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Animal-Assisted Therapy as a Complementary Intervention for Mindfulness-Based Therapies

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Abstract

Moderate to severe anxiety disorders affect approximately 29% of Americans. Mindfulness training has demonstrated moderate efficacy for treating anxiety disorders. However, counselors often report that clients have difficulty with acceptance as well as treatment engagement and completion. The addition of animal-assisted therapy (AAT) as a complementary intervention may mitigate these barriers, thus enhancing the overall impact of mindfulness training. The purpose of this article is to explain how integrating AAT as a complementary intervention within mindfulness-based training can improve treatment acceptability, retention, and effectiveness. A review of mindfulness training and animal-assisted therapy as treatments for anxiety disorders is provided, followed by implications for counseling professionals.

Keywords: animal-assisted therapy, mindfulness training, complementary intervention

Approximately 29% of Americans report experiencing moderate to severe anxiety during their lifetime (National Institute of Mental Health [NIMH], 2016). Collectively, anxiety disorders (e.g., generalized anxiety disorder, panic disorder, social phobia), are among the most common mental disorders (NIMH, 2016). The core features of anxiety include intense and disabling worry about future danger or an intense fear without the presentation of a true threat. These features may be expressed behaviorally, cognitively,

physiologically, or interpersonally (Beauchaine & Hinshaw, 2008; Kilgus, Maxmen, & Ward, 2015). Moderate to severe anxiety is a “future oriented emotion, characterized by perceptions of uncontrollability and unpredictability over potentially aversive events,” typically manifested as avoidance, worry, and/or psychological arousal (Barlow, 2002, p. 104). Further, anxiety disorders are often comorbid with mood, substance use, or other disorders (Cummings, Caporino, & Kendall, 2014). Many treatment approaches for anxiety disorders (e.g., cognitive behavioral therapy, stress reduction techniques) focus on cognitive restructuring and symptom reduction. However, typical treatment modalities tend to only yield a moderate effect (Bandelow et al., 2015), and have a 25% to 40% treatment dropout rate (Santana & Fontenelle, 2011). Recent research has focused on the addition of complementary interventions (e.g., animal-assisted therapy, mindfulness-based therapies) to enhance treatment effectiveness and completion (Shonin, Van Gordon, & Griffiths, 2013).

Stress reduction techniques and cognitive behavioral therapy (CBT) demonstrate moderate efficacy in the treatment of anxiety disorders (Bandelow et al., 2015; Hipol & Deacon, 2013); however, these approaches focus on a singular manifestation. Studies indicate that the addition of complementary interventions to standard treatment approaches enhances individuals’ overall improvement (National Center for Complementary and Integrative Health [NCCIH], 2016). For example, mindfulness-based therapies have become increasingly popular over the last 20 years as a complement to traditional therapy (Shonin et al., 2013). Mindfulness-based therapies effectively treat anxiety disorders by reducing psychological and physiological symptoms of the disorders (Shonin et al., 2013), increasing empathy, and promoting pro-social behaviors (Mascaro, Rilling, Negi, & Raison, 2013). Although mindfulness-based therapies are a promising method of treating anxiety disorders, the practice can be challenging for some clients (Weil, 2011).

American society values competition, thinking, and individualism, which are often opposed to the accepting nature of mindfulness (Ellis, 2006). Establishing a consistent mindfulness practice can be difficult, and the underlying tenants of mindfulness (e.g., spirituality, non-doing) may be off-putting (Kabat-Zinn, 1994; Weil, 2011). In fact, many studies demonstrating the effectiveness of mindfulness have had high rates of participant dropout (Nam & Toneatto, 2016). Thus, the decreased acceptance and completion of mindfulness training can present problems with treatment engagement or sustained therapeutic effect. Adding an additional complementary therapy, such as animal-assisted therapy (AAT), to mindfulness-based therapies can mitigate the potential challenges with treatment engagement and follow-up.

While the research on AAT is in its infancy, studies have demonstrated a positive influence of AAT on symptoms of anxiety and distress, such as heart rate variability, respiration rates, state anxiety, and fears related to future (Chandler, 2012). Further, AAT interventions have shown significant increases in treatment participation and completion (Holcomb & Meacham, 1989). For example, Chandler (2012) reported that AAT interventions were the most effective for engaging isolated clients in treatment, regardless of diagnosis. Thus, adding AAT as a complementary intervention to mindfulness-based therapies has the potential to increase the acceptability and completion of treatment, and improve psychophysiological health for individuals with anxiety disorders. The purpose of this article is to explain how the addition of AAT as a complementary intervention can

improve treatment processes and outcomes of mindfulness-based therapies (e.g., acceptability, retention, and effectiveness).

Mindfulness-Based Therapies for Anxiety Disorders

The cognitive origins of anxiety disorders are well documented (Beck, 1976; Ellis, 2004). Traditional therapeutic approaches, such as cognitive behavioral therapy, rely on helping individuals change their patterns of thinking and behaving to reduce anxiety (Beck, 1976; De Castella et al., 2015; Goodwin, 2002). Cognitive behavioral interventions often include cognitive restructuring through disputing cognitions, thought stopping, thought logs, homework, journaling, and other methods of changing cognitive patterns (Beck, 1976; De Castella et al., 2015; Goodwin, 2002). For example, counselors may help clients identify how futuristic thinking causes anxiety and provide interventions to help clients change their thinking patterns. Counselors may also help clients practice behavioral techniques such as deep breathing to reduce anxiety. Although these therapeutic interventions are often associated with modern psychotherapy, they are rooted in Buddhism and early Greek philosophy (Goodwin, 2002).

Mindfulness practices come from Buddhist traditions (Weil, 2011). Mindfulness is “the self-regulation of attention and the ability to maintain attention on one’s experience in the present moment” (Weil, 2011, p. 66). Simply put, mindfulness is moment-to-moment awareness of ever-changing phenomena, including sense perceptions, thoughts, and emotions (Kabat-Zinn, 1984, 1994). Practicing mindfulness includes focusing attention on a single point, often the breath, as a means of increasing present moment awareness (Kabat-Zinn, 1984, 1994). As individuals focus on their breathing, their minds naturally wander to memories of the past or fantasies about the future (Kabat-Zinn, 1994). These thoughts result in a variety of emotions and bodily sensations (Kabat-Zinn, 1994). For example, clients practicing mindfulness may notice their thoughts wandering to upcoming deadlines, social events, or family issues. As their minds wander, mindfulness practitioners refocus their attention on their breathing, thereby increasing their awareness of the present moment and reducing their anxiety (Kabat-Zinn, 1994; Weil, 2011).

Clients practicing mindfulness gradually begin to expand their field of awareness to include their five senses (Kabat-Zinn, 1984, 1994). Mindfulness promotes a nonreactive and nonjudgmental stance to sensations, emotions, thoughts, or other stimuli (Kabat-Zinn, 1984, 1994). Therefore, clients are encouraged to become aware of pleasant and unpleasant phenomena, such as anxiety, and observe the temporary nature of phenomena rather than judge or react to it (Kabat-Zinn, 1994). For example, clients may be encouraged to observe the thoughts and physical sensations associated with anxiety as the sensations arise and pass, rather than reacting through avoidance or continued worry. As their minds wander to future events, they refocus on a single point, and thus, are changing their cognitive patterns. Many practices promote mindful awareness, including meditation, yoga, tai chi, qigong, chanting, prayer, and martial arts (Goodwin, 2002). The longstanding effectiveness of mindfulness practices has resulted in their integration into therapeutic modalities (McWilliams, 2010).

Mindfulness-based therapies have gained popularity in a variety of treatment settings (Weil, 2011). Empirical studies support the efficacy of mindfulness-based

therapies for treating chronic pain, substance use disorders, personality disorders, mood disorders, and anxiety disorders (Dakwar & Levin, 2009). Therefore, newer treatment modalities incorporate mindfulness principles into their approach (McWilliams, 2010). Treatment modalities based on mindfulness include: dialectical behavioral therapy (DBT), acceptance and commitment therapy (ACT), mindfulness-based cognitive therapy (MBCT), mindfulness-based relapse prevention (MBSR; McWilliams, 2010), and mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1984, 1994). The intricacies of each therapeutic modality are beyond the scope of this article; therefore, the following review will focus on mindfulness-based therapies collectively rather than individually. Mindfulness-based therapies continue to be refined and studied; however, results are encouraging for their efficacy in treating anxiety disorders (Dakwar & Levin, 2009).

Physiological Effects of Mindfulness

As previously discussed, anxiety disorders result in a variety of physiological symptoms, including muscle tension, sleep disturbance, fatigue, or changes in heart rate and respiration (American Psychiatric Association [APA], 2013). These physiological symptoms result from neural pathways formed in the mind-body response to anxiety-provoking stimuli (Weil, 2011). Fortunately, technological advances in neuroscience and neuroimaging have led to increased understanding of how mindfulness influences biology and neuroplasticity (Weil, 2011).

Neuroplasticity is the body's ability to alter and develop neural connections in response to changes in environment and behaviors (Yang et al., 2016). A study by Yang and colleagues (2016) examined the effects of an 8-week mindfulness meditation training on anxiety and neural connections. Findings indicated that participants who practiced mindfulness meditation had reduced anxiety and altered neural connections associated with depression and anxiety (Yang et al., 2016). Findings from similar studies indicate that mindfulness interventions are an effective method of reducing anxiety and improving mood through changes in the mind-body response to anxiety provoking stimuli (Hofmann, Sawyer, Witt, & Oh, 2010).

Intrapersonal Effects of Mindfulness

Effective treatment of anxiety disorders includes cognitive interventions (Beck, 1976; Ellis, 2004, 2006). According to cognitive theorists, anxiety results from patterns of thinking such as worrying, obsessing, and perseverating about future or past events (Beck, 1976; Ellis, 2006). Mindfulness-based therapies promote changes in cognitions similar to those of traditional cognitive therapies (Zeng, Oei, & Liu, 2014). Ellis (2006) identified that mindfulness practice, despite subtle differences, is similar to rational emotive behavior therapy (REBT) in promoting acceptance and flexible beliefs (Ellis, 2006).

Mindfulness practice promotes acceptance of moment-to-moment reality through increasing equanimity (Kabat-Zinn, 1994). Equanimity is a state of nonjudgmental composure based in a nonreactive acceptance of the present moment (Zeng et al., 2014). Equanimity is a product of flexible thinking and acceptance rather than judgment and reactivity (Zeng et al., 2014). For example, clients with anxiety disorders may become increasingly aware of their thoughts, bodily sensations, and sensory experience through mindfulness practices. Their mindfulness practice may enable them to identify an

increase in worry and anxiety, and practice calm observation of their bodies' anxiety responses. Clients may be better able to manage anxiety through observation of its temporary nature rather than their previous tendency to exacerbate anxiety through worry and obsessing. By observing rather than reacting, clients practicing mindfulness are able to develop more flexible thought patterns (Kabat-Zinn, 1994) that result in more adaptive responses to anxiety such as decreased avoidance of formerly anxiety provoking stimuli.

Interpersonal Effects of Mindfulness Practice

Individuals with anxiety disorders often avoid anxiety-provoking stimuli (APA, 2013). For example, clients with social anxiety disorder often avoid social situations and clients with post-traumatic stress disorder often avoid situations, places, or people that remind them of their past trauma (APA, 2013). Anxiety disorders often negatively influence the social well-being of clients (APA, 2013). Mindfulness-based therapies may help clients with anxiety disorders improve their social functioning by decreasing anxiety and increasing empathy.

Siegal (2009) posited that mindfulness practice increases clients' awareness of themselves and others. Mindfulness helps clients develop a nonreactive stance so they can better understand others and increase their sense of empathy (Siegal, 2009). In fact, a key aspect of mindfulness practice is developing compassion for others (Mascaro et al., 2013). Studies indicate that meditation practice activates neural circuitry associated with empathy, which can promote prosocial behaviors (Mascaro et al., 2013).

Limitations of Mindfulness Interventions

Although mindfulness-based therapies show promise in treating a variety of disorders, limitations persist in defining mindfulness and helping clients establish a consistent mindfulness practice (Shonin et al., 2013; Weil, 2011). Mindfulness is a broad concept with a variety of religious and philosophical underpinnings (Kabat-Zinn, 1984, 1994), therefore a consistent and accepted definition of the construct is lacking (Shonin et al., 2013). Similarly, unclear intervention protocols often limit the generalizability of studies on mindfulness-based therapies, and negatively influence the results of longitudinal studies (Shonin et al., 2013).

Mindfulness-based therapies require consistent practice for optimal benefit (Kabat-Zinn, 1994; Weil, 2011), which may be challenging for clients who are already overburdened with deadlines and commitments. Additionally, Americans are immersed in a culture that values thinking and creativity and the practice of non-doing and non-thinking that mindfulness promotes can be off-putting and frustrating (Ellis, 2006). Clients have reported aversive reactions to mindfulness practice such as physical discomfort, muscle tension, and relaxation-induced anxiety (Nam & Toneatto, 2016). These reactions may be associated with decreased treatment acceptance and engagement, as well as increased treatment dropout (Nam & Toneatto, 2016). Therefore, to enhance the acceptability and engagement in mindfulness-based therapies, counselors must modify the counseling environment. Recent research has demonstrated the potential for AAT to improve the therapeutic alliance and increase treatment comfort, engagement, and completion (Fine, 2000; Pichot, 2012). Thus, integrating AAT within mindfulness-based therapies may reduce these barriers.

Animal-Assisted Therapy

Animal-assisted therapy is the use of the human-animal bond in a goal-directed intervention (Chandler, 2012). Most often, AAT is used as a complementary intervention to enhance the effect of treatment. The addition of therapy animals into the therapeutic process has many benefits. Clients report that developing the therapeutic alliance is easier with a therapy animal than with a human counselor. Clients also report greater levels of trust with therapy animals than human counselors (Chandler, 2012). A therapeutic alliance and trust are essential within the therapeutic relationship, as well influential to clients' clinical outcomes (Lambert & Barley, 2001). This finding is especially important for the treatment of anxiety, because clients with anxiety disorders have difficulty forming a strong therapeutic alliance with their counselors in the early stages of treatment (Lambert & Barley, 2001). Integrating animals into counseling could have positive effects on developing therapeutic relationships, thus positively influencing clients' outcomes.

Recent literature also reports the impact of animal-assisted activities, which differ from AAT in that there are no goal-directed interventions on physiological health and anxiety symptoms. Animal-assisted activities have been used by health providers, including doctors, nurses, and clinicians, to improve the health and functioning of their patients. For example, studies have demonstrated a reduction in cortisol, a hormone associated with stress level, as well as systolic and diastolic blood pressure following interaction with a therapy animal (Chandler, 2012). Other studies have demonstrated reduced self-reported anxiety by children in an oncology ward, adults in a prison setting, and adults in a cardiology ward (Chandler, 2012). Although the literature base on the efficacy of AAT is limited, recent studies have demonstrated positive physiological, intrapersonal, and interpersonal effects.

Physiological Effects of AAT

The human-therapy animal interaction has demonstrated improvement among a number of physiological domains associated with stress and anxiety. Nepps, Stewart, and Bruckno (2014) examined the psychological and physiological effects of animal-assisted activities with individuals hospitalized within an inpatient mental health facility. Results of this study noted a reduction in heart rate for all participants and a reduction in blood pressure in women participants (Nepps et al., 2014). Similarly, Barker, Knisely, McCain, Schubert, and Pandurangi (2010) explored the stress-buffering response of interacting with therapy animals within a group of dog owners. Participants were exposed to a 30-minute stress task, followed by interaction with a therapy animal. The results of this study yielded moderate decreases in salivary cortisol, blood pressure, heart rate, and self-reported anxiety (Barker et al., 2010). Interaction with therapy animals can also affect the neurochemicals associated with stress reduction. Specifically, Odendaal (2000) found that individuals' interactions with a therapy animal increased neurochemicals associated with decreased blood pressure (e.g., dopamine, endorphins, oxytocin) and decreased cortisol, a hormone associated with higher levels of stress.

The positive influences of psychophysiological interventions in treating mental health disorders, especially anxiety and stress-related disorders, have been well documented (e.g., Kabat-Zinn, 1994; Weil, 2011; Yang et al., 2016). However,

counselors often struggle with developing and evaluating interventions for modifying individuals' psychophysiological states (De La Reyes & Aldao, 2015). Thus, interventions that influence psychophysiological states are important to the field of mental health counseling. However, the symptomology of anxiety disorders includes psychophysiological, intrapersonal, and interpersonal factors (APA, 2013). Therefore, focusing on psychophysiology alone will not likely achieve the best outcomes.

Intrapersonal Effects of AAT

Beyond the positive effects on psychophysiological factors, AAT has also shown significant benefits for intrapersonal factors (e.g., anxiety, stress, depression). Tsai, Friedmann, and Thomas (2010) examined the influence of AAT on state anxiety and medical fear in hospitalized children. The results showed a moderate effect of AAT on both state anxiety and medical fear, though there was no significant effect on cardiovascular factors. Nepps et al. (2014) noted similar findings in a study that explored the influence of animal-assisted activities on anxiety and depressive symptomology. Results of this study showed significant reduction in physiological and self-report symptoms of anxiety and depression following a one-hour group therapy session in which participants interacted with a dog and processed the interactions. Depressive symptoms, which often co-occur with anxiety, have also been examined in relation to AAT interventions. For example, Folsie, Minder, Aycocock, and Santana (1994) found a significant reduction in depression and related symptoms within a college counseling center. Participants of this study were placed in one of three groups: AAT only intervention; AAT with psychotherapy; or psychotherapy only. Results demonstrated a significant reduction in reported depressive symptoms for participants in the AAT only group, and a clinical effect for participants in the AAT with psychotherapy group as compared to the psychotherapy only group.

The reduction in anxiety, stress, and depression through the integration of AAT within therapeutic interventions is well documented. However, research exploring the reasons why AAT has an impact on intrapersonal factors remains sparse. The results of Klontz, Bivens, Leinart, and Klontz's (2007) research provided insight into the cognitive changes that occur as a result of AAT. Specifically, the study found that participants reported a stronger orientation to the present, an increased ability to be in the here-and-now, decreased guilt and regret, decreased focus on future-oriented fears, and increased self-efficacy. Such cognitive alterations are similar to the concept of equanimity (Kabat-Zinn, 1994), a key component of mindfulness training.

Interpersonal Effects of AAT

Animal-assisted therapy has a demonstrated positive influence on psychophysiological and intrapersonal factors for individuals with anxiety. Literature also depicts the potential for AAT to improve individual's interpersonal relations and interactions (e.g., Souter & Miller, 2007). In particular, research has focused on socializing effects AAT provides as part of treating anxiety disorders. The nature of AAT provides an environment that requires multiple interpersonal interactions. For example, a typical individual AAT session includes the client, counselor, AAT handler, and the pet. Such socializing dynamics play a key role in mitigating the avoidance aspect of certain anxiety disorders, particularly social anxiety disorder (SAD).

Individuals with SAD often present with persistent fears of social interactions that may induce scrutiny from others (Rapee & Heimberg, 1997). Individuals often feel uncomfortable in new situations, such as a counseling environment. The socializing effects of AAT significantly reduce avoidance and increase comfort with social interactions (Pichot, 2012). For example, a typical AAT intervention for the treatment of SAD involves a client taking a therapy dog for a walk in a public setting, accompanied by the counselor and therapy animal's handler. In this intervention, the counselor encourages the client to engage socially with people approaching to meet and pet the dog. Interventions such as this help increase confidence and comfort with engaging in social interactions, thus minimizing the likelihood of continued social avoidance (Chandler, 2012). The following section examines the implications of integrating AAT as a complementary intervention within the treatment of anxiety. Further, an example of an AAT-mindfulness intervention protocol concludes the section.

Implications for Counseling Professionals

Determining the best approach or strategy to use with a particular client is, at times, a daunting task. Counselors are required to draw upon their training in counseling theories and treatment, keep up to date with the most recent literature regarding treatment efficacy and effectiveness, and assess client factors that will affect the course and prognosis of a treatment strategy. CBT interventions have demonstrated moderate efficacy for symptom reduction for the treatment of anxiety disorders (Bandelow et al., 2015). Mindfulness-based therapies show similar results (Kabat-Zinn, 1994). However, as with all counseling interventions, both CBT and mindfulness-based therapies pose potential barriers to successful client engagement and follow through with learned skills. Specifically, CBT-based interventions tend to have a singular focus (i.e., cognitions) and mindfulness-based therapies require buy-in and integration into one's lifestyle to sustain positive treatment outcomes (Shonin et al., 2013). A current trend in the counseling field is the addition of complementary interventions (e.g., AAT) to offset potential barriers, thus enhancing overall outcomes.

There is strong evidence for the benefits of adding complementary interventions to enhance the outcomes of standard treatment approaches (NCCIH, 2016). Integrating AAT within standard mindfulness-based therapies has the potential to reduce anxiety symptoms, increase acceptability and engagement in the therapy process, and increase the transferability of mindfulness skills post treatment completion. For example, integrating AAT may increase clients' willingness to engage in therapeutic strategies they normally would not, thus increasing participation in treatment. Holcomb and Meacham (1989) demonstrated significant increases in treatment engagement and completion through the integration of AAT interventions. The increase in client engagement is likely due to the changes in the clinic environment created through the introduction of AAT. Pichot (2012) noted that the addition of AAT within counseling modified the overall environment by changing the power differential between counselor and client, increasing the general comfort level, encouraging clients to focus on positive activities, and allowing the client to focus on an external source. Further, Fine (2000) found that the addition of AAT lead to an increase in client talkativeness and interaction.

A primary tenant of mindfulness is based on Wolpe's principle of reciprocal inhibition, meaning one cannot do two opposite things concurrently (Erford, 2015). For example, a client is not able to feel stressed and relaxed at the same time. Thus, focusing on positive self-talk, visualization, and muscle relaxation reduces the likelihood of the opposite, negative effect from occurring (Erford, 2015). The potential role of AAT as a complementary intervention for mindfulness-based therapies would, in part, be to enhance the client's experiences during treatment sessions.

The following is an example protocol for an AAT-mindfulness combined intervention for introducing and practicing stress-reduction techniques.

Introduction: The counselor introduces the client to the therapy animal and handler, discussing the assurance of confidentiality of the therapy animal handler being part of the process. Prior to beginning the client-therapy animal interaction, the counselor asks the client to rate their current level of anxiety on a scale of 1 to 5, with 5 being the most anxious they have felt.

Mindful breathing: The counselor guides the client through 5 minutes of deep breathing, allowing for natural interactions to occur between the client and the therapy animal. The counselor instructs the client to tune into any changes that occur (e.g., emotional, physical) during the client-therapy animal interaction.

Interaction with therapy animal/mindfulness of external world: The counselor guides the client through 5 minutes of direct interaction with the therapy animal. This interaction can include touch, sight, smell, and sound. The counselor instructs the client to tune into their senses as they interact with the therapy animal.

Compassion for the therapy animal/compassion mindfulness: The counselor guides the client through 5 minutes of exploring their compassionate feelings towards the therapy animal. This can include positive or negative emotional or cognitive experiences that arise during the interaction with the therapy animal.

Debriefing: The counselor guides the client through a 5-minute debriefing upon completion of the client-therapy animal interactions. During the debriefing period, the counselor begins by reassessing the client's current level of anxiety on a scale from 1 to 5. The counselor then processes the client's response to interacting with the therapy animal, specifically related to experienced physical and emotional sensations. Lastly, the counselor assists the client to draw connections between the client-therapy animal interaction, and stress reduction techniques that can be utilized outside of session.

Conclusion

Integrating complementary and integrative interventions within standard treatment for anxiety disorders has become increasingly popular due to the increase of positive clinical outcomes (Shonin et al., 2013). This movement arose from counselors' recognition that variations in symptomology, as well as client acceptance and engagement, require a variety of treatment strategies. Although mindfulness-based

therapies have demonstrated positive results for reducing anxiety, barriers (e.g., acceptance, engagement, treatment completion) still remain that influence the overall efficacy of the approach (Shonin et al., 2013). Integrating AAT as a complementary intervention for mindfulness-based therapies has the potential to address client-related barriers to treatment, thus enhancing the impact of mindfulness-based therapies on the reduction of anxiety (Pichot, 2012). Further research is needed to examine the effect of an AAT-mindfulness combined intervention for the treatment of anxiety disorders across psychophysiological, intrapersonal, and interpersonal factors. Further, studies utilizing experimental designs are needed to more thoroughly examine the influence of AAT-mindfulness combined interventions on the factors of treatment acceptance, engagement, and completion.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Bandelow, B., Reitt, M., Rover, C., Michaelis, S., Gorlich, Y., & Wedekind, D. (2015). Efficacy of treatment for anxiety disorder: A meta-analysis. *International Clinical Psychopharmacology*, *30*(4), 183–192. doi:10.1097/YIC.0000000000000078
- Barker, S. B., Knisely, J. S., McCain, N. L., Schubert, C. M., & Pandurangi, A. K. (2010). Exploratory study of stress-buffering response patterns from interaction with a therapy dog. *Anthrozoös*, *23*(1), 79–91.
- Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York, NY: Guilford.
- Beauchaine, T. P., & Hinshaw, S. P. (2008). *Child and adolescent psychopathology* (2nd ed.). Hoboken, NJ: John Wiley & Sons Inc.
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York, NY: International Universities Press.
- Chandler, C. (2012). *Animal assisted therapy in counseling* (2nd ed.). New York, NY: Routledge, Taylor, & Francis Group.
- Cummings, C. M., Caporino, N. E., & Kendall, P. C. (2014). Comorbidity of anxiety and depression in children and adolescents: 20 years after. *Psychological Bulletin*, *140*(3), 816–845.
- Dakwar, E., & Levin, F. R. (2009). The emerging role of meditation in addressing psychiatric illness, with a focus on substance use disorders. *Harvard Review of Psychiatry*, *17*(4), 254–267. doi:10.1080/10673220903149135
- De Castella, K., Goldin, P., Jazaieri, H., Heimberg, R. G., Dweck, C. S., & Gross, J. J. (2015). Emotion beliefs and cognitive behavioural therapy for social anxiety disorder. *Cognitive Behaviour Therapy*, *44*(2), 128–141. doi:10.1080/16506073.2014.974665
- De La Reyes, A., & Aldao, A. (2015). Introduction to the special issue: Toward implementing physiological measures in clinical child and adolescent assessments. *Journal of Clinical Child and Adolescent Psychology*, *44*(2), 221–237. doi:10.1080/15374416.2014.891227
- Ellis, A. (2004). *Rational emotive behavior therapy: It works for me--it can work for you*. Amherst, NY: Prometheus Books.

- Ellis, A. (2006). Rational emotive behavior therapy and the mindfulness-based stress reduction training of Jon Kabat-Zinn. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 24(1), 63–78. doi:10.1007/s10942-006-0024-3
- Erford, B. T. (2015). *40 techniques every counselor should know* (2nd ed.). Boston, MA: Pearson Education, Inc.
- Fine, A. (2000). *Handbook on animal-assisted therapy: Theoretical foundations and guidelines for practice*. San Diego, CA: Academic Press.
- Folse, E. B., Minder, C. C., Aycock, M. J., & Santana, R. T. (1994). Animal-assisted therapy and depression in adult college students. *Anthrozoos*, 7(3), 188–194.
- Goodwin, L. (2002). *The button therapy book. A practical psychological self-help book and holistic cognitive counseling manual for mental health professionals*. Victoria, BC, Canada: Trafford Publishing
- Hipol, L. J., & Deacon, B. J. (2013). Dissemination of evidence-based practices for anxiety disorders in Wyoming: A survey of practicing psychotherapists. *Behavior Modification*, 37(2), 170–188. doi:10.1177/0145445512458794
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169–183. doi:10.1037/a0018555
- Holcomb, R., & Meacham, M. (1989). Effectiveness of an animal-assisted therapy program in an inpatient psychiatric unit. *Anthrozoös*, 2(4), 259–264. doi:10.2752/089279389787057902
- Kabat-Zinn, J. (1984). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *Revision*, 7(1), 71–72.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York, NY: Hyperion.
- Kilgus, M. D., Maxmen, J. S., & Ward, N. G. (2015). *Essential psychopathology & its treatment*. New York, NY: W. W. Norton & Company.
- Klontz, B. T., Bivens, A., Leinart, D., & Klontz, T. (2007). The effectiveness of equine-assisted experiential therapy: Results of an open clinical trial. *Society and Animals*, 15, 257–267.
- Lambert, M. J., & Barley, D. E. (2001). Research summary on the therapeutic relationship and psychotherapy outcome. *Psychotherapy Theory Research Practice and Training*, 38, 357–361. doi:10.1037/0033-3204.38.4.357
- Mascaro, J. S., Rilling, J. K., Negi, L. T., & Raison, C. L. (2013). Compassion meditation enhances empathic accuracy and related neural activity. *Social Cognitive and Affective Neuroscience*, 8(1), 48–55. doi: 10.1093/scan/nss095
- McWilliams, S. A. (2010). Inherent self, invented self, empty self: Constructivism, Buddhism, and psychotherapy. *Counseling and Values*, 55(1), 79–100. doi:10.1002/j.2161-007X.2010.tb00023.x
- Nam, S., & Toneatto, T. (2016). The influence of attrition in evaluating the efficacy and effectiveness of mindfulness-based interventions. *International Journal of Mental Health and Addiction*. doi:10.1007/s11469-016-9667-1
- National Center for Complementary and Integrative Health. (2016, June). *Complementary, alternative, or integrative health: What's in a name?* Retrieved from <https://nccih.nih.gov/health/integrative-health>

- National Institute of Mental Health. (2016, March). *Anxiety disorder*. Retrieved from <http://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml>
- Nepps, P., Stewart, C. N., & Bruckno, S. R. (2014). Animal-Assisted Activity: Effects of a complementary intervention program on psychological and physiological variables. *Journal of Evidence-Based Complementary & Alternative Medicine*, *19*(3), 211–214. doi:10.1177/2156587214533570
- Pichot, T. (2012). *Animal assisted brief therapy: A solution-focused approach* (2nd ed.). New York, NY: Routledge Taylor & Francis Group.
- Odendaal, J. S. (2000). Animal-assisted therapy – magic or medicine? *Journal of Psychosomatic Research*, *49*(4), 275–280.
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, *35*(8), 741–756.
- Santana, L., & Fontenelle, L. F. (2011). A review of studies concerning treatment adherence of patients with anxiety disorders. *Patient Preference and Adherence*, *5*, 427–439. doi:10.214/PPA.S23439
- Siegel, D. J. (2009). Mindful awareness, mindsight, and neural integration. *The Humanistic Psychologist*, *37*(2), 137–158. doi:10.1080/08873260902892220
- Shonin, E., Van Gordon, W., & Griffiths, M. D. (2013). Mindfulness-based interventions: Towards mindful clinical integration. *Frontiers in Psychology*, *4*. doi:10.3389/fpsyg.2013.00194
- Souter, M. A., & Miller, M. D. (2007). Do animal-assisted activities effectively treat depression? A meta-analysis. *Anthrozoos*, *20*(2), 167–181.
- Tsai, C., Friedmann, E., & Thomas, S. A. (2010). The effect of animal-assisted therapy on stress responses in hospitalized children. *Anthrozoos*, *23*(3), 245–258.
- Weil, A. (2011). *Spontaneous happiness*. New York, NY: Little Brown and Company
- Yang, C., Barrós-Loscertales, A., Pinazo, D., Ventura-Campos, N., Borchart, V., Bustamante, J., & Walter, M. (2016). State and training effects of mindfulness meditation on brain networks reflect neuronal mechanisms of its antidepressant effect. *Neural Plasticity*, *2016*. doi:10.1155/2016/9504642
- Zeng, X., Oei, T. P., & Liu, X. (2014). Monitoring emotion through body sensation: A review of awareness in Goenka's Vipassana. *Journal of Religion and Health*, *53*(6), 1693–1705. doi:10.1007/s10943-013-9754-6

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