Critical Review:
What is the clinical utility and effectiveness of Acceptance and Commitment Therapy in the treatment of people who stutter?

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This critical review examined the current evidence base documenting the theoretical and/or clinical use of Acceptance and Commitment Therapy (ACT) with individuals who stutter. Six articles were included, consisting of three expert opinion-based papers and three papers which employed a single-group design. Due to several limitations evident in the articles evaluated, the evidence for the clinical utility and effectiveness of ACT as an adjunct to stuttering treatment is both limited and suggestive at best. Clinical implications for speech-language pathologists are subsequently outlined, and direction for future research provided.

Introduction

Stuttering is characterized by the presence of abnormal speech patterns (the *core behaviours*; Van Riper, 1971, 1982; as discussed in Guitar, 2014). The core behaviours of stuttering are involuntary and are comprised of repetitions, prolongations, and blocks (Craig & Tran, 2006; Guitar, 2014). Repetitions may occur on sounds (e.g., s-sunny), syllables (e.g., sun-sunny), or words. Prolongations occur when a speech sound is stretched out/held on to for a length of time beyond its typical duration (e.g., sssunny). Blocks are characterized by an inappropriate halting of airflow, with the muscles of the speech organs (articulators) frequently remaining fixed in a tense position.

People who stutter (PWS) may develop learned reactions to their stuttering, following successful attempts to terminate a moment of stuttering (*escape* behaviours) or to avoid stuttering altogether (*avoidance* behaviours) (Guitar, 2014). Escape behaviours may include eye blinks or head nods in an effort to complete the word that the individual is stuttering on. Avoidance behaviours occur in anticipation of stuttering, and may include substitutions of words, using postponements, and evading feared speaking situations. Over time, these acquired behaviours become increasingly resistant to change. In stuttering intervention, a key target is the reduction of severity by way of decreasing the frequency of stutters, duration of stuttering moments, and physical behaviours (e.g., muscle tension in the lips or jaw, head movements) that often accompany stuttered speech.

Equally critical in the treatment of stuttering is the recognition that its impact **extends beyond fluency** to negatively affect an individual's quality of life (Beilby, Byrnes, & Yaruss, 2012). PWS may experience social anxiety, exhibit social avoidance behaviour, and experience emotional struggle when stuttering (Craig & Tran, 2006). In addition to fear, feelings of shame, embarrassment, and helplessness may dominate the individual's life (Guitar, 2014). Anger, inadequacy, and loneliness are among other negative emotional reactions in response to one's stuttering (Cooper, 1993; Watson, 1988; Yaruss & Quesal, 2006; as referenced in Beilby & Byrnes, 2012). This therefore underscores the importance of a holistic, *comprehensive* approach to assessment and treatment, which addresses *both* the behavioural and affective components of stuttering. After the age of six or seven, alleviating the emotional impact (i.e., negative feelings) related to stuttering is an especially important and common therapy goal for clients who stutter (Guitar, 2014).

Stuttering modification and fluency-shaping are two major treatment approaches for stuttering that speech-language pathologists (SLPs) may use. Stuttering modification aims to replace the tense, uncontrolled, and lengthy moments of stuttering with more intentional, relaxed, and brief stutters (Guitar, 2014; Manning & DiLollo, 2018). Fluency-shaping, particularly for those individuals with more severe stuttering, might use prolonged speech where PWS are initially encouraged to speak at a very slow pace (Guitar, 2014). With success, the rate of speech is gradually increased such that it more closely resembles natural speech.

An example of a comprehensive stuttering treatment program is the Comprehensive Stuttering Program at the University of Alberta's Institute for Stuttering Treatment and Research (Blomgren, 2010). In addition to employing fluency-facilitating techniques such as easy vocal onsets and light articulatory contacts around the central concept of prolonged speech, PWS in this program receive strategies aimed at reinforcing positive attitude and self-confidence around speaking,

cultivating well-rounded social communication skills, and reducing avoidance behaviour.

Recently, **Acceptance and Commitment Therapy** (ACT; pronounced as "act") has received attention as being particularly applicable to alleviating the struggle that PWS experience in their pursuit of fluent speech (Beilby & Byrnes, 2012). ACT falls within the family of CBT approaches, but is not synonymous with CBT. Efforts in traditional CBT might focus on reducing the frequency or challenging the validity of difficult thoughts such as "I always stutter, so I shouldn't talk" (Hayes, Pistorello, & Levin, 2012). In contrast, ACT encourages a willingness to *be present with difficult feelings, thoughts, and private experiences*, with the goal of diminishing their perceived power, believability, and impact (Beilby, Byrnes, & Yaruss, 2012; Cheasman & Everard, 2013; Hayes, Pistorello, & Levin, 2012). ACT also places emphasis on helping individuals to identify and clarify their personal values (e.g., expressing themselves, communicating with others), and subsequently take action that is consistent with their values (e.g., participating in group discussions). Therefore, from this perspective, most psychological suffering is derived from becoming enmeshed with our thoughts (*cognitive fusion*) and struggling in an attempt to suppress or eliminate difficult thoughts, feelings, and experiences (*experiential avoidance*).

ACT encompasses **six core principles**: thought defusion, self as context, acceptance, contact with the present moment, defining values, and committed action (Palasik & Hannan, 2013). Mindfulness is a key part of ACT and is represented by the first four of ACT's core principles; the combination of mindfulness, value identification, and values-driven committed action assists in attaining the central goal of ACT: greater psychological flexibility (Hayes, Pistorello, & Levin, 2012).

Outside the realm of fluency disorders, ACT programs have demonstrated clinical effectiveness in the reduction of depression, comorbid anxiety, and stress for individuals struggling with chronic conditions (for an extensive list of publications on these topics, see Beilby & Byrnes, 2012). In regard to stuttering treatment approaches, ACT has been hypothesized to facilitate traditional stuttering treatments such as Van Riper's Stuttering Modification Therapy (SMT) (Van Riper, 1973; as referenced in Freud, Levy-Kardash, Glick, & Ezrati-Vinacour, 2019). In particular, ACT is thought to decrease avoidance behaviours and assist with generalization of fluency-facilitating strategies through mindfulness, acceptance, anxiety reduction, and supporting values-driven action.

Objective

The primary objective of this review is to critically evaluate the existing literature on the clinical utility and effectiveness of ACT in the treatment of PWS.

Methods

Search Strategy

The articles included in this critical review were located using the following electronic databases: ASHAWire/ ASHA Journals (American Speech-Language-Hearing Association), Google Scholar, PubMed, and Western Libraries.

The first set of keywords was used to search ASHA Journals, Google Scholar, and PubMed, whereas the second set was used for Western Libraries:

- ((stutter*) OR (stammer*) OR (fluency)) AND (("acceptance and commitment therapy") OR (ACT))
- (([*Title*] Stammer*) OR ([*Title*] Stutter*)) AND ([*Any field*] "acceptance and commitment therapy")

No constraints were placed on the search, with the exception of Western Libraries. Here, keywords within titles were specified and the search was limited to books and eBooks.

Selection Criteria

Included studies were required to explore and evaluate the theoretical applications and/or clinical use of ACT within the context of stuttering treatment. The primary area of interest was the application of ACT in combination with existing stuttering treatments; however, studies using or describing ACT as an independent approach to treat stuttering were also accepted for inclusion.

Data Collection

Six articles were selected for inclusion in this critical review. These consisted of an equal proportion of expert opinion-based and single-group design papers. Notably, this was the extent of the existing literature on this research topic, given its novelty.

Results

Expert Opinion

Motivated by the potential compatibility between ACT's philosophy and stuttering treatment, **Beilby and Byrnes (2012)** examined how ACT's core principles might theoretically be incorporated into stuttering intervention. Specifically, these authors aimed to explore and analyze potential ways in which ACT could

support behavioural and psychosocial therapeutic changes. For instance, they proposed that ACT could facilitate the development of self-efficacy and self-responsibility, both critical to maintenance of stuttering treatment outcomes (Craig, 1998). Beilby and Byrnes (2012) also referenced ACT's emphasis on promoting greater insight into the degree of congruency between one's behavioural decisions and personal values, arguing that this focus on values-driven action underscores ACT's suitability for PWS who struggle due to the weight placed on fluent speech. Therefore, these authors suggest that ACT, when combined with traditional stuttering intervention approaches (e.g., stuttering modification), may enhance the quality of life of PWS.

An evaluation of this work, especially from the perspective of a clinician seeking to determine ACT's utility in the context of stuttering, highlighted several strengths and weaknesses. Although Beilby and Byrnes (2012) logically described how ACT's six core principles could theoretically be employed in the pursuit of common goals in stuttering treatment, the level of detail provided did not go beyond making broad connections between these principles and the challenges that PWS face. For example, the concepts of cognitive fusion and defusion were compared, with an emphasis on how defusion facilitates behavioural flexibility. However, specific details surrounding how to structure intervention exercises were absent. Further, potential challenges with implementation of a combined ACT and stuttering treatment approach were not explored, effectively making the proposal presented here one-dimensional.

Beilby and Byrnes (2012) identified several assessment tools relevant for future studies investigating the effectiveness of ACT, when paired with traditional stuttering treatment approaches, in achieving positive psychosocial changes. These included established tools such as the Mindfulness and Attention Awareness Scale (MAAS) which possesses strong psychometric properties and validation (Carlson & Brown, 2005; as referenced in Beilby & Byrnes, 2012), as well as the Overall Assessment of the Speaker's Experience of Stuttering (OASES) which demonstrates strong psychometric properties (Yaruss & Quesal, 2006; Yaruss & Quesal, 2010; as referenced in Beilby, Byrnes, & Yaruss, 2012).

Despite providing adequate background information on the historical use of psychotherapy (in particular, CBT) in the context of stuttering, and outlining tools to measure treatment outcomes, the depth of Beilby and Byrnes' (2012) exploration into the clinical utility of ACT in stuttering was limited. Combined with a lack of discussion around any challenges to its implementation, their proposal that ACT may be beneficial when paired with existing stuttering treatments amounts to **highly suggestive evidence**.

Recognizing the scarcity of literature on the effectiveness of an integrated ACT approach to stuttering treatment, **Palasik and Hannan (2013)** aimed to more specifically illustrate how ACT exercises could complement existing treatments. These authors argued that ACT's core principles demonstrated immense clinical utility for PWS, though similar to CBT, ACT may not directly impact stuttering severity. Its role may instead be to facilitate the management of stuttering's physical and affective components, perhaps through improving the implementation of fluency techniques.

In comparison to Beilby and Byrnes' (2012) paper, Palasik and Hannan (2013) developed a stronger argument in support for ACT's incorporation within current stuttering intervention approaches. The present authors described various and specific ways that each core principle could be employed, with many of these ACT-related activities having been published in the literature (though not necessarily in the field of fluency disorders). For instance, their suggestions for the clinical application of the ACT principle *contact with the present moment* included breathing-focused meditation, a technique previously used with PWS (Reddy, Sharma, & Shivashankar, 2010; as referenced in Palasik and Hannan, 2013). However, it is difficult to ascertain this technique's efficacy in obtaining positive fluency changes because Reddy and her colleagues used *both* speech techniques (i.e., humming, prolongation) and mindfulness meditation simultaneously. In general, the suggested exercises varied in the quality and quantity of evidence investigating their effectiveness, with some appearing to be based on anecdotal evidence.

As part of their exploration of ACT's integration into stuttering intervention, Palasik and Hannan (2013) also discussed possible challenges which may arise. Concepts such as acceptance and committed actions are susceptible to misinterpretation by clients; these authors identified how these misunderstandings could occur and how to resolve them. Given the novelty around the use of ACT for stuttering, historical context was provided which reviewed the use of CBT for stuttering and how ACT originated, as well as more recent research evaluating ACT's efficacy in other clinical settings. However, due to its opinion-based and theoretical nature, Palasik and Hannan's (2013) paper presents **suggestive evidence** to support ACT's clinical utility in the context of a combined approach to stuttering treatment.

In an effort to expand the literature base detailing how ACT may be embedded within traditional stuttering treatments, **Michise and Palasik (2017)** published a paper sharing their experiences using ACT with PWS. They asserted that ACT could be applied in various ways to address one's emotional reactions and negative perceptions related to stuttering. Recognizing the daily struggle PWS face, these authors reviewed a study where chronic stress was found to produce long-term changes in brain structure and function, such that the amygdala-hippocampus connection may be strengthened and the fight-or-flight response enhanced (Chetty et al., 2014; as referenced in Michise & Palasik, 2017). In advocating for ACT's incorporation, Michise and Palasik (2017) also highlighted findings suggestive of an association between a Mindfulness-Based Stress Reduction (MBSR) program and structural brain changes in regions including the hippocampus, which contributes to emotion regulation (Hölzel et al., 2011). Such changes may possibly indicate improved hippocampal function in the regulation of emotional responses. In reviewing these studies, Michise and Palasik (2017) aimed to show how ACT's core principles may potentially effect changes within the brain.

The research on chronic stress and MBSR allowed Michise and Palasik (2017) to add another dimension to their argument for ACT's utility with PWS. However, generalizability of the findings following MBSR to ACT cannot be said with certainty; while mindfulness is a component of ACT, these two approaches are not synonymous (Hayes, Pistorello, & Levin, 2012). With regard to Michise and Palasik's (2017) clinical examples of ACT integrated within stuttering intervention, criticism here is prompted by the anecdotal nature of this evidence. Notably however, many of these examples involved using ACT with children or adolescents who stutter, thereby offering guidance to SLPs who seek to expand the pediatric front of this emerging research area.

Overall, Michise and Palasik's (2017) article presented **highly suggestive evidence** in support for ACT's role within a stuttering treatment program. This is largely due to the use of anecdotal evidence to support ACT's utility with PWS, as well as the indirect support from MBSR. Furthermore, no comments can be confidently made regarding ACT's effectiveness in achieving increased fluency from the present study.

Single Group Design

Beilby, Byrnes, and Yaruss (2012) aimed to evaluate the effectiveness of a combined ACT-stuttering treatment program for adults who stutter (n = 20). Outcomes of interest were assessed pre- and post-treatment and at three months follow-up; these included stuttering frequency, readiness for therapy and change, use of mindfulness skills, psychosocial functioning, and psychological flexibility. A group intervention approach was employed, which consisted of two-hour weekly sessions for eight consecutive weeks. Descriptive statistics were computed and indicated statistically significant changes (in favourable directions) with large effect sizes for all measures of interest; these results were found both post-treatment and at follow-up.

This study was largely well-designed, with the exception of a few flaws. Stuttering frequency was obtained via representative speech samples rated by two SLPs and percentage of syllables stuttered (%SS) subsequently calculated using a computerized method. Correlation coefficients were determined for inter-rater (0.91) and intra-rater reliability (intra-class correlation coefficient = 0.89), indicating satisfactory correlation and agreement. The remaining outcomes of interest were evaluated using the following quantitative questionnaires (counterbalanced to control for any order effects): Modified Stages of Change questionnaire (MSOC), Kentucky Inventory of Mindfulness Skills (KIMS), Mindfulness and Attention Awareness Scale (MAAS), Overall Assessment of the Speaker's Experience of Stuttering (OASES), and the Acceptance and Action Questionnaire (AAQ-II). Importantly, some questionnaires, such as the OASES and the MAAS, demonstrate strong psychometric properties (Yaruss & Quesal, 2006; Yaruss & Quesal, 2010; Brown & Ryan, 2003; as referenced in Beilby, Byrnes, & Yaruss, 2012), whereas the KIMS and the AAQ-II were reported to have good internal consistency (Baer, Smith, & Allen, 2004; Bond et al., 2011; as referenced in Beilby, Byrnes, & Yaruss, 2012). However, the MSOC requires further research following its adaptation for PWS (Floyd, Zebrowski, & Flamme, 2007; as cited in Beilby, Byrnes, & Yaruss, 2012).

Although the participant sample was somewhat heterogeneous, the authors reported no significant univariate or multivariate outliers (Beilby, Byrnes, & Yaruss, 2012). Analysis of the data for the presence of multivariate outliers was performed using Mahalanobis distances. Yet, it is still questionable as to why a relatively diverse set of participants was initially recruited, particularly with respect to age range (19-65 years), reason for participation (self-referral or referred by community SLPs), and prior experience with stuttering treatment (20% of participants had never attended speech therapy). Other limitations of this study included the small sample size (n = 20) and short duration for follow-up (i.e., three months).

Beilby, Byrnes, and Yaruss' (2012) study was the first to experimentally investigate the effectiveness of ACT when paired with traditional stuttering treatment techniques (e.g., stuttering modification, fluency shaping). While the findings obtained are certainly encouraging and controls were generally implemented appropriately, the methodological flaws described here limit the generalizability of the findings, as well as the ability to measure long-term stability of treatment outcomes. Therefore, this study amounts to **suggestive evidence** in support for the effectiveness of a combined ACT and stuttering treatment program.

In advocating for the utility and effectiveness of ACT for PWS, **Cheasman and Everard (2013)** evaluated both quantitative and qualitative treatment outcomes following a three-day, ACT *stand-alone* group intervention for 14 adults who stutter. Specifically, these authors aimed to assess ACT's effects on acceptance of stuttering, mindfulness skills, and avoidance behaviours, as well as thoughts and feelings associated with stuttering. The initial two days of the intervention were consecutive, followed by the final day after a four-week break, with assessments occurring at pre- and post-intervention. In examining the mean scores obtained at these timepoints, Cheasman and Everard (2013) reported significant improvements across all treatment outcomes. These findings were also cautiously interpreted as possible evidence for maintenance of treatment effects.

Considering the relatively recent emergence of ACT in the field of fluency disorders, the extensive detail outlining their program's structure will facilitate future study replication. Cheasman and Everard (2013) also shared several participants' self-reflections, thereby offering insight into the perspectives of key stakeholders on the therapy experience and benefits outside the clinical setting (e.g., improved quality of life). Taken together, these aspects of the present study may provide guidance for future researchers who wish to expand the literature base.

Despite including their rationale behind the program's schedule and the types of participants selected for inclusion, concerns with interactions between treatment dosage and representativeness of the participant sample exist. For example, by specifically targeting past and current clients, clients' experience of already having received some form of stuttering treatment may have contributed to the results obtained. This is particularly true for current clients, where the delivery of ACT possibly coincided with other treatments for stuttering. Determination of an adequate dosage is complicated by this interaction; moreover, generalizability of the findings becomes greatly restricted when predicting the outcomes for PWS who never received treatment for stuttering. Lastly, the results were obtained using assessment tools which varied in their psychometric properties, with the Freiburg Mindfulness Inventory demonstrating psychometric stability, the Wright and Ayre Stuttering Self-Rating Profile showing internal reliability, and no comments made by the present study's authors regarding the Stammering Acceptance Questionnaire's psychometric properties (McCracken, Vowles, & Eccleston, 2004; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006; Wright & Ayre, 2000; as referenced in Cheasman & Everard, 2013).

Taken together, Cheasman and Everard's (2013) study provides **suggestive evidence** for ACT's utility and effectiveness in the treatment of PWS. This designation is reinforced by the study's small sample size and limited follow-up duration. Furthermore, individual participant scores were not reported.

Freud, Levy-Kardash, Glick, and Ezrati-Vinacour (2019) examined the effectiveness of a stepwise stuttering intervention program that employed ACT and Stuttering Modification Therapy (SMT) for adults who stutter (Van Riper, 1973, as cited in Freud et al., 2019). Recognizing how ACT could theoretically complement the stages of SMT, Freud and her colleagues assessed whether such a combined program would reduce stuttering frequency, decrease negative emotional reactions to various speaking situations, alleviate stuttering's impact on a PWS, and enhance mindfulness skills. Briefly, this approximately year-long, three-phase program contained *eight sessions each* of (1) ACT group sessions, followed by (2) SMT individual/group sessions, and finally, (3) monthly follow-up maintenance ACT group sessions which coincided with the stabilization stage of SMT. Treatment outcomes were analyzed prior to and immediately after phase one, and once more following each of phases two and three. Results demonstrated slight changes across all outcomes of interest, which generally occurred in favourable directions, with the exception of an *increase* in stuttering frequency following the conclusion of phase three.

These authors conveyed a thorough and logical argument asserting how ACT could theoretically complement SMT's goals. Sufficient detail was also provided for future replication of this study. However, a number of limitations and methodological flaws were present, with many of these either acknowledged or resolved by the authors through planned changes for future studies on this topic. An inability to draw conclusions about the efficacy of the combined program as compared to either ACT or SMT alone and

restrictions on the generalizability of results due to the small sample size and considerable participant attrition were among the limitations of this study. Methodological flaws included examining only stuttering frequency (i.e., not including stuttering severity as a measure when SMT focuses on reducing severity), and only ensuring participants were not *concurrently* receiving either stuttering treatment or psychotherapy (i.e., not screening also for *prior* experience with either intervention) (Guitar, 2014; Manning & DiLollo, 2018). Similar to Cheasman and Everard's (2013) study, the psychometric properties of the clinical instruments used in the present study varied from either strong (OASES) or reasonable (Five Facet Mindfulness Questionnaire), to unknown/not described (Speech Situation Checklist) by Freud and her colleagues (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Yaruss & Quesal, 2006; Yaruss & Quesal, 2010; as cited in Freud et al., 2019).

While individual participant scores and group-level statistics (means, standard deviations, effect sizes) were described, the significant amount of participant attrition (from n=8 to n=3) severely limited the ability to perform adequate statistical analyses. For example, confidence intervals for exceedingly small sample sizes may become so large that they offer little meaningful information (Archibald, 2019b). Representativeness and generalizability of the results were also similarly affected.

The present discussion and critical evaluation of Freud and her colleagues' (2019) study suggests that the evidence for the effectiveness of a combined ACT-SMT approach is **equivocal**.

Discussion

Limitations common to many of the expert opinion-based and experimental research papers included the use of anecdotal evidence, inadequate detail to guide future investigators, short follow-up duration, limited sample size, lack of transparency into individual participant scores, problematic generalizability of findings (*especially to the pediatric population*), and with one study in particular (i.e., Freud et al., 2019), the inability to conduct reliable statistical analyses due to a very limited sample size. Moreover, in order for the argument supporting the combination of ACT and current stuttering treatments to be successful, evidence must be accumulated which demonstrates advantages attributable to such a combined approach in comparison to either one alone. As it currently stands, none of the experimental studies examined in this critical review have investigated this issue. Taken together, these limitations weaken the evidence base on the use of ACT in traditional stuttering intervention approaches.

Given the novelty of this area of research, there is not only a need for an expansion of the literature both from theoretical and experimental standpoints, but also a need for studies specifically addressing the common limitations identified above. Future research should compare outcomes of a combined approach against ACT, SMT, or fluency shaping administered alone, extend the period of follow-up to better determine the stability of treatment outcomes, investigate the effectiveness of ACT in promoting generalization of fluency-facilitating strategies, as well as increase sample sizes. Studies which employ small sample sizes may be less representative of the population of interest and therefore may limit generalizability of results; in addition, studies with small sample sizes may detect only large effects due to a decrease in power (Archibald, 2019a, 2019b).

Conclusion

As this is an emerging area of research, the current state of the evidence assessing the clinical utility and effectiveness of ACT as an adjunct to stuttering treatment is **both limited and suggestive** at best. Evidence for the efficacy of ACT as an independent treatment for stuttering is exceedingly scarce and cannot be determined at this time. Furthermore, the available theoretical and experimental work in this area has been predominantly completed with adults who stutter. Consequently, SLPs wishing to implement ACT into their clinical practice with PWS should exercise caution.

Clinical Implications

This critical review of the evidence provides, at best, suggestive evidence for the integration of ACT into existing stuttering treatment approaches. Importantly, SLPs should be aware of the limits of their scope of practice as it relates to counseling and psychotherapy. Specifically, while psychotherapeutic approaches aimed at addressing communication disorders may fall within the role of the SLP, SLPs may require additional qualifications in order to deliver them. With respect to the experimental research articles evaluated (i.e., Beilby, Byrnes, & Yaruss, 2012; Cheasman & Everard, 2013; Freud et al., 2019), the treatment programs were conducted by a team consisting of clinicians qualified in delivering psychotherapy (e.g., clinical psychologists) and SLPs. Therefore, SLPs are encouraged to use their clinical expertise in fluency disorders in collaboration with professionals qualified in providing psychotherapy; this interdisciplinary approach is key to advancing

knowledge of and evidence for ACT's utility and effectiveness in the treatment of PWS.

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