Spring 2015

Treatment Outcomes for the MASS Treatment Approach for Adults who stutter: A case study assessment

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Honors Research Project

Submitted to

The Honors College

Approved:	Accepted:
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Treatment Outcomes for the MASS Treatment Approach for Adults who stutter: A case study assessment

By Danielle Reymann
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INTRODUCTION

Stuttering is a physical speech disruption and there are many potential changes that people who stutter (PWS) go through besides the speech disruption itself. Challenges that can be associated with the physical behavior of stuttering are; negative thoughts and emotions connected to communication, negative stereotypes, prejudice and discrimination, and victimization and bullying (Boyle, 2011). Speech Language Pathologist can address these attitudinal needs of a client in order to potential change negative perceptions. PWS turn to speech-language pathologists to help them with the treatment of their stuttering. There are various ways to treat stuttering and the psychosocial aspects of the disorder. This current case study looks to see how the Mindfulness Acceptance and Commitment Therapy Somatic Stuttering Treatment (MASS treatment) can treat adults who stutter.

LITERATURE REVIEW

Mindfulness training is one of the ways speech-language pathologist will help PWS. Mindfulness can be defined as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Boyle; p. 123). The observation of experiences, both inner and outer, being aware, and acceptance of internal and external experiences, are all a part of mindfulness. There are different ways in which mindfulness can be used, such as mediation comprising of either focused attention or open monitoring (Boyle).

Focused attention is when the focus is on a specific idea such as breathing or a physical sensation in the body. Vipassana, a mindful practice, is a form of mediation that

works to expand conscious awareness focusing on breathing. The goal is for the individual to notice their thoughts without judgment (Gunaratana, 2002). One other form of mediation, that is similar to Vipassana, is known as breathing-focused meditation. Breathing-focused mediation has been incorporated into the therapy for PWS. In using this technique it has been shown to decrease the number of stuttering moments for individuals who stutter (Reddy, Sharma, & Shivashankar, 2010). Open monitoring is when the person is alert to any thoughts, feelings or sensations that come up. One of the major concepts of mindfulness is having attention in the present moment experience (Boyle).

Mindfulness is used with people who stutter to help them increase their well being, improve their desensitization, become more self-accepting, reduce their stress and anxiety, and improve upon their locus of control. Mindfulness requires the person to be aware as well as attentive. Awareness deals with our connection with reality, how we consciously recognize a stimulus, while attention is about noticing an object or stimuli and when the stimulus creates a strong registration that person becomes concentrated on it (Plexico & Sandage, 2009).

There are six main components of Mindfulness, as talked about in Plexico & Sandage) are seen as (p. 45):

1. **Clarity of Awareness**: An awareness of one's thoughts, emotions, sensations, actions, and surroundings as they exists at any given moment

2. **Nondiscriminatory Awareness**: Simple noticing without comparison, evaluation, categorization, introspection, or rumination.

3. **Flexibility of Awareness:** Ability to gain the larger perspective and also take in situational details

4. **Empirical Stance Towards Reality**: Fact-seeking and deferral of judgment

5. **Present-Oriented Consciousness**: Maintaining a present state of mind about the current reality.

6. **Steadiness of Awareness**: Eliminating the desire to attach thoughts and emotions form past experiences onto the present.

Stuttering has been evaluated to have stressful and threatening experiences that brings about a lot of undesirable emotions such as, fear, shame and embarrassment, which is commonly dealt with through escaping or avoiding situations. Avoidance, one of the coping responses for people who stutter, comes from the person attempting to protect themselves and the listeners from a situation that may become uncomfortable within the stuttering experience. Three ideas that have been shown to reduce the desire to escape a situation are, desensitization, increasing self-acceptance and being in a more mindful state (Plexico & Sandage).

The use of mindful attention that puts the concentration on the internal and external present moment situation of stuttering instead of attempting to avoid the stuttering could produce a more realistic, cognizant response than a reaction based on emotions. Lastly, if people who stutters could accept that they are going to have times when they have disfluencies and that when these moments happen there is no actual threat to themselves or the listener, then times when stuttering does occur could become more tolerable instead of being feared or trying to be avoided (Plexico & Sandage).

A study, by Beilby, Byrnes, and Yaruss, was conducted with 20 adults who stuttered, using Acceptance Commitment Therapy (to be discussed in the next chapter) as the therapy technique results showed that there were substantial reductions in the adverse impact that stuttering was having on their lives as found with the admission of the Overall Assessment of the Speaker's Experience of Stuttering (OASES; Yaruss & Quesal, 2010). Also there was progression of their mindfulness skills as seen on the

MAAS (Mindfulness Attention and Awareness Scale; Brown & Ryan, 2003) and KIMS (Kentucky Inventory of Mindfulness Skills; Baer, Smith & Allen, 2004) and their overall frequency of stuttering decreased (%SS) (Palasik & Hannan, 2013).

Acceptance and Commitment Therapy

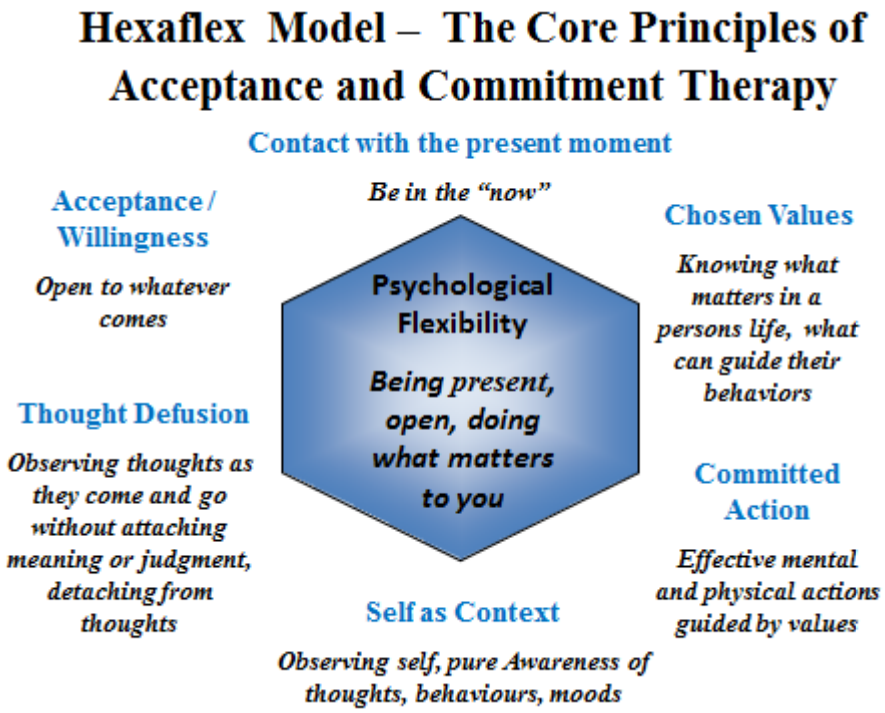
Acceptance and Commitment Therapy is a way to use mindfulness concepts to help treat mental health issues. With ACT individuals are asked to acknowledge what they are thinking from a neutral perspective, but should not engage in those thoughts or let those thoughts define who they are. One of the main goals of ACT is to promote psychological flexibility, meaning that instead of avoiding situations and emotions that are uncomfortable the individual should take a positive action toward confronting those uncomfortable experiences. ACT asks the individual to use guided values action and "mindful" action as part of the behavioral therapy. It is crucial for the individual to identify their core values that are going to guide, encourage and inspire the changes in their behavior. Secondly, to use "mindful" action, full awareness and openness to experiences is needed to make sure there is full engagement in the task at hand. The purpose of ACT is to help individuals construct a life full of meaning, while being able to accept the inevitable pain that occurs in life. ACT works to create a this way of life through using mindful skills and helping to clarify the things that are important and significant in the person's life. Mindful skills are psychological skills used to decrease the impact and affect that painful thoughts and feeling have on a person. Lastly, it is important for individuals to realize their values and what is important to them so they can be used to set goals and take action to better improve their lives (Harris, 2009).

When looking at the ACT perspective and how it relates to human suffering the acronym F-E-A-R can be used for further understanding, F-E-A-R stands for (Springer, 2012):

- **F**usion with thoughts: Handle thoughts the same way as the experiences or situations they describe.
- **E**valuation of experiences: Undertake the idea that the evaluation of a person's experiences accurately reflects reality instead of an opinion of the experience.
- **A**voidance of experience: avoid experience that cause uncomfortable thoughts or feelings.
- **R**eason-giving for behavior: Gives reasons as to why the person is not acting in a way that goes along with a chosen, respected direction (Springer, 2012).

ACT is a fairly new perspective but there is empirical support for its use to treat anxiety, depression, obsessive-compulsive disorder, pain, psychotic disorders, and substance abuse. With some of the treatments plans using ACT, exposure therapies are used to help the patient become more comfortable and decrease the fear, stress or anxiety that is brought about. One other way used to describe the steps taken with ACT is using the acronym A-C-T (Hayes, Strosahl, & Wilson, 2012). The 'A' in A-C-T represents Accept; releasing the struggle against experiences within and allowing them to be how they are. The 'C' stands for Choose, by discovering what the individual values and decide where they want their life to go in unison with those values. Lastly, the 'T' represents Take action, the individual will benefit from working on actions that will help them achieve their values and go in to the direction they want their life to go (Springer, 2012).

Figure 1. ACT Hexaflex



Acceptance and Commitment Therapy is attained through using psychological flexibility by applying six interconnecting principles. The six main principles of ACT include; defusion, acceptance, flexible attention to the present moment, self-as-context, committed action, and values. Theses six principles can be illustrated in a hexagon-shaped figure (See Figure 1), called the "ACT Hexaflex", which illustrates the connectedness of the six processes that produce psychological flexibility (Hayes, Strosahl, & Wilson, 2012). When looking at the hexaflex it can be separated into two central processes, mindfulness and acceptance processes and behavioral activation processes. The mindfulness and acceptance processes are made up four processes, flexible attention to the present moment, values, committed action and self-as-context. The second central process, behavioral activation processes, is made up the four processes, self-as-context, defusion, acceptance, and flexible attention to the present moment. When one or more of the six essential processes are absent, there is a risk for psychological inflexibility (Hayes, Strosahl, & Wilson, 2012).

Defusion examines what is keeping the person stuck in the place and mindset that they are in. Some examples of what may be keeping someone stuck in a place or mindset are, negative thoughts, strict rules, damaging self-beliefs, or tough judgment (T. Bowden, & S. Bowden, 2012). PWS will try to keep themselves from stuttering and become overwhelmed with attempting to "fix" their speech. In order to help clients who stutter clinicians can assist in bringing out the negative and positive thoughts that the client is having about their stuttering. Clinicians can help in this exploration and expression by mirroring what the client is explaining, by saying " I hear you saying…" or "It sounds like you are expressing…". This is a way to address thought defusion and have the client examine their thoughts from another perspective (Palasik & Hannan, 2013).

The principle of acceptance has the individual try and discover what types of feeling and experiences the person is avoiding, and how they are avoiding them. Also, asking what is the cost of avoiding these experiences (T. Bowden, & S. Bowden, 2012). Acceptance proposes that the client be able to experience their thoughts without any judgment of them. An activity that can be used with a client who stutters is to have the client carry the negative thoughts they have with them through different situations in life. The client can use a therapy tool called mobile health to carry their negative thoughts with them throughout their daily activities. Mobile health (mHealth) is an assortment of health care services that uses voice, text, data, imaging or video functions supported by a mobile device (Houston, 2013). Clients who stutter can use this therapy tool of keeping their negative thoughts written in a notes section of their cell phones. Most people have their cell phones with them throughout the day so the client will constantly have those thoughts with them in their phones. The following session the clinician and client talk about what is was like carrying the negative thoughts with them using their cell phone,

with the central idea being for the client be aware of their negative perceptions and accepting their thoughts since they are being carried with them daily (Palasik & Hannan, 2013).

The present moment assess how much time is spent thinking about past experiences and worrying about what is going to happen in the future (T. Bowden, & S. Bowden, 2012). PWS may avoid the present moment by constantly reviewing what has happened in the past and planning for future situation, this can cause them to miss out on life experiences and events. There are many techniques that clinicians can use to teach their clients about how to be in the present moment. Meditation and mindfulness activities are both great ways to help PWS become more aware of their moment-to-moment experiences. The meditation practice, "Six Breaths on Purpose" (Wilson, 2012), involves asking clients to close their eyes and take into account how their breathing is making their body feel. The clinician then instructs the client to take six log and deliberate breaths before returning to their current thoughts. This technique can be use when the client is in a cognitively intense moment and can help them relax and be apart of the present moment, while also taking in their thoughts. The clinician will also debrief with the client to addresses any thoughts or perceptions that occurred during the mediation (Palasik & Hannan, 2013).

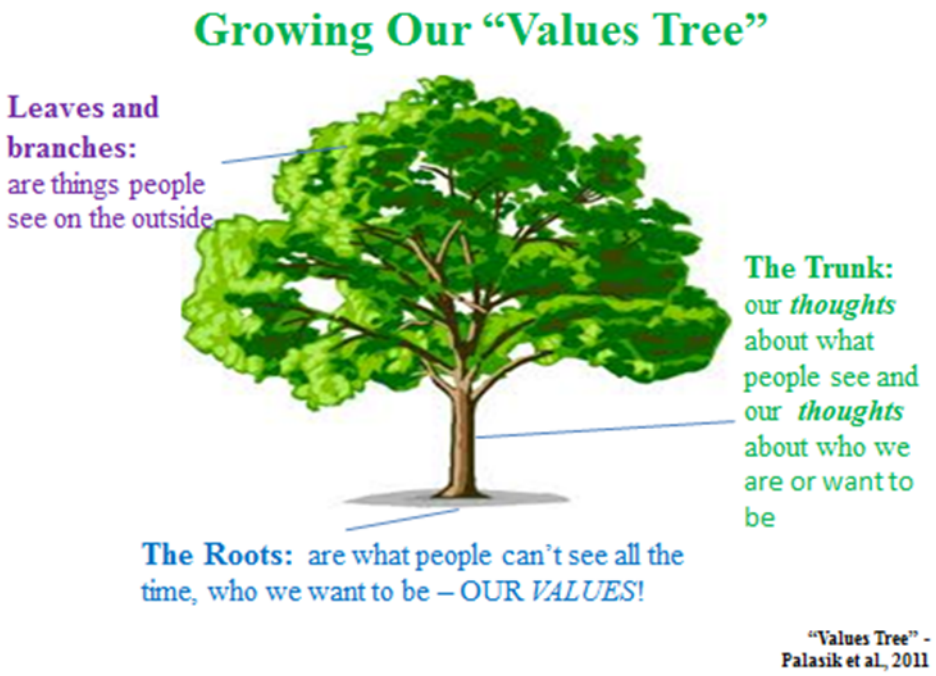
The fourth principle, self-as-context, asks the person about how they view themselves, do they just see their existing struggle, or do they see themselves as more (T. Bowden, & S. Bowden, 2012)? Self- as-context implies the "observing self", looking at oneself from an external perspective without having negative, disapproving thoughts. Using this perspective can help the client to assess the words they use to describe themselves and look at the labels in which they have for themselves. Clinicians can guide

clients by talking to them about how they view themselves and explain to them how some of these perceptions can be problematic when looking at the self as context (Palasik & Hannan, 2013).

Committed action attempts to determine what the individual is actively doing to help get them to the place and to the person they want to be in their life (T. Bowden, & S. Bowden, 2012). This principle is involves getting the individual to see and acknowledge their internal and external thoughts and behaviors. A strategy called Commitment Scaling used to put these committed action goals in place. Commitment scaling includes the clinician and client talking about the client's goals, and how they are going to bring together their values with their actions. These committed actions can range from major committed action to a smaller committed action. A major goal may be initiating a conversation with a classmate or approaching a worker in a store to ask a question. By creating these goals and working toward them the client is becoming more in line with they want to be and leading a life based on their values (Palasik & Hannan, 2013).

Finally the sixth principle, values, looks to see how close the individual is to being connected or disconnected to what matters most to them (T. Bowden, & S. Bowden, 2012). A *Values Tree* (See Figure 2, Values Tree) is a way in which clinicians can discuss values with their client. The *Values Tree* is made up of the roots, trunk and leaves and branches. The roots are the values; they can't be seen but are who we want to be in our life. The trunk consists of our thoughts of what others see and thoughts about our self or what we want to be. The leaves and branches signify the external behaviors that others see of the person. The clinician and client can then make a tree based in the client's values, thoughts and views of others on the outside, and a conversion can take place about the client's values and avoidance behaviors (Palasik & Hannan, 2013).

Figure 2. Values Tree



All six of these principles are arranged in three different response styles, open, centered and engaged. The open response to psychological flexibility includes acceptance and defusion, this response is connected to willingness. The centered response is related to mindfulness and includes the process of being in the present moment and self-as-context. The third response, engaged, includes the processes of values and committed action (Hayes, Strosahl & Wilson, 2012). ACT does not necessarily have the goal to get rid of the symptoms, but looks to reduce the symptoms. The goal is for more clients to

live a life that is valuable and meaningful, even with the pain they are going through (T. Bowden & S. Bowden, 2012).

ACT programs have dramatically increased in use in clinical and medical settings. These programs have been shown to have a positive effect on people who suffer from chronic medical and psychological issues; these positive effects include a reduction in anxiety, depression, and stress. ACT is frequently called the third wave of behavioral therapy since the approach has an emphasis on awareness, acceptance, and being able to understand the context of thoughts. The main goal of ACT, as in mindfulness, is to encourage the person to fully be in the present moment using psychological flexibility. Using ACT and psychological flexibility for PWS could help diminish the negative thoughts, be more accepting of a situation as it is, live in the present moment, make valued life choices, and have committed action to their goals (Beilby & Byrnes, 2012).

Assessment Types

There are different ways to assess the therapeutic changes for PWS when the ACT model is being used. One of the assessments is the Acceptance and Action Questionnaire (AAQ), with the most recent form being the AAQ-II. The AAQ-II is used to assess and measure psychological flexibility; it is consistent and is correlated with measures of a person's mental health (Beilby & Byrnes, 2012). There is another assessment that is used to assess changes in ACT is the Overall Assessment of the Speaker's Experience of Stuttering (OASES). The OASES assess the affects stuttering and is divided into four sections, general information about the person, reactions, communication in daily situations, and quality of life.

One other assessment, called The Valued Living Questionnaire (VLQ), has the person rate the importance of ten areas in of their personal life. Since valued living is a

major part of the ACT process, this questionnaire helps in assessing valued living. The VLQ is broken up into parts and has clients rate how important 10 areas of their lives are on a 10-point scale. The 10 areas being rated are; family, marriage/couples/ intimate relations, parenting, friendship, work, education, recreation, spirituality, citizenship, and physical self- care (Wilson, Sandoz, Kitchens, & Roberts, 2010).

Overall, there are many benefits to the Mindfulness Acceptance and Commitment Therapy Somatic Stuttering Treatment (MASS treatment) approach since it combines the ideas of mindfulness and acceptance commitment therapy to treat adults who stutter. Using the MASS treatment program, along with different fluency enhancing and stuttering modification treatment models, the lives of people who stutter will be positively affected and enhanced.

METHODS

The participant in this case study was a client with a childhood-onset fluency disorder who was being treated at The University of Akron Audiology and Speech Center. Client progress notes were used to gather qualitative and quantitative data from clinicians', along with an initial interview diagnostic report, end of semester progress reports, and observations.The client was a 21 year-old seeking treatment for a stuttering issue and during his treatment he was seen by three clinicians; one being the supervisor and the other two were student clinicians. The therapy sessions were held once a week for an hour at a time for 17 therapy sessions. The lead researcher observed 10 of those sessions. The therapy sessions were completed over a seven-month period of time.

During the therapy sessions, the client participated in several activities like the Values Tree where the client displayed his values and his thoughts about his behaviors on the outside as a visual form of a tree. Also, guided meditation was taught and used weekly where the client followed the clinician through a scripted mediation, focusing on breathing techniques and letting go of all thoughts; challenging thoughts, neutral thoughts and positive thoughts. Mobile health activities were used where he would keep track of his thoughts, meditation practices and feelings throughout the week which then be discussed in therapy with the clinician. Commitment Scaling was another activity used in therapy where the client and clinician discussed goals small and big for a variety of speaking situations in order to create a hierarchy of challenging situation in order to develop an effective communication style. Finally, the client and clinician discussed a variety of fluency enhancing techniques that coupled with the Acceptance and Commitment therapy goals which would generate a relaxed speaking rate physically and psychologically.

At the initial speech and language evaluation and then again at the start and end of each semester, the client completed the Overall Assessment of the Speaker's Experience of Stuttering (OASES), the Stuttering Severity Instrument-4 (SSI-4), the Erikson S24 Scale, the Thought Control Questionnaire (TCQ), the Acceptance and Action Questionnaire II (AAQ-2). Disfluency counts examining percent syllables stuttered were calculated at the beginning and end of each therapy session. See Appendix A, B, C, D and E for the complete versions of the analysis components. The OASES is a comprehensive self-report that assesses the effect stuttering has on the individual's life (Riley, 2009). The SSI-4 measures the severity of the individual's stuttering using frequency of repetition and prolongation measurements, duration of blocks, and physical concomitants (Yaruss & Quesal, 2010). The Erickson S24 Scale is used to evaluate the client's attitude toward their communication. Guitar (2006) found that if the client's communication attitude does not change over the course of their treatment, their chances of relapsing within 12 to 18 months increases. The Thought Control Questionnaire is used to evaluate the techniques that a person commonly uses to control unpleasant and/or unwanted thoughts, see Appendix A for the TCQ. The AAQ-2 is a questionnaire designed to assess the psychological flexibility of a client, whether there is acceptance or experiential avoidance occurring. The higher the score is on the AAQ-2 the more psychologically flexible the individual is. Appendix B shows a complete version of the AAQ-2.

One last analysis component used in the study was disfluency counts, which was the percent syllables stuttered for the client. These were taken at the start and end of each session. They show the frequency of types of stuttering moments the client experiences. This frequency is used to observe trends and changes in the client's physical speech

behaviors. Examples of types of stutters are: sound syllable repetition (e.g., ca-ca-cat), prolongations (sssssit), and blocks (where no audible speech is being produced).

RESULTS

Analysis

The analysis was conducted through tracking the frequency of types of disfluencies using disflunecy count sheets. Calculated means for each type of disfluency for the initial 200 syllables and final 200 syllables were computed for each session the client attended. There was an examination of the final test score trends for the AAQ-2, Erickson S24 Scale, OASES, SSI-4, and TCQ, in order to assess psychological and physical severity progress.

Psychological changes and trends toward improvement

The scores from the AAQ-2, Erikson S24, TCQ and the OASES were all used to examine the case study client's psychological changes and trends toward improvement. There were four data points used for the attitude scales, the first data point was the evaluation, and then there was one assessments given and scored at the end of the fall semester, start of the spring semester and then at the end of the spring semester.

There was a consistent increase the AAQ-2 score, which indicates the psychological flexibility of the client has increased. The increase in the client's AAQ-2 score also shows that there is an increase in the client's acceptance of stuttering and a decrease in his experiential avoidance. The score on the Erikson went down by an average of 24% for each data point taken after the initial evaluation. The decrease in the client's Erikson score shows the client's attitude toward his communication has improved. There was a steady decline in the OASES scores, which indicates there was a decrease in the effect that stuttering is having on the client's life. The OASES scores went from the moderate-severe range in the evaluation to moderate in the following

assessing and continue to stay moderate through out the following assessments. The findings showed that despite the client's score staying in the moderate range, his number score steadily declined. See table 1.2 for the scores on the assessments given.

The Thought Control Scale (TCQ) is an assessment that examines an individual's ability to control unpleasant and unwanted thoughts (Wells & Davies, 1994). It is made of 30 items and is given to the client as self-report questionnaire. This instrument is used to measure the different ways an individual chooses to control their unwanted thoughts. The TCQ is based on a four point rating scale where 1= never, 2= sometimes, 3= often, and 4= almost always. There are five elements that are measured in the TCQ that go along with the approaches used for control unpleasant thoughts. The five elements include Distraction (items 1, 9, 16, 19, 21 and 30); Social Control (items 5, 8, 12, 17, 25 and 29); Worry (items 4, 7, 18, 22, 24 and 26); Punishment (items 2, 6, 11, 13, 15 and 28); and Reappraisal (items 3, 10, 14, 20, 23 and 27). To scoring of the TCQ instrument is done by totaling the numbers from each sub-scale of Distraction, Social Control, Punishment, Worry, and Reappraisal.

The TCQ allows the clinician to see how often the client uses the different techniques to control their thoughts, where the client needs help and improvement and the clinician can view the progression of the client by having the client take it throughout their time in therapy. To analyze the results, the clinician determines if the score of the Distraction increases that means the client is increasing their use of the distraction technique. The higher the score is for the Social Control technique the more the individual is suppressing their thoughts and not talking about them. The higher the score for Worry the more the client is worrying more and may be replacing one worries with other worries. When looking at the Punishment technique, as that number increase the

individual is punishing himself or herself more often. Lastly, the when the Reappraisal technique increase that means the individual is more time analyzing the unpleasant and unwanted thoughts. For each technique/factor that clinician wants to see the score/number decrease because the lower the number the less anxiety the individual is going to be having, and the lower the score the more improvement that is seen in that specific area.

The results from the case study client for the TCQ can be found in Table 1.3. When looking at the results from the client in this case study there was a decrease, in the TCQ scores for five out of the six areas and one of the scores remained the same through out each session when comparing the evaluation to session 17 (the initial TCQ in comparison to the final TCQ). The lower number scores for the Distraction, Social Control, Punishment and Reappraisal indicate that they case study client felt less anxiety and stress from unpleasant, unwanted thoughts and shows that the client is improved in those areas.

Table 1.2

Session	**AAQ-2**	**Erikson S24**	**OASES**
Evaluation (Session1)	42	21	3.24 (moderate/severe)
End of Fall Semester (Session 6)	44	15	2.71 (moderate)
Beginning of Spring Semester (Session 8)	48	17	2.51 (moderate)
End of Spring Semester (Session 17)	55	16	2.47 (moderate)

Table 1.3 Thought Control Questionnaire

Session	**Distraction**	**Social Control**	**Worry**	**Punishment**	**Reappraisal**	**Total Score**

Evaluation (Session1)	**18**	**14**	**6**	**9**	**18**	**65**
End of Fall Semester (Session 6)	**18**	**14**	**6**	**8**	**16**	**62**
Beginning of Spring Semester (Session 8)	**18**	**15**	**6**	**11**	**19**	**69**
End of Spring Semester (Session 17)	**16**	**11**	**6**	**6**	**17**	**56**
Normed Means	**14.58**	**13.58**	**10.53**	**10.19**	**14.92**	**49.22**

Physical changes and trends toward improvement

Samples of disfluencies were taken from the initial 200 to 300 syllables of the session and the final 200-300 syllables of each session. These were then compared during the analysis to look for trends of disfluencies either increasing, decreasing (and/or not produced), remaining the same. Out of 17 total sessions observed, 13 sessions were examined for trends of change where both initial and final session speech samples were collected. The four sessions that were not included in this analysis were due to lack of final session speech samples.

Stuttering Severity Index (SSI-4) was completed for four out of the 17 total sessions. The four times the SSI-4 was conducted was during the evaluation, the end of the Fall semester, the beginning of the Spring semester and at the end of the Spring semester. See Table 1.1 below for results:

Table 1.1

Session Number	Percentile	Severity	Raw Score
Session 1	61-77	Moderate	30
Session 6	41-60	Moderate	26
Session 9	41-60	Moderate	28
Session 16	41-60	Moderate	26

As observed in the Table 1.1, percentiles across all four sessions went form 61-77 to 41-60, subsequently severity stayed the same as moderate, however, the total raw score went from 30 to a 26, thus showing a steady decrease in physical severity.

Percent syllables stuttered for the initial speech sample was compared to the final speech sample for each session. The total mean of percentage syllables stuttered across all completed initial speech samples was 10%, while the percent syllables stuttered across all completed final speech samples was 10%. Eight of thirteen sessions that contained both an initial speech sample and final speech sample decreased, zero stayed the same, and five increased. For the eight sessions that went down in total percent syllables stuttered, the mean for the initial speech sample was 10.7% and the mean for the final speech sample was 8.2%, thus yielding a 23.4% change in percent syllables stuttered from the initial speech sample to the final. For the five sessions that increased in total percent syllables stuttered, the mean for the initial speech sample was: 9.7% and the mean for the final speech sample was: 12.1%.

The percent of interjections for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage interjections across all completed initial speech sample was 45%, while the percent of interjections across all

completed final speech samples was 48%. Five of thirteen completed initial and final session samples decreased, zero stayed the same, and eight increased. For the five session that decreased in total percent interjections, the mean for the initial speech sample was 51.8% and the mean for the final speech sample was 39.6%. For the eight sessions that increased in total percent interjections, the mean for the initial speech sample was 40.6 and the mean for the final speech sample was 52.4%.

Percent of revisions for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage of revisions across all completed initial speech samples was 4%. The percent of revisions across all completed final speech samples was 5%. Three of thirteen completed initial and final session samples decreased, seven stayed the same, and three increased. For the three sessions that decreased in total percent revisions, the mean for the initial speech sample was 12.3% and the mean for the final speech sample was 1.3%. For the seven sessions that stayed the same in total percent of revisions, the mean for both the initial and final speech sample was 0.6%. For the three sessions that increased in total percent revisions, the mean for the initial speech sample was 3.3% and the mean for the final speech sample was 16.8%.

Percent of phrase repetitions for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage phrase repetitions across all completed initial speech samples was 6%. The percent of phrase repetitions across all completed final speech samples was 8%. Three of thirteen completed initial and final session samples decreased, three stayed the same, and seven increased. For the three sessions that decreased in total percent phrase repetitions, the mean for the initial speech sample was 12.7% and the mean for the final speech sample was 2.7%. For the three sessions that stayed the same in total percent of phrase repetitions, the mean for

both the initial and final speech sample was 1.7%. For the seven sessions that increased in total percent phrase repetitions, the mean for the initial speech sample was 5% and the mean for the final speech sample was 13.7%.

The percent of word repetitions for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage of word repetitions across all completed initial speech samples was 33%. While the percent of word repetitions across all completed final speech samples was 22%. Ten of thirteen completed initial and final session samples decreased, one stayed the same, and two increased. For the ten sessions that decreased in total percent word repetitions, the mean for the initial speech sample was 35.3%% and the mean for the final speech sample was 18%. For the one session that stayed the same in total percent of word repetitions, the mean for the initial and final speech sample was 37%. For the two sessions that went up in total percent word repetitions, the mean for the initial speech sample was: 22% and the mean for the final speech sample was 37.5%.

Percent of sound/syllable repetitions for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage of sound/syllable repetitions across all completed initial speech samples was 10%. While the percent of sound/syllable repetitions across all completed final speech samples was 12%. Six of thirteen completed initial and final session samples decreased, one stayed the same, and six increased. For the six sessions that decreased in total percent sound/syllable repetitions, the mean for the initial speech sample was 17.8% and the mean for the final speech sample was 8.7%. For the one session that stayed the same in total percent sound/syllable repetitions, the mean for both the initial and final speech sample was 6%.

For the six sessions that increased in total percent sound/syllable repetitions, the mean for the initial speech sample was 7.7%and the mean for the final speech sample was 15.5%.

The percent of blocks for the initial speech sample were compared to the final speech sample for each session. The total mean of percentage of blocks across all completed initial speech samples was 1%. The percent of blocks across all completed final speech samples was also 2%. Two of thirteen completed initial and final session samples decreased, nine stayed the same, and two increased. For the two sessions that decreased in total percent blocks, the mean for the initial speech sample was 6.5% and the mean for the final speech sample was 0%. For the two sessions that increased in total percent blocks, the mean for the initial speech sample was 2% and the mean for the final speech sample was 11.8%. For the other nine sessions no blocks were reported for the initial or final speech samples. The total percent syllable stuttered for this particular type of disfluency might appear inflated due to limited sample size and the occurrence of this type of disfluency maybe seen as an outlier.

Of the three normal disfluencies including interjections, revisions and phrase repetitions, all three of them increased overall when looking at the initial and final speech samples. Of the four stuttering disfluencies the word repetitions decreased, the sound syllable repetitions and blocks (outliers) increased, and the syllables stuttered remained the same, when comparing the initial and final speech sample disfluencies for the thirteen sessions that were examined for trends of change where both the initial and final speech samples were collected. Overall, the percentage of normal disfluencies went up, the percentage of stuttering like disfluencies when down.

DISCUSSION

The first interesting finding from this case study was that the majority of sessions that had both an initial and final speech sample to generate a percent syllables stuttered total, the totals went down and there are many possible reasons for why this decrease occurred. One of the reasons that there was a decrease on the percent syllables stuttered is due to mediation practice. Meditation can allow the client to develop a sense of openness to their thoughts, and to recognize them, accept those thought and then let them go (Palasik & Hannan, 2013). The clinician provided education to the client about stuttering and techniques to be used. The clinician discussed with the client about the idea that if the client were to read a passage along with someone out loud the client would not stutter, this is referred to as choral speech**.** Also, if the client were to read the passage alone in his

bedroom he also would not stutter but once there is someone else around him the stuttering begins again. The clinician explained that one theory of this phenomenon is that certain neurons called mirror neurons in the brain of the person who stutters are not working exactly like the neurons of a person who doesn't stutter (Ramachandran, 2005). There are other explanations for this like auditory processing, but these are theories.

Another aspect that helped to decrease the client's total percent of syllables stuttered was helping client to connect his life experiences and background with confidence. The clinician asked the client what a confident person sounds like when speaking, and the client say the loudness in their voice, the speaker's posture, eye contact, gestures, and the organization and flow of their speech. Activities inside and outside of therapy were used to increase the client's confidence with his speaking based off of what his description of a confident speaker was. The client was asked to perform outside actions and speaking situations at work (e.g. initiate a conversation with a customer and ask them if they need help finding an item in the store) to help decrease anxiety-provoking thoughts.

There were four situations that total percent syllables stuttered when up from initial to final. In the first session that the percent syllables stuttered went up the client discussed how his personal stuttering experiences and the feelings that come about when he stutters. Having the client discuss these thoughts and feelings brings them to the forefront of his mind and could bring about more anxiety and stress, which therefore may have been a reason his percent syllables stuttered increased for this session. Becoming more mindful and conscious of anxious thoughts related to stuttering might temporally increase the physical component of stuttering, however over time in mind yield decrease stuttering events due to desensitization of stuttering itself. When looking at the SOAP notes and reviewing the notes from the observation of the second session where the percent

syllables stuttered went up, the findings included that the client was lacking confidence in the activities within the therapy session with the client saying he isn't very good at the games that were about to be played. Both notes also discussed the client stating how he has a subconscious fear of not knowing what he is going to say next. The lack in confidence in this session along with the client's subconscious fear associated with speaking most likely contributed to the increase in percent syllables stuttered for this session.

The third session that had an increase in percent syllables stuttered had similar notes and findings from the first session when this increase occurred. The client discussed feeling anxious and stressed in therapy and said it was related to outside events like school and work. Another interesting finding from the SOAP notes on this session was that the client explained how he tends to choose different words to say in place of words that could cause him to stutter. The client is aware of certain words that will bring about a stuttering instance and tries to avoid those words. The client's feelings of being stressed and anxious in combination with talking about avoiding certain words to prevent the stuttering might have impacted this change in syllables stuttered.

When looking at the SOAP notes from the fourth session when the percent syllables stuttered went up the client felt stressed with the amount of homework he had to do in the upcoming week. Stress has seemed to be an ongoing feeling for the client and presents a pattern of increase in his syllables stuttered when he is feeling stressed. In this session the client also discussed his mindfulness while playing a game in therapy. He was planning and thinking of a word he was going to use in the game and had the thought that he was going to stuttered on the word, and then did end up stuttering when it came time to say it. The client explained that he felt a build up of pressure from thinking about the word and

how he was probably going to stutter when he said it. The stress the client was feeling from his thoughts about his homework as well as the pressure of thinking too much about a certain word probably had an impact on the increase of the percent syllables stuttered for this session.

Stuttering is cyclical; meaning that overtime the degree of severity of the stuttering will change. This can be seen in the findings from this case study, that over the course of the client's treatment the stuttering was cyclical and occurred more often in some sessions than others. As seen from the four sessions where there was an increase in the percent syllables stuttered, stress, anxiety, lack on confidence, subconscious fears, avoidance, pressure and overthinking can all impact when and how often an individual may stutter.

A third interesting finding from examining the collected data is that it appears that the normal disfluencies replaced the stuttering disfluencies. From this result it appears the client it moving toward more relaxed speech or more normal speaking disfluences like interjections, revisions, and phrase repetitions. This might indicate that the client is discovering more relaxed moments of speaking and moving forward through stuttering like moments and thoughts.

Overall, Mindfulness Acceptance and Commitment Therapy Somatic Stuttering Treatment (MASS treatment) improved how the client appeared to feel and think about himself and how affective he was as a communicator.

Limitation and Future Studies

Due to the nature of this research project being a case study it cannot be applied to all people who stutter, however it does provide an initial understanding of the use of Acceptance and Commitment Therapy (ACT) activities and mindfulness task in order to address stuttering with an adult. Another limitation was the lack of final session speech samples, which created some missing data points that were not included, thus providing a lower sample size to be analyzed. This can be easily rectified for future studies with a variety of clients in both age and stuttering severity. One last limitation was that not all sessions were observed first hand by the lead researcher due to scheduling conflicts. Again, future studies would demand consistent observation for more than one researcher in order to compare and contrast observations and create reliability between qualitative observational data.

Future studies might include a greater number of participants, to expand the sample size and allow for comparing and contrasting of the qualitative and quantitative data. A follow up interview could be included to future studies to allow for input from participants, to examine their personal thoughts and feelings of their progression of where they are after a period of time of being in therapy.

Another future study could examine the six ACT principles individually with people who stutter and introducing other speaking situations like public speaking, speaking with novel listeners, speaking at occupations, or other types of interactions that a person who stutters might encounter in everyday life.

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