

Comparing the Effectiveness of Cognitive Behavioral Group Therapy and Mindfulness and Acceptance Group Therapy for Adults who Stutter: A Randomized Clinical Trial

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Abstract

Background: Considering the importance of psychological interventions for adults who stutter (AWS), the present study compared the effectiveness of Cognitive Behavioral Group Therapy (CBGT) and Mindfulness and Acceptance Group Therapy (MAGT), in combination with Speech Therapy (ST) in AWS.

Materials and Methods: A randomized clinical trial was conducted with 36 AWS in Tehran and Alborz provinces in Iran from September-2019 to September-2020. Participants were assigned to CBGT + ST and MAGT + ST groups. Outcomes variables, the fear of negative evaluation scale (FNE) and the social avoidance and distress scale (SAD), were measured at four stages: (1) pretest, (2) after MAGT/CBGT, (3) after ST, and (4) at 6-month follow-up.

Results: The results of repetitive measure-analysis on variance showed that CBGT + ST and MAGT + ST were significantly effective ($P = 0.001$ and $P = 0.003$) on SAD. The same analysis showed that CBGT + ST was significantly effective ($P = 0.001$) on FNE. The results of Analysis of Covariance showed that there was no significant difference between CBGT + ST and MAGT + ST on SAD but CBGT + ST was more effective than MAGT + ST at stage 3 ($P < 0.05$) on FNE.

Conclusion: Data indicated that CBGT + ST and MAGT + ST were both effective for SAD of AWS. Regarding FNE, unlike MAGT + ST, CBGT was effective either alone or in combination with ST for AWS. Further studies are needed to confirm the results of this study.

Keywords: Anxiety, cognitive behavioral therapy, mindfulness, stuttering

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INTRODUCTION

Stuttering is a multifactorial disorder in which features of stuttering are not always confined to “moments of stuttering.”^[1] Stuttering has many negative consequences throughout life.^[2] These consequences can start at early years of life^[3] and make children with stuttering more vulnerable to behavioral, affective, and social developmental impairments compared to peers.^[4] As children grow older and become more involved in social communications, their problems with bullying, peer victimization, social isolation, and rejection

intensify.^[5,6] In fact, it has long been known that many adults who stutter (AWS) experience anxiety in speaking situations.^[7] Hence, anxiety in speaking situations can be considered as an outcome of the negative consequences AWS experiences across the life span.^[1]

The experience of anxiety includes expectancies of negative events, subjective distress, avoidance responses, etc. In several studies, it has been shown that AWSs scores on the

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Fear of Negative Evaluation (FNE) and Social Avoidance and Distress (SAD) were higher than control groups.^[8-10] Based on the relationship between social anxiety symptoms and stuttering, it was suggested that anxiety reduction strategies should be considered as another focus of stuttering treatment along with speech therapy (ST).^[11]

There is considerable evidence for the efficacy of Cognitive Behavioral Group Therapy (CBGT) for social anxiety.^[12] Mindfulness and Acceptance Group Therapy (MAGT) is another promising evidence-based treatment.^[13-15] There are some differences and similarities between these two psychotherapy models: (1) they both emphasize attention as an important component of social anxiety psychopathology,^[16] (2) MAGT promotes cognitive defusion (detachment from thoughts and observing them nonjudgmentally) whereas CBGT promotes cognitive restructuring (considering thoughts just as a possibility, not reality), (3) CBGT learns people how to gradually expose with threatening social situations whereas MAGT learns them to peruse their life values regardless of their fear and anxieties, etc.

Cognitive behavioral therapy (CBT) is widely used for AWS.^[7,17-21] But neither of these studies implemented CBT in a group setting nor compared its effectiveness with MAGT or other psychotherapies. Among all, only one study separated CBT from ST.^[21] Mindfulness-based psychotherapies have also been implemented for AWS and had promising results.^[22-26] But considering the studies of this field to date, there are still unanswered questions: Are CBGT and MAGT effective for FNE as well as SAD of AWS either alone or in combination with ST? Are there any differences between these two combined treatments regarding FNE and avoidance and distress of AWS? The present study aimed to answer these questions by replicating and improving Menzies *et al.*'s^[21] study design. (1) We changed their individual CBT package to a group setting; (2) We implemented the ST in a group setting as well (we assumed that implementing treatments in a group setting give participants a chance to receive feedback from other members of the group); (3) We compared CBGT with MAGT; (4) and we improved the content of the CBT package by including interventions targeting anticipatory and postevent processing.

MATERIALS AND METHODS

The present experimental study was a Randomized Clinical Trial. Participants were 36 AWS who lived in Tehran and Alborz provinces in Iran [Table 1 indicated demographic information of the participants]. Inclusion criteria were (1) diagnosis of developmental stuttering by a speech and language pathologist (SLP); (2) 18 years of age or older; (3) having native or native-like command of Farsi; and (4) graduation of junior high school. The exclusion criteria were (1) being/had been in psychotherapy or receiving a new psycho-pharmacotherapy during or 6 months before the intervention; (2) being in simultaneous ST; (3) diagnosis of severe psychiatric disorders by a clinical psychologist.

Procedure

The procedure was administrated from September-2019 to September-2020. Volunteers were introduced to the researchers mostly via advertising on social media and self-help groups for AWS. After meeting inclusion criteria, by an SLP and a clinical psychologist, and signing informed consent forms, participants were randomly allocated to the MAGT + ST and CBGT + ST groups. Randomization was executed through www.sealedenvelope.com in blocks of nine. Then, participants were assessed via the FNE and SAD. The scores of the participants were considered as stage 1 (pretest). After 10 consecutive weekly CBGT or MAGT sessions, Stage 2 (after psychotherapy) assessment completed. Stage 3 assessment was administrated after 4 ST sessions and Stage 4 was completed at 6-month follow-up. The sampling and randomization process is shown in Figure 1.

Statistical analysis

Mixed Repeated Measures Analysis of Variance (ANOVA) was used to investigate the main and interaction effects of stage of assessment and group. One-way analysis of covariance (ANCOVA), using the pretest scores as the covariate, was administrated to compare the two groups (between-group effect). Repeated measures ANOVA was used to investigate the simple effect (within-group) to see were there any differences among the 4 stages of evaluation in each group. Bonferroni *post hoc* tests were used for pairwise comparisons of different stages. Tests were run to investigate the aforementioned analyses' assumptions, and these assumptions were satisfied ($P < 0.05$). Independent *t*-test and Chi-square test were used to investigate any difference between groups at the pretest stage. SPSS software, version 26 was used to analyze the data.

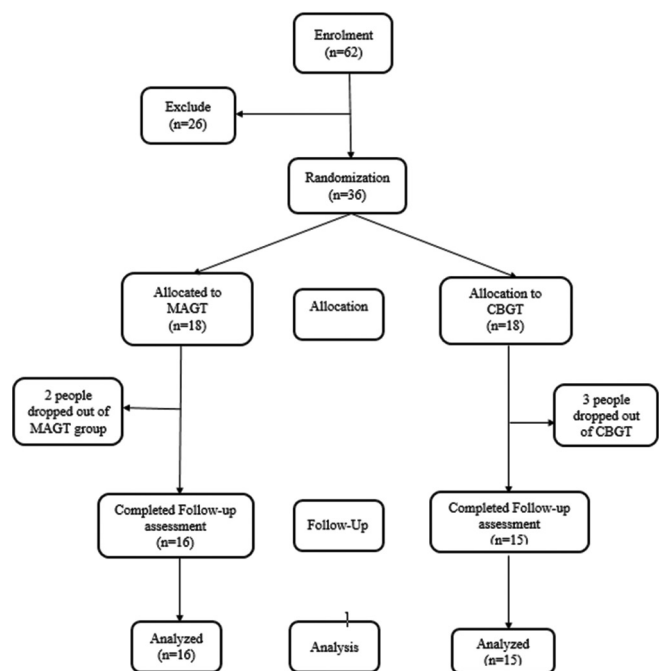


Figure 1: CONSORT diagram showing process of sampling and random assignment

Measures

Fear of negative evaluation scale

The FNE includes 30 items and assesses apprehension about others' evaluations, distress over their negative evaluations, avoidance of evaluative situations, and the expectation that others evaluate themselves negatively.^[27] The internal consistency of this scale was obtained 0.94 in an anxiety disorder population.^[28] The present Cronbach's α was 0.83.

Social avoidance and distress scale

The SAD consists of 28 items and assesses avoiding being with, talking to, or scaring from others, and the reported experience of negative emotions such as being upset, tense, or anxious.^[27] As the FNE scale, the internal consistency of the SAD was obtained 0.94 in an anxiety disorder population.^[28] The present Cronbach's α was 0.90.

Structured clinical interview for axis I disorders diagnostic and statistical manual of mental disorders-IV-TR

This semi-structured interview has good psychometric properties.^[29] Inter-rater reliability of diagnosis was reported as moderate to good (kappa higher than 0.6).^[30]

Stuttering severity instrument-3

The stuttering severity instrument 3 (SSI-3) assesses three primary components: stuttering frequency, duration of stutters, and physical concomitants. It evaluates the observable characteristics of stuttering using spontaneous speech and reading samples.^[31] Content and face validity of the Persian version is 0.100, and reliability was calculated by test-retest to be 0.9.^[32] In this study, SSI-3 score was used for diagnosing developmental stuttering.

Treatments

Cognitive behavioral group therapy

The present study applied a cognitive-behavioral program which was specifically designed for AWS and relies on standard CBT.^[33] We reformed the package into ten 2-h group therapy sessions to match MAGT. Each session is roughly divided into four parts: (1) warm-up and set the agenda: 5–10 min, (2) review of homework: 15–30 min with group discussion, (3) cognitive-behavioral techniques: 55–85 min [Table 1], (4) summarization and homework assignment: 5–10 min. CBGT was executed by a clinical psychologist who has practiced CBT for 8 years.

Mindfulness and acceptance group therapy

The group met for 2 h weekly for 10 weeks. Each session is roughly divided into four parts: (1) mindfulness exercise: 15 min followed by 5–10 min of discussion [Table 2], (2) review of homework: 15–30 min, (3) session theme: Introduction of ACT concepts using metaphors and experiential exercises (sessions 1–5) and ACT-consistent exposure, called taking VITAL Action (sessions 6–10) (55–85 min), (4) homework assignment (5–10 min).^[34] MAGT was executed by a clinical psychologist who has practiced Mindfulness-Based Therapies for 6 years.

Table 1: Descriptive statistics of the cognitive behavioral group therapy and mindfulness and acceptance group therapy groups

Group	MAGT	CBGT	Significance
Gender (frequency)			
Female	6 (0.375)	4 (0.27)	$\chi^2=0.42$ (0.52)
Male	10 (0.625)	11 (0.73)	
Age, mean (SD)	27.56 (4.54)	29.53 (4.85)	$t=1.17$ (0.25)
Years of education, mean (SD)	17.12 (3.26)	17.06 (2.37)	$t=0.06$ (0.95)
FNE, mean (SD)	17.31 (4.51)	20.07 (6.16)	$t=-1.43$ (0.16)
SAD, mean (SD)	14.12 (7.47)	13.4 (6.66)	$t=0.28$ (0.77)
<i>n</i>	16	15	

Gender, education, age, FNE, and SAD based on pretreatment stage. CBGT: Cognitive behavioral group therapy, MAGT: Mindfulness and acceptance group therapy, FNE: Fear of Negative Evaluation Scale, SAD: Social Avoidance and Distress Scale, SD: Standard deviation

Smooth speech program

This study implemented Craig and Lincoln's ST program called smooth speech program.^[35] We implemented this program because the package is conducted in a group setting which was in consistence with the group psychotherapies of this study. The program modified and conducted by two expert SLPs with masters degrees who have been practicing, using this protocol, for more than 10 years. The modified package includes four 4-h group sessions (16 h) of 4–5 members. The speech therapists were not aware of participants' SSI-3 scores or their psychotherapy group assignment. Session by session content of MAGT, CBGT, and ST are shown in Table 2.

RESULTS

Table 1 indicates the descriptive statistic for gender, age, years of education, and the FNE and SAD stage 1 scores. As indicated, there were no significant differences between the groups concerning demographic and dependent variables.

Main and interaction effects of group and stages of evaluation

The main effect of FNE ($F [3,27] = 6.78, P = 0.001, \eta^2 = 0.43$) and SAD ($F [3,27] = 11.93, P = 0.001, \eta^2 = 0.57$) was significant. However, any significant interaction effects were not found for FNE ($F [3,27] = 2.11, P = 0.12, \eta^2 = 0.19$) and SAD ($F [3,27] = 1.18, P = 0.33, \eta^2 = 0.11$).

Fear of negative evaluation

ANCOVA showed that there was no difference between two groups in stage 2 ($F [1,28] = 1.94, P = 0.17, \eta^2 = 0.06$) and stage 4 ($F [1,28] = 1.28, P = 0.26, \eta^2 = 0.044$). However, significant difference was found for stage 3 ($F [1,28] = 4.19, P = 0.05, \eta^2 = 0.13$).

The repeated measure ANOVA test indicated a nonsignificant difference between at least two stages of MAGT + ST group ($F [3,45] = 1.46, P = 0.23, \eta^2 = 0.089$), but significant difference between CBGT + ST stages were found

Table 2: Content of treatment sessions

Sessions	MAGT	CBGT	ST
1	Mindful eating	Psychoeducation about anxiety and stuttering, situation analysis, how thoughts produce emotions	Smooth speech exercises at speeds of 50 SPM, and 100 SPM
2	Observing mountain	Cognitive distortions, basic assumptions or rules, semantic technique and spectrum, logical analysis of thoughts and beliefs	Reading a text with 100 SPM, and 150 speed, and talking about the content of the text for 2 min, and discussing with other participants
3	Body scan	Limited search, cost-benefit analysis of a thought or belief, emotional heuristics, examining the evidence	Determine the speed while speaking (150 SPM), group conversation with 150-180 SPM, and play game conversation with 150-180 SPM
4	Mindfulness of breath, sound, and thoughts	Distinguish progressivism from perfectionism, self-fulfilling prophecy, identifying worry, and examine the disadvantages and advantages of worry	2 challenging conversations with 180 SPM speed
5	Mindful stretching	Turn worries into predictions, examine previous thoughts and predictions, reminding beneficial copings with past negative events	
6	Mindful seeing, acceptance of feelings and thoughts, guest house poem	Examine negative predictions, change negative thoughts through behavior (behavioral experiments)	
7	Imagining VITAL action	Behavioral experiments	
8	Cultivating self-compassion	Graded exposure	
9	Loving-kindness	Graded exposure	
10	Imagining VITAL action	Graded exposure	

CBGT: Cognitive behavioral group therapy, MAGT: Mindfulness and acceptance group therapy, ST: Speech therapy, SPM: Syllables per minute, VITAL: Values and goals, In the present moment, Take notice of your experience from your observer perspective, Allow your experience to be exactly as it is

($F [3,45] = 10.32, P = 0.001, \eta^2 = 0.42$). The *post hoc* Bonferroni test depicted in Table 3. Figure 2 illustrates how the FNE scores have changed in both groups [Figure 2].

Social avoidance and distress

ANCOVA indicated that, there were no difference between two groups in stage 2 ($F [1,28] = 3.01, P = 0.09, \eta^2 = 0.09$), stage 3 ($F [1,28] = 0.001, P = 0.97, \eta^2 = 0.001$), and stage 4 [$F [1,28] = 1.35, P = 0.25, \eta^2 = 0.04$].

The results of the repeated measure ANOVA indicated a statistically significant difference between at least two stages of MAGT + ST group ($F [3,45] = 7.12, P = 0.003, \eta^2 = 0.32$) and CBGT + ST group ($F [3,45] = 6.91, P = 0.001, \eta^2 = 0.33$). The *post hoc* Bonferroni depicted in Table 3. Figure 3 illustrates how SAD scores have changed in both groups [Figure 3].

DISCUSSION

This study was conducted to compare the effectiveness of CBGT + ST and MAGT + ST in FNE and avoidance and distress of AWS. The findings showed that, unlike MAGT + ST, CBGT + ST had effectiveness on FNE's score of AWS, and a significant difference was found between the two combined treatment packages at stage 3. This finding was in the line with Menzies *et al.*'s study.^[21] To explain the results, we can point out different parts of the CBGT + ST package: people with high FNE scores tend to interpret potentially neutral social communication as if others evaluate them negatively. Cognitive restructuring interventions of CBGT could help participants cope more effectively with their distorted thoughts and irrational beliefs, and as a result, their FNE scores were decreased. For example, an AWS might have thought "people

Table 3: Results of Bonferroni post hoc test

Stage	MAGT		CBGT	
	MD	P	MD	P
FNE				
Stage 1-stage 2	0.19	1.00	4.60	0.028
Stage 1-stage 3	2.12	1.00	9.33	0.002
Stage 1-stage 4	2.93	0.74	6.66	0.003
Stage 2-stage 3	1.93	0.45	4.73	0.254
Stage 2-stage 4	2.75	0.87	2.06	1.00
Stage 3-stage 4	0.81	1.00	-2.66	0.92
SAD				
Stage 1-stage 2	5.12	0.12	1.73	0.90
Stage 1-stage 3	6.50	0.007	6.06	0.003
Stage 1-stage 4	5.68	0.04	2.93	0.36
Stage 2-stage 3	1.37	0.41	4.33	0.11
Stage 2-stage 4	0.56	1.00	1.20	1.00
Stage 3-stage 4	-0.81	1.00	-3.13	0.48

CBGT: Cognitive behavioral group therapy, MAGT: Mindfulness and acceptance group therapy, FNE: Fear of Negative Evaluation Scale, SAD: Social Avoidance and Distress Scale, MD: Mean Differences

would laugh at me if I speak with stuttering," may come up with some alternative rational thought like "they do not necessarily think of stuttering as a funny thing" and/or "stuttering is an attribute not a sign of weakness or being dumb," etc., They may have also learned how to examine their negative predictions and see what was really happening based on facts, not their mental representations. The graded exposure technique may have also shown them speaking with stuttering was not as dangerous as they thought, and they can gradually be got used to speaking with stuttering and nothing catastrophic would happen. The FNE's scores of the CBGT group at stage 3

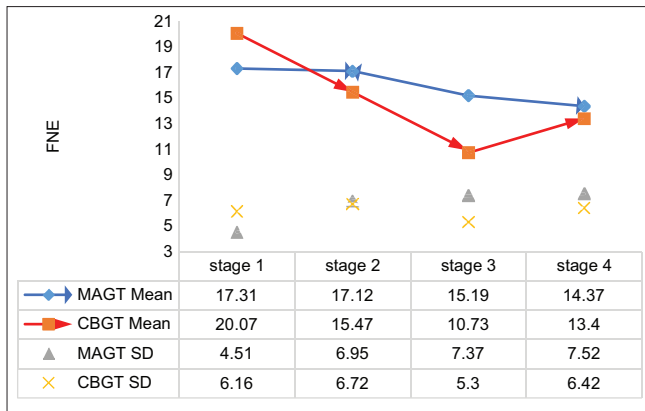


Figure 2: A comparison of mean and standard deviation scores of fear of negative evaluation changes in four stages

indicated that ST may help them decrease their FNE's scores even more; although the difference between stages 2 and 3 was not statistically significant. The group setting of this treatment may have helped participants to challenge common sets of unhelpful thoughts and beliefs regarding stuttering. They also helped one-another prepare for *in vivo* exposures with role play.

Despite similarities between CBGT and MAGT, the MAGT group's FNE scores were not decreased significantly either alone or in combination with ST. These findings can be explained by pointing out the direct method of CBGT challenging distorted thoughts and irrational beliefs. Adding to this, behavioral experiments may have helped the CBGT group's participants change their thoughts and beliefs about other people's attitudes toward stuttering. The significant difference between the two groups after stage 3 (ST) can be explained in light of the importance of applying CBGT + ST techniques simultaneously. The CBGT group's participants may first be made ready to enter social speech situations using CBGT techniques and then applied ST techniques in real social communications. They may have also monitored other people's actual reactions and gradually decreased their FNE. The CBGT group's FNE scores increased none significantly at stage 4 (follow-up). This could be the result of coinciding this stage of study (March 2020–September 2020) with the COVID-19 pandemic in Iran. Due to quarantine and social restrictions, the participants may have lost the opportunity to practice the skills they have learned, resulting in increased FNE scores.

Neither CBGT nor MAGT alone had a significant effect on the SAD scores of participants but when these psychotherapies were combined with ST, the decrease in participants' SAD scores became statistically significant. As none of stage 2–3 differences were significant, the reduction of SAD scores at stage 3, compared to stage 1, cannot be attributed solely to ST. Both combined treatments were effective in the SAD scores of AWS. To explain these results, we may point out at cognitive behavioral aspects of CBGT as well as MAGT. Participants of the CBGT group may have learned how to cope with negative thoughts, expose themselves to socially threatening situations,

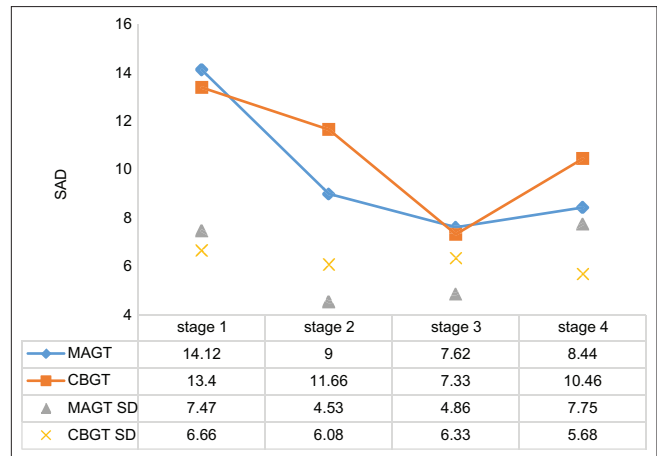


Figure 3: A comparison of mean and standard deviation scores of social avoidance and distress changes in four stages

and gradually gain the courage and confidence to participate more effectively in social settings. Using ST techniques may have helped them speak more fluently and as a result, their tendency to get distressed and avoid social threatening setting has decreased.

The MAGT group participants may have learned how to cope with their “safety mode” encountering social threatening situations. The safety mode leads people to escape or avoid potentially threatening situations. The more they have exposed themselves to social threats, the more their distress and avoidance tendencies have decreased. The MAGT group participants may have learned how to activate “VITAL-mode” which lets them know their life values, be in the present moment, take notice of their experiences from an observer perspective, and allow their experiences to be as they are. The “VITAL mode” was in congruence with the main technique of the Smooth Speech Package, called “airflow.” The MAGT group participants may have taken advantage of the combination of MAGT and ST by letting the air pass through their air tract in a controlled manner, facilitating phonation without intense contractions in muscles of the lips, larynx, and mouth.

CONCLUSIONS

In total, CBGT + ST and MAGT + ST were both effective for SAD of AWS but only CBGT was effective regarding FNE of AWS either alone or in combination with ST. The researchers suggest SLP and clinical psychologists who have trained in the area of stuttering administer joint programs using combined treatment packages, including ST and CBT or MAT programs.

Limitations

Because of limited access to proper samples, we could not add a control group that only received ST. The follow-up phase of the study coincided with the COVID-19 pandemic in Iran (March 2020–September 2020), and the change coronavirus imposed on people's lifestyle (restricting social interactions) may have influenced the results.

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Conflicts of interest

There are no conflicts of interest.

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