credibility and Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000). Participants rated the perceived credibility of the treatment (CBT or PAT) before and after they read the educational materials. Items queried about how logical the treatment appeared, how successful the treatment might be in reducing symptoms of depression, and how confident participants would be in recommending the treatment to a friend. Items were measured on a slider scale from 0 (not at all) to 100 (very logical/successful/confident). One additional item was used to assess participants’ beliefs about the effectiveness of the treatment: “Of all the people who complete CBT/PAT for depression, what percentage of them do you think are no longer depressed?” The item was similarly measured on a slider scale from 0 to 100. Slider scales were used to circumvent the issue of restricted ranges and provide sufficient variance to uncover findings consistent with theory where Likert-type scales might fail (Kemper et al., 2019). These four items were summed to produce a total credibility score at baseline and after participants read the educational materials. Internal consistency was acceptable (Cronbach’s alpha = .87 at baseline, and .85 after the educational materials were presented).
**Image Induction.** One item was used for the image induction manipulation. We asked participants: “Do you see yourself as open-minded?” The question was designed to increase the salience of an identity that was willing to consider new ideas in an unprejudiced fashion. The image induction prime was delivered immediately before participants were presented educational materials on CBT or PAT. The item was based on previous work demonstrating increased compliance to a request after an image induction prime containing the construct of helpfulness (Bolkan & Andersen, 2009). In the control groups, we asked: “Do you see yourself as someone with a good sense of humor?” We assumed that the activation of a self-image related to jocularity would not influence perceptions of treatment credibility. Among participants who received the image induction question, 95.3% (N = 225), responded “Yes” to indicate that they saw themselves as open-minded. Participants who responded “No” (4.7%; N = 11) were removed from subsequent analyses. Among participants in the control groups, 93.7% (N = 239) responded “Yes” to indicate that they saw themselves as someone with a good sense of humor. All participants in the control groups were included for data analyses.

**Educational Materials.** Participants read brief educational materials about either CBT or PAT. Treatment descriptions were 300-306 words in length. Each description outlined the treatment process, posited mechanisms of change, and provided data on treatment efficacy. The full descriptions appear in Appendix A and B. These educational materials built on previous work addressing the credibility of these treatments (Altman et al., 2022). Two licensed clinical psychologists, one licensed clinical social worker, and a psychology graduate student reviewed the descriptions to confirm that the treatments were accurately presented. One of the two clinical psychologists and the clinical social worker were graduates of a Psychedelic-assisted Therapies and Research certificate program.
The CBT description drew on meta-analytic reviews (Cuijpers, 2017) and emphasized the connection between thoughts, behaviors, and emotions; the development of cognitive flexibility and problem-solving skills; and the use of behavioral activation techniques. The material informed participants that CBT treatment generally requires 12-20 weekly sessions and symptom reduction has been observed in 50% to 65% of patients, with improvements lasting up to two years or more.

The PAT description also drew on published data (Davis et al., 2021; Johnson et al., 2014; Reiff et al., 2020; Schenberg, 2018), and emphasized the neurological action of psilocybin on the serotonergic system as well as the effects of mystical experiences; the rapid onset of symptom relief; and the absence of adverse long-term effects. Participants also read about the potential for challenging experiences or negative affect such as anxiety or sadness during the administration stage. Finally, the material informed participants that PAT typically includes two sessions set a few weeks apart and over 50% of patients no longer meet criteria for depression within a month.

After reading the educational materials, participants answered three multiple-choice test questions to demonstrate that they had read and understood the information. Only participants who correctly answered at least two of the three test questions were included in the analyses. Of those who were included in the analyses, 19.0% (N = 91) correctly answered two of the three test questions and 81.0% (N = 398) correctly answered all three test questions. Test questions appear in Appendix A and B. Participants also answered one additional question to ascertain the perceived informational quality of the treatment descriptions: “Do you think the description of CBT/PAT for depression was adequately informative?” Participants responded on a 3-point
Likert-type scale from 1 (not informative at all) to 3 (adequately informative). The mean score was 2.60 (SD = .50; CBT M = 2.61, SD = .50; PAT M = 2.58, SD = .50).

**Depressive Symptoms.** Participants completed The Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10; Andresen et al., 1994). The questionnaire comprised 10 items rated on a scale from 0 (rarely or none of the time) to 3 (most or all of the time). The summation of scores from the 10 items represent a measure of current depressive symptoms. Internal consistency was acceptable (Cronbach’s alpha = .84). In our sample, the mean CESD-R-10 score was 12.13 (SD = 6.04, range = 0-27).

**Treatment History.** Participants reported if they had undergone psychotherapy before, if they had participated in CBT, and if they had experienced a depressive episode before. A total of 20.8% (N = 100) participants reported undergoing psychotherapy at some point, of which 60.0% (N = 60) reported participating in CBT. Over half of the participants (54.0%; N = 259) endorsed experiencing at least one prior depressive episode.

**Psychedelic Use.** Participants reported if they had ever used psychedelics and if they had ever used psilocybin. In our sample, 10.0% (N = 48) had prior experience with psychedelics and 4.8% (N = 23) had prior experience with psilocybin.

**Attention Check.** One instructed response item was embedded in the survey to check for careless responding: “Please move the slider to a number greater than 70 here”. Participants who failed to respond appropriately (N = 21), were not included in the data analyses. Prior work suggests that such attention checks can decrease error variance and improve correlations among indicators of the same construct (Meade & Craig, 2012).

**Results**
Missing values for each credibility item were 1% or less. There were no missing values in participants’ pre-credibility ratings. Nine participants had missing values in post-credibility ratings. Post-credibility scores were calculated using person-mean imputation—an approach that works well when missing data is 20% or less (Downey & King, 1998). Skews on credibility scores were negative, but not more than -0.5. Standardization revealed one univariate outlier with a Z score less than -3.29. Mahalanobis distance revealed one multivariate outlier. Both outliers were removed. Final credibility scores ranged from 0 to 400. Details appear in Table 1.

A paired samples t-test revealed that post-education credibility scores (M = 249.09, SD = 71.90) significantly exceeded baseline credibility scores (M = 183.24, SD = 93.20), t(479) = 19.93, p < .05, Cohen’s d = 0.91. Baseline credibility scores were significantly higher for CBT (M = 208.40, SD = 83.93) compared to PAT (M = 146.14, SD = 94.00), t(478) = 7.59, p < .05, Cohen’s d = 0.71. However, the magnitude of the change was not significantly different between treatment groups (CBT M = 60.93, SD = 62.96; PAT M = 73.12, SD = 84.02), t(478) = 1.72, p > .05. The magnitude of change was significantly correlated with participants’ baseline credibility score (r = -.65, p < .05), such that higher baseline credibility scores were associated with a smaller magnitude of change in perceptions of credibility.

A repeated-measures ANOVA was conducted with time (pre- and post-educational materials) as the within-subjects factor and the combination of treatment and prime condition grouping (CBT + prime vs. CBT + control vs. PAT + prime vs. PAT + control) as the between-subjects factors. Sex, previous therapy experience, and previous psychedelic experience were entered as covariates to the model. All the covariates reached statistical significance, (sex: F(1, 471) = 5.64, p < .05; previous therapy experience: F(1, 471) = 10.43, p < .05; previous psychedelic experience: F(1,471) = 10.18, p < .05). Mean credibility scores differed significantly
across the time points (pre-education vs. post-education), F(1, 471) = 87.98, p < .05, indicating a main effect of educational materials. Mean credibility scores differed significantly across the four groups, F(3, 471) = 28.58, p < .05. The interaction effect was significant as well, F(3, 471) = 4.58, p < .05. Post hoc analysis with a Bonferroni adjustment revealed that the estimated marginal means in credibility scores was significantly higher in the CBT + prime group compared to the PAT + prime group (mean difference = 55.10, 95% CI [30.92, 79.28], p < .05), and significantly higher in the CBT + prime group compared to the PAT + control group (mean difference = 53.50, 95% CI [27.64, 79.36], p < .05. The estimated marginal means in credibility scores were also significantly higher in the CBT + control group compared to the PAT + prime group (mean difference = 62.76, 95% CI [40.44, 85.09], p < .05) and significantly higher in the CBT + control group compared to the PAT + control group (mean difference = 61.16, 95% CI [37.00, 85.32], p < .05). Figure 1 shows the change in credibility scores across time for all four experimental conditions.

The image induction prime only affected credibility scores in the PAT group such that post-education credibility scores in the PAT group that received the image induction prime (M = 87.05, SD = 86.78) significantly surpassed post-education credibility scores in the PAT group that received the control question (M = 55.27, SD = 77.24), t(192) = 2.66, p < .05, Cohen’s d = .38).

**Discussion**

College students rated the perceived credibility of CBT or PAT for depression before and after they read brief educational materials. Half of the participants responded to an image induction prime containing the construct of open-mindedness before reading the educational materials. The remaining participants received a control question in place of the image induction.
prime. We hypothesized that brief written educational materials would increase perceptions of credibility for both CBT and PAT, and the image induction prime would further increase perceptions of credibility for PAT but not for CBT. Both hypotheses were supported.

Educational materials significantly increased perceived treatment credibility for both treatments, with a large effect size. Perceived credibility at baseline was higher for CBT compared to PAT, which is likely due to the established nature of CBT as reflected in higher initial familiarity scores. However, the magnitude of change in perceived credibility did not differ significantly between CBT and PAT following the provision of educational materials. This finding suggests that the effect of educational materials might be stable, resulting in a constant increase in perceived treatment credibility across different treatment types, notwithstanding initial assessments. Baseline credibility scores were significantly and negatively correlated with the magnitude of change such that higher baseline credibility scores were associated with a smaller magnitude of change in perceptions of credibility. Higher baseline credibility scores might have been reflective of pre-existing knowledge about the treatments and as such, the educational materials did not provide new information, thus impacting credibility change to a smaller degree.

Few studies have investigated the effects of brief, written educational material on perceptions of treatment credibility and results from our study have important clinical implications. Our data suggest that psychoeducation can be delivered via brief, written materials of about 300 words, offering an efficient and cost-effective way to enhance treatment credibility. Outlining the treatment rationale and process as well as providing empirical data on treatment efficacy appear to be sufficient for enhancing credibility. Furthermore, our study is the first to examine the effect of such educational materials on perceptions of PAT for depression. Results
indicate that brief educational materials for PAT were as effective as those for CBT in enhancing credibility. Extant literature indicates that patient-perceived treatment credibility covaries with important outcome measures including symptom reduction, therapeutic alliance, patient satisfaction, and attrition rates (Constantino et al., 2018; Fjermestad et al., 2018; Jordan et al., 2017; Smeets et al., 2008; Söchting et al., 2016). Moreover, perceived treatment credibility might influence help-seeking behaviors; educational materials could enhance mental health literacy efforts in the community.

Our study is also the first to attempt to leverage consistency research from the field of social psychology to enhance perceived treatment credibility. Our findings show that a targeted, salient self-image can increase following a single text-based question, affecting change in receptiveness towards psychoeducation and subsequently enhancing perceived treatment credibility. The priming effect was relevant for PAT, and future studies should examine if this approach could be effective for other psychedelic-assisted therapies such as ketamine (Dore et al., 2019), MDMA (Vermetten & Yehuda, 2020), or ayahuasca (Palhano-Fontes et al., 2019). Furthermore, the simplicity of this technique could lend itself to a multitude of applications in clinical practice. Although we used the construct of open-mindedness in our study, the image induction question could plausibly be tailored for diverse needs. For example, clinicians might ask an image induction question related to “willingness to try new things” for clients who are resistant to therapist-suggested activities. Future studies testing variations of the image induction prime as well as different methods of delivery, such as verbal versus written, might prove fruitful for optimizing the technique.

Several limitations are worthy of note. The sample comprised undergraduate students who were taking an introductory psychology course. As such, these participants might have been
particularly amenable to the educational materials regarding psychotherapy. In addition, those in younger age groups tend to have more favorable attitudes towards psychedelics (Barnett et al., 2018; Corrigan et al., 2021), which might have influenced perceptions of credibility for PAT. Future studies using community samples with a more diverse age range, as well as clinical samples of depressed patients, might shed light on potential group differences. In our sample, the image induction prime did not have an impact on perceptions of CBT. It is possible that increasing the salience of a self-image related to the construct of open-mindedness was not effective for this sample who might have already been receptive to a well-established therapy model like CBT. The same image induction prime in a sample with more reservations towards psychotherapy in general could yield different results and warrants further investigation.
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**Table 1**

*Means and Standard Deviations of Credibility Scores at Baseline and Post Educational Materials*

<table>
<thead>
<tr>
<th></th>
<th>CBT</th>
<th>PAT</th>
<th>Control</th>
<th>Prime</th>
<th>CBT + Control</th>
<th>CBT + Prime</th>
<th>PAT + Control</th>
<th>PAT + Prime</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base</strong></td>
<td>208.40 (83.93)</td>
<td>146.14 (94.00)</td>
<td>192.15 (91.25)</td>
<td>173.13 (94.55)</td>
<td>210.71 (85.47)</td>
<td>205.00 (81.86)</td>
<td>155.02 (91.59)</td>
<td>139.22 (95.68)</td>
</tr>
<tr>
<td><strong>Post</strong></td>
<td>269.32 (60.20)</td>
<td>219.27 (77.33)</td>
<td>251.02 (74.41)</td>
<td>246.90 (69.04)</td>
<td>271.39 (60.09)</td>
<td>266.29 (60.49)</td>
<td>210.29 (83.44)</td>
<td>226.27 (71.82)</td>
</tr>
<tr>
<td><strong>Change</strong></td>
<td>+ 60.93 (62.96)</td>
<td>+ 73.12 (84.02)</td>
<td>+ 58.87 (68.92)</td>
<td>+ 73.76 (75.49)</td>
<td>+ 60.68 (64.53)</td>
<td>+ 61.29 (60.86)</td>
<td>+ 55.27 (77.24)</td>
<td>+ 87.05 (86.78)</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are presented in parenthesis. CBT = cognitive behavioral therapy; PAT = psilocybin-assisted therapy; Control = control question; Prime = image induction question; Base = credibility score at baseline, Post = credibility score after participants read the educational materials; Change = Post minus Base.
Figure 1

Change in credibility scores across time for all four experimental conditions with sex, previous therapy experience, and previous psychedelic experience entered as covariates.

Note. CBT = cognitive behavioral therapy; PAT = psilocybin-assisted therapy; Control = control question; Prime = image induction question; Time 1 = credibility score at baseline, Time 2 = credibility score after participants read the educational materials.
Appendix A

Brief Educational Materials About Cognitive Behavioral Therapy (CBT) and Associated Test Questions

Cognitive Behavioral Therapy for Depression

Over 150 research studies support cognitive behavior therapy (CBT) for depression. The treatment rests on a key idea: thoughts and actions affect emotions. Generally, people whose thoughts are flexible, realistic, and adaptive report better moods. People are also happier doing activities that they find meaningful and fun. CBT therapists listen attentively to form a good relationship with clients. They then ask clients about their thoughts to help them move from dysfunctional attitudes to more adaptive ones. For example, depressed people might think “Everyone should like me or I am a failure.” The therapists might ask clients to examine thoughts like this one to establish how adaptive or true they are. They likely ask about alternative perspectives, too. Eventually, clients can find themselves with more flexible, forgiving thoughts. They might think, “I would prefer to have lots of people like me. If some people don’t, though, it’s not a disaster.”

CBT therapists also focus on actions. Discussions help clients discover their own values. Then, they can plan appropriate tasks for each day. Some clients realize that they need to change what they do and how they spend their time. Eventually, they schedule each week to include leisure time, socializing, and work that they find meaningful. They learn to solve problems, too. Then they tackle essential tasks that they might have been avoiding. They also make sure that they get appropriate amounts of rest. After 12-20 weekly sessions, at least 50-65% of clients improve dramatically. Clients in this therapy consistently do better than others. They are less
depressed than clients who get a placebo pill. They improve more than clients who had to wait to start treatment. They also do better than clients who meet weekly with the therapist simply to talk about their feelings. Improvement can last two years or more.

**Test Questions for CBT**

Please answer these questions to show that you understand the treatment described above.

1. CBT for depression focuses on:
   a. Uncovering childhood traumas
   b. A client’s thoughts
   c. The interpretation of dreams

2. A CBT therapist will likely ask clients about:
   a. How they view the world
   b. If they were fed with a bottle
   c. Allergic reactions to medications

3. CBT for depression usually includes:
   a. 12 to 20 weekly sessions
   b. 45-minute sessions on 4 days of each week
   c. Aerobic exercise
Appendix B

Brief Educational Materials About Psilocybin-assisted Therapy (PAT) for Depression and Associated Test Questions

Psilocybin Treatment for Depression

Several studies suggest that psilocybin, the active ingredient in “magic” mushrooms, can help depression. The substance interacts with many biological systems. One of which is the serotonergic system, which is linked to mood. Most other medications for depression require small, daily doses. These medications take weeks to heighten mood. In contrast, psilocybin treatment relies on only a couple of doses. Symptoms improve very quickly. Other medications for depression may cause unwanted side effects and withdrawal. In contrast, there are few negative long-term effects reported with psilocybin treatment.

Treatment begins when clients meet the guide. The guide explains the procedure and answer questions. These meetings help clients develop a trusting relationship with the guide. Clients ingest psilocybin in a safe space. Clients typically wear eyeshades during the sessions. They will also listen to music. Guides encourage clients to look inward. Clients lie down and focus on their experience. Sessions last approximately 5 hours. Reactions to psilocybin can be pleasant. They can also be challenging. Guides offer reassurance and encouragement. Clients tend to report mystical experiences after 30-60 minutes. These experiences are feelings of unity, peace, and joy. Space and time may feel different than usual. Those who feel at one with the universe tend to improve the most. Some clients also report anxious or weepy periods during these sessions.

A typical treatment includes two sessions a couple weeks apart. After ingesting
psilocybin, clients return for integration sessions. In these integration sessions, clients discuss their experiences. They relay any insights, too. They often discuss their plans for the future. Most clients report at least a 50% decrease in depressive symptoms one week later. Over 50% of clients no longer qualify for a diagnosis of depression when they report symptoms one month later. Although the research is in its early stages, psilocybin seems to hold a lot of promise.

**Test Questions for PAT**

Please answer these questions to show that you understand the treatment described above.

1. Psilocybin treatment for depression involves:
   a. Taking a pill daily
   b. Keeping a dream journal
   c. Sessions in the presence of a guide

2. Psilocybin treatment focuses on:
   a. The client’s inner experience
   b. Learning social skills
   c. Making dietary changes

3. The beneficial effects of psilocybin treatment for depression:
   a. Can be felt quickly
   b. Take weeks or months to occur
   c. Usually comes with unwanted side effects