

Pilot Program Combining Acceptance and Commitment Therapy with Stuttering Modification Therapy for Adults who Stutter: A Case Report

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Keywords

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Abstract

Background: The impact of stuttering far exceeds its effects on speech production itself. It includes increased anxiety levels and avoidance of speech situations that may impact the general quality of life. Therefore, psychological treatment methods have been incorporated into speech therapy programs with positive results. Acceptance and commitment therapy (ACT) is a relatively recent addition to the field of stuttering. In this case report, we present a pilot program of integrating acceptance and commitment therapy (ACT) with stuttering modification therapy for adults who stutter. **Method:** Eight adults who stutter entered the approximately year-long program, which consisted of three parts: group ACT, individual/pair stuttering modification therapy, and monthly stabilization/follow-up sessions. **Results:** Improvement was observed in group mean measures of mindfulness skills, speech-related attitudes, anxiety, daily communication, quality of life, and stuttering frequency. Improvement in quality of life was also self-described by participants through-

out the program. **Conclusions:** Participant improvement and positive self-reports suggest a potentially promising effect of combining ACT with stuttering modification therapy. Further research is needed to evaluate treatment efficacy.

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Introduction

Stuttering is a long-established disorder whose definition has evolved and changed with time. Stuttering's definition has changed from being a physical speech condition, characterized by myospasms originating from the central nervous system [1], to a broader perspective, using the analogy of an iceberg [2]. The currently well-accepted iceberg analogy depicts stuttering not only by its *overt* symptoms (i.e., sound or part word repetitions, prolongations, and blocks), but also represents its *covert* symptoms. These include negative attitudes towards stuttering, as well as feelings of shame, anxiety, loneliness, depression, etc. [2].

An even broader perspective was provided by the DSM-V, which defined stuttering not only by its speech-related symptoms and its accompanying feelings shared

by many persons who stutter (PWS), but also as a disorder that causes “anxiety or limitations in effective communication, social participation, or academic or occupational performance” [3]. The extent of limitations described by the DSM-V may correlate with the severity of stuttering, but they can also be the result of coping behaviors adopted to reduce or avoid moments of stuttering [4]. These coping behaviors may provide short term relief from unpleasant feelings related to stuttering, but they prevent the individual from confronting moments of stuttering, thereby never experiencing the possibility that things will work out better than catastrophically feared. As a result, anxiety is perpetuated [5] and a vicious circle is created.

As is evident, the typical sequelae resulting from coping with stuttering create the picture of a much more complex disorder than one limited to an impediment to the production of speech. It is the reaction of the individual to his/her own stuttering that would determine if stuttering is a disabling or a handicapping disorder [6].

As the perspective on stuttering has expanded, the treatments for it have also evolved. As research has begun to emphasize the high prevalence of speaking situation anxiety and elevated social anxiety symptoms among PWS e.g., [7, 8] and their associated impact on quality of life [9, 10], it has become more and more evident that fluency shaping treatment programs e.g., [11–13], in which speech strategies are primarily practiced (e.g., rhythm, breathing) [14]), are insufficient for several reasons. First, it has become acknowledged that improving fluency does not necessarily improve speech-related anxiety unless anxiety is addressed directly [15]. Moreover, it has been argued that anxiety is a key factor in the low maintenance rates of speech therapy programs [16–18]. Therefore, it has been recommended that treatment for stuttering should target both fluency as well as the stuttering-related anxiety and avoidance behaviors, so that PWS, whose speech may be indeed more fluent post-therapy, could face the feared situations, engage in daily communicational situations, and maintain fluency [15, 16].

For this reason, psychological methods have been incorporated into speech therapy programs, thereby enriching the therapeutic tools of speech language pathologists (SLPs). One of the most frequently used methods is Cognitive Behavioral Therapy (CBT) [15, 19–21], which has been found to be helpful when working with PWS; this approach is based on a cognitive model in which thoughts determine emotions, which consequently influence behavior. Therefore, in CBT, unhelpful thoughts are challenged and rationally corrected, with the aim of re-

ducing negative emotional responses. In turn, the reduction in anxiety and other unpleasant emotions facilitates a behavioral shift, so that previously avoided behaviors are gradually confronted. For example, the client may attempt to approach the feared words, people, and situations [22].

A relatively recent therapeutic approach introduced to the field of stuttering therapy is Acceptance and Commitment Therapy (ACT), which has been viewed as part of the growing third “wave” of cognitive behavioral therapies that are often “more experiential than didactic” and whose “underlying philosophies are more contextualistic than mechanistic” [23, p. 640]. Most basically, ACT aims to promote the client’s psychological flexibility, and help him/her live a full and value-based life [24–26]. More precisely, by highlighting a mindfulness- and acceptance-based perspective, ACT integrates six therapeutic processes, traditionally represented in a “hexaflex” (hexagon of psychological flexibility). These include:

1 *Present-moment awareness*, using mindfulness. Mindfulness is “awareness that arises through paying attention, on purpose, to the present moment, non-judgmentally” [27].

2 *Acceptance*, being in full contact with internal experiences without attempting to change them, even when unpleasant.

3 *Cognitive defusion*, the process of recognizing thoughts or other mental events for what they really are: entities separate from the person.

4 *Self as context*, shifting from the client’s own perspective to one of an observer so that life may be interpreted according to the client’s true current values.

5 *Values*, paths or directions that have been defined as important by the client.

6 *Committed action*, targeting a behavioral change, according to the client’s designated values.

During the past few decades, it has been demonstrated that ACT is an effective treatment for a variety of conditions such as anxiety [28], social phobia [29], weight control [30], post-traumatic stress disorder [31], and fibromyalgia [32]. Even though these conditions are inherently different from stuttering, they nevertheless share elements of pain and suffering [33, 34]. Therefore, in recent years, ACT (and also mindfulness [35]) has been recommended for PWS as well [33, 36, 37].

To the best of our knowledge, there are only two research-reports in the peer-reviewed literature regarding the utilization of ACT for PWS. Beilby et al. [36] describe an integrated ACT program for PWS, consisting of 2-h sessions conducted over 8 consecutive weeks that includ-

ed practicing fluency strategies as well as ACT techniques. Their participants showed improvement in measures related to the impact of stuttering on life: readiness for change, mindfulness skills, and a decrease in stuttering severity. Cheasman and Everard [33] also reported conducting ACT group therapy for PWS in a standalone 3-day workshop. Improvement was noted in measures of mindfulness skills, acceptance of stuttering, thoughts, feelings, and avoidance.

Previously, in our therapeutic program, we had observed clinical improvement among PWS when utilizing Charles Van Riper's stuttering modification therapy (SMT) [38]. The SMT approach is based on the view that "the great bulk of stuttering consists of learned responses to the experience of the anticipation of broken fluency" [38, p. 245]. Hence, the aim of SMT is to unlearn or modify such responses, and achieve an easier forward moving form of stuttering [38]. To achieve that goal, the client must first accept the presence of stuttering, develop awareness to stuttering behaviors (identification stage), and reduce negative emotions (desensitization stage). This combined work may ultimately increase the ability of the PWS to speak more freely and participate in a broader range of social activities [38, 39].

The Advantages of Combining ACT with SMT

Notwithstanding the above-reported improvement from using SMT with PWS, we considered that PWS may further benefit from utilizing ACT for several reasons. First, elements of SMT might be more successfully implemented given prior experience with ACT practices. For instance, in the identification and modification stages of SMT, the participant is encouraged to develop careful attention to the sensory-motor features of speech. However, since the moment of stuttering can be painful and trigger feelings of shame and guilt, the often habitual behavior of PWS is to avoid the feelings (and therefore also the physical sensation) of the moment of stuttering. The principles of mindfulness and acceptance from ACT, however, may help PWS better tackle this task; practicing mindfulness and acceptance may enable PWS to stay with the present moment without self-judgment. By doing so, PWS are empowered to move self-observation flexibly between sensory modalities: *What do I feel while stuttering? What do my articulators do? How do I sound? How do I feel?* In the given example, therefore, the increased ability to focus with such flexibility on the sensory-motor features of one's speech supports the successful implementation of the identification/modification stages of SMT. Thus, integrating SMT and ACT approaches to

treating stuttering may equip PWS with skills to confront, rather than avoid, difficulties related to stuttering. This may enable better coping and adjustment that could facilitate even greater positive change.

A second reason for combining ACT with SMT is that ACT may serve as a good foundation for undergoing the desensitization stage of SMT, a critically important stage in the process of therapy. This stage involves negative practice, i.e., stuttering deliberately, a technique used for reducing anxiety and avoidance of word/situation fears [38]. However, this step may be perceived as frightening for many PWS. Accordingly, ACT may encourage PWS to overcome fears by using mindfulness. Mindfulness assists in recognizing and self-acknowledging thoughts and feelings, addressing them with self-compassion, and accepting their presence. Thus, self-awareness and emotional acceptance may promote avoidance reduction. In addition, the individual may be able overcome his fears by placing them in the context of one's life values and related goals. Therefore, developing mindfulness skills and achieving a well-defined sense of personal values and goals that is facilitated by ACT may assist PWS in tolerating the desensitization process necessary for reaping the benefits of negative practice, as prescribed by SMT.

A third reason for combining ACT with SMT is that ACT can be helpful in managing anxiety, which may be an obstacle to implementing SMT's modification stage, which offers three speech behaviors to assist PWS: cancellations, pullouts, and preparatory sets, which are intended to achieve "a new slow-motion form of fluent stuttering" [38, p. 337]. These behaviors require delicate speech movements and attention that are usually possible in the safe environment of the clinic. However, the generalization of these behaviors into real life situations may be challenging when heightened anxiety is present. In such a case, ACT offers some solutions. ACT promotes directing gentle and non-judgmental attention to the feeling of anxiety, by practicing and improving the ability to accept unpleasant body sensations and thoughts (particularly those related to anxiety), thereby reducing the impact of anxiety on performance. ACT also helps refine the ability to focus, and shift focus, so that attention can be shifted either to the pace of breathing, the speech organs, or the conversational partner. By enhancing the ability to de-escalate anxiety, PWS are more likely to be able to perform the modified speech behaviors recommended by the SMT approach.

A fourth and final example of the advantage of the therapeutic combination of ACT/SMT, is that ACT can also assist with the generalization stage of SMT, in which

the participant is asked to face speech situations (rather than avoid) and implement his new way of stuttering in daily life. This stage can be particularly challenging, given that the individual must face multiple demands, and most of all, experience anxiety in various speech situations which may discourage the individual from facing his fears and speak with his new form of stuttering. In that sense, ACT can be a support for PWS during this SMT phase through self-definition of one's life values and goals. If one's life values are explicitly defined, it becomes easier to identify personally *meaningful* situations for speech practice that may balance out, or assuage, the anxiety that typically accompanies this activity. In other words, identifying one's life values, as prescribed by ACT, can promote the client's motivation to practice and generalize newly learned speech and communication skills that is encouraged by SMT.

Given the theoretical synergy between the two approaches, we wished to provide our clients who stutter an opportunity to experience a therapeutic approach that combined ACT with SMT. Although our case study would, by definition, be unable to definitively determine whether the two treatments together are more impactful than either treatment provided independently, we hoped to observe anecdotal evidence that ACT materially contributed to the degree of improvement we normally see when implementing SMT independently. Moreover, given the brevity of the previous ACT programs for PWS reported in the literature, we wished to offer a longer, stepwise program than was previous described that included a "maintenance phase" which combined the SMT stabilization stage with ACT philosophy. It was our view that this might result in a deeper understanding and assimilation of the therapeutic goals. Accordingly, we designed an approximately year-long therapeutic program consisting of: (1) group ACT, (2) stuttering modification via individual and group therapy, and (3) stabilization within group sessions.

Case Report

The Setting

The current group took place at the Chaim Sheba Medical Center. The treatment period began in April 2017 and ended in July 2018, which included breaks for holiday and summer vacations during which sessions were not held.

Our therapy program included three parts. The first part consisted of group ACT consisting of eight 90 min sessions. The second part consisted of Van Riper's Stuttering Modification Therapy, provided in eight sessions. Each session included 60 minutes of individual or pair therapy and 60 min of group therapy. The

third part consisted of eight once-a-month follow-up group sessions for stabilization. A more detailed description of the program follows.

The program was conducted by a clinical psychologist from the Chaim Sheba Medical Center's "Shahaf" Stress Reduction Clinic, and three fluency-specialized speech language pathologists (SLPs) from the Chaim Sheba Medical Center's Speech, Language, and Hearing Center.

Although participation in the therapeutic program and use of clinical measures to assess change were for the sole purpose of clinical care, we nevertheless obtained approval from the Chaim Sheba Medical Center institutional ethics committee to utilize retrospectively and anonymously the clinical information (no informed consent required) to more formally analyze and disseminate any findings about this innovative therapy program.

Participants

The first part of the program started with eight participants (age range = 18–47 years, mean = 33, SD = 10.3). Six of these participants were recruited to the program through advertisements in the Israeli Stuttering Association ("AMBI") and two were referred to the program by speech-language-pathologists (SLPs). Prior to the initiation of the program, participants were interviewed by a clinical psychologist and a SLP. In order to identify individuals who were suitable for the intended group work, rather than needing more specific or intensive individual work, these interviews confirmed the absence of additional psychiatric, neurological, or developmental disorders. None of the participants had any previous knowledge or experience with ACT. It was also confirmed that none of the participants was currently enrolled in speech therapy or psychotherapy, as these might conflict with the methods or goals of the current program. Of these eight participants, two stopped attending after 2–3 sessions of part one (described below), due to changes in their personal circumstances; the remaining six participants regularly attended the parts one and two. Three participants dropped out of the program prior to the maintenance phase (part three). A summary of participant demographics is provided in Table 1.

Description of the Program

The program consisted of three parts (an illustration of the program is presented in Fig. 1).

Part One

Part one consisted of eight sessions of group ACT. Each session involved reviewing homework, learning, and practicing. The first session consisted of group cohesion and setting the rules for group work and privacy. Participants were introduced to the Three-Component Model of Emotions [40]. This model posits that emotional experiences can be better understood by observing the interrelation between thoughts, physical sensations, and behaviors. We found this model to be well-suited to set the stage for further mindfulness and acceptance strategies. It is consistent with ACT in the sense that it advocates for observing, describing, and understanding emotional experiences via its three discrete components.

The second session consisted of an introduction to ACT theory and mindfulness practice (for example, the "raisin exercise," in which participants take a few minutes to eat a raisin, while directing and re-directing attention to taste, texture, sound, and other senses involved in eating a raisin). Being mindful enables the cre-

Table 1. Participant demographics

Participant	Gender	Age, years	Marital status	Field of work	Occupation status	Age of stuttering onset	Years since onset of stuttering
1	Male	18	Single	High school student	Unemployed	4	14
2	Male	26	Single	Engineering student	Employed	5	21
3	Female	29	Single	Preschool education student and assistant	Employed	7	22
4	Male	37	Married	Social work student and special needs assistant	Employed	12	25
5	Male	41	Single	High technology	Unemployed	4	37
6	Male	47	Married	Private equities	At a break from work	5	42

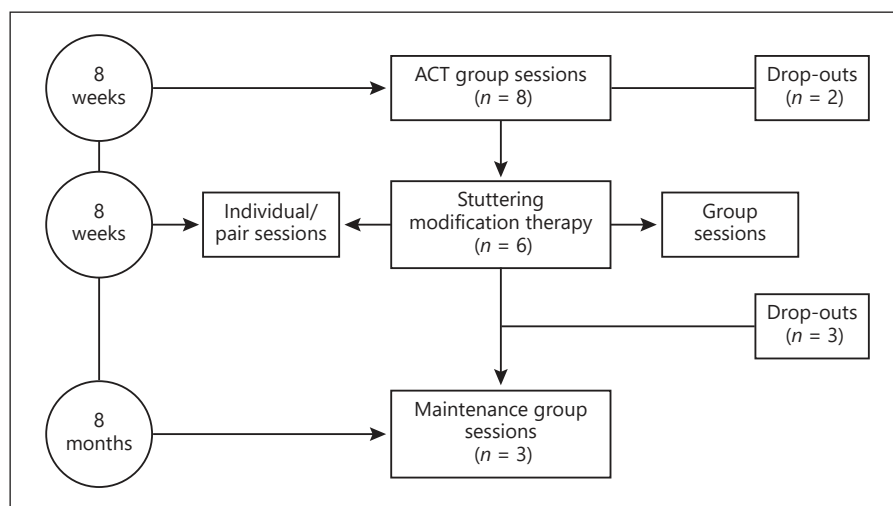


Fig. 1. Illustration of the therapeutic program.

ation of a separation between oneself and one's thoughts, promotes acceptance of body sensations, and encourages proactive behavioral engagement, rather than avoidance, with unpleasant situations. Therefore, according to ACT, mindfulness is a highly relevant tool for living a rich and meaningful life.

In the third session, participants were introduced to the ACT "hexaflex," the foundation of the ACT program (present-moment awareness, acceptance, cognitive defusion, self as context, values, and committed action). Then, its relevance to stuttering was discussed broadly [37]. For example, participants were asked to create a personal narrative of "What's stopping me?" using the ACT language (e.g., trying to be in control, being mindless). Then, participants were asked to describe the cost of these self-imposed barriers on their lives. For example, one participant identified that trying to be in control of his image (to himself and others) has caused him to repeatedly ask his brother to order take-out food for him over the phone. He recognized that the price of "trying to be in control" is his independence.

The fourth session aimed to identify the personal values of each participant, whether these are related to stuttering or not. Examples of participants' general identified values included, for example: "adopting an active and leading role at work," "being a better parent," "volunteering," and "actively participating in the religious community." Then, participants were to differentiate between values that are sufficiently and insufficiently employed in the indi-

vidual's life. Out of the latter, a discussion was held on identifying whether these values are limited due to stuttering-related feelings. In cases where stuttering was a limiting factor in the implementation of the identified values, a discussion on communicational values was held, trying to deepen the understanding of which values in communication are important to the individual (such as "delivering the message," "focusing on the content," and "being an effective communicator") following which the relation between these values and managing stuttering was discussed.

After identifying personal life values, whether related or not to stuttering, the fifth session was dedicated to setting value-congruent goals and carefully planning graded steps to achieve them. For example, one participant identified "volunteering" a value, and planned his steps so that this value would be achievable. The immediate goal was to look for animal shelters, contact them and introduce oneself, plan the week's timetable for specific volunteering time, and finally, start volunteering at the shelter. While planning these steps, possible barriers to effective action were recognized and discussed, such as stuttering-related shame. The limiting effect of shame on the individual's actions was discussed, and self-compassion was suggested as a way to acknowledge the shame and soften it. By doing so, self-compassion can support the participants in relating differently to shame, so that, although it is still there, the individual is able to achieve his/her goals despite it.

The sixth session consisted of differentiating between “self as context,” compared to “self as content.” “Self as context” refers to the self that changes according to the specific context, whereas self as content refers to a permanent concept of self (e.g., “I stutter now” [context] instead of “I am a PWS” [content]). This session also included practicing thought defusion techniques that change the manner in which thoughts are experienced by disputing the notion that “thought equals truth,” or in other words, learning to create a distance between self and thoughts. For example, one technique of thought defusion is to identify a thought (e.g. “If I stutter I will make a fool of myself”) and then replay it with the phrase “I’m having the thought that...” (e.g., I am having the thought that if I stutter I will make a fool of myself [24]).

The seventh session related to being mindful of body sensations and accepting them. For example, mindfulness to body sensations was practiced by body scanning and breathing meditation in which participants were instructed to focus primarily on either their body sensations or breathing.

The eighth session was dedicated to summarization, conclusion, and relapse prevention.

At the end of each session, homework assignments were given. These included practicing mindfulness – both informally (in everyday life) and formally (using prerecorded meditations of mindfulness of the breath, body scan, and acceptance). Other assignments included identifying values, planning value-consistent goals, and participating in phone conversations with other group members in which attention was instructed to be allocated toward individually construed speech-related values (such as speaking authentically, listening attentively to the speech partner, asking kindly and assertively for help, etc.).

Part Two

Part two aimed to address speech disfluencies in a more direct manner according to Stuttering Modification Therapy (SMT) [38]. All six participants who completed part one proceeded to this phase, which consisted of eight weeks of both individual/pair and group therapy. Individual or pair sessions targeted personalized aspects of disfluency. Group sessions aimed to provide a setting in which participants could implement newly learned speech behaviors acquired from the ACT sessions.

The Stuttering Modification Therapy program consisted of four stages. The first, the identification stage, related to identifying “the overt and covert behaviors that constitute the disorder” [38, p. 245]. In other words, it consisted of developing specific self-awareness of the moment of stuttering, and recognizing the specific stuttering behaviors, yet without any correction of speech. Van Riper suggested a sequence of identification: first, identifying “fluently spoken words”; second, identifying “short easy stutterings”; third, “the collection, confrontation, and analysis of avoidance behaviors” and other coping behaviors such as “postponement, timing, [and] verbal cues precipitating expectancy of stuttering” [38, p. 245]. Finally, attention was drawn to identifying post-stuttering reactions, feelings of frustration, shame, and hostility. During this stage, participants used the mindfulness skills developed during part one to get in contact with their tactile, kinesthetic, and proprioceptive sensations during stuttering, as well as with their stuttering-related feelings. As mindfulness encourages identifying and acknowledging sensations without judging, having practiced self-compassion in part one helped the participants face their stuttering behaviors with more ease. By the end of

the identification stage, the PWS was able to choose stuttering behavior for elimination or minimization.

The second stage, desensitization, aimed to reduce speech-related anxiety and learn new ways of coping with the expectancy of stuttering. It included desensitization to listener reactions, counterconditioning, learning assertive responses, pseudo-stuttering, and self-disclosure of being a person who stutters. The fact that the ACT group preceded this part helped the participants in performing many of these tasks. For example, the fact that participants had practiced self-acceptance supported their performance of pseudo-stuttering and self-disclosure. In addition, if anxiety- or distress-evoking thoughts were identified (using mindfulness skills), participants attempted to defuse those thoughts by recognizing that those were just thoughts.

In the third stage, modification, the participants learned to vary stuttering behaviors through techniques such as cancellations, pullouts, pauses, and preparatory sets. By doing so, the participants learned a fluent form of stuttering. However, since SMT does not aim to eliminate stuttering, and participants will still experience stuttering and fluency attenuations, psychological flexibility, improved by ACT, could assist the clients in adapting to these speech fluency state shifts.

The fourth stage, stabilization, aimed to generalize and maintain the accomplishments, and gradually reduce therapy. This stage is often described as the hardest, as the challenges of daily life and the complexity of real-life speech situations may pose great difficulty for incorporating and maintaining the learned skills as the therapeutic setting becomes less frequent [38]. At this stage, all ACT components that have been introduced and practiced in part 1 may support participants in using their new speech skills in daily life and maintaining these changes. Mindfulness, thought defusion, value-oriented goals, and, ultimately, psychological flexibility, may support the adaptation of participants to general life changes and new speech demands (e.g., changing workplaces or work demands, family changes).

Part Three

This final part of the therapy program was held in once-a-month group sessions for eight months. The purpose of this part was to combine the SMT stabilization stage with the ACT philosophy. In particular, we monitored participants’ “committed actions,” those actions that are targeted by the client in accordance with their life values. Prior to the inception of this part of the program, three participants left: participant #1 stopped attending due to joining the army (in Israel, military service is obligatory and the exact recruitment date is determined by the army); participant #3 stopped attending without any notice (later she informed us that she left the group as her emotional state deteriorated significantly after being dismissed from work, and felt unable to continue attending the program); and participant #6 stopped attending as he had a very mild severity of stuttering and felt sufficiently empowered by the work that had been done until that point to not need further intervention.

Clinical Measures

Several measures were administered to evaluate and track participant change throughout the program. Data were collected at four time points: at the first week and the last week of part 1, at the end of part 2, and at the end of part 3. These measures included the following:

The Five Facet Mindfulness Questionnaire (FFMQ) [41]. This questionnaire includes 39 items that consist of five mindfulness

Table 2. Participant individual and average scores on all study measures at all timepoints

	P1	P2	P3	P4	P5	P6*	Mean (SD) [†]
FFMQ							
Pre ACT	2.92	2.95	3.28	3.56	2.59	3.08	3.06 (0.37)
Post ACT	3.00	3.46	3.03	3.97	2.69	3.44	3.23 (0.50)
Post SMT	3.00	3.46	3.10	4.18	2.95	3.62	3.34 (0.51)
Post maintenance	NA	3.69	NA	3.97	2.56	NA	
SSC-ER							
Pre ACT	3.09	2.59	4.57	3.00	3.24	2.80	3.30 (0.75)
Post ACT	3.06	2.61	4.14	2.42	3.22	2.84	3.09 (0.67)
Post SMT	2.92	2.76	4.00	1.52	3.08	2.04	2.86 (0.89)
Post maintenance	NA	2.28	NA	1.81	3.16	NA	
OASES-A							
Pre ACT	3.16	2.61	4.06	3.07	3.09	2.13	3.2 (0.53)
Post ACT	2.99	2.59	3.65	2.32	3.12	2.36	2.93 (0.51)
Post SMT	2.89	2.49	3.61	2.18	3.03	2.04	2.84 (0.54)
Post maintenance	NA	2.30	NA	1.97	3.08	NA	
SS%							
Pre ACT	5.08	14.46	14.87	4.79	5.57	0.63	8.95 (5.22)
Post ACT	4.84	10.44	9.74	10.30	4.21	0.32	7.91 (3.11)
Post SMT	4.15	9.12	15.33	7.74	2.88	0.33	7.84 (4.90)
Post maintenance	NA	11.29	NA	9.65	8.61	NA	

* Participant 6 identified himself as a person who stutters, although his pre ACT measures are <3%. He reported being significantly more disfluent when speaking a foreign language, which was needed for his work.

[†] Group descriptive statistics exclude P6.

FFMQ, Five Facet Mindfulness Questionnaire; ACT, acceptance and commitment therapy; SMT, stuttering modification therapy; SSC, Speech Situation Checklist; ER, emotional reaction; OASES-A, Overall Assessment of Speaker's Experience of Stuttering for Adults; SS%, stuttered syllable percentage; NA, not applicable.

subscales: (1) Observe, (2) Describe, (3) Act-Aware, (4) Non-Judge, and (5) Non-React. Responses are rated on a 5-point scale, in which 5 represents 'very often or always true' and 1 the opposite. Several items are reversed. The FFMQ has been shown to have good internal consistency and significant relationships in the predicted directions with a variety of constructs related to mindfulness [41]. The Hebrew version was taken from Sheleg [42]. In contrast to the following tools, in the case of the FFMQ, higher scores represent an increase in mindfulness skills.

Speech Situation Checklist (SSC) [43–46]. This questionnaire aims to evaluate the level of emotional reaction (ER) and speech disruption (SR) in 51 situations. For the purpose of the present intervention, only SSC-ER was used. Responses are rated on a 5-point scale in which higher scores indicate a higher level of negative emotion. The Hebrew version of the SSC-ER was taken from a previous study [47].

The Overall Assessment of Speaker's Experience of Stuttering for Adults (OASES-A) [48, 49]. This 100 item questionnaire aims to evaluate the impact of stuttering on the individual across four dimensions: (1) General Information, (2) Reactions to Stuttering (emotional and cognitive reaction), (3) Communication in Daily Situations, and (4) Quality of Life. Responses for each item are rated on a 5-point scale, in which higher scores indicate a more severe impact of stuttering. The OASES has been shown to have strong psychometric properties [48, 49]. For this program, the Hebrew version of the OASES was used [50].

Stuttering Frequency. This measure is obtained by calculating the percentage of stuttered syllables (SS%) out of a speech sample of 400 syllables. Participants' speech was audio-recorded in a quiet room for 10 min, using a Shure Microflex MX391/0 omnidirectional surface mount microphone, while talking to one of the clinicians. After a two-minute warm up, participants answered open-ended questions that elicited spontaneous speech (e.g., "Would you tell me about your last trip?").

In addition, during the course of the program, participants were asked to describe the effect of the program on their quality of life, and these responses were collected.

Results

Overall Group Scores

Table 2 summarizes individual participant scores and mean group scores.

Mean FFMQ (Five Facet Mindfulness Questionnaire) scores increased slightly during the course of the program ($\eta^2 = 0.56$), representing positive progress. This pattern was observed among most participants until part 3 (stabilization). Mean SSC-ER (Speech Situa-

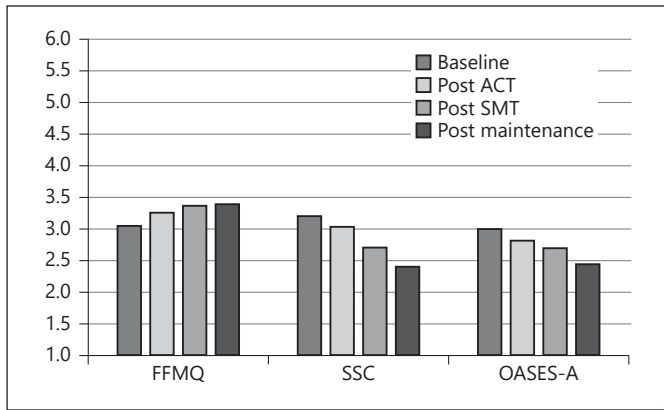


Fig. 2. Overall group mean scores of the Five Facet Mindfulness Questionnaire (FFMQ), Speech Situation Checklist (SSC), and Overall Assessment of Speaker’s Experience of Stuttering for Adults (OASES-A). * On the FFMQ scores, higher scores represent an increase in mindfulness skills.

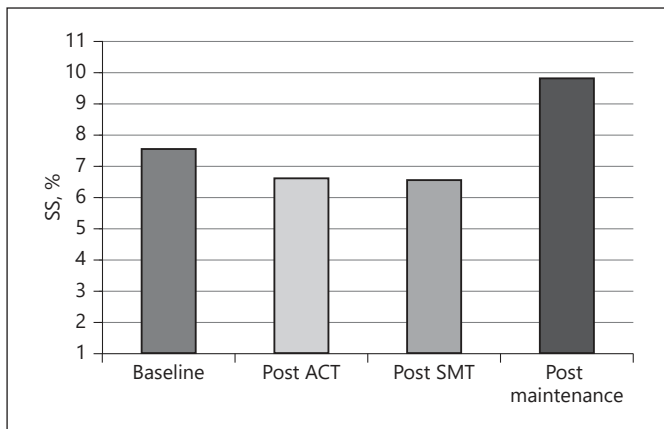


Fig. 3. Overall group mean Stuttered Syllables percentages (SS%).

tion Checklist) and OASES-A (Overall Assessment of Speaker’s Experience for Adults) group scores decreased slightly during the course of the program ($\eta^2 = 0.46$ and $\eta^2 = 0.54$ respectively), indicating a decrease in speech-related anxiety and in the overall impact of stuttering on the PWS’s life. Mean stuttering frequency (SS%) decreased slightly throughout part 1 and 2 of the program, and increased considerably after part 3 ended ($\eta^2 = 0.13$). These results are illustrated in Figures 2 and 3.

Participants’ Personal Reports

Personal reports collected from participants describing the effect of the program on their quality of life are summarized below.

Participant 1

This participant noted some degree of speech fluency change, and reported a significant behavioral change in daily life. For the first time in many years, he spoke in front of a large audience, both in class and at the synagogue. He initiated a conversation with a bus driver while other passengers were waiting and listening. He started ordering food on the phone instead of asking his friend to order for him, started talking in social encounters, and started calling his friends on the phone instead of using text messages. In general, he reported a significant change in his self-confidence, but admitted that “there is much more work to be done about self-acceptance and being less anxious about stuttering.” This participant did not attend part 3, owing to the fact that he was enlisted to the army.

Participant 2

This participant commented that he learned to be less angry at himself and his stuttering, and to accept his stuttering-related challenges with more self-compassion. He reported that he started “showing” more of his stuttering instead of hiding it. For example, he started participating in university classes and disclosed the fact that he stutters in a conversation with a consultant.

Participant 3

This participant reported that the program helped her “connect” to her stuttering although “there was more work to do about self-acceptance.” This participant possessed significantly high levels of anxiety and negative attitudes at her baseline evaluation, and the process of change was significantly slower for her compared to her peers. She did not attend part 3’s stabilization sessions, and provided neither notice nor a reason.

Participant 4

This participant summarized his experience as follows: “I learned a lot from ACT. I relate very much to self-fulfillment, identifying values, and making goals for action. It made me think about what I want and what I have, and how to bridge the gap between the two. It made me mindful of my body, thoughts, urges, and behavior. For me, this is the true change. It also helped me accept myself, and become less ashamed by my stuttering.” During the program, this participant completed his social work studies by presenting a research project that was related to stuttering (disclosing publically that he was a PWS). Also, he accepted a speech-related job offer of a manager, a position that included running staff meetings and other situations involving speaking.

Participant 5

This participant evidenced an improvement in his speech fluency and self-confidence to the point that he started looking for a job following months of unemployment. He acknowledged that there is much more work ahead of him and that he should keep working on his self-confidence and being less anxious about his stuttering.

Participant 6

This participant reflected that the program promoted his self-acceptance as a person who stutters. Also, he reported setting new speech challenges. For example, he actively engaged in business group meetings using English as a second language. In those situations, he also declared himself to be a PWS and described his experiences as a PWS. This participant did not attend the maintenance stage, as he felt no more need for intervention.

Discussion

The aim of this article was to explore the theoretical and practical possibilities of combining stuttering modification therapy (SMT) with the principles of Acceptance and Commitment Therapy (ACT). The use of ACT among adult PWS was reported previously by both Beilby et al. [35] who conducted group ACT in which speech goals were incorporated, and Cheasman and Everard [33] who performed standalone group ACT for PWS. Our program offered another variation in the use of ACT with PWS by constructing a program of three parts: (1) group ACT, (2) stuttering modification therapy (SMT) via individual and group sessions, and (3) stabilization via group sessions. We chose to separate the active treatment options (parts 1 and 2) into two sequential parts. Because the primary goal of our overall therapeutic approach is to promote the acceptance of stuttering and the committed action of living a full life according to one's personal values, we made the ACT curriculum the first part of the program, so that those who wish to avail themselves only of this approach could easily do so. We chose to follow part 1 (ACT) with stuttering modification therapy (part 2), so that participants who wished to do more technical work on their speech could do so as well. Structuring the program in this way would also enable us to observe the potential impact of ACT on the implementation of SMT. Part 3 (stabilization/maintenance) was offered to provide a long-term (approximately 8 months) structured format during which participants could continue to work on understanding and applying what they had learned.

Eight PWS started the program, with six participants completing part 1 (group ACT). The quantitative results show a general group trend of improvement, though slight, from baseline to the end of part 2, with individual variations. For those participants who continued until the end of part 3, two participants showed continued progress in most scores of FFMQ, OASES, and SSC-ER through part 3 (P1, P4); one participant, whose progress was minimal across all measures, maintained similar scores by the end of part 3. The most noticeable improvement was in Speech Situation Checklist (SSC-ER) scores, implying that speech situations were ultimately perceived as less threatening, resulting in reduced speech-related anxiety. Similarly, the Overall Assessment of Speaker's Experience of Stuttering for Adults (OASES-A) scores also gradually decreased, indicating that participants were more knowledgeable about stuttering in general, and about their own stuttering in particular. They also had more positive emotional reactions and attitudes towards stuttering, and noticed improvement in both daily communication situations and general quality of life. The Five Facet Mindfulness Questionnaire (FFMQ) showed increased scores, indicating a slight positive change in their mindfulness skills, including: being in present moment, shifting attention from thoughts to body sensations, connecting with life values, and committing to action. Interestingly, while there was a slight decrease in stuttering frequency (SS%) after part 1 (ACT group) and after part 2 (stuttering modification therapy), in the final measurement following the last of the eight once-a-month stabilization sessions, SS% was found to have increased individually among each of the remaining participants. On one hand, such a tendency is somewhat surprising, as the maintenance stage aimed to assure the preservation of the positive fluency changes (as well as positive changes in other measures). On the other hand, the fact that these fluency changes were not totally preserved over time may be best understood in the context of the *overall* changes participants underwent: Perhaps the achievements in improved quality of life and greater acceptance of stuttering proved to be a more stable change, and these more *global* adjustments supported the participants regardless of the level of maintenance in the speech fluency improvement. It is also possible that at the end of the program, participants decreased their avoidance levels, resulting in more observed stuttering. Finally, just as there was a high variability in participant SS% at the initial measurement; their course of improvement also varied greatly throughout the program.

Participants' personal reports, detailing the impact of the program on their quality of life, both support and expand on the quantitative measurements derived from the clinical instruments. Their reports depict new and courageous steps taken to clarify and actualize their life values and goals, significantly focusing on their new behaviors compared to their past ones, and the reactions of those in their environment to those new behaviors. It is particularly interesting to note that their stuttering itself is not mentioned in these reports. For example, Participant 4 reported taking over the microphone to speak while on a bus trip with his work colleagues; he did not mention whether his speech included stuttering or not. The fact that participants reported positive functional changes in typical daily communication situations, is, in our opinion, the best evidence that participants felt empowered to implement changes in line with their newly clarified life values and goals.

While previous studies have reported using ACT with PWS (such as combining ACT with fluency shaping therapy; Beilby et al. [36]), the present therapy program is unique in the fact that it combines ACT with Stuttering Modification Therapy. In contrast to Beilby et al.'s integrated program in which ACT and fluency shaping techniques were addressed in a combined manner in a total of eight sessions, our program entailed about 24 sessions, consisting of eight ACT sessions, eight SMT sessions, and eight additional sessions for generalization and maintenance. Beilby et al. reported significant improvement in stuttering frequency (SS%), in OASES scores, and on other instruments that focus on different aspects of ACT therapy (mindfulness skills, acceptance, and action). When comparing the quantitative changes among our participants to Beilby et al.'s, it is evident that Beilby et al. achieved a greater shift in all scores compared to the present case-study. The difference in the range of improvement, even when comparing the OASES, which was conducted in both studies, may be explained by the different number of participants (6 in our study versus 20 in Beilby et al.) and the gender composition of our participants compared to Beilby et al. (5 males and 1 female versus 10 males and 10 females in Beilby et al.). It should be recognized, however, that the fact that Beilby et al.'s program is combined in nature, so that ACT and fluency techniques may have been practiced almost simultaneously, may also have contributed to the greater shift as measured in the reported instruments.

With respect to the fact that the shifts in stuttering frequency were smaller in our study, one should keep in mind that SMT does not aim to increase fluency, but to

achieve an easier way of stuttering [38], such as reducing or eliminating accompanying sounds, interjections, physical tension, and physical movements exhibited at the moment of stuttering. Therefore, Beilby et al.'s participants may indeed have gained more fluent speech, resulting in much more emphasized improvement of SS% scores. Given the preliminary nature of this work, and the retrospective nature of its data collection, we could not analyze changes in the quality of stuttering symptoms or changes in stuttering severity.

Notwithstanding the merits of this innovative pilot therapeutic program that have been identified, there are several limitations to be acknowledged. First, the eight ACT group sessions were 90 minutes long, leaving only a short time for practice and group talk that would better promote achieving the goals of ACT. Second, the number of participants in this pilot program was limited. Consequently, this work is presented as a case report, which does not allow for much generalization of results.

Third, participants were monitored each week for homework and attended all sessions, and our impression was that all participants felt comfortable, highly motivated, and established a positive therapeutic alliance with the therapists. However, there was a significant dropout rate for part 3 for different reasons. While still unable to control external factors in the future (such as army enlistment), we believe that higher compliance rates can be achieved by assessing the degree of motivation to attend, and expectations about, the program, during the interview process with possible participants, and adding time for group talk during the program sessions so that each participant can report on how s/he is doing and feeling toward the program.

Fourth, our measure of stuttering was limited only to assessing the frequency of stuttering, and does not reflect stuttering severity. Had severity measures been utilized, they may have better reflected changes in the stuttering movements- either their length or their characteristics- as these are addressed directly in SMT. Therefore, the lack of inclusion of measures of stuttering severity or characteristics precludes determining the careful outcomes of the reported SMT. We therefore recommend other stuttering measures be used in future studies (Stuttering Severity Instrument [51]; Weighted SLD score [52]). Finally, although our clinical impression is that SMT and ACT may work synergistically and reach results beyond those achieved in SMT or ACT separately, the preliminary nature of this case study cannot demonstrate the program's efficacy, and therefore our reported results should be regarded with caution. Future studies are needed to com-

pare the efficacy of SMT and ACT for PWS when performed as a standalone therapy with the combined SMT and ACT program.

Conclusion

The present pilot therapy program for adult PWS showed some individual variation in response to the therapy as designed, but with generally positive progress during its stepwise course. These results, although preliminary, provide evidence to support further study on combining ACT with SMT. Each of the therapies shares a mutual philosophy; their combination appears to promote the process of positive change among PWS.

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References

- 1 Bryngelson B. Suggestions in the theory and treatment of dysphemia, and its symptom, stuttering. *Commun Educ*. 1952 Mar;1(2): 131–6.
- 2 Sheehan J. Conflict theory of stuttering. In: Eisenson J, editor. *Stuttering: A symposium*. New York (NY): Harper & Brothers; 1958. pp. 121–66.
- 3 [3] American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub; 2013 May 22.
- 4 Guitar B. *Stuttering: An intergrated approach to its nature and management*. Baltimore: Lippincott Williams & Wilkins; 2006.
- 5 Panayiotou G, Karekla M, Mete I. Dispositional coping in individuals with anxiety disorder symptomatology: avoidance predicts distress. *J Contextual Behav Sci*. 2014 Oct;3(4):314–21.
- 6 Yaruss JS. Describing the consequences of disorders: stuttering and the international classification of impairments, disabilities, and handicaps. *J Speech Lang Hear Res*. 1998 Apr; 41(2):249–57.
- 7 Craig A, Tran Y. Trait and social anxiety in adults with chronic stuttering: conclusions following meta-analysis. *J Fluency Disord*. 2014 Jun;40:35–43.
- 8 Iverach L, Menzies RG, O'Brian S, Packman A, Onslow M. Anxiety and stuttering: continuing to explore a complex relationship. *Am J Speech Lang Pathol*. 2011 Aug;20(3):221–32.
- 9 Craig A, Blumgart E, Tran Y. The impact of stuttering on the quality of life in adults who stutter. *J Fluency Disord*. 2009 Jun;34(2):61–71.
- 10 Yaruss JS. Assessing quality of life in stuttering treatment outcomes research. *J Fluency Disord*. 2010 Sep;35(3):190–202.
- 11 Franken MC, Boves L, Peters HF, Webster RL. Perceptual evaluation of the speech before and after fluency shaping therapy. *J Fluency Disord*. 1992;17(4):223–41.
- 12 O'Brian S, Onslow M, Cream A, Packman A. The Camperdown Program: outcomes of a new prolonged-speech treatment model. *J Speech Lang Hear Res*. 2003 Aug;46(4):933–46.
- 13 Schwartz D, Webster LM. A clinical adaptation of the Hollins Precision Fluency Shaping Program through de-intensification. *J Fluency Disord*. 1977 Mar;2(1):3–10.
- 14 Bloodstein O, Bernstein Ratner N. *A handbook on stuttering*. Clifton Park (NY): Delmar Cengage Learning, Inc; 2008.
- 15 Menzies RG, O'Brian S, Onslow M, Packman A, St Clare T, Block S. An experimental clinical trial of a cognitive-behavior therapy package for chronic stuttering. *J Speech Lang Hear Res*. 2008 Dec;51(6):1451–64.
- 16 Iverach L, O'Brian S, Jones M, Block S, Lincoln M, Harrison E, et al. Prevalence of anxiety disorders among adults seeking speech therapy for stuttering. *J Anxiety Disord*. 2009 Oct;23(7):928–34.
- 17 Martin RR. Introduction and perspective: Review of published studies. In: Boberg E, editor. Maintenance of fluency: Proceedings of the Banff Conference. New York, NY: Elsevier North-Holland; 1981; p. 1–30.
- 18 Menzies RG, Onslow M, Packman A, O'Brian S. Cognitive behavior therapy for adults who stutter: a tutorial for speech-language pathologists. *J Fluency Disord*. 2009 Sep;34(3):187–200.
- 19 Beck AT. Cognitive therapy: nature and relation to behavior therapy. *Behav Ther*. 1970 May;1(2):184–200.
- 20 Helgadóttir FD, Menzies RG, Onslow M, Packman A, O'Brian S. Online CBT I: bridging the gap between Eliza and modern online CBT treatment packages. *Behav Change*. 2009 Dec;26(4):245–53.
- 21 Lowe R, Helgadottir F, Menzies R, Heard R, O'Brian S, Packman A, et al. Safety behaviors and stuttering. *J Speech Lang Hear Res*. 2017 May;60(5):1246–53.
- 22 Beck AT. *Depression: Clinical, experimental, and theoretical aspects*. Philadelphia (PA): University of Pennsylvania Press; 1967.
- 23 Hayes SC. Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behav Ther*. 2004 Sep;35(4):639–65.
- 24 Harris R. *ACT made simple: An easy-to-read primer on acceptance and commitment therapy*. Oakland (CA): New Harbinger Publications; 2009.
- 25 Hayes SC, Strosahl KD, Wilson KG. *Acceptance and commitment therapy: The process and practice of mindful change*. New York (NY): Guilford Press; 2012.
- 26 Luoma JB, Hayes SC, Walser RD. *Learning ACT: An acceptance & commitment therapy skills-training manual for therapists*. Oakland (CA): New Harbinger Publications; 2007.

Statement of Ethics

The study protocol has been approved by the research institute's committee on human research.

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- 27 Mindfulness KZ. *Mindfulness*. 2015 Dec;6(6): 1481–3.
- 28 Arch JJ, Eifert GH, Davies C, Plumb Vilardaga JC, Rose RD, Craske MG. Randomized clinical trial of cognitive behavioral therapy (CBT) versus acceptance and commitment therapy (ACT) for mixed anxiety disorders. *J Consult Clin Psychol*. 2012 Oct;80(5):750–65.
- 29 Dalrymple KL, Herbert JD. Acceptance and commitment therapy for generalized social anxiety disorder: a pilot study. *Behav Modif*. 2007 Sep;31(5):543–68.
- 30 Lillis J, Kendra KE. Acceptance and Commitment Therapy for weight control: Model, evidence, and future directions. *J Contextual Behav Sci*. 2014 Jan;3(1):1–7.
- 31 Orsillo SM, Batten SV. Acceptance and commitment therapy in the treatment of posttraumatic stress disorder. *Behav Modif*. 2005 Jan; 29(1):95–129.
- 32 Luciano JV, Guallar JA, Aguado J, López-Del-Hoyo Y, Oliván B, Magallón R, et al. Effectiveness of group acceptance and commitment therapy for fibromyalgia: a 6-month randomized controlled trial (EFFIGACT study). *Pain*. 2014 Apr;155(4):693–702.
- 33 Cheasman C, Everard R. Embrace your demons and follow your heart: An Acceptance and Commitment Therapy approach to work with people who stammer. In: Cheasman C, Everard R, Simpson S, editors. *Stammering therapy from the inside: New perspectives on working with young people and adults*. Guildford, UK: J & R Press; 2013. pp. 267–302.
- 34 Corcoran JA, Stewart M. Stories of stuttering: A qualitative analysis of interview narratives. *J Fluency Disord*. 1998 Nov;23(4):247–64.
- 35 Boyle MP. Mindfulness training in stuttering therapy: a tutorial for speech-language pathologists. *J Fluency Disord*. 2011 Jun;36(2):122–9.
- 36 Beilby JM, Byrnes ML, Yaruss JS. Acceptance and Commitment Therapy for adults who stutter: psychosocial adjustment and speech fluency. *J Fluency Disord*. 2012 Dec;37(4): 289–99.
- 37 Scott P, Jaime H. The clinical applications of acceptance and commitment therapy with clients who stutter. *Perspect Fluency Disord*. 2013 Nov;23(2):54–69.
- 38 Van Riper C. *The Treatment of Stuttering*. Englewood Cliffs (NJ): Prentice-Hall; 1973.
- 39 Blomgren M, Roy N, Callister T, Merrill RM. Intensive stuttering modification therapy: a multidimensional assessment of treatment outcomes. *J Speech Lang Hear Res*. 2005 Jun; 48(3):509–23.
- 40 Barlow DH, Ellard KK, Fairholme CP, Farchione TJ, Boisseau CL, Allen LB, et al. *Unified Protocol for Transdiagnostic Treatment of Emotional Disorders: Workbook*. Oxford, UK: Oxford University Press; 2010. <https://doi.org/10.1093/med:psych/9780199772667.001.0001>.
- 41 Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. *Assessment*. 2006 Mar;13(1):27–45.
- 42 Sheleg Z. The Effect of Coping Strategies on Ego Depletion and on level of Performance on an Attentional Task (Unpublished master's thesis). Jerusalem: Hebrew University of Jerusalem; 2012.
- 43 Brutten GJ. Behavior assessment and the strategy of therapy. In: Lebrun Y, Hoops R, editors. *Neurolinguistic approaches to stuttering*. The Hague: Mouton; 1973. p. 8-17.
- 44 Brutten GJ. Stuttering: Topography, assessment and behavior change strategies. In: Eissenson J, editor. *Stuttering: A second symposium*. New York, NY: Harper and Row, 1975. p. 199-262.
- 45 Brutten EJ, Janssen P. A normative and factor analysis study of the responses of Dutch and American stutterers to Speech Situation Checklist. In: Urban GJ, editor. *Proceedings of the 18th Congress of the International Association of Logopedics and Phoniatrists*. Rockville, MD: ASLHA, 1981. p. 281-6
- 46 Vanryckeghem M. The Behavior Assessment Battery: an update. *Proceedings of the XX-IVth Congress of the International Association of Logopedists and Phoniatrists*. Nijmegen: Nijmegen University Press, 1999.
- 47 Ezrati-Vinacour R, Levin I. The relationship between anxiety and stuttering: a multidimensional approach. *J Fluency Disord*. 2004; 29(2):135–48.
- 48 Yaruss JS, Quesal RW. Overall Assessment of the Speaker's Experience of Stuttering (OASSES): documenting multiple outcomes in stuttering treatment. *J Fluency Disord*. 2006; 31(2):90–115.
- 49 Yaruss JS, Quesal RW. *Overall assessment of the speaker's experience of stuttering (OASSES)*. Bloomington (MN): Pearson Assessments; 2010.
- 50 Freud D, Kichin-Brin M, Ezrati-Vinacour R, Roziner I, Amir O. The relationship between the experience of stuttering and demographic characteristics of adults who stutter. *J Fluency Disord*. 2017 Jun;52:53–63.
- 51 Riley G. *SSI-4 stuttering severity instrument*. 4th ed. Austin (TX): Pro-Ed; 2009.
- 52 Ambrose NG, Yairi E. Normative disfluency data for early childhood stuttering. *J Speech Lang Hear Res*. 1999 Aug;42(4):895–909.