Preliminary Findings on Trainee-Delivered Online Brief Cognitive Behavioral Therapy (Brief-CBT) for Reducing Depression, Anxiety, and Stress among Working Adults in Klang Valley

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Cognitive Behavioral Therapy (CBT) is well-established for managing depression, anxiety, and stress, but traditional formats can be time-intensive and less accessible for working adults. This pilot study examined the feasibility and preliminary outcomes of trainee-delivered online Brief-CBT among working adults in Klang Valley, Malaysia. Twelve participants were recruited using purposive sampling, though one withdrew, resulting in a final sample of 11. Six Clinical Psychology trainees from the University of Cyberjaya delivered five online sessions of Brief-CBT. Depression, anxiety, and stress were assessed pre- and post-intervention using the Depression Anxiety and Stress Scale-21 (DASS-21). Paired-samples *t* tests revealed significant reductions across all outcomes, with large effect sizes (depression, $d = 0.86$; anxiety, $d = 1.15$; stress, $d = 0.98$). Cronbach's α exceeded .90 for all subscales, and factor analysis supported the DASS-21's three-factor structure, providing preliminary evidence of reliability and construct validity in this context. These findings provide pilot-level support for trainee-delivered online Brief-CBT as a feasible and scalable mental health intervention for Malaysian working adults, while underscoring the need for larger, more diverse studies with mixed-methods designs and long-term follow-up.

Keywords: Brief Cognitive Behavioral Therapy (Brief-CBT); online CBT; depression; anxiety; stress

Cognitive behavioral therapy (CBT) has proven effective in helping university students and employees manage work-related stress and irrational thoughts (Igwe et al., 2024). However, traditional CBT can be time-consuming, often requiring 12 to 20 sessions, which can limit its accessibility for working adults (Cully et al., 2020). This issue is particularly relevant in Malaysia, where a national study highlights that 53% of working individuals experience high levels of work-related stress (Chua, 2020). The demand for more accessible mental health interventions is therefore critical.

The need for flexible treatment options is underscored by common barriers to traditional therapy, such as stigma, cost, time constraints, and geographic limitations. Brief-CBT addresses these barriers by condensing the number of sessions to 4 to 8 and focusing on specific problems that require resolution (Cully et al., 2020). This approach positions Brief-CBT as a potentially practical and viable option for working adults who may not have the time or resources for extended therapy. While international studies have demonstrated the benefits of Brief-CBT, Malaysia faces unique contextual challenges such as workplace stigma, limited employer involvement in mental health, and varying levels of digital literacy. These factors may influence both the uptake and effectiveness of online interventions, underscoring the need for locally grounded research.

Despite the growing recognition of the importance of mental health, a startlingly low percentage of employers are aware of or implement effective well-being interventions. A recent survey found that only 13% of employers are knowledgeable about well-being interventions that can help manage and reduce stress among employees (Murugesan, 2023). This suggests that even when effective treatments like Brief-CBT are available, they are underutilized due to a lack of employer engagement and knowledge.

Digital mental health interventions (DMHIs) have been created as an alternative to conventional mental health treatments, potentially making them more accessible and appealing to certain individuals (Lattie et al., 2022). In the same study, Lattie et al. (2022) pointed out that many online CBT programs used in routine healthcare settings, mainly outside the United States, have shown clinically significant results, though the effects are typically smaller than those observed in highly controlled trials.

Although these findings highlight the potential of digital interventions, adoption in Malaysia has been slower. Possible reasons include cultural attitudes toward mental health, lower levels of digital literacy, and limited integration of mental health programs within workplaces. These challenges exist despite alignment with Malaysia's healthcare policy, particularly the national agenda for digital health transformation outlined in the Twelfth Malaysia Plan (2021–2025), which emphasizes the integration of digital technologies into healthcare delivery to improve efficiency and reach. Nevertheless, despite its promise, the implementation of DMHIs in Malaysia has progressed more slowly than anticipated (Payne et al., 2020).

While international studies support the effectiveness of Brief-CBT, cultural stigma, limited employer engagement, and digital literacy gaps in Malaysia may moderate its uptake, underscoring the need for localized research.

Problem Statement and Research Gap

Depression, anxiety, and stress have profound effects across biological, psychological, and social domains, making them critical areas of focus in mental health interventions (World Health Organization, n.d.).

Depression, for instance, disrupts neurotransmitter balance, particularly serotonin and dopamine, leading to symptoms such as persistent fatigue, changes in appetite, and sleep disturbances (Czerepak, 2023). Psychologically, it distorts thinking patterns, fostering feelings of hopelessness and worthlessness that impair decision-making and reduce motivation (Chand & Arif, 2022). Socially, depression often results in withdrawal from social interactions, which strains relationships and deepens isolation, further exacerbating the condition (Teo et al., 2020).

Anxiety, similarly, exerts significant influence on various aspects of life. Biologically, chronic anxiety can trigger an overactive sympathetic nervous system, leading to physical symptoms such as increased heart rate, muscle tension, and gastrointestinal issues (Chand & Marwaha, 2023). Psychologically, anxiety manifests as excessive worry and fear, often resulting in racing thoughts, difficulty concentrating, and a heightened state of alertness that can be mentally exhausting (American Psychiatric Association, 2022). According to Hamm (2019), on a social level, anxiety can cause individuals to avoid situations or interactions that trigger their fears. This may lead to social withdrawal, challenges in forming and maintaining relationships, and a diminished quality of life.

Stress, with its wide-ranging impact, also significantly affects biological, psychological, and social well-being. Biologically, chronic stress activates the hypothalamic-pituitary-adrenal (HPA) axis, leading to elevated cortisol levels that contribute to health issues such as cardiovascular problems, weakened immune function, and digestive disorders (Hinds & Sanchez, 2022). Psychologically, stress induces feelings of overwhelm, irritability, and difficulty concentrating, which alters how people perceive the value of potential rewards or punishments and impairs problem-solving and decision-making abilities (Porcelli & Delgado, 2017). Socially, prolonged stress can strain relationships as individuals may become irritable, hostile, withdrawn, or less engaged, leading to conflicts and social isolation (Sandi & Haller, 2015).

These pervasive effects of depression, anxiety, and stress highlight the critical need for effective mental health interventions. Brief-CBT, supported by evidence for its role in reducing stress and improving mental health outcomes, particularly among working adults and university students (Cully et al., 2020), emerges as a promising approach. However, Digital Mental Health Interventions (DMHIs) like Brief-CBT face challenges such as engagement issues, digital literacy concerns, and data privacy matters, necessitating ongoing research to validate their applicability in real-world settings (Smith et al., 2023).

A significant barrier to the broader implementation of Brief-CBT in the workplace is the lack of employer awareness and engagement in mental health interventions. Factors contributing to this gap include a lack of interest, resources, priority, awareness, and knowledge among employers (Coppens et al., 2023). Increasing awareness and education about Brief-CBT among employers could be a crucial step in bridging this gap, as the lack of awareness and implementation leaves a substantial portion of the workforce without adequate support for managing stress. Investing in mental health programs, however, can yield significant benefits, including enhanced employee productivity, improved work performance, and reduced work impairment and decisional conflict (Prudenzi et al., 2024).

Despite the global recognition of Cognitive Behavioral Therapy (CBT) as an effective treatment for depression, anxiety, and stress, there is a notable lack of comprehensive studies examining the outcomes of Brief-CBT among working adults in Klang Valley. The unique stressors faced by working adults in this region—such as cultural attitudes toward mental health, workplace culture, and digital literacy, have not been adequately explored, leaving a significant gap in the literature regarding the applicability and effectiveness of Brief-CBT within this demographic.

By addressing these gaps, this research aims to contribute to the development of effective mental health interventions that can be practically implemented in the Malaysian workplace, ultimately improving the mental health and well-being of working adults in Klang Valley.

Significance of Study

This study aims to bridge the gap by evaluating the feasibility and preliminary outcomes of Brief-CBT in reducing depression, anxiety, and stress among working adults. By exploring the feasibility and preliminary outcomes of trainee-delivered interventions, the study seeks to provide evidence for its use as a practical and accessible option for managing stress within the working population. The ultimate goal is to contribute to improved mental health and productivity among working adults. Furthermore, the study

intends to raise awareness among employers about the benefits of well-being interventions, encouraging broader implementation of such programs in the workplace. In this way, the study is crucial in developing targeted, short-term mental health interventions that could alleviate depression, anxiety, and stress, while also enhancing the overall well-being of Malaysia's workforce.

For employers, the findings from this study suggest that trainee-delivered online Brief-CBT could provide a cost-effective and scalable mental health intervention that can be integrated into existing employee wellness programs. Addressing issues of depression, anxiety, and stress may contribute to improved job performance, reduced absenteeism, and enhanced workplace productivity. These outcomes could, in turn, reduce turnover rates and foster a more positive work environment, factors that are essential for achieving long-term organizational success.

For employees, particularly those in the Klang Valley, this study highlights the accessibility and potential benefits of online Brief-CBT delivered by trainees. By reducing common mental health challenges such as depression, anxiety, and stress, employees may experience improved psychological well-being, benefiting both their personal and professional lives. This may also foster a more supportive workplace culture where mental health is prioritized, leading to greater job satisfaction and overall quality of life.

The findings may also inform government policies and initiatives aimed at improving mental health care accessibility in Malaysia. With mental health increasingly recognized as a public health priority, trainee-delivered online Brief-CBT could be considered as one option for reaching broader populations, particularly in urban areas like Klang Valley. This could support the strategic allocation of resources and the development of mental health programs that are both effective and cost-efficient, thereby strengthening Malaysia's overall mental health infrastructure.

For researchers, this study contributes to the growing body of literature on the feasibility of Brief-CBT, particularly in the context of online delivery by trainees. It opens opportunities for further research on scalability and sustainability in diverse populations. Additionally, it could provide a foundation for comparative studies examining trainee-delivered versus professionally delivered CBT, as well as investigations of long-term outcomes.

Finally, mental health practitioners, including psychologists, counsellors, and trainee therapists, may benefit from the practical insights provided by this study. For trainees, the findings highlight the value of their role in delivering CBT and may encourage training programs to incorporate more online therapy modules. For established practitioners, this study offers a model for integrating trainee-delivered services into practice, potentially expanding service reach while maintaining high standards of care.

Research Questions

1. Is there a significant difference in the level of depression pre and post online Brief-CBT intervention?
2. Is there a significant difference in the level of anxiety pre and post online Brief-CBT intervention?
3. Is there a significant difference in the level of stress pre and post online Brief-CBT intervention?

Hypothesis

1. H0: There is no significant difference in the level of depression between pre and post online Brief-CBT intervention.

H1: There is a significant difference in the level of depression between pre and post online Brief-CBT intervention.

2. H0: There is no significant difference in the level of anxiety between pre and post online Brief-CBT intervention.
   H1: There is a significant difference in the level of anxiety between pre and post online Brief-CBT intervention.
3. H0: There is no significant difference in the level of stress between pre and post online Brief-CBT intervention.
   H1: There is a significant difference in the level of stress between pre and post online Brief-CBT intervention.

Research Objectives

1. To investigate the difference in the level of depression pre and post online Brief-CBT intervention among working adults.
2. To investigate the difference in the level of anxiety pre and post online Brief-CBT intervention among working adults.
3. To investigate the difference in the level of stress pre and post online Brief-CBT intervention among working adults.

Conceptual Definition

Depression is conceptually defined as a negative affective state characterized by persistent sadness, pessimism, and despondency that significantly interfere with daily functioning. It involves physical, cognitive, and social changes, such as altered eating or sleeping habits, lack of energy or motivation, difficulty concentrating or making decisions, and withdrawal from social activities (APA Dictionary of Psychology, 2018c).

According to the APA Dictionary of Psychology (2018a), anxiety is defined as a prolonged, future-oriented response to a vague or diffuse threat, accompanied by physical symptoms such as muscle tension, rapid breathing, and an increased heart rate. Unlike fear, which is a short-term response to a specific threat, anxiety is more enduring and generalized.

Stress is defined as the physiological or psychological response to internal or external stressors, leading to changes that affect nearly every system in the body. It may manifest as symptoms such as palpitations, sweating, shortness of breath, and increased negative emotions, or as stress-related conditions like the general adaptation syndrome. Stress can contribute to both mental and physical health issues, reducing overall quality of life (APA Dictionary of Psychology, 2018b).

Operational Definition

Depression, anxiety, and stress were assessed using the Depression, Anxiety, and Stress Scale – 21 items (DASS-21), developed by Lovibond and Lovibond (1995). The DASS-21 is a self-report instrument designed to measure the emotional states of depression, anxiety, and stress experienced over the past week. It comprises 21 items, with seven items allocated to each of the three subscales. Respondents rated how much each statement applied to them using a 4-point Likert scale ranging from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much or most of the time”).

Subscale scores were calculated by summing the scores of the relevant seven items and multiplying the total by two, following the DASS-21 scoring protocol. This produced a score ranging from 0 to 42 for each subscale, where higher scores reflect greater symptom severity. The

scores were interpreted according to established severity categories:

- **Depression**: normal (0–9), mild (10–13), moderate (14–20), severe (21–27), and extremely severe (28+);
- **Anxiety**: normal (0–7), mild (8–9), moderate (10–14), severe (15–19), and extremely severe (20+);
- **Stress**: normal (0–14), mild (15–18), moderate (19–25), severe (26–33), and extremely severe (34+).

In this research, participants who scored in the moderate, severe, or extremely severe range on at least one of the three subscales, depression, anxiety, or stress, were operationally defined as experiencing significant psychological distress and were included in the analysis. The DASS-21 has demonstrated strong internal consistency and construct validity in both clinical and non-clinical populations. The instrument was administered via an online questionnaire, and responses were interpreted in accordance with standardized scoring guidelines.

Conceptual Framework

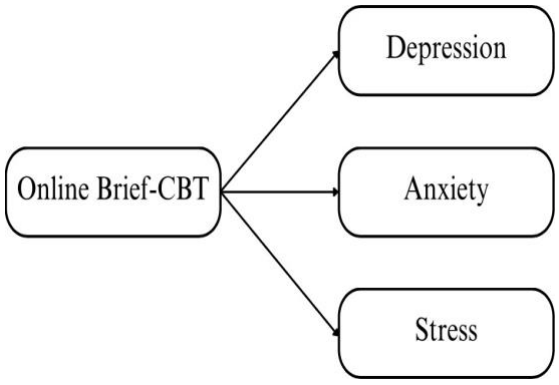

Figure 1 Conceptual Framework

In this framework, online Brief-CBT is designed to identify and challenge maladaptive thoughts and beliefs that contribute to depression, anxiety, and stress among working adults. Through structured, short-term online interventions, the therapy helps individuals reframe negative thoughts, develop healthier coping strategies, and potentially reduce these symptoms. The online format enhances accessibility and convenience, while trainee involvement allows for scalable intervention, ultimately aiming to reduce depression, anxiety, and stress, though outcomes should be regarded as preliminary.

Theoretical Framework

The theoretical framework of Cognitive Behavioral Therapy (CBT) is often represented by the CBT triangle, which illustrates the interconnectedness of thoughts, emotions, and behaviors. In this context, maladaptive thoughts in working adults may lead to heightened levels of depression, anxiety, and stress, which in turn negatively affect emotions and behaviors.

Through trainee-delivered online Brief-CBT, the aim is to intervene in this cycle by helping participants identify and challenge distorted thoughts. By doing so, the therapy seeks to alter the associated negative emotions and maladaptive behaviors, contributing to improved mental well-being. The online format makes the therapy more accessible for busy working adults, while the involvement of trainees supports scalability. This framework underscores the potential of brief, structured interventions to provide meaningful improvements in the mental health of working adults in a modern, digital environment such as Klang Valley.

Literature Review

Cognitive Behavioral Therapy (CBT)

In the 1960s, Aaron Beck developed Cognitive Behavioral Therapy (CBT), also

known as cognitive therapy. Since its inception, extensive research has validated its effectiveness in treating a wide range of psychiatric disorders, including depression, anxiety disorders, eating disorders, substance abuse, and personality disorders. CBT has been adapted for various populations, children, adolescents, adults, couples, and families, demonstrating its broad applicability. Its benefits extend beyond psychiatric conditions to address various non-psychiatric issues as well (Chand et al., 2023). Additionally, studies have shown that CBT remains effective in treating depression and other mental disorders within typical clinical settings (Samaan et al., 2020).

CBT focuses on enhancing client functioning by exploring the connections between thoughts, feelings, and behaviors, especially those related to problematic symptoms. The therapist works with the client to critically examine these aspects and encourage more adaptive behaviors and outcomes. This process helps clients identify and modify less adaptive thought and behavior patterns, fostering new ways of thinking and coping (King & Boswell, 2019).

The primary goal of CBT is to address and alter distorted, unhelpful, or dysfunctional beliefs, attitudes, and behaviors through a variety of therapeutic techniques. Clients are encouraged to explore how their thoughts, emotions, and behaviors are interconnected and to critically evaluate and challenge existing thought patterns, emotional responses, and behaviors (Wiener & Timmermanis, 2012).

Beyond this, CBT seeks to eliminate avoidant and safety-seeking behaviors that impede the correction of faulty beliefs. This approach aids in stress management, helping reduce stress-related disorders and enhancing overall mental health. By fostering more balanced thinking, CBT improves individuals' ability to manage stress effectively (Nakao et al., 2021).

Brief-CBT

Typically, CBT involves weekly 60-minute sessions over 8 to 12 weeks, which can be time-consuming (Chand et al., 2023). To address this, Brief-CBT was developed as a more condensed version of traditional CBT. Brief-CBT retains the core principles of CBT while offering a more efficient and flexible approach, making it suitable for various settings and formats, including online delivery (Center for Substance Abuse Treatment, 1999).

Online CBT

Research highlights the potential of Brief-CBT in different formats. For instance, Svärdman et al. (2022) found that online CBT was associated with reductions in stress, anxiety, and depressive symptoms among adults experiencing high stress levels. This is consistent with Barrett and Stewart (2020), who reported that internet-based CBT alleviated stress. These findings highlight the potential of digital platforms to expand access to therapeutic interventions, making mental health support more widely available.

The convenience and flexibility of online CBT allow individuals to engage in therapy at their own pace and from the comfort of their homes, which is particularly beneficial for those with busy schedules or limited access to in-person therapy. Research by Kotera et al. (2021) supports this, showing that online therapy can be especially helpful for clients with demanding lifestyles.

Moreover, the structured nature of CBT, combined with the scalability of online platforms, suggests that internet-based interventions could offer a cost-effective solution for addressing mental health issues. Baumann et al. (2020) emphasize this potential, noting that online CBT can effectively reach larger audiences while

managing costs. This growing body of evidence reinforces the value of incorporating online CBT into mental health care strategies to enhance outcomes for individuals managing stress, anxiety, and depression.

Although these international findings are encouraging, the Malaysian context presents unique challenges. Cultural stigma toward mental health, limited employer-driven wellness programs, and varying levels of digital literacy may affect the accessibility, uptake, and effectiveness of online CBT. Therefore, while evidence supports its promise globally, localized research is necessary to determine feasibility in Malaysia.

CBT for Depression

CBT is widely recognized for its effectiveness in treating depression and depressive symptoms, as reported by López-López et al. (2019). Internet-delivered CBT has been shown to produce both immediate and sustained reductions in depressive symptoms, making it a highly accessible and convenient treatment option (Sztein et al., 2017). Whether administered in-person or online, CBT not only alleviates symptoms during treatment but also offers long-term benefits, reducing the likelihood of relapse (Chen et al., 2022).

CBT for Anxiety

CBT is consistently effective in treating anxiety and anxiety-related disorders. By focusing on identifying and challenging distorted thought patterns and maladaptive behaviors, CBT helps individuals manage anxiety more effectively (Kaczkurkin & Foa, 2015). Its structured approach allows individuals to gradually confront and reframe their fears, leading to lasting improvements (Curtiss et al., 2021). CBT has proven beneficial across various anxiety disorders, including generalized anxiety disorder, social anxiety, and panic disorder, demonstrating its versatility.

CBT for Stress

Research indicates that CBT provides patients with practical coping strategies and problem-solving skills, leading to significant reductions in stress (Abdelaziz et al., 2024). CBT helps individuals develop a more balanced perspective on stressors, thereby mitigating their impact (Nakao et al., 2021). Its structured, goal-oriented nature enables individuals to manage stress effectively in both acute situations and long-term stress management, enhancing overall well-being.

Online Brief-CBT for Depression, Anxiety, and Stress

In summary, CBT is a well-established treatment for a range of mental health disorders. Recognized as a cornerstone of mental health care, it addresses various issues through tailored treatment protocols. Traditional CBT involves weekly 60-minute sessions over 8 to 12 weeks, which can be time-consuming. This led to the development of Brief-CBT, a condensed version that retains CBT's core principles but offers a more efficient and flexible approach. Brief-CBT is adaptable to different settings and formats, including online delivery.

Recent studies have reported that online CBT may reduce stress, anxiety, and depressive symptoms. The convenience and accessibility of online platforms make such interventions especially useful for individuals with busy schedules or limited access to in-person therapy. International evidence highlights that online CBT can significantly improve depressive and anxiety symptoms across different populations and has also shown promise in reducing stress-related difficulties (Luangphituck et al., 2023). However, these findings may not be directly

transferable to Malaysia, where cultural stigma toward mental health, limited employer-driven wellness initiatives, and uneven digital literacy remain pressing challenges. These contextual differences suggest that, despite robust international evidence, localized studies are needed to examine how workplace culture, organizational support, and digital readiness may moderate intervention uptake and outcomes. Such research is essential to establish the feasibility and acceptability of online Brief-CBT for Malaysian working adults.

Although robust international findings support the promise of online CBT, local barriers such as workplace stigma, limited employer wellness initiatives, and uneven digital literacy may constrain effectiveness in Malaysia. Thus, localized studies are required to validate applicability within the Malaysian workforce.

Research Methodology

Research Design

This study employed an experimental, quantitative pretest–posttest design to evaluate the feasibility, acceptability, and preliminary outcomes of online Brief Cognitive Behavioral Therapy (online Brief-CBT) in reducing depression, anxiety, and stress among working adults in Klang Valley. The target population included working adults aged 18 and above who were experiencing moderate to high levels of these psychological conditions.

Sample Size Calculation

Li et al. (2020) conducted a similar study, and based on their findings, Cohen's *d* for each scale was used to calculate the effect size for the paired-samples *t* test. The formula is shown below:

	Baseline	After intervention
	Intervention group	
Depression scale (mean, SD)*	11.0 (3.30)	7.98 (2.42)
Anxiety scale (mean, SD)*	17.1 (4.44)	10.3 (3.70)
Stress scale (mean, SD)*	16.8 (3.59)	13.1 (3.44)
Total DASS-21 (mean, SD)*	45.0 (8.50)	31.4 (7.42)

Result from study by Li et al. (2020)

$$SD_{\text{diff}} = \sqrt{\left(\frac{SD_{\text{pre}}^2 + SD_{\text{post}}^2}{2}\right)}$$

Where *M*pre and *M*post are the means of the pretest and posttest scores, and *SD*diff is the standard deviation of the differences between paired observations. The standard deviation was calculated as:

Based on the result above, Cohen's d for each scale is calculated as below:

Depression Scale (Intervention Group)	$$\text{Mean Difference} = 11 - 7.98 = 3.02$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{3.3^2 + 2.42^2}{2}\right)} = \sqrt{\left(\frac{10.89 + 5.86}{2}\right)} = \sqrt{8.375} \approx 2.89$$ $$d = \frac{3.02}{2.89} \approx 1.04$$
Depression Scale (Control Group)	$$\text{Mean Difference} = 10.1 - 8.07 = 2.03$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{3.17^2 + 2.06^2}{2}\right)} = \sqrt{\left(\frac{10.05 + 4.24}{2}\right)} = \sqrt{7.14} \approx 2.67$$ $$d = \frac{2.03}{2.67} \approx 0.76$$
Anxiety Scale (Intervention Group)	$$\text{Mean Difference} = 17.1 - 10.3 = 6.8$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{4.44^2 + 3.7^2}{2}\right)} = \sqrt{\left(\frac{19.73 + 13.69}{2}\right)} = \sqrt{16.71} \approx 4.09$$ $$d = \frac{6.8}{4.09} \approx 1.66$$
Anxiety Scale (Control Group)	$$\text{Mean Difference} = 16.5 - 11.2 = 5.3$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{4.81^2 + 3.67^2}{2}\right)} = \sqrt{\left(\frac{23.16 + 13.49}{2}\right)} = \sqrt{18.33} \approx 4.28$$ $$d = \frac{5.3}{4.28} \approx 1.24$$

Stress Scale (Intervention Group)	$$\text{Mean Difference} = 16.8 - 13.1 = 3.7$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{3.59^2 + 3.44^2}{2}\right)} = \sqrt{\left(\frac{12.88 + 11.83}{2}\right)} = \sqrt{12.36} \approx 3.51$$ $$d = \frac{3.7}{3.51} \approx 1.08$$
Stress Scale (Control Group)	$$\text{Mean Difference} = 17.1 - 12.8 = 4.3$$ $$SD_{\text{diff}} = \sqrt{\left(\frac{3.71^2 + 2.47^2}{2}\right)} = \sqrt{\left(\frac{13.76 + 6.11}{2}\right)} = \sqrt{9.94} \approx 3.15$$ $$d = \frac{4.3}{3.15} \approx 1.37$$

Average effect size for intervention group	$$\frac{1.04 + 1.66 + 1.08}{3} = \frac{3.78}{3} \approx 1.26$$
Average effect size for control group	$$\frac{0.76 + 1.24 + 1.37}{3} = \frac{3.37}{3} \approx 1.12$$

Given that both groups exhibited large effect sizes, a large effect size was selected in G*Power to ensure a conservative estimate. Consequently, an effect size of *d* = 1.20 was chosen for calculating the sample size. This large effect size reflects the substantial results observed in prior studies and helped ensure that the current study would achieve adequate statistical power.

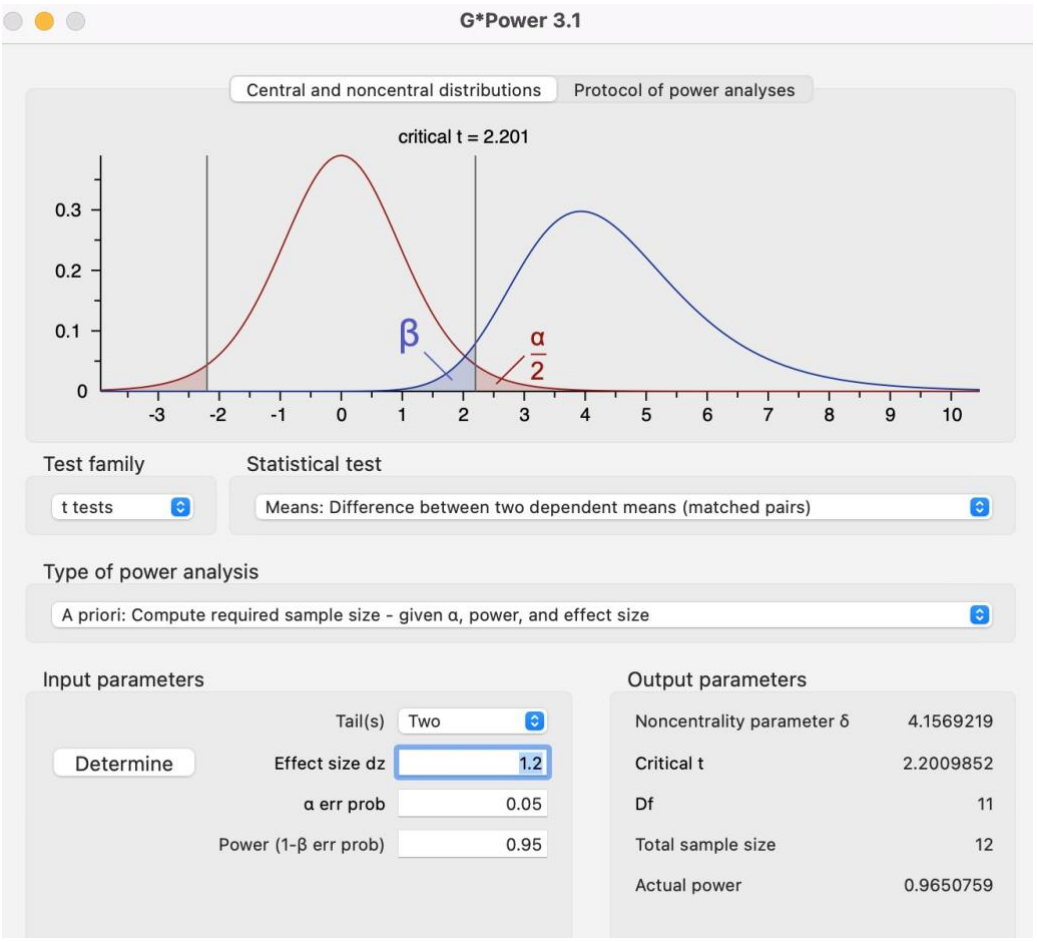

*Figure 2 G*Power Sample Size Calculation for Paired-Samples t Test*

Research Sample

Purposive sampling was used to recruit 12 working adults from various occupational backgrounds in Klang Valley. One participant dropped out during the intervention, resulting in a final sample size of 11. This method was chosen to ensure participants met the inclusion criteria of experiencing moderate to severe psychological distress, making it appropriate for a feasibility study. However, purposive sampling introduces potential selection bias and limits the generalizability of findings, which should be considered when interpreting results. Although purposive sampling ensured participants met inclusion criteria, this method introduces potential selection bias and limits generalizability beyond this feasibility context.

Additionally, six Clinical Psychology Trainees from the University of Cyberjaya (Batch 7) were recruited through volunteer sampling to deliver the online Brief-CBT intervention. These trainees conducted the online sessions and administered the DASS-21 assessments before and after the intervention. To ensure consistency and fidelity, trainees followed structured session protocols and received weekly supervision from licensed clinical psychologists. Periodic adherence reviews were conducted, further enhancing treatment integrity.

Research Tools / Instruments

The Depression, Anxiety and Stress Scale-21 (DASS-21) was used to measure symptom severity before and after the intervention. The DASS-21 has demonstrated excellent internal consistency, with Cronbach's α = .96 for the overall scale and subscale reliabilities of α = .92 (depression), α = .87 (anxiety), and α = .89 (stress) (Laranjeira et al., 2023). Confirmatory Factor Analysis (CFA) has supported its construct validity, with *CFI* = .931, *PNFI* = .818, *PCFI* = .825, and *RMR* = .038. Higher scores indicate greater symptom severity.

Subject Criteria

Inclusion criteria

- Currently employed full-time in Klang Valley
- Experiencing moderate to high levels of depression, anxiety, or stress
- Aged 18 and above

Exclusion criteria:

- Currently receiving psychological therapy
- Taking psychiatric medication
- Diagnosed with severe mental health conditions

Data Collection

Data were collected through self-administered online surveys. The online Brief-CBT intervention and assessments were conducted entirely via online platforms, allowing for greater accessibility and convenience. Participants completed the DASS-21 assessments at baseline (pre-intervention) and after the completion of five online Brief-CBT sessions.

Data Analysis

Data were analyzed using paired-samples *t* tests to compare pre- and post-intervention scores. Effect sizes (Cohen's *d*) were calculated to determine the magnitude of change for each outcome. Ethical considerations such as informed consent, anonymity, and confidentiality were upheld throughout the study. All analyses were conducted to determine the feasibility and provide preliminary evidence of the outcomes of online Brief-CBT, with the aim of informing the design of future large-scale studies.

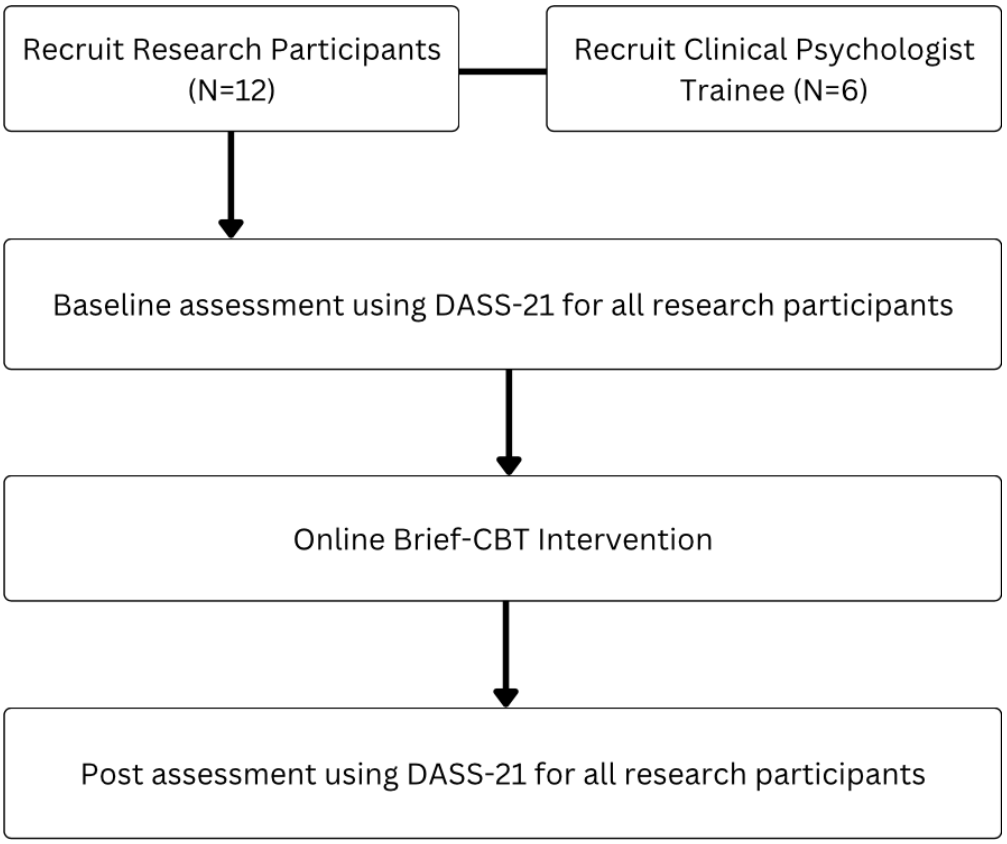

Figure 3 Flowchart of Research Procedure

Research participants will receive the intervention being tested in the study, specifically undergoing online Brief-CBT sessions delivered by trainees. The goal of this group is to evaluate the preliminary impact of the intervention on outcomes such as depression, anxiety, and stress levels.

Table 1
Intervention plan

Session	Session Plan
1	Intake Session ● Build rapport ● Intake Interview ● Set Treatment Goals ● Administer DASS-21
2	Start Implementing Treatment Plan ● Mood check ● Unhelpful Thoughts / Behavioral Activation / Problem Solving / Relaxation / Exposure / Thought Record ● Homework
3	Continue Treatment Plan ● Mood check, get feedback, review homework ● Unhelpful Thoughts / Behavioral Activation / Problem Solving / Relaxation / Exposure / Thought Record ● Homework
4	Continue Treatment Plan ● Mood check, get feedback, review homework ● Unhelpful Thoughts / Behavioral Activation / Problem Solving / Relaxation / Exposure / Thought Record ● Homework ● Discuss termination
5	Termination Session ● Mood check, get feedback, review homework ● Administer DASS-21 ● Review progress of treatment ● Introducing self management

Note. Refer to Appendix A for sample CBT worksheets.

To ensure fidelity of trainee delivery, all sessions were supervised weekly by licensed clinical psychologists. Trainees followed structured session checklists, and adherence was monitored through periodic reviews. These procedures enhanced intervention consistency and ensured treatment integrity.

Expected Outcome

It was hypothesized that participants would demonstrate preliminary improvements in depression, anxiety, and stress following the online Brief-CBT intervention. Based on pre–post comparisons using the DASS-21, it was expected that participants would report lower scores on all three subscales, reflecting decreased psychological distress. The study aimed to assess the feasibility and provide preliminary evidence of trainee-delivered online Brief-CBT as a mental health intervention for working adults in Klang Valley.

Results

A total of 12 participants (6 females and 6 males) were initially recruited for the study. One female participant dropped out before completing the post-intervention survey. Therefore, the final analysis was conducted on data from 11 participants (5 females and 6 males) who completed both the pre- and post-intervention assessments. Participants' ages ranged from 24 to 49 years, with a mean age of 32.18 years (SD = 7.8). All participants were residing in the Klang Valley region of Malaysia. Baseline scores prior to the intervention showed that the mean depression score was 28.45 (SD = 10.2), anxiety was 26.73 (SD = 9.8), and stress was 31.55 (SD = 11.1).

Paired-samples t tests were conducted to examine the effects of online Brief-CBT on participants' levels of depression, anxiety, and stress. The analyses revealed statistically significant reductions in all three psychological outcomes, providing preliminary evidence of improvement following the intervention.

Table 2
Pre- and post-test paired-samples *t* test results for DASS-21 subscales ($n = 11$)

Outcome	Pre ($M \pm SD$)	Post ($M \pm SD$)	$t(10)$	p	Cohen's d
Depression	28.45 ± 10.2	15.91 ± 8.3	2.84	0.018	0.86
Anxiety	26.73 ± 9.8	16.00 ± 7.4	3.82	0.003	1.15
Stress	31.55 ± 11.1	19.91 ± 8.6	3.24	0.009	0.98

Note. Cohen's *d* was calculated as the mean difference divided by the standard deviation of the difference scores.

For depression, participants' post-intervention scores ($M = 15.91$, $SD = 8.3$) were significantly lower than their pre-intervention scores ($M = 28.45$, $SD = 10.2$), $t(10) = 2.84$, $p = .018$, $d = 0.86$. A significant reduction was also observed in anxiety levels, $t(10) = 3.82$, $p = .003$, $d = 1.15$, and in stress levels, $t(10) = 3.24$, $p = .009$, $d = 0.98$. These results suggest large effect sizes across all three outcomes, providing preliminary support for the feasibility of trainee-delivered online Brief-CBT.

Table 3
Cronbach's alpha for DASS-21 subscales at pre- and post-test

Subscales	Cronbach's Alpha (Pre-Intervention)	Cronbach's Alpha (Post-Intervention)
Depression	.921	.924
Anxiety	.911	.918
Stress	.916	.920

Cronbach's α is a widely used statistic to assess the internal consistency reliability of measurement instruments, indicating how well items within a scale measure the same construct. A value of .70 or higher is generally considered acceptable, with values above .80 preferred and values below .60 regarded as problematic unless justified (Izah et al., 2023). As shown in Table 2, all three subscales of the DASS-21: Depression, Anxiety, and Stress, demonstrated strong internal consistency, with α values above .90 at both pre- and post-test. These results suggest that items within each subscale were highly interrelated and consistently measured the intended psychological constructs. The stability of these high α values provides preliminary evidence supporting the reliability of the instrument for assessing emotional distress in this sample.

Table 4
KMO and bartlett's test of sphericity for DASS-21 items

Tests	Value
KMO Measure of Sampling Adequacy	.846
Bartlett's Test of Sphericity (Chi-Square)	1050.27
Bartlett's Test Significance (p-value)	< .001

To assess the construct validity of the DASS-21 in this study, an exploratory factor analysis (EFA) was conducted using principal component extraction with Varimax rotation. Before performing EFA, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were examined. A KMO value above .60 is considered acceptable for factor analysis (Jani et al., 2023). In this study, the KMO was .85, indicating adequate sampling adequacy, while Bartlett's Test of Sphericity was significant, $\chi^2(210) = 1050.27$, $p < .001$, suggesting that correlations among items were sufficient for factor analysis.

The factor analysis revealed a clear and interpretable three-factor structure, with items clustering according to their intended domains: Depression, Anxiety, and Stress, consistent with the DASS-21 theoretical subscales. The three extracted factors had

eigenvalues greater than 1.0 and collectively explained 69.47% of the variance. Specifically, the Stress factor accounted for 42.86% (eigenvalue = 9.00), followed by Depression at 14.42% (eigenvalue = 3.03) and Anxiety at 12.29% (eigenvalue = 2.58). This structure aligns with the theoretical model proposed by Lovibond and Lovibond (1995) and provides preliminary evidence supporting the construct validity of the DASS-21 for use in this sample.

Table 5
Total variance explained by DASS-21 factors

Factor	Eigenvalue	Percentage of Variance	Cumulative %
Depression	3.03	42.86	42.86
Anxiety	2.58	12.29	69.47
Stress	9.00	42.86	42.86

A principal component analysis with Varimax rotation was conducted to examine the factor structure of the DASS 21. Three factors emerged with eigenvalues greater than 1.0, a criterion widely accepted for identifying meaningful components (Jani et al., 2023). As shown in Table 4, these three factors collectively accounted for 69.47% of the variance. Specifically, the Stress factor accounted for 42.86% of the variance (eigenvalue = 9.00), followed by Depression at 14.42% (eigenvalue = 3.03) and Anxiety at 12.29% (eigenvalue = 2.58). This three-factor solution aligns with the theoretical structure of the DASS-21 and provides preliminary evidence supporting the scale's construct validity within this sample.

In summary, the results demonstrated statistically significant reductions in depression, anxiety, and stress following the trainee-delivered online Brief-CBT intervention. These improvements were accompanied by strong internal consistency across the DASS-21 subscales and a three-factor structure consistent with the theoretical framework. Collectively, these findings provide preliminary support for both the reliability and construct validity of the DASS-21, as well as for the feasibility of trainee-delivered online Brief-CBT as a mental health intervention in this sample of Malaysian working adults.

Discussion

The present study aimed to evaluate the preliminary effectiveness of trainee-delivered online Brief Cognitive Behavioral Therapy (online Brief-CBT) in reducing depression, anxiety, and stress among working adults in Klang Valley, Malaysia. The findings demonstrated statistically significant reductions across all three psychological outcomes, with large effect sizes for depression (d = 0.86), anxiety (d = 1.15), and stress (d = 0.98). While these outcomes are encouraging, they must be interpreted with caution due to the small sample size and the use of purposive sampling, which may introduce selection bias and limit generalizability. These results therefore provide pilot-level evidence supporting the feasibility of trainee-delivered online Brief-CBT as a

time-efficient and accessible intervention, particularly for employed individuals experiencing moderate to high emotional distress.

However, the findings rely primarily on quantitative measures, without capturing participants' subjective experiences of the intervention. Although this study did not include qualitative data, incorporating participant feedback in future research could enrich interpretation by providing deeper insight into acceptability and lived experiences. Future research should incorporate mixed-methods approaches to better understand both the outcomes and the lived experiences of participants.

The study was grounded in the theoretical framework of Cognitive Behavioral Therapy (CBT), which posits that thoughts, emotions, and behaviors are interrelated, and that maladaptive thought patterns contribute to emotional and behavioral difficulties (Landfield et al., 2021). By targeting these cognitive distortions and promoting adaptive coping strategies, CBT enables individuals to regain control over their mental health. Online Brief-CBT, a condensed format of traditional CBT, retains its core principles while reducing the number of sessions, making it more accessible for individuals with time and resource limitations (Cully et al., 2020). The positive outcomes observed in this study suggest that even when delivered in a shorter format by trained clinical psychology trainees, CBT remains a potentially useful therapeutic tool.

International research has shown significant improvements in depressive and anxiety symptoms following online CBT, with reviews highlighting its effectiveness in reducing psychological distress, stress, and related symptoms among working adults (Luangphituck et al., 2023). However, these outcomes may not fully mirror those in Malaysia due to contextual barriers. Local challenges such as persistent stigma toward mental health (Suhardi et al., 2024) continue to influence how individuals access and engage with psychological interventions. Malaysian research further indicates that stigma is a pervasive barrier, reinforced by social environments and relationships, which reduces the support available for recovery and discourages help-seeking. This suggests that while international findings provide a valuable foundation, localized research remains essential to adapt and validate such interventions within Malaysia's unique cultural and occupational landscape.

The outcomes also align with a growing body of literature supporting the feasibility of CBT and its digital adaptations. Prior research has established CBT as a first-line treatment for a range of mental health conditions, including depression, anxiety, and stress (Cuijpers et al., 2025). The current findings are preliminary but appear consistent with studies demonstrating the feasibility of brief and online CBT interventions. For example, Fadipa et al. (2023) found that internet-delivered CBT significantly reduced stress among adults, while Reitsma et al. (2021) reported that online CBT was effective in alleviating depressive symptoms. Additionally, Boß et al. (2021) showed that online CBT can be as effective as traditional in-person approaches in stress management, particularly in high-pressure professions such as healthcare and social work. At the same time, contextual factors such as workplace stigma surrounding mental health, varying levels of digital literacy in Malaysia, and cultural differences may shape the uptake and effectiveness of these interventions. This highlights the importance of adapting international findings to the Malaysian context.

The practical implications of this study are noteworthy. This pilot-level intervention

was designed specifically for working adults, a population known to face substantial barriers to accessing mental health care, including time constraints, stigma, and high service costs. The use of Clinical Psychology trainees not only addressed workforce limitations but also demonstrated that supervised trainee-delivered interventions can yield meaningful clinical outcomes. This model holds promise for scalability and integration into existing employee assistance or workplace wellness programs.

Additionally, the online delivery format enhanced accessibility, allowing participants to engage from the convenience of their homes or workplaces, thereby reducing logistical barriers associated with traditional therapy formats. From a public health perspective, this study contributes to the growing need for cost-effective and scalable mental health interventions in Malaysia, where the workforce is increasingly affected by psychological stressors. A national report by Murugesan (2023) revealed that more than half of Malaysian employees experience significant work-related stress, yet only a small percentage of employers are aware of or implement structured mental health programs. This study supports the case for expanding brief, evidence-based interventions such as CBT into corporate wellness initiatives. The findings also provide a foundation for informing mental health policy development and the strategic allocation of resources to improve accessibility.

Limitations

This study has several limitations. First, the small sample size (n = 11) limits statistical power and restricts the generalizability of the findings. Results should therefore be regarded as preliminary and interpreted with caution.

Second, purposive sampling was used to ensure participants met inclusion criteria. While suitable for feasibility research, this method introduces selection bias, limiting the representativeness of the sample and the extent to which findings can be applied to broader populations.

Third, reliance on self-report measures (DASS-21) increases the risk of biases such as social desirability and recall inaccuracies. Finally, participants were drawn only from the Klang Valley region, which may not reflect working adults in rural or less digitally connected communities. Collectively, these factors constrain the external validity of the study. As such, the findings should be regarded as preliminary and not generalized beyond this study context.

Ethics

Ethical procedures were strictly adhered to throughout the study. Prior to participation, informed consent was obtained, outlining the study's purpose, procedures, risks, and benefits. Participants were assured of their right to withdraw at any time without penalty. Data confidentiality and anonymity were maintained, with all data securely stored and accessible only to the research team. Ethical approval was obtained from the relevant institutional ethics committee before data collection. These measures ensured that participants' rights and welfare were protected at all stages of the research process.

Conclusion

This study provides preliminary evidence that trainee-delivered online Brief-CBT may reduce symptoms of depression, anxiety, and stress among working adults in Klang Valley. The intervention demonstrated feasibility and potential as a scalable, accessible approach to workplace mental health care. However, given the small sample size, purposive sampling, and

reliance on self-reports, the findings should be interpreted with caution. Future studies involving larger and more diverse samples, mixed-methods designs, and long-term follow-up are needed to validate and expand upon these results.

The intervention's online delivery and facilitation by Clinical Psychology trainees addressed several barriers to mental health care access, including time constraints, high costs, and service availability. This model not only broadens the reach of mental health services but also contributes to capacity-building within the mental health workforce.

Moreover, the study supports the integration of online Brief-CBT into workplace wellness initiatives and highlights its role within broader employee mental health strategies. While these preliminary findings are promising, further research involving randomized controlled trials, larger samples, and long-term follow-up assessments is essential. Additionally, future studies should incorporate qualitative feedback to better understand participant experiences and implementation challenges.

Ultimately, this research contributes to the growing field of digital mental health interventions and lays the foundation for continued exploration of brief, innovative, and accessible therapeutic approaches, while emphasizing that these findings are preliminary and require validation through larger, more diverse, and methodologically rigorous studies, including the integration of qualitative feedback to better capture participant perspectives.

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Appendix A1

APPENDIX A • PATIENT HANDOUTS

Unhelpful Thinking Styles

1. **All-or-Nothing Thinking:** Viewing situations on one extreme or another instead of on a continuum.
   Ex. "If my child does bad things, it's because I am a bad parent."
2. **Catastrophizing:** Predicting only negative outcomes for the future.
   Ex. "If I fail my final, my life will be over."
3. **Disqualifying or Discounting the Positive:** Telling yourself that the good things that happen to you don't count.
   Ex. "My daughter told her friend that I was the best Dad in the world, but I'm sure she was just being nice."
4. **Emotional Reasoning:** Feeling about something overrules facts to the contrary.
   Ex. "Even though Steve is here at work late everyday, I know I work harder than anyone else at my job."
5. **Labeling:** Giving someone or something a label without finding out more about it/them.
   Ex. "My daughter would never do anything I disapproved of."
6. **Magnification/Minimization:** Emphasizing the negative or downplaying the positive of a situation.
   Ex. "My professor said he made some corrections on my paper, so I know I'll probably fail the class."
7. **Mental Filter/Tunnel Vision:** Placing all your attention on the negatives of a situation or seeing only the negatives of a situation.
   Ex. "My husband says he wished I was better at housekeeping, so I must be a lousy wife."
8. **Mind Reading:** Believing you know what others are thinking.
   Ex. "My house was dirty when my friends came over, so I know they think I'm a slob."
9. **Overgeneralization:** Making an overall negative conclusion beyond the current situation.
   Ex. "My husband didn't kiss me when he came home this evening. Maybe he doesn't love me anymore."
10. **Personalization:** Thinking the negative behavior of others has something to do with you.
    Ex. "My daughter has been pretty quiet today. I wonder what I did to upset her."
11. **"Should" and "Must" Statements:** Having a concrete idea of how people should behave.
    Ex. "I should get all A's to be a good student."

APPENDIX A • PATIENT HANDOUTS

Helpful Questions

SITUATIONAL QUESTIONS	FEELING QUESTIONS	THOUGHT QUESTIONS
• What happened? What were you doing? • Who was there? • Who were you speaking to? • When did this happen? • What time of day was it? • Where did this incident occur?	• How were you feeling before this happened? • How did you feel while it was happening? • What mood were you in after this happened? • Can you rate your mood on a scale of 1-100?	• What was going through your mind before you started to feel that way? • What made you feel that way? • Do you have any other thoughts? • Which thought bothered you the most? • What images did you have with these thoughts? • What are you afraid might happen? • What if this is true? What does this say about you? • What could happen if this were true? • What other ways could we think of this?

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Thought Record

(1) Situation	(2) Automatic Thought(s)	(3) Emotion(s) & Mood	(4) Evidence That Supports Thought	(5) Evidence That Doesn't Support Thought	(6) Alternative Thought	(7) Rate Mood Now
What actually happened? Where? What? How? When?	*What thought(s) went through your mind? How much did you believe it? (1-100)*	*What emotion(s) did you feel at the time? Rate how intense they were (1-100).*	*What has happened to make you believe the thought is true?*	*What has happened to prove the thought is not true?*	*What is another way to think of this situation?*	*Rate from 0-100 (worst to best)*

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SOLVED: Problem-Solving Exercise

Specific problem: _____

_____

_____

Open Your Mind **L** ist

To Possible Solutions PROS AND CONS

1.

2.

3.

4.

Verify the best solution by circling your choice.

Enact the Solution.

Steps and Time Frame of Solution:

1. _____ Time: _____

2. _____ Time: _____

3._____ Time: _____

Decide if Your Solution Worked: [_____] YES [_____]NO

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Rating Moods

Describe a recent event. Rate the intensity of your mood at the time the event occurred on a scale of 0-100 (There is a list of different moods at the bottom if you need help).

1. Event: _____

_____

Mood: 0___10___20___30___40___50___60___70___80___90___100___

2. Event: _____

_____

Mood: 0___10___20___30___40___50___60___70___80___90___100___

3. Event: _____

_____

Mood: 0___10___20___30___40___50___60___70___80___90___100___

4. Event: _____

_____

Mood: 0___10___20___30___40___50___60___70___80___90___100___

Angry	Anxious	Ashamed	Confident	Depressed
Disgusted	Embarrassed	Enraged	Hopeless	Nervous
Excited	Hurt	Panicky	Furious	Humiliated
Sad	Frightened	Frustrated	Guilty	Happy
Hopeful	Insecure	Irritated	Jealous	Livid
Mad	Scared	Tense	Warm	

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Self-Management Time Guide

1. **Mood Check**
   a. List five emotions you are feeling right now, and rate their intensity from 0- 100%.

   b. List three emotions you have felt this past week, and rate their intensity from 0-100%.

2. **Review the Previous Week**
   a. Did I use any tools I learned in therapy this week?
      i. If I did not, what problem did I have this week that could have been helped through the use of these skills?

   b. What good things happened this week?
      i. How did I make those good things happen?

3. **Current and Future Problematic Situations**
   a. What are my current problems?
      i. How can I think about these problems in a different way?
      ii. What can I do to change the feelings associated with these problems?

   b. What problems can occur before my next self-management time?
      i. What skills can I use to deal with these problems?

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Deep-Breathing Technique

Step #1: Put one hand on your abdomen, with the little finger about one inch above the navel, and place one hand on your chest.

Step #2: Pay attention to your breathing (pause for several seconds to assess your breathing). Ideally, the hand on the abdomen should be moving, while the hand over the chest remains still. This ensures that the breaths are deep.

Step #3: Take deeper breaths by getting the hand over the stomach to move, while having little movement of the hand over the chest.

NOTE: If you have a lung or heart condition and you are having difficulty with this exercise, slow the process down to your comfort level.

Step #4: Continue your slow, even, deep breaths. To pace yourself, you can say the words in and out slowly while taking breaths. Inhalations and exhalations should build to approximately three seconds in duration.

Step #5: Repeat the breathing exercise three or more times.

Other tips for deep breathing:

1. Inhale through your nose and out your mouth.
2. Purse your lips (as if blowing out hot soup) while exhaling.
3. Do not pause between inhales and exhales.
4. Close your eyes during the exercise.
5. Use a mantra such as “relax” during each exhale
6. Pair up deep breathing with imagery once you have mastered the breathing skills.
7. REMEMBER: Deep breathing is a portable skill that can be used in a variety of situations and relatively without notice of others.