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**Mindfulness Training for Adults Who Stutter: An Overview for Speech-
Language Pathologists**

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Language Pathologists**

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Report

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Abstract

Mindfulness Training for Adults Who Stutter: An Overview for Speech-Language Pathologists

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Over the span of 2,500 years, mindfulness techniques have transformed from being purely Buddhist meditation practices to secular therapeutic interventions. Mindfulness training has been adopted by a variety of healthcare and educational professionals for increasing psychological, emotional, and physical well-being. Speech-language pathologists have recognized that psychological and emotional well-being can be an important factor when implementing speech and language intervention with people who stutter. Mindfulness practice can result in decreased avoidance, increased emotional regulation, and acceptance, in addition to improved sensory-perceptual processing and attentional regulation skills. Increasingly, mindfulness based strategies are being employed by speech-language pathologists, particularly with regard to stuttering treatment. This report will provide an overview of mindfulness based techniques used by speech-language pathologists with adults who stutter including: the relationship between stuttering

and mindfulness, assessment and treatment of stuttering, the benefits of mindfulness for adults who stutter, and considerations for future research.

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INTRODUCTION

Stuttering can be described as a genetically based, neurophysiological disorder characterized by atypical disruptions in the fluency of speech. Stuttering occurs in approximately 1% of the general population and in 5% of primary school children (Gupta, Yashodharakumar, & Vasudha, 2016). Males are four times more likely to stutter compared to females (Perez & Stoeckle, 2016). The etiology of stuttering is unknown and there is no cure for stuttering. However, research supports a genetic basis of stuttering. Up to 90% of children who stutter can recover from stuttering with speech therapy interventions or through natural recovery (Perez & Stoeckle, 2016). However, many children enter adulthood with a stutter and a significant amount of these adults may have ongoing psychosocial and emotional issues related to stuttering. There are emerging data to suggest that age of onset of stuttering (>3yrs), family history of persistence, male gender, and lower language skills are predictors of persistent stuttering.

Speech-language pathologists are trained in providing interventions that target reduction of disfluencies in the speech of people who stutter, and more recently, have focused on interventions that simultaneously target emotional support for people who stutter. In fact, most people who stutter prefer an integrated treatment approach, with appropriate goals that address both feelings and attitudes about stuttering and speech fluency (Yaruss & Quesal, 2002). Attitudes and feelings about stuttering are important to consider because communication competence and confidence for people who stutter can be diminished through avoidance or through behavioral techniques present in traditional

stuttering intervention methods that are difficult to generalize to everyday conversation. Managing reactions to disfluent speech can be an effective technique for regulating disfluent speech and reducing the psychosocial effects associated with stuttering.

Disfluent speech caused by stuttering can impact emotional well-being. Emotional reactions to stuttering instances include anxiety and frustration associated with anticipated embarrassment and humiliation when speaking (Craig & Tran, 2014). The potential negative psychosocial impact of stuttering may lead to lowered motivation and avoidance of situations when anticipation of stuttering instances might occur. Increased anxiety and avoidance of social situations can adversely affect the quality of life of individuals who stutter (Boyle, 2015). Therefore, speech therapy interventions targeting the reduction of anxiety and psychological stress symptoms associated with stuttering are necessary to benefit both communication effectiveness and the quality of life for people who stutter.

Increasingly, mindfulness techniques have been used to decrease psychological symptoms, including those caused by stuttering. Mindfulness practices have been adopted by some speech-language pathologists as a therapeutic intervention used to enhance communication effectiveness and the quality of life for people who stutter. This paper will provide an overview of the different aspects of mindfulness based therapy techniques including: the definition of mindfulness, the history of mindfulness, assessment and treatment of stuttering, the benefits of mindfulness in stuttering management for adults, and considerations for future research.

MINDFULNESS

Mindfulness therapy techniques used for stuttering differ from traditional stuttering interventions, such as stuttering modification that focuses on reducing the stuttering moment as it is happening and fluency shaping that focuses on manipulating speech by beginning every first word of every utterance with an easy onset in an effort to speak with 100% fluency. In contrast, mindfulness encourages acceptance, rather than attempting to change or manipulate. Mindfulness can be defined as paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally (Boyle, 2011). Mindfulness philosophies are based off of the religious foundations of Buddhist meditation and can be traced back more than 2,500 years (Ditrich, 2016). The goal of Buddhist meditation, which includes mindfulness, is liberation from suffering and awakening from delusions, cravings and aversions (Ditrich, 2016).

In Buddhist tradition, mindfulness is always one component within the overall ethical framework of Buddhist discourse, but mindfulness alone does not lead to liberation from suffering (Ditrich, 2016). Although mindfulness continues to be a key component of Buddhist meditation, mindfulness techniques have been adopted by people from many different backgrounds as a way to bring awareness to the present moment for the apparent benefits.

Secularized mindfulness practices have been used to enhance psychological and physical well-being since the late twentieth century (Ditrich, 2016). Therapies in which mindfulness plays a central role have been shown to have positive outcomes for a broad range of clinical symptoms. Mental health professionals utilize mindfulness methods with

clients in order to decrease anxiety and depression, decrease stress, reduce weight stigma, reduce unhealthy eating patterns, and increase overall emotional well-being (Palmeira, Pinto-Gouveia, & Cunha, 2017). Teachers utilize mindfulness techniques in order to improve school-aged children's attention, test anxiety, social skills, and overall global executive control (Volanen et al., 2016). Mindfulness-based interventions include Mindfulness-Based Stress Reduction, Mindfulness Based Cognitive Therapy, and Acceptance and Commitment Therapy (Boyle, 2011). Speech-language pathologists have recently begun to explore mindfulness interventions for treatment of communication disorders, including for adults who stutter. By using mindfulness techniques in speech therapy, adults who stutter may see positive emotional well-being outcomes, increases in attention and awareness, and they may also experience a reduction in stuttering instances.

MINDFULNESS AND STUTTERING MANAGEMENT

Mindfulness based interventions use specific techniques that are unique to mindfulness. However, there are several similarities between mindfulness and other stuttering management interventions. Clinicians familiar with more traditional stuttering therapy techniques may target similar outcomes as those targeted through the use of mindfulness-based interventions. Clinicians who implement mindfulness interventions for adults who stutter might target: awareness and attention, emotional regulation and perception of thought, and acceptance.

Awareness and Attention

Focused attention is a skill that can be taught through mindfulness training. Mindfulness begins by bringing awareness to the present experience. Mindfulness training has been shown to increase attentional control (Chambers, Lo, & Allen, 2008) and increase sustained attention on tasks (Jha, Krompinger, & Blame, 2007). In addition, mindfulness training has been found to increase activation in areas of the brain involved in sustaining and monitoring the focus of attention (Tomasino & Fabbro, 2015). Regulating the focus of attention to the changing field of thoughts, feelings, and sensations from moment to moment can lead to a feeling of being alert to what is occurring in the present (Bishop et al., 2004).

Sustained attention can be applicable to many different facets of stuttering therapy. People who stutter sometimes experience difficulties controlling and focusing attention required to make changes in traditional stuttering therapy (Boyle, 2011). In addition,

increased attention and awareness to thoughts, feelings, and behaviors associated with stuttering may have possible implications on the psychosocial and emotional consequences associated with stuttering. Mindfulness training could assist in recognizing when feelings of fear and avoidance arise during a stuttering moment or during a period of relapse. Recognizing these feelings can allow people who stutter to respond mindfully and non-judgmentally.

Emotional Regulation and Perception of Thought

Rumination on a thought that is not the present moment, such as negative past events or feared future events, can confuse the mind into thinking contrived thoughts are representative of the present situation. These thoughts can lead to negative emotional feelings of anxiety and depression and can prevent effective problem solving (Ramel, Goldin, Carmona, & McQuaid, 2004). During mindfulness practice, thoughts are viewed as passing mental events rather than accurate reflections of reality (Boyle, 2011). Emotional-regulation emphasizes acknowledging the mind's tendency to fabricate experiences that are not true to reality and bringing attention back to the present. Rather than ruminating on a particular thought, or allowing yourself to follow an elaborative thought stream, mindfulness involves a direct experience in the mind and body (Bishop et al., 2004). Mindfulness has been shown to decrease the activation in areas of the brain that are part of the default mode network that has been related to monitoring the reliability of internal and external information, which are often a source of worry and anxiety (Tomasino & Fabbro, 2015). Mindfulness may help in navigating the differences between perceived thought and reality and lead to a decrease in negative emotional clinical symptoms.

People who stutter may experience negativity as their mind generates perceived thoughts about their stuttering. Clinicians involved in the treatment of stuttering have to take into account emotional regulation and perception of thought in both their assessment and treatment of stuttering (Craig & Tran, 2013). By recognizing that thought is just a figment of reality, people who stutter may improve their overall perception of their stutter and thus improve their overall emotional regulation. For this reason, mindfulness should be considered as treatment strategy for adults who stutter because of the emphasis on improved emotional regulation and perception of thought related to stuttering.

Acceptance

Acceptance is being open to the present experience, whether the experience is good, bad, or neutral. Acceptance is the opposite of avoidance, escape or suppression of symptoms. Instead of reprimand for letting the mind wander during mindfulness practice, a person is expected to accept the unwanted thought and bring the mind back to the present without any self-criticism. Avoidance, suppression, and escape can result in higher levels of anxiety and unpleasant experiences (Boyle, 2011). In contrast, positive psychological well-being is expected to result from being mindful and accepting of experiences.

Anxiety related to suppression and avoidance of stuttering are negative prognostic indicators for stuttering management and quality of life of people who stutter (Boyle, 2015). Increased anxiety in people who stutter can overload the capacity of the speech motor system and thus disrupt functioning (Craig & Tran, 2014). Those who internalize stigma and apply stigmatizing attitudes to themselves experience lower levels of psychological well-being. However, many people who stutter are resilient and can buffer

self-esteem, self-efficacy, and life satisfaction even in the face of public stigma (Boyle, 2012). Professionals emphasize the importance of acceptance in stuttering management, as avoiding stuttering instances can exacerbate stuttering. Incorporating both intentional acceptance and self-regulation into mindfulness practice can lead to meaningful psychological and quality of life changes for people who stutter.

ASSESSMENT AND TREATMENT OF STUTTERING

Speech-language pathologists may be responsible for differential diagnosis and treatment of stuttering. However, speech-language pathologists consistently rank the area they feel the least competent for diagnosis and treatment as stuttering among all speech and language areas (Brisk, Healey, & Hux, 1997; Tellis, Bressler, & Emerick, 2009; Yaruss et al., 2017). One reason might be that students who study speech-language pathology in Master's programs may be provided little training in diagnosing and treating stuttering (Yaruss, 1999; Yaruss & Quesal, 2002). Upon entering the field, many speech-language pathologists have had little or no clinical experience with diagnosing and treating stuttering. This section will provide information on diagnoses and treatment guidelines, how diagnoses and treatment are currently changing, and assessment tools used to evaluate clinical symptoms associated with stuttering and mindfulness.

Mindfulness-Based Measurements

Type and frequency of speech disfluencies have been used as a means for differential diagnosis between children who do and do not stutter since the 1950s (Johnson et al., 1959). Atypical disfluencies associated with stuttering include sound or syllable repetitions (i.e., “D-D-Dog”), prolongations (i.e., “ddddddog”), and blocks (inaudible or silent fixations or inability to initiate sounds). Typical disfluencies might include multi-syllabic whole-word and phrase repetitions (i.e., “The cat- The cat meowed), interjections (i.e., “Uh- the cat meowed”), and revisions (i.e., “The dog- the cat meowed”). Because stuttering instances are variable, clinicians should never rely only on standardized tests or

frequency counts for diagnoses of stuttering. Informal tests, clinical observations, and client interviews can provide information about a person who stutters that is not present during formal testing. For example, a person may not present any secondary behaviors during the diagnostic session, however s/he may report producing secondary behaviors when in a different speaking environment.

Evaluation of tension and description of stuttering moments is also important to consider when determining if a person is someone who stutters or presents with typical disfluencies. In the past, frequency of speech disfluencies indicated the severity of stuttering- the higher incidence of atypical disfluencies, the more severe a person stutters (Johnson et al., 1959). Increasingly, speech-language pathologists are moving towards new severity guidelines by assessing speaker's acceptance and awareness of stuttering, personal feelings about stuttering, avoidance of stuttering instances, and overall impact on quality of life (Beilby, Byrnes, & Yaruss, 2012). The following tests can be used to assess stuttering domains that can be addressed through mindfulness therapy: The Mindful Attention Awareness Scale, The Overall Assessment of Speaker's Experience of Stuttering, The Acceptance and Action Questionnaire, and the Speech Situation Checklist.

THE MINDFUL ATTENTION AWARENESS SCALE (MAAS)

Attention and awareness of the present moment can be important in determining the severity of stuttering and overall impact stuttering may have on the quality of life of individuals who stutter. The MAAS can be used to assess awareness of and attention to the present and help identify if mindfulness treatment goals might be appropriate for therapy (Brown & Ryan, 2003). When conducting the MAAS, clinicians should instruct individuals

to rate how often they have experiences of being open and receptive to present moment experiences across cognitive, emotional, physical, interpersonal, and general life domains (Beilby et al., 2012). Low rating scores could indicate unawareness and minimal attention to the present moment and suggest that mindfulness training could be an appropriate treatment for stuttering management. The MAAS could be used by speech-language pathologists to track progress related to awareness and attention goals for stuttering (Beilby et al., 2012). By comparing results before and after mindfulness treatment, speech-language pathologists can document changes in ratings related to awareness and attention to the present moment.

THE OVERALL ASSESSMENT OF SPEAKER'S EXPERIENCE OF STUTTERING (OASES)

The OASES can be used to assess the adverse impact and negative consequences associated with stuttering. The OASES questionnaire evaluates general perceptions of the stuttering impairment, the affective, behavioral and cognitive reactions to stuttering, the impact of the stuttering impairment on functional communication, and the impact of stuttering on overall quality of life (Yaruss & Quesal, 2010). A higher score on the OASES indicates a stronger negative impact associated with stuttering and lower scores indicate less negative impact. The OASES can be helpful in identifying environmental factors and participation and activity limitations related to stuttering. In addition, the OASES can emphasize areas of concern and potential mindfulness goals to target in therapy for people who stutter.

THE ACCEPTANCE AND ACTION QUESTIONNAIRE (AAQ)

The AAQ can be used to assess elements of experiential avoidance, including negative evaluation of and tendency to avoid or control difficult or unpleasant situations (Bond et al., 2011). Intentional avoidance of stuttering situations is important to consider when diagnosing and determining treatment goals for stuttering management because avoidance of stuttering situations may exacerbate or perpetuate stuttering instances. By assessing psychological flexibility during unpleasant situations, clinicians can determine if mindfulness training is warranted for treatment of avoidance of stuttering behaviors.

THE SPEECH SITUATION CHECKLIST (SSC)

The SSC measures the extent to which specific situations provoke negative feelings and/or non-fluency (Brutten, 1975). To administer the SSC, clinicians ask participants to indicate to what extent they perceive negative feelings in 51 situations. The items depict situations that could raise negative emotions in people who stutter. The higher rating indicates a higher degree of negative emotion from the person who stutters. The SSC can be used to judge the level of anxiety about speech situations when assessing whether someone is a person who stutters. In addition, the SSC can provide valuable information about the types of speaking situations in which a person who stutters feels most anxious.

Clinicians should always use a combination of formal and informal tests, clinical observations, client interviews, and professional clinical judgement to diagnose, determine severity, and create treatment goals for stuttering. Each client will bring a unique set of circumstances that will require individualized attention and planning by the attending clinician.

Speech-language pathologists who implement mindfulness training aim to improve frequency of disfluencies, attention and awareness, psychological well-being, and over-all quality of life for people who stutter. Based on the World Health Organization's International (2001) Classification of Functioning Disability and Health classification, potential outcomes of mindfulness training effect body functions and communication activity and participation. Mindfulness can be implemented into stuttering therapy in a variety of ways. This section will explain the mindfulness strategies and techniques currently being used by speech-language pathologists in stuttering management.

The following therapy interventions incorporate mindfulness and have been used with adults who stutter to target improvements in psychosocial functioning, readiness for therapy change, psychological flexibility, communication attitudes, and frequency of stuttering: Mindfulness Based Stress Reduction, Acceptance and Commitment Therapy, and Cognitive Behavior Therapy plus Mindfulness Training.

MINDFULNESS-BASED STRESS REDUCTION (MBSR) THERAPY

The MBSR program is an eight-week training course consisting of two and half hour sessions that focus on teaching participants how to relax attentively. The MBSR program has been applied to multiple clinical samples with a variety of symptoms including: chronic pain (Sagula & Rice, 2004), anxiety and panic disorders (Miller, Fletcher, & Kabat-Zinn, 1995), and fibromyalgia (Kaplan, Goldberg, & Galvin-Nadeau, 1993). Recently, MBSR has been modified and applied to stuttering management for adults who stutter. The MBSR program utilizes a variety of mindfulness strategies to target stress, anxiety about speech situations, self-efficacy beliefs, coping, locus of control, and attitude

towards speech situations when implemented with adults who stutter (de Veer, Brouwers, Evers, & Tomic, 2009).

During MBSR sessions, clients can partake in the following mindfulness exercises: (1) body scan, (2) yoga exercises, and (3) sitting meditation. After learning how to implement each exercise, clients can practice the exercises on their own for continued practice and maintenance of skills. Body scan exercises are meant to get the client to pay systematic attention to the whole body and simultaneously perceive sensations in various parts of the body (de Veer et al., 2009). Attention is given to a certain part of the body (i.e., the hands), held in awareness for a brief time to explore any sensations that arise in the area, and then let go before focusing attention on the next part of the body. For people who stutter, body scanning may bring awareness to any physical sensations related to stuttering.

The second and third technique used in MBSR require coordination of mind and body. Yoga exercises involve stretching and striking poses in coordination with the inhale and exhale of the breath to increase the awareness of the muscular system. During sitting meditation, attention is drawn to breathing, physical sensations, and thoughts and emotions. For people who stutter, sitting meditation and yoga exercises may bring awareness to both positive and negative thoughts and emotions and physical sensations associated with stuttering. In addition, focusing on the breath may increase awareness and attention of the body and could provide a foundation for monitoring the speech production process for people who stutter (Boyle, 2011). By focusing on each breath, acknowledging wandering thoughts, and directing attention back to the breath, mindfulness can be achieved and the mind may begin to feel at ease (Bishop et al., 2004).

ACCEPTANCE AND COMMITMENT THERAPY (ACT)

ACT teaches mindfulness as one component of the acceptance and commitment approach to help people who stutter. The goal of ACT is to improve the psychosocial functioning, readiness for therapy and change, utilization of mindfulness skills and psychological flexibility, and frequency of stuttering in adults who stutter (Beilby et al., 2012). ACT aims to reduce frustration through acceptance and focuses on valued living (Beilby et al., 2012). Mindfulness is used as one of the six core processes to contribute to psychological flexibility in the ACT model. Specifically, mindfulness, as it relates to ACT, teaches perspective on the present rather than dwelling on thoughts and experiences in the past (Beilby et al., 2012). By targeting psychological flexibility, ACT intends to improve the quality of life, reduce emotional reactivity, and improve mental health for adults who stutter.

The ACT model breaks down the six core processes into eight sessions. The six principles of ACT include: a) defusion- observing thoughts as they come and go without attacking meaning or judgement, b) acceptance- open to whatever comes, c) flexible attention to the present moment- be in the now, d) self-as-context- pure awareness of thoughts/behaviors/moods, e) committed action- effective mental and physical actions guided by values, and f) chosen values- knowing what matters in a person's life. The ACT model emphasizes the interconnectedness between each principle and how each principle contributes to the ACT goal of psychological flexibility.

The first session familiarizes the client with ACT and therapeutic goals. The second session aims to increase client awareness of emotional control and the concepts of

willingness and acceptance as alternatives to avoidance. The third session further introduces acceptance interventions, self-evaluation and the practice of mindfulness skills. At this stage, clients are taught to notice each thought as being a thought, rather than adhering to thoughts as facts. The fourth session is used to generalize mindfulness skills to daily living. The fifth, sixth, and seventh session expand on the committed action and management of skills targeted in previous sessions. The eighth and final session addresses client reactions to the treatment program and promotes post-treatment maintenance of therapeutic gains (Beilby et al., 2012).

The ACT program teaches clients that thoughts are mental events that are not necessarily an accurate representation of reality. Clients can change their relation with their thoughts by using a metaphor, such as viewing thoughts as images. Telling the client that an image of an apple may represent an apple but the image is not an actual apple, may be useful in explaining thoughts as representations of reality. Viewing thoughts as images on a flashing movie screen may also be an effective approach. The metaphor can be particularly useful because after seeing a movie several times, one knows the script and the novelty wears off (Boyle, 2011). In the same way, the scripts of the mind which recur again and again through the process of rumination, lose their power once the client becomes aware of the mental tape being played.

COGNITIVE BEHAVIOR THERAPY (CBT) WITH MINDFULNESS TRAINING

The last mindfulness-based intervention known to be used with adults who stutter is cognitive behavior therapy in conjunction with mindfulness training (Gupta et al., 2016). The goal of CBT in adults who stutter is to reduce social avoidance and anxiety (Craig &

Train, 2006). CBT utilizes a combination of mindfulness attentional training, exposure, voluntary stuttering, and cognitive restructuring to target negative psychosocial aspects and quality of life of people who stutter. The mindfulness component of CBT includes mindfulness meditation; awareness about thoughts, feelings and body; awareness of the present moment; identifying past, present, and future thinking; and integrating mindfulness and acceptance into daily life (Gupta et al., 2016).

Mindful attentional training can be used in CBT to reduce the frequency of threat-related negative thoughts and the bias toward undesirable aspects of the social environment- both of which are critical in stuttering management. In attentional training, clients are seated in a comfortable posture with their eyes closed. They are then asked to focus on counting while inhaling and exhaling on each breath. On each inhale the client counts a number in their mind, while on each exhale the client hears the word relax in their mind. Clients are then instructed to complete the simple attentional training task twice a day for five minutes (Menzies, Onslow, Packman, & O'Brien, 2009).

In summary, mindfulness exercises and strategies vary and can be implemented in different ways. Understanding the wants and needs of each client is important in deciding which mindfulness strategy or combination of strategies to apply in treatment. In addition, mindfulness strategies may be one part of a treatment intervention and care plan, rather than the sole intervention used for stuttering management. Clinicians should consider all intervention options, including mindfulness exercises, when implementing a treatment plan and writing goals for adults who stutter.

BENEFITS OF MINDFULNESS FOR ADULTS WHO STUTTER

Mindfulness can be an appealing intervention approach to clinicians because mindfulness can improve the lives of people who stutter across multiple domains. This section will discuss the potential benefits of mindfulness integrated within the MBSR, ACT, and CBT programs for adults who stutter.

Mindfulness-Based Stress Reduction (MBSR) Therapy

The MBSR program has proven to be an effective intervention approach for adults who stutter. De Veer et al. (2009) found that immediately after an eight-week MBSR program, adults who stutter suffer less from stress and related complaints, such as tension and fatigue. In addition, adults who stutter have less anxiety about speech situations, have more confidence in their ability to approach speech situations, perceive themselves to be more in control of life-events, are less likely to avoid certain situations or problems, and have a more positive attitude towards speech situations (de Veer et al., 2009). Reductions in stress and anxiety about speech situations continue to decrease even four weeks after the completion of the program (de Veer et al., 2009). Stress and anxiety about speaking situations can increase the frequency of disfluencies in a person who stutters speech. In addition, increased stress and anxiety can negatively impact the quality of life of people who stutter. Therefore, the decrease in stress and anxiety and increase in confidence and feelings of control of speech situations demonstrate that people who stutter may benefit from the MBSR program.

Acceptance and Commitment Therapy (ACT)

The ACT program has also been proven to be effective in providing therapeutic gains for stuttering management (Beilby et al., 2012). Clients who undergo ACT group therapy for two-hours a week and for eight consecutive weeks demonstrate reductions in the adverse impact of stuttering on their lives, an increase in their readiness for change, an improvement in their mindfulness skills, and a reduction in their overall frequency of stuttering (Beilby et al., 2012). Furthermore, these gains may be maintained for a period of three months prior to the completion of the ACT program (Beilby et al., 2012). The positive outcomes associated with ACT suggest that adults who stutter can speak more fluently and communicate more effectively, all while living their lives with a greater sense of acceptance and a reduced burden from their disorder. Thus, the ACT program can lead to improved psychosocial functioning, improved speech fluency, and enhanced quality of life.

Cognitive Behavior Therapy (CBT)

Lastly, cognitive behavior therapy (CBT) with a mindfulness training (MT) component has proven to be a beneficial intervention to implement with adult clients who stutter (Gupta et al., 2016). The CBT + MT program that consists of 15-20 60 minute sessions can bring positive changes in measures of anxiety, speech disfluency, communication attitude, mindfulness, self-esteem, and quality of life in adults who stutter (Gupta et al., 2016). These improvements suggest that the CBT + MT program may be an appropriate treatment for speech-language pathologists to implement with adult clients who stutter.

Overall, mindfulness-based interventions can be beneficial for adults who stutter. The increase in awareness, acceptance, and emotional regulation following mindfulness training seem to have a positive influence on the communication attitude and quality of life of people who stutter. For this reason, speech-language pathologists should consider mindfulness exercises as a treatment approach for adult clients who stutter.

CONSIDERATIONS AND FUTURE RESEARCH

Mindfulness-based therapy has demonstrated to be beneficial for adults who stutter in clinical trials (Beilby et al., 2012; De Veer et al., 2009; Gupta et al., 2016), however there is still ambiguity about mindfulness related to stuttering. The definition of mindfulness varies among the literature and questions about which aspects of mindfulness are responsible for treatment gains should be considered when making clinical decisions. Future research should document a precise and thorough description of mindfulness and strategies to achieve mindfulness in order for clinicians to realistically implement evidence-based mindfulness interventions into practice.

Second, all of the programs discussed include a number of components and elements, any of which may contribute to the improvements found in each study. Future research should investigate if there is a common core factor that is contributing to the gains made in all three mindfulness-based interventions in clinical trials. For example, focusing on the breath and perceiving thoughts as passing events both are forms of mindfulness practice used with adults who stutter (Boyle, 2011; De Veer et al., 2009). Further research is warranted to determine which aspects of mindfulness training are most advantageous to therapeutic gains related to stuttering.

Third, many of the current studies available related to mindfulness and stuttering management for adults are pilot studies. There should be more repetitions of studies with larger sample sizes. Long-term outcomes were assessed in most studies, however the time

period between the end of each program and post-testing lacks in length of time. Clients are more likely to experience a stuttering relapse after a longer period of time. Comparing long-term outcomes following mindfulness-based interventions and the feelings associated with having a stuttering relapse with and without mindfulness-based intervention should be investigated further. Additional research is needed to determine the lasting effect of mindfulness training on adults who stutter.

Fourth, all of the studies measured treatment outcomes related to stress and anxiety by questionnaires only. Future studies should measure stress levels using objective measures, including blood pressure and heart rhythm. In addition, future research should implement objective brain imaging to assess differences in brain functioning before and after intervention. Further research is needed to determine the objective outcomes of mindfulness training on adults who stutter.

Fifth, cultural implications and bilingualism is absent within the literature. There are currently no articles that address the use of mindfulness as a technique with bilingual speakers. In addition, the literature does not address the potential cultural prejudice people might have against mindfulness practice. For example, people might be unwilling to participate in mindfulness activities because of the Buddhist background from which mindfulness originates. Future research is required to determine the effects of mindfulness-based interventions on bilingual speakers who stutter. In addition, future research is necessary to determine potential cultural barriers associated with mindfulness-based interventions and people who stutter.

Sixth, comparison studies between the use of different mindfulness-based interventions and between traditional stuttering therapies and mindfulness-based interventions is missing within the literature. Future studies should compare results related to psychosocial functioning and speech disfluency between ACT, MBSR, and CBT to determine if one intervention provides greater improvements than the other mindfulness-based interventions. In addition, future studies should compare results from mindfulness-based interventions to traditional therapy strategies that target stuttering modification. Further research is warranted to determine the effects of mindfulness-based interventions compared to other stuttering management interventions.

Seventh, speech rate before and after implementation of mindfulness-based therapy interventions should be assessed in future studies. Slower speech rate has been proven to facilitate more fluent speech in people who stutter. There is a possibility that the increase in awareness and attention following mindfulness-based interventions is contributing to a slower speaking rate, which could be enabling more fluent speech. Further research is needed to determine the effects of mindfulness-based interventions on the speaking rate of people who stutter.

Lastly, there are other psychosocial interventions which utilize mindfulness that have yet to be explored by speech-language pathologists. For example, self-compassion therapy has three main components, one of which is mindfulness. The three main components of self-compassion are: a) self-kindness- being kind and understanding toward oneself in instances of pain or failure rather than being harshly self-critical, b) common humanity- perceiving one's experiences as part of the larger human experience rather than

seeing them as separating and isolating, and c) mindfulness (Neff, 2003). Based on the positive effects associated with other mindfulness-based interventions, self-compassion therapy should be investigated as a potential intervention for adults who stutter.

SUMMARY

In conclusion, mindfulness can be defined as paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally. Mindfulness originates from Buddhist meditation, but more recently, has been used by professionals to treat a wide range of clinical populations, including adults who stutter. Awareness, emotional regulation, perception of thought, and acceptance have all been identified as key components of mindfulness and have been integrated into interventions such as: Mindfulness-Based Stress Relief, Acceptance and Commitment Therapy, and Cognitive Behavior Therapy. These mindfulness-based interventions have proven to be effective for stuttering management for adults; however, future research is needed to provide additional insight on the efficacy of mindfulness-based stuttering therapies. This report provided an overview of the different aspects of mindfulness and stuttering management, including: the relationship between stuttering and mindfulness, assessment and treatment of stuttering, the benefits of mindfulness for adults who stutter, and considerations for future research. Stuttering will continue to affect children and adults across the lifespan. More research is needed to discover and increase effectiveness of treatments for stuttering.

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