Hovedoppgave

NTNU
Norges teknisk-naturvitenskapelige universitet
Fakultet for samfunns- og utdanningsvitenskap
Institutt for psykologi

Tone Louise Svendsen

The Predictive Value of Motivational Language in Relation to Psychotherapy Outcome

A Study of Group Metacognitive Therapy for Generalized Anxiety Disorder

Hovedoppgave i Profesjonsstudiet i psykologi
Veileder: Stian Solem
Desember 2020

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Kunnskap for en bedre verden

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Preface

During the psychology study I have built an interest in what factors that lead to behavior change and what the change mechanisms in psychotherapy are. Although I already knew that motivation is associated with being a key factor to accomplish successful therapy, what aspects of motivation that are central was still not clear to me. Knowing that NTNU had worked on this topic in previous master thesis, I investigated whether this was possible to continue working on which it apparently was. Additionally, I thought it was useful to work on something that would give me more insight into a specific therapy method, metacognitive therapy (MCT), as this could be useful for my upcoming work as a clinical psychologist.

During the work with this thesis I have gained a lot of useful insight regarding the topic of investigation. In the period of coding, I watched several videos both for the purpose of training and coding. Through this I learned to recognize motivational language in the videos, but also in my everyday life being more automatically attentive to this type of language. Being attentive to motivational language could also be beneficial for my future work as a psychologist, as I am prepared to use this skill to monitor and address patient motivation more accurately, and thereby possibly making the therapy more successful. Through working with this thesis, I also got a better understanding of the principles of MCT and what therapeutic techniques that are typically used. Moreover, by watching various professional therapists preform this therapy I also learned how individual therapeutic style varies and contributes positively in different ways.

Lastly, I want to thank several people that have been involved in the process of finishing this master thesis. Firstly, I want to thank my supervisor Stian Solem who has given detailed, thorough and useful feedback evenly throughout the whole period, in addition to being very available. I also want to thank Svein Haseth who was giving us permission to use the video recordings. I also want to thank Mourad Touil for the cooperation with coding half of the video recordings, including useful discussions in the process of learning to code. He investigated session one for his thesis while I mainly investigated session four. Lastly, I want to thank Isak Joramo and Bendik Romundstad who gave us useful insight in coding the videos through their former experience with using MISC.

Abstract

Patient motivation for change is known to be an important factor for accomplishing successful therapy outcome. However, self-report measures of motivation seem to be weakly related to therapy outcome indicating that it gives an inaccurate measure of one's true, internal motivation. In contrast, observed motivational language during therapy seems to be more predictive of therapy outcome. The aim of this study was to investigate the predictive value of motivational language on treatment outcome in group metacognitive therapy (g-MCT) for generalized anxiety disorder (GAD). Video recordings of the first and fourth therapy session of 55 patients were coded using the Motivational Interviewing Skills Code (MISC) manual categorizing patient utterances into categories of change talk (CT) or counter change talk (CCT). The findings indicated that more CT in session four was associated with less worry at post-treatment and follow-up, and more CCT in session four was associated with more worry at post-treatment. Increases in CT from session one to four was also associated with less worry at post-treatment and follow-up. The motivational categories *taking steps* and *commitments* emerged as significant predictors of outcome, indicating that these categories represent important facets of motivation in relation to behavior change. These results confirmed the predictive value of MISC in g-MCT for GAD. Further, it highlights the importance of therapists being attentive to- and addressing patient motivational utterances as this possibly could enhance therapy effectiveness.

Keywords: GAD, MCT, MISC, motivation, worry, generalized anxiety disorder, metacognitive therapy.

Sammendrag

Pasienters motivasjon for endring er en viktig faktor for å oppnå atferdsendring i terapi. Selvrapporteringsmål på motivasjon har imidlertid vist seg å være svakt relatert til terapiutfall, som kan indikere at dette ikke har gitt et presist mål på indre motivasjon. Pasienters motivasjonsutsagn i terapi har vist seg å være en bedre prediktor for terapiutfall. Formålet med denne studien var å undersøke i hvilken grad motivasjonsprat kan predikere terapiutfall for pasienter i metakognitiv gruppeterapi (g-MCT) for generalisert angstlidelse (GAD). Videoopptak fra første og fjerde terapitime ble kodet for 55 pasienter ved bruk av «Motivational Interviewing Skills Code» (MISC) manualen. Pasientutsagn ble kodet i kategorier av positivt og negativt endringsprat, henholdsvis «change talk» (CT) og «counter change talk» (CCT). Våre funn indikerte at mer positivt endringsprat i terapitime fire var assosiert med lavere symptomtrykk ved behandlingsslutt og etter tre måneder. Mer negativt endringsprat i terapitime fire var assosiert med høyere symptomtrykk ved behandlingsslutt. En økning i positivt endringsprat fra time en til fire var assosiert med et lavere symptomtrykk ved behandlingsslutt og etter tre måneder. Utsagn som ble kategorisert i kategorien som omhandlet å handle i tråd med behandlingsmålene («taking steps»), og kategorien som omhandlet å vise forpliktelse til behandlingsmålene («commtments») fremstod som signifikante prediktorer av utfallsmålet. Dette kan indikere at disse kategoriene representerer viktige faktorer for atferdsendring i terapi. Resultatene fra denne studien bekrefter den prediktive verdien av MISC i g-MCT for GAD, og understreker viktigheten av å være oppmerksom på- samt adressere endringsprat i terapi da dette kan ha en innvirkning på terapiutfallet.

Nøkkelord: GAD, MCT, MISC, motivasjon, bekymring, generalisert angstlidelse, metakognitiv terapi.

The Predictive Value of Motivational Language in Relation to Psychotherapy Outcome

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM–5), generalized anxiety disorder (GAD) is characterized by the presence of excessive anxiety and worry which the person finds difficult to control, and which occurs most days for at least six months (American Psychiatric Association, 2013). Furthermore, three of the following symptoms should be present to fulfill the diagnostic criteria: "restlessness, easily fatigued, concentration or memory difficulties, irritability, muscle tension or sleep disturbance" (American Psychiatric Association, 2013). GAD is one of the most common disorders in primary care (Kroenke et al., 2007; Wittchen, 2002). A review of the epidemiology of GAD in Europe estimated the lifetime prevalence to be between 0.1% and 6.4% using the criteria from DSM-III-R and DSM-IV (Lieb et al., 2005). GAD is associated with decreased work productivity and great use of health care services which consequently causes a great economic load for the society (Wittchen, 2002).

Recommended treatment for GAD is based on the treatment principles of cognitive behavioral therapy (CBT) (National Institute for Health and Care Excellence [NICE], 2019). However, several studies also show promising results regarding treatment effectiveness of meta-cognitive therapy (MCT) for GAD (e.g., Nordahl et al., 2018; van der Heiden et al., 2012; Wells & King, 2006; Wells et al., 2010). MCT for GAD can also be delivered as group therapy (Haseth et al., 2019; van der Heiden et al., 2013). A meta-analysis reviewing the effect of MCT for anxiety and depression, revealed large effect-sizes and that MCT might be more effective than other interventions (Normann & Morina, 2018).

Metacognitive therapy (MCT) is "based on the idea that people become trapped in emotional disturbance because their metacognitions cause a particular pattern of responding to inner experiences that maintains emotion and strengthens negative ideas" (Wells, 2011, p. 1). Psychological disorders are associated with the activation of a certain destructive way of thinking referred to as Cognitive Attentional Syndrome (CAS). This thinking style often consist of perseverative thinking, which in the case of GAD often take the form of worry, threat monitoring, and unhelpful coping behaviors such as avoidance. The CAS is the result of erroneous metacognitive beliefs which affects the control and interpretation of ways of thinking and feeling. Engaging in CAS is seen as the patient's strategy of coping with threat and emotion aroused by them. However, it will prevent adaptive learning and support the growth of erroneous

metacognitive beliefs. The treatment for generalized anxiety disorder involves challenging CAS and the negative and positive metacognitions the person holds regarding worrying. The rationale for this is based on the idea that such beliefs, in addition to unhelpful coping strategies, are what keep the person unable to stop worrying (Wells, 2011).

To successfully treat psychological disorders such as GAD, addressing individual patient factors such as motivation for changing ways of thinking or acting is central (e.g., Lombardi et al., 2014; Poulin et al., 2019). However, when it comes to measuring treatment motivation and readiness to change, self-report measures such as the University of Rhode Island Change Assessment (URICA) has not been successful in predicting psychotherapy outcome (e.g., Solem et al., 2016). Several studies have indicated that self-report measures are unsuccessful in predicting psychotherapy outcome, but better at predicting therapy dropout (e.g., Dozois et al., 2004; Kampman et al., 2008). This might indicate that self-report measures do not capture a precise reflection of one's intrinsic motivation. A possible explanation for this could be that self-report responses are affected by social desirability bias, thus leading to ceiling effects (Westra, 2011). Furthermore, conscious responses are not necessarily equivalent to unconscious motivation and automatic responses (Kahneman, 2011). In contrast, measuring motivation by attending to client motivational language during psychotherapy has been shown to give a more successful prediction of psychotherapy outcome both in individual therapy (e.g., Joramo, 2019; Lombardi et al., 2014; Poulin et al., 2019) and group therapy (Marker et al., 2019).

The aforementioned studies have used the Motivational Interviewing Skills Code (MISC) which is a therapy process coding system (Glynn & Moyers, 2012). The MISC has been used to measure client motivational language by rating the amount of client statements in favor of changing or maintaining a certain problem behavior. After defining the target behavior, utterances are coded into different categories of change talk (CT) or counter change talk (CCT), containing respectively statements in favor of change or opposing change. All motivational utterances are coded on a 5-point Likert-type rating scale. The more the patients are signalizing willingness to change (CT), the higher value is coded for that utterance. Contrary, negative values are coded to represent degrees of unwillingness to change (CCT). The categories of motivational language described in the manual of MISC version 2.5 include utterances that signalizes *reasons, commitments, need, desire, ability* to change or maintain the target behavior. In addition, the category *taking steps* includes utterances that signalizes that the patient has been

moving away from or towards changing the target behavior. *Other* is used for change talk not fitting in either of the categories. The rationale for this categorization of change- and counter change talk is based on the assumption that these categories represent central parts of what constitute human motivation and willingness to change (Houck et al., 2011).

Research on the association between therapist language, client motivational language and behavior change has been investigated in several studies. Most studies involve using MISC or similar coding methods, in regard to Motivational Interview (MI) interventions for substance abuse (e.g., Apodaca et al., 2014; Borsari et al., 2018; Gaume et al., 2008; Moyers et al., 2007). Apart from studies within the substance field, three studies have investigated the predictive capacity of motivational language for psychotherapy treatment outcome for generalized anxiety disorder (GAD) treated with CBT (Joramo, 2019; Lombardi et al., 2014; Poulin et al., 2019) or MCT (Joramo, 2019). All three studies indicated that motivational language was predictive of post-treatment outcomes.

Lombardi et al. (2014) investigated 37 patients undergoing CBT for GAD. Motivational statements for one of the first two sessions were coded using MISC 1.1 (Glynn & Moyers, 2009). Counter change talk (CCT) was found to be a significant predictor of worry scores at post-treatment, and differentiated the patients responding to the treatment from those who did not. Using hierarchical regression, self-report measures accounted for 22% of the variance in post-treatment scores, beyond pre-treatment worry scores. Furthermore, CT and CCT explained 17% of the variance in post-treatment outcome scores, beyond self-report measures and pre-treatment worry scores. Removing CT from this model, CCT significantly accounted for 21% of the variance in post-treatment worry scores. CT alone was not related to post-treatment outcome. These findings indicated that counter change talk was the strongest predictor of outcome where more oppositional talk was associated with worse treatment outcomes. The authors argued further that self-reported motivation and motivational language might be measures of different facets of motivation as both of the variables separately contributed significantly to the variance of the outcome, and because they were not correlated. Furthermore, there was a significant, positive correlation between CT and CCT ($r = .44$, $p = .007$). The authors argued that this might indicate that CT and CCT are different constructs as one would expect negative correlation if they were endpoints on the same continuum.

The second study investigated the predictive capacity of motivational language in a study of 85 patients with GAD undergoing either CBT or CBT with elements from Motivational Interviewing (MI-CBT) (Poulin et al., 2019). Findings indicated that motivational language measured in the first session was a significant predictor of worry, especially CCT, whereas self-report measures of motivation were not. This study separated counter change talk (CCT) into categories of resistance (CCT-R) defined as behavior opposing the direction set by the therapist and ambivalence (CCT-A) capturing ambivalence to change. Both post-treatment and 1-year follow up outcomes were significantly predicted by motivational language, with the largest effect from CCT-R. More specifically, a prediction model consisting of CT, CCT-R, and CCT-A significantly explained 21% more of the variance of post-treatment scores and 38% for 1-year follow-up, compared to a prediction model consisting only of self-report measures and pre-treatment worry scores. The largest contribution to this variation (both at post-treatment and follow-up) was from CCT-R and CCT-A. No significant effect was found for CT alone on post-treatment worry, and only a small significant contribution for CT was found for the variance at follow-up.

The third study further confirmed the positive predictive value of motivational language in a study involving 24 patients with GAD treated with CBT and 27 patients with GAD treated with MCT (Joramo, 2019). This was the first MISC study to investigate MCT. Patient motivation in session one and four was quantified by using MISC 2.5 (Houck et al., 2011), including the subcategories of motivational language. The results indicated that reduction in CCT from session one to four in combination with early *commitments* to change, significantly explained 24% more of the variance in post-worry scores than pre-treatment severity and treatment condition alone. *Taking steps* in session four significantly explained 10% more of the variance in worry scores two years after treatment, than pre-treatment scores and treatment condition alone. Total change talk in session four emerged as a strong predictor of both 2-year follow-up and post-treatment, significantly explaining respectively 12% and 13% more of the variance than pre-treatment scores and treatment condition alone. CCT in session four significantly explained another 12% of the variance in 2-year follow-up scores, beyond pre-treatment scores and treatment condition. Lastly, changes in counter change talk from session one to four was a significant predictor of post-treatment scores explaining another 15% of the variance beyond pre-treatment scores and treatment condition. However, no significant relationship was found for CT or CCT in session

one in relation to therapy outcome (Joramo, 2019). This stands in contrast to previous findings of how CCT in the first sessions of therapy has a predictive value in relation to therapy outcome (Lombardi et al., 2014; Poulin et al., 2019).

Finally, the results of Marker et al. (2019) further confirmed the positive predictive value of motivational language for treatment outcome in group therapy undergoing CBT for different anxiety disorders. This study investigated the predictive role of change talk (CT)- and counter change talk (CCT) in a session involving cognitive restructuring (sessions 2–9) and a session involving exposure (sessions 4–9). Taking steps towards or away from changing the problem behavior was measured as CCT/CT-engagement, whereas utterances that signalized a reason, ability, need, desire, or commitment to maintain or change the problem behavior was measured as CCT/CT-motivation.

After controlling for verbosity, in the sessions with cognitive restructuring, results indicated that as CCT-motivation increased, the slope of improvement flattened and symptom severity at post-treatment increased. No significant result for CCT-engagement was found in this session. Similar results were also found for participants expressing more CT-motivation, as more CT-motivation surprisingly also led to a flatter slope of improvement and greater post-treatment symptom severity. During exposure sessions, an increase in CCT-engagement led to greater post-treatment symptom severity and flatter slope of improvement. No significant result in relation to therapy outcome was found for CCT-motivation or CT in these sessions. Lastly, CT-engagement in the first session and CT-motivation in the latter session were found to be significantly associated with therapy attendance (Marker et al., 2019).

It is still somewhat unclear whether patient motivation is central to outcome of group therapy in general and to outcome of group MCT for GAD specifically. Marker et al. (2019) is the only study, investigating patients' motivational language in a group setting, which highlights the importance of more similar studies to validate their results. Furthermore, some of their results stands in contrast to previous studies as an increase in CT-motivation in cognitive restructuring sessions was found to have a negative effect on treatment outcome. The authors discussed that levels of CT-motivation in these sessions might mostly have captured the patients' attitudes towards their anxiety (e.g. "my anxiety makes my life worse"), and not solely their attitudes towards the treatment goals. This means that it might have been the patients' negative perceptions of their anxiety symptoms, and not their attitudes towards the treatment goals, that

were associated with the negative effect on treatment outcome. Lastly, their sample consisted of eight different anxiety disorders which makes it impossible to differentiate between the possible difference motivation could play in treatment of different disorders (Marker et al., 2019).

There are to this date no studies investigating to what extent motivational language affect treatment outcome in group metacognitive therapy for generalized anxiety disorder. This study will be the first to investigate this topic. There might be other factors that affect the psychotherapy outcome and the amount of motivational language being expressed in a group therapy setting compared to individual therapy. This could be factors such as client verbosity, group dynamic, social desirability bias and contagion effects in relation to what is being said and not. To what extent and what motivational language in a group therapy setting is related to psychotherapy outcome is important to investigate as this could give the therapist a way to more precisely assess clients' motivation. This could have implications for the proceeding psychotherapy, and the information could be used to guide the group conversation in a profitable direction in order to foster the necessary motivation. This information could also be used to foster a dialogue that seeks to develop more of the seemingly necessary motivation for behavior change. Moreover, this is important to investigate as it could give a broader understanding of the role of motivation in a group therapy setting in relation to treatment outcome. This highlights the importance of further studying whether motivational utterances are associated with psychotherapy outcome and further what characterizes the content of this motivational language.

Most studies have so far investigated client motivation in the early sessions (1+2). However, motivation in later therapy sessions also seem to have a significant capacity to predict therapy outcome (e.g., Joramo, 2019; Marker et al., 2019). By only paying attention to early session motivation, as earlier studies have done, the fluctuating nature of motivation is not taken into consideration, which might make the predictive capacity inadequate. Another argument for not using the first session in group therapy is based on Bonsaksen et al. (2011) who showed that engagement during group-CBT for anxiety increases linearly as the therapy is progressing and the group climate develop. In addition, people might be more likely to adjust their utterances in relation to the rest of the group in the beginning of the therapy, which might result in less honest utterances at this stage of the therapy. As patients might be more honest in later therapy sessions, we chose to focus on session four. In addition, findings of Joramo (2019) indicated that motivational language was predictive of outcome in session four, and studying the same session

would allow us to a greater extent to be able to compare and validate these results. Furthermore, whether changes in CT or CCT during therapy is predictive of therapy outcome is important to investigate as it could reveal whether the course of MCT is affecting levels of motivation. Changes in motivation from session one to four is therefore investigated in this study.

Additionally, few studies have looked at the categories of motivational utterances in relation to therapy outcome. Doing this might give information about whether some categories are more central to therapy outcome than others. *Commitments* to change in session 1 and *taking steps* in session 4 were found to have strong predictive capacity for the therapy outcome in individual therapy (Joramo, 2019). More studies are central to investigate the importance of these specific categories.

The hypothesis of this study was firstly that total CCT and CT in session four could be associated with symptom severity at post-treatment and at 3-month follow-up. More CCT was hypothesized to be associated with increased severity of symptoms at outcome measures, whereas more CT was hypothesized to be associated with decreased severity. Secondly, we hypothesized that reduction in CCT and increases in CT from session one to four would be associated with reduction in symptoms at outcome measures. Lastly, we hypothesized that positive *taking steps* and *commitments* would be associated with reduction in symptoms at outcome measures.

Method

Participants and procedure

Video recordings of group therapy sessions were obtained from a psychiatric clinic from groups undergoing MCT for GAD from 2013 to 2018. Ninety-two persons were referred to the clinic by their general practitioner, mental health clinics, or by student health service. Of these subjects, 37 did not meet the inclusion criteria or were excluded from the study of other reasons, while 55 were offered treatment and completed it. Twenty-seven of the subjects were treated in a pilot phase (functioned as training for the therapists), while 23 patients were part of a feasibility trial on group metacognitive therapy for generalized anxiety disorder (Haseth et al., 2019). The last five patients were from a group completed after the publication of the aforementioned study.

To be included in the study, participants had to be adults with GAD as their primary diagnosis. The Anxiety Disorder Interview Schedule (ADIS-IV, Brown et al., 1994) was used to establish the diagnosis for all the subjects prior to the treatment. The diagnostic interview was conducted by clinical psychologists, not otherwise a part of the treatment. A written informed consent was signed prior to the treatment for all the participants. None of the participants had known cluster A or B personality disorders, known serious somatic illnesses, post-traumatic stress disorder, psychosis, were suicidal, or suffered from drug addiction. The Regional Committees for Medical and Health Research Ethics in Norway approved the study (REK; 2013/2155).

Several of the patients had comorbid psychiatric disorders: 15 individuals had OCD, 14 individuals had depression, seven individuals had social anxiety disorder, five individuals had specific phobia, four individuals had agoraphobia, three individuals had panic disorder, two individuals had health anxiety, one individual had body dysmorphic disorder, and one individual had trichotillomania. Twenty-seven of the participants had paid work (49.1%), 14 were students (25.5%), seven were getting short term pension due to present illness (12.7%), six were on sick leave (10.9%) and one participant (1.8%) had disability pension. Further descriptive characteristics are shown in Table 1.

Table 1

Demographic Characteristics of the Sample (N=55)

Measure	*M*	*SD*
Age	32.1	9.3
	N	*%*
Female sex	45	81.8
Male sex	10	18.2
Previous psychiatric outpatient treatment	48	87.3
Previous psychiatric inpatient treatment	3	5.5
Current use of antidepressants	11	20.0
Civil status		
Single	15	27.3
Married/cohabitant	39	70.9
Separated/divorced	1	1.8

Video recordings from the first and fourth session were coded for all patients that were present during these sessions, 43 in total. For the eight patients that were not present in session one, session two were coded instead. Similarly, session five was used for the four patients not present in session four. One session lacked 1/3 of the video recordings as the therapist forgot to turn on the camera. Other than that, the video recordings were approximately complete or lacking five minutes or less of the session.

The coding for this study were completed by two students at the clinical program in psychology at NTNU in their fifth year. First, both students familiarized themselves with the MISC manual and the coding procedure. Then videos, not used in this study, were coded as practice in collaboration with a supervisor and two other students from the same class. After building an approximately equal understanding of the coding system through practice and discussion, similar videos were then coded by each student. This was followed by a common discussion to ensure equal coding behavior and to strengthen the interrater reliability. Lastly,

videos were coded separately by two students. However, discussion with each other and the supervisor continued in this process when encountering difficulties.

Treatment

A clinical psychologist and a psychiatric nurse lead the therapy together in all groups. Both had completed training in MCT by completing a masterclass in MCT. The groups were given treatment based on an adaption of the MCT manual for GAD (Wells, 2011). All groups received 10 sessions lasting 90 minutes in addition to a follow up session after three months. Each group consisted of 4-7 patients and the treatment was conducted at Nidaros DPS, St. Olavs Hospital.

The first session of the therapy involved creating a case conceptualization and socialization to the model. This was done in order to give the patient an understanding of the nature and maintenance of worry in relation to MCT principles. Furthermore, the patients learned to develop detached mindfulness skills. After identifying the trigger of worrying, patients were instructed to apply detached mindfulness skills and postpone the worry process they normally initiated.

The focus in session four was to challenge negative metacognitions such as “worrying is harmful” and “worrying is uncontrollable”. This was done both verbally and with in-session experiments. To challenge the belief that worrying could make you lose control, most of the groups underwent a “loss of control” experiment aimed at debunking this belief. The patients were also asked to report how well they so far were managing to handle trigger thoughts with detached mindfulness skills they had learned during therapy.

Motivation for change was not being addressed directly in neither the first nor the fourth session. However, the patients were asked questions around the credibility of their metacognitions which resulted in utterances that might have reflected their willingness to change these assumptions and thereby willingness to stop worrying.

Some of the subjects were not present in session one and four and therefore session two and five were investigated for these subjects. Challenging the belief that “worrying is uncontrollable” was the focus of session two as well as repeating the model introduced in session one. In the fifth session, challenging the belief that “worrying is harmful” was the main focus.

Measures

Penn State Worry Questionnaire (PSWQ)

This is a 16-item instrument used to measure worry severity (Meyer et al., 1990). Several analyses of the psychometric properties of PSWQ indicates that the questionnaire is a valid and reliable measure (Brown et al., 1992). This questionnaire was used to measure treatment effect and was administered prior to treatment, post-treatment, and in the 3-month follow-up session. Total scores of 16-39 indicates a mild degree of worrying, 40-59 moderate, and 60-80 severe.

Motivational Interviewing Skills Code (MISC) Version 2.5

The manual MISC 2.5 (Houck et al., 2011) was used to measure and quantify the patients' level of motivation for changing or maintaining the problem behavior of worrying. The focus of this study was solely on patient motivation. The target behavior was defined as worry, and utterances were coded into different categories of change or counter change talk in relation to this behavior, on a 5-point Likert-type rating scale. Utterances that were signalizing *reasons, commitments, need, desire, ability* to change or maintain the target behavior were coded. Additionally, utterances that signalized that the patient had been *taking steps* in a positive or negative direction in relation to changing the target behavior, were coded. Change- and counter change talk that did not fit in either of these categories were placed in the category *other*. (Houck et al., 2011). Finally, all the categories of utterances were also coded in strength and frequency, in addition to total change (CT) and counter change (CCT) talk. Strength was coded by using a 5-point Likert-type rating scale for positive and negative values. The more the patients signalized willingness to change, taking both verbal and non-verbal information into consideration, the higher value was given. Similarly, patients uttering unwillingness to change was coded in negative values. A total strength variable for each motivational category was calculated by summing the positive and negative values. CT and CCT were calculated by summing the total amount of respectively CT- and CCT utterances during the session. In the statistical analyses, strength (not frequency) variables were used. This was done in order to limit the amount of predictors, as many predictors could be challenging when working on small samples as this study does.

Statistical analyses

Effect sizes for the outcome measure (PSWQ scores) from pre-treatment to post-treatment and for pre-treatment to follow-up were calculated ($d = (M_{pre} - M_{post/\ follow\text{-}up}) / SD_{pooled}$). To show how outcome was related to motivational language, correlations between the measures were calculated. More specifically, the correlation between the different motivational language variables and the PSWQ measures at post- and follow up were included. To find the degree to which patient motivation had any predictive value on treatment outcome, three linear regression models were used. Treatment outcome was measured using PSWQ scores at post-treatment and follow-up. On step 1, we added demographic variables (sex and age). On step 2, PSWQ scores at pre-treatment were added. In the first model, we added total strength of CT and CCT from session four in step 3. In the second model, we added changes in total strength of CT and CCT from session one to four in this step. In the third model, we added *commitment* and *taking steps* from session four in step 3, to find whether these motivational categories had a predictive value on treatment outcome, based on the findings of Joramo (2019). Session one was not included as a separate variable in the regression models as the focus of this study regarded the predictive value of motivational language in session four, and changes in motivational language from session one to four. The predictive capacity of motivational language in session one was investigated in another master thesis (Touil, 2020).

Four of the subjects did not complete the Penn State Worry Questionnaire (PSWQ) at post-treatment and eight had missing values at follow-up, but these were still included in the study. Last Observation Carried Forward (LOCF) was used to account for the missing data for follow-up scores. For the four missing post-treatment PSWQ scores, we calculated scores based on an algorithm taking into account their last observed PSWQ score, and scores on related measures of anxiety and depression.

Results

Descriptive statistics for the outcome measure PSWQ, were 70.02 (SD = 6.55) at pre-treatment, 42.89 (SD = 13.81) at post-treatment, and 41.64 (SD = 14.97) at follow-up. This indicated that the patients had a severe level of worrying prior to treatment and a mild-moderate degree of worrying at post-treatment and follow-up. The effect size from pre-treatment to post-treatment was $d = 2.51$, and for pre-treatment to follow-up the effect size was $d = 2.46$. Descriptive statistics for motivational language including the categories of MISC are shown in Table 2. Both frequency and strength of the motivational language are included in the table. In both session 1 and session 4 the frequency and strength of CT was approximately twice as large as for CCT. In regard to the motivational categories, there was a relatively high strength and frequency of positive *reasons*, negative *ability* and positive *other* in session 1. In session 4, there was a relatively high strength of positive *reasons* and positive *taking steps*. There was a slight reduction in the strength of *reasons* from session 1 to 4 and an increase in both the strength of *taking steps*, *ability*, and *commitment*. Furthermore, there was a small reduction in CCT from session 1 to 4, whereas CT remained quite stable from session 1 to 4. Lastly, the categories *need* and *desire* were rarely reported among this sample in both sessions.

Table 2

Descriptive statistics for CT, CCT and the Motivational Categories of MISC, M (SD)

	Session 1			Session 4		
	Freq pos	Freq neg	Strength	Freq pos	Freq neg	Strength
CT	9.55 (4.78)	-	24.76 (12.13)	8.95 (5.06)	-	25.29 (13.92)
CCT	-	4.49 (2.68)	14.09 (8.21)	-	4.49 (3.04)	12.22 (9.05)
Reason	3.76 (3.10)	0.87 (1.06)	9.05 (8.82)	1.45 (1.51)	0.27 (0.56)	3.64 (4.60)
Ability	1.13 (1.04)	3.02 (1.92)	-7.05 (6.53)	1.49 (1.18)	2.15 (1.74)	-2.16 (5.57)
Commitment	0.35 (0.58)	0.25 (0.67)	0.16 (2.20)	0.96 (1.22)	0.11 (0.31)	2.35 (3.62)
Desire	0.33 (0.51)	-	0.69 (1.56)	0.09 (0.29)	-	0.24 (0.86)
Need	0.05 (0.23)	-	0.20 (0.85)	0.05 (0.23)	-	0.13 (0.58)
Taking steps	0.31 (1.03)	0.13 (0.47)	0.49 (2.07)	3.56 (2.38)	1.91 (1.53)	4.93 (8.75)
Other	3.62 (2.23)	0.22 (0.50)	6.91 (4.83)	1.33 (1.40)	0.05 (0.30)	3.27 (4.08)

Note: CCT: Counter change talk, CT: Change talk, Freq pos: Frequency of positive utterances, Freq neg: Frequency of negative utterances, Strength: Sum of strength scores for negative and positive utterances.

Table 3 shows the correlations between the strength of the motivational language and treatment outcome. The ratio of CT/CCT was also included. There was no significant correlation between PSWQ pre-treatment and motivational language. There was a significant negative correlation between PSWQ post-treatment and CT session 4 and between PSWQ post-treatment and changes in CT, both r = -.29. Similarly, there was a significant negative correlation between PSWQ follow-up and CT session four, and between PSWQ follow-up and changes in CT with respectively r = -.41 and r = -.37. There was a significant negative correlation between PSWQ post-treatment and ratio of CT/CCT in session four with, r = -.35. Lastly, there was a significant positive correlation between PSWQ post-treatment and changes in the ratio of CT/CCT from session one to four, with r = .37. The findings indicated that positive change talk in session four was associated with less worry at post-treatment and at follow-up. Similarly, uttering more CT in relation to CCT in session four was associated with less worry at post-treatment. Furthermore, increases in positive change talk from session one to session four was associated with less worry

at both post-treatment and at follow-up. No other significant relationships were found between motivational language and outcome.

Table 3

Correlations Between PSWQ and Motivational Utterances, (N=55)

Measure	1	2	3
1. PSWQ pre-treatment	-		
2. PSWQ post-treatment	.18	-	
3. PSWQ 3-month follow-up	.20	.79**	-
MISC variables			
4. CT session 1	.05	.02	-.02
5. CCT session 1	.12	.15	.18
6. CT/CCT session 1	-.19	.01	-.08
7. CT session 4	-.11	-.29*	-.41**
8. CCT session 4	.07	.22	.12
9. CT/CCT session 4	-.14	-.35*	-.24
10. CT change	-.12	-.29*	-.37**
11. CCT change	-.03	.02	-.09

Note: PSWQ: Penn State Worry Questionnaire, CCT: Counter change talk, CT: Change talk, CT and CCT change: changes in CT and CCT from session 1 to 4, CT/CCT: ratio of CT/CCT. *p < .05, **p < .01.

Correlations between the categories of MISC in session 4 and worry outcomes are presented in Table 4. A negative significant relationship was found between post-treatment scores and the categories *ability* and *taking steps*. Moreover, a negative significant relationship was found between follow-up scores and the categories *commitment* and *taking steps*.

Table 4

Correlations Between the Categories of MISC and Treatment Outcome.

MISC Session 4	PSWQ post-treatment	PSWQ follow-up
Reason	-.10	-.21
Ability	-.30*	-.25
Commitment	-.22	-.29*
Desire	-.07	-.00
Need	.10	-.15
Taking steps	-.34*	-.35**
Other	.06	.00

Note: PSWQ: Penn State Worry Questionnaire. Strength of the motivational categories of MISC were used. *p < .05, **p < .01.

Two linear regression models were used to find the predictive value of the strength of motivational language on treatment outcome. The results are presented in Table 5. On step 1, we added demographic variables (sex and age) which significantly explained 11% of the variance at post-treatment and 12% at follow up, with the strongest contribution from the variable age. This indicated that younger patients were more likely to accomplish symptom reduction than older patients. On step 2, PSWQ scores at pre-treatment were added. This did not significantly explain variance in treatment outcome measures. In the first model, we added motivational language (CT and CCT) in session four on step 3, which significantly explained additionally 16% of the variance at post-treatment and 20% at follow up. At follow-up only CT was significantly contributing to this variance.

In the second model, we added changes in motivational language (CT-cha and CCT-cha) on step 3. This significantly explained another 10% of the variance at post-treatment and 13% at follow up. Only changes in CT was significantly contributing to this variance.

Table 5

Predictive value of Change Talk and Counter Change talk on Treatment Outcome (PSWQ)

	Model 1					Model 2			
	Post-treatment		3-months f-u			Post-treatment		3-months f-u	
Step	Adj R^2	R^2 Cha	Adj R^2	R^2 Cha		Adj R^2	R^2 Cha	Adj R^2	R^2 Cha
1. Age & Sex	.08	.11*	.08	.12*		.08	.11*	.08	.12*
2. PSWQ pre	.12	.05	.13	.06		.12	.05	.13	.06
3.CT-4 & CCT-4	.25	.16**	.31	.20**	CT Cha & CCT Cha	.19	.10*	.24	.13*
Final step	β	t	β	t		β	t	β	t
Sex	.19	1.53	.16	1.37		.21	1.69	.21	1.69
Age	.34	2.84**	.36	3.07**		.34	2.63*	.31	2.47*
PSWQ pre	.19	1.55	.19	1.67		.21	1.69	.21	1.72
CT-4	-.30	-2.47*	-.42	-3.61**	CT Cha	-.28	-2.29*	-.37	-3.06**
CCT-4	.28	2.36*	.19	1.59	CCT Cha	.15	1.17	.03	0.23

Note: PSWQ: Penn State Worry Questionnaire, CCT-4: Counter change talk in session four, CT-4: Change talk in session four, CCT and CT Cha: Changes in CCT and CT from session one to four. *p < .05, **p < .01.

In a third regression model, statements regarding *taking steps* and *commitment* from session four was entered on step 3. This is presented in Table 6. The motivational category *taking steps* and *commitment* on step 3 significantly explained 17% of the variance at post-treatment beyond sex and age and PSWQ pre-treatment scores. In the final step of the equation, only *taking steps* (not *commitment*) was significant. Using the same model for predicting follow-up scores, both *taking steps* and *commitment* emerged as significant predictors explaining an additional 21% of the variance.

In total, the regression models indicated that CT in session 4 and changes in CT from session one to four emerged as the most evident predictors for treatment outcome. Both

commitments and *taking steps* emerged as significant predictors of outcome, with *taking steps* emerging as the strongest contributor to explain the variance in outcome.

Table 6

The Predictive Value of Commitment and Taking Steps for PSWQ at Post-treatment and Follow-up

	Model 3			
	Post-treatment		3-month follow up	
Step	Adj R^2	R^2 Cha	Adj R^2	R^2 Cha
1. Age & sex	.08	.11*	.08	.12*
2. PSWQ pre	.12	.05	.13	.06
3. CT and CCT categories	.27	.17**	.32	.21**
Final step	β	t	β	t
Sex	.18	1.52	.20	1.76
Age	.40	3.26**	.41	3.50**
PSWQ pre	.13	1.02	.12	0.98
Taking steps-4	-.34	-2.72**	-.33	-2.76**
Commitment-4	-.19	-1.42	-.27	-2.08*

Note: PSWQ: Penn State Worry Questionnaire, CCT: Counter change talk, CT: Change talk. Categories: Commitment and Taking steps. *p < .05, **p < .01

Discussion

The aim of this study was to investigate the predictive value of motivational language on treatment outcome in g-MCT for GAD. More specifically, motivational language in session 4 and changes in motivational language from session 1 to 4 were investigated. Findings indicated that CT in session 4 had a significant predictive value on PSWQ scores at post-treatment and at follow-up whilst controlling for demographic variables and pre-treatment worry scores. This indicated that more change talk in session four was associated with less worry at post-treatment and follow-up. CCT in session 4 had a significant predictive value on PSWQ scores at post-treatment, but not significant at follow-up. This indicated that more counter change talk in session four was associated with more worry at post-treatment. Age also seemed to be a significant predictive variable, as being younger was associated with less worry at post-treatment and follow-up. Moreover, changes in CT from session one to session four was significantly predicting treatment outcome at post-treatment and follow-up. This indicated that increases in CT from session one to four was associated with less worry at post-treatment and follow-up. The motivational category *taking steps* in session four was a significant predictor of both post-treatment and follow-up. Lastly, *commitments* to change was significant in predicting treatment outcome at follow-up.

The Predictive Value of CT in Session Four on Treatment Outcome

There were certain categories of motivational language that were more common in the various sessions and could partly be understood in relation to the therapeutic focus in the session. Session one involved discussing the negative consequences of worrying which elicited utterances that were categorized as positive *reasons* to change. The strength of the category *other* emerged quite high in this session, and often coded when patients reported ways of coping with worry. The strength of *ability* emerged very low, indicating that patient utterances in this session was strongly negative in terms of their belief in their ability to change. In session four, the strength of the category *taking steps* emerged quite high and could partly be due to patients discussing the progress in therapy in this session. The predictive value of CT and CCT should also be regarded in light of this.

Aligning with our hypothesis, findings indicated that more CT in session four was associated with less worry at post-treatment and follow-up. These findings are similar to Joramo

(2019) regarding the significant predictive capacity of CT in *session four* on treatment outcome. Other research on the predictive capacity of CT on treatment outcome have investigated session one (Ewbank et al., 2020; Joramo, 2019; Lombardi et al., 2014; Poulin et al., 2019), where findings have been somewhat inconsistent. Our findings might reflect that these patients were less ambivalent to change, thus had proceeded longer in the change process and already started challenging their problem behavior (Joramo, 2019). We concur with this argument.

In contrast, (Marker et al., 2019) found surprisingly that an increase in CT-motivation in cognitive restructuring sessions (session 2-9), was found to have a negative effect on treatment outcome. The authors discussed that levels of CT-motivation in these sessions might mostly have captured the patients' attitudes towards their anxiety (e.g. "my anxiety makes my life worse"), and not solely their attitudes towards the treatment goals. This means that it might have been the patients' negative perceptions of their anxiety symptoms, and not their attitudes towards the treatment goals, that were associated with the negative effect on treatment outcome (Marker et al., 2019).

Additionally, in session four the therapists often gave the patients much time to report to what degree they had accomplished following the treatment goals since their last meeting. This led to many *taking steps* utterances relative to the other categories. Thus, total CT might be highly influenced by the category *taking steps.* Lastly, it is worth noting that negative metacognitions in MCT are coded as CT in MISC. This implies that patient utterances regarding the experienced negative consequences of worrying are coded as CT. Thus, the predictive value of CT in session four might also reflect the experienced negative consequences of worrying and the symptom severity. Lastly, the correlations between PSWQ and the ratio of CT/CCT had a mild negative correlation (r = -.35), similar to CT in session four (r = -.29). This indicated that taking into consideration the relative amount of CT in comparison to CCT did not affect the results much. This confirms the importance of attending to patient change talk utterances as more change talk in session four was found to be profitable for treatment outcome.

The Predictive Value of CCT in Session Four on Treatment Outcome

In line with our hypothesis, our findings indicated that more CCT in session four was associated with more worry at post-treatment. However, in contrast with our hypothesis, no significant results were found for CCT in session four in regard to follow-up scores. In previous

research investigating the predictive role of motivational language on treatment outcome, CCT has been found to be a robust predictor of both post-treatment and at follow-up leading to poorer treatment outcomes (e.g., Lombardi et al., 2014; Poulin et al., 2019) and alliance ruptures (Hunter et al., 2014) in CBT for GAD. One possible reason for why our findings differ from other findings might be rooted in the different therapy formats. Most previous findings have investigated individual therapy which might be a more suitable arena for expressing counter change utterances. Research within social psychology indicates that fear of negative evaluation of the group members could limit individuals in the group in expressing their true values and opinions (Deutsch & Gerard, 1955). The need for social acceptance and group cohesion might therefore result in patient CT and CCT utterances that to a greater extent align with the other members than with the true individual opinion, thus resulting in social desirability biases. As patients in the group were diagnosed with GAD it could be plausible to think that such patients would be extra self-critical and monitoring what they say. Thus, in a group format, patients might be more reluctant to express one's honest internal resistance towards change due to social desirability effects and fear of negative evaluation. The frequency and strength of CCT in comparison to CT is relatively low in both sessions investigated and could support these assumptions.

Despite this, Marker et al. (2019) found that CT and CCT better predicted outcomes in a group setting than self-report measures which might reflect that the possible social desirability effect appearing in a group setting is thus smaller than in self-reported measures of motivation. Moreover, counter change talk that specifically regards utterances that oppose the therapy or the therapist have been found to be a stronger predictor of treatment outcome, leading to poorer outcomes than utterances that oppose behavior change (e.g., Sijercic et al., 2016). Such utterances might be the least socially acceptable to utter in a group and might be one of the reasons CCT does not appear as a stronger predictor in this study.

A potential reason for the insignificant relationship with follow-up scores could be due to missing data at follow-up assessment. However, it is worth noting that CCT was significantly predicting outcome at post-treatment which confirms previous findings of how more CCT is associated with worse treatment outcome (e.g., Apodaca et al., 2014; Lombardi et al., 2014; Poulin et al., 2019). Lastly, the strength of the motivational categories were calculated by summing the negative (CCT-categories) and positive (CT-categories) utterances. Since the

strength of two of the categories emerged as significant predictors, this also indicated that the strength of the CCT-categories in relation to CT-categories mattered, thus highlighting the importance of the counter change variable.

The Predictive Capacity of Changes in CT and CCT From Session One to Four

Aligning with our hypothesis, an increase in CT from session one to four was associated with less worry at post-treatment and follow-up. In contrast with our hypothesis, no significant results were found for changes in CCT from session one to four. The reason changes in CT from session one to four were predictive of outcome might partly be due to lack of utterances in general in session one, and the limitations regarding the degree to which the patient motivation can be measured by attending to patient utterances in the first session. These limitations regard the characteristics of session one in general in MCT, such as the possible firmer structure involving more psychoeducation leading to less spontaneous utterances. Moreover, there might be more social desirability effects early on in therapy which could have stimulated to less to honest utterances. In session four the patients might have been more comfortable sharing their true inner thoughts which might contribute to explain why changes in CT was predictive of therapy outcome. The limitations of measuring motivation in the first session might also explain why we did not find any significant prediction of reduction of CCT from session one to four, as a certain amount of utterances is needed in session one in order to get a reduction in session four.

Furthermore, increases in the amount of CT from session one to four might also reflect that these patients were moving faster in the process of change (Prochaska & DiClemente, 2005) resolving ambivalence to change and increasing the intention to change already during the first four sessions. Additionally, the content of the change talk variable also changes from session one to four, as the strength of *reasons* and *other* decreases, while the strength of *ability*, *commitment* and *taking steps* increases, which might contribute to explain this finding. The course of MCT and the MCT techniques might have contributed to increase patient motivation for change, and also have affected what utterances that were emerging in session one and four. Lastly, reduction in CCT from session one to four have previously been found to predict treatment outcome (e.g., Joramo, 2019). In sum, this confirms the assumption that motivation is a fluctuating measure and highlights the importance of stimulating to an effective change process during the course of therapy.

The predictive capacity of motivational language increased slightly over time from post-treatment to 3-months follow-up both for session four and for changes from session one to four. CT and CCT in session four accounted for 16% vs. 20% of the variance post-treatment vs. follow-up, and changes in CT and CCT accounted for 10% vs. 13%. Although this is a small increase, the results indicate that the explained variance is stable and not decreasing. The predictive capacity of motivational language has previously also been found to increase at later measurements (e.g., Poulin et al., 2019). This might reveal that motivational language is more predictive of the ability to maintain acting in accordance with therapy goals over time without the supportive guidance from a therapist, thus managing to stay in the maintenance stage (Prochaska & DiClemente, 2005). However, future studies are needed to investigate this by having later follow-up measures, as this study only investigated follow-up after 3-months.

The Predictive Capacity of the Motivational Categories

In line with our hypothesis, we found the strength of *taking steps* to be an important predictive factor for both post-treatment outcome and follow-up, as positive *taking steps* were associated with less worry. Similarly, Joramo (2019) found this variable to be a strong predictor of 2-year follow-up outcome measures, as this variable in session four predicted additional 10% of the variance at 2-year follow-up beyond treatment condition and pre-treatment scores. The author argued that this might have indicated that these patients at this point had proceeded quicker in the change process, following the model of Prochaska and DiClemente (2005), already starting to change their behavior in accordance with the therapy goals. This would indicate that they by this time had resolved much of the ambivalence to change and prepared themselves to start changing. This could indicate that the patients' speed in moving through the different stages in the change process might be a useful marker to differentiate the ones managing to maintain changing the problem behavior at follow-up (Joramo, 2019). We could also argue this because *taking steps* significantly explained worry severity at post-treatment and follow-up beyond gender and age and PSWQ pre-treatment scores, as positive *taking steps* was associated with reduction in worry.

The variable *taking steps* might simply reflect symptom improvement or treatment adherence, which might indicate the importance of early improvement and treatment adherence during the therapy course to accomplish symptom reduction at later measures. Moreover, by

taking steps in accordance with the therapy goals the patients' attitudes towards the problem behavior might have been changed in a congruent direction of these goals, as a way of reducing the cognitive dissonance occurring when acting in new ways. Similarly, behaving in accordance with the therapy goals could change their identity, perceiving themselves as someone who worry less, as a way of reducing the cognitive dissonance (Festinger, 1957). This could possibly contribute to the positive effect on outcome measures. In addition, verbal statements of *taking steps* in a certain direction might have affected future behavior in a similar direction based in the ideas of Cialdini and Trost (1998) who highlights the human tendency to act congruently with one's verbal statements and previous behavior in order to fulfill the need of maintaining a positive self-concept. This possible effect might be enlarged in a group setting as the patients report having taken steps towards the therapy goals in front of a greater audience than what is the case for individual therapy. This might contribute to the patients being held responsible for their statements and that they continue to take steps which thereby make them accomplish more symptom reduction.

In contrast, Marker et al. (2019) found no significant result for CT-engagement alone, a variable similar to positive *taking steps*, on treatment outcome. However, during exposure sessions (sessions 4–9) an increase in CCT-engagement was found to lead to greater post-treatment symptoms severity and flatter slope of improvement (Marker et al., 2019). All these aforementioned studies altogether highlight the importance of taking behavioral steps in accordance with the therapy goals in order to achieve a successful therapy outcome.

We also found that the strength of the *commitments* to change was significantly predicting treatment outcome at follow-up (but not at post-treatment). Similarly, Joramo (2019) found the frequency of this category in session one to have a significant predictive value on treatment outcome post-treatment. The category c*ommitment* was used when the patients signalized a commitment to act more in accordance with the therapy goals in near future time. Verbal commitments to treatment goals have previously been found to improve the adherence to these goals, and thus affecting the following behavior of such statements (e.g., Putnam et al., 1994).

Similarly, this is in line with the cognitive dissonance theory (Festinger, 1957). This regards that commitments to certain behavior could affect the followingly future behavior to be more in accordance with what one promised. This happens in order to be consistent and to

reduce the cognitive dissonance appearing in the realm of promising a new certain behavior. As previously mentioned, Cialdini and Trost (1998) highlights how the human need of maintaining a positive self-concept is preserved by acting consistently with one's statements, actions, self-ascribed traits, commitments and beliefs. Additionally, commitments to change might reflect one's intentions to change which could be a good predictive factor for accomplishing behavior change, according to the theory of planned behavior (Ajzen, 1991). Thus, such commitments could lead to a more successful therapy outcome. However, the frequency and strength of the category *commitment* in the various sessions was relatively low. When observing the videotapes, we noted that such utterances were not consistently encouraged by the therapist in all the groups and are not naturally implemented in the MCT manual, which could have led to this low frequency in both sessions. As this category still emerged as a significant predictor, it might indicate that such utterances were important in relation to the therapy outcome either because it represents central part of motivation, or by having a congruently effect on behavior due to the need of consistency.

We did not find any of the other categories of MISC, apart from *ability*, to correlate significantly with treatment outcome. A reason why some of the categories were rarely frequent and have no significant relationship to outcome might be how the MCT verbal techniques did not naturally stimulate to all such utterances. Another reason might be that such utterances are not important representations of internal motivation, and thereby were not expressed. Further research, exploring the possible effect various methods have on patient utterances, is needed to explain this finding.

Limitations

There are several limitations of measuring the predictive capacity of motivational language in a group setting. Firstly, individual differences in assertiveness and verbosity could have affected the amount of utterances being expressed from the different group members. In addition, the therapists are not always successful in facilitating the group members to talk in somewhat an equal amount. This put together could have contributed to the fact that two of the patients did not say anything in some of the sessions. As this study did not measure neutral utterances which were not related to motivation, the results are not fully controlled for verbosity. Furthermore, individual differences in ways of expressing the strength of a motivational

statement could have affected the coding behavior in this direction. A hushed subject could have the same internal strength in their motivation as a highly extraverted subject who would express the same internal strength more extreme. As so, the results could reflect personality differences, as some traits might be more or less associated with polarized expressions as well as the possibility and willingness of changing behavior. Future studies should therefor investigate whether personality traits are associated with certain motivational utterances and with treatment outcome.

Secondly, total group change talk might have affected individual motivational expressions, which is not controlled for in this study. D'Amico et al. (2015) indicated that total group change talk affected individual alcohol and marijuana outcomes in a group MI intervention for adolescents. Increases in group CT was associated with decreased alcohol intentions and usage, whereas group sustain talk was related to increased marijuana intentions and decreased motivation to change. This illustrates the importance of also investigating the group CT and CCT in future studies, as this could affect the type and amount of motivational utterances being expressed, and thus affect the individual motivation for change and the individual therapy outcome.

Thirdly, there are some limitations in regard to the method and research design of this study. Some patient utterances were not coded due to weak sound quality or due to several patients talking at the same time making it impossible to identify the speaker. There was some lack of video material after breaks as well as some patients leaving early which impaired the quality of the data. Session two and five were used when the patients were absent in respectively session one and four. This limits the results as these session have a somewhat different structure and focus, and the motivational utterances were being measured at a different time in the course compared to the majority of the sample. Missing data might have resulted in an inaccurate measure of outcome for some of the patients. Furthermore, the therapists were more trained in leading the therapy in later groups than the first, which could have affected the treatment outcome negatively for the first groups. The effect size of this study was smaller than in other MCT studies which support this assumption. There was also no variation in the use of therapists which makes it impossible to control for possible therapist differences. Future studies should also include randomly controlled trials to investigate whether these findings are unique for MCT. Furthermore, although the coders of this study strived to accomplish an equal coding behavior,

this study did not control the inter-rate reliability, and thus this is another limitation. Additionally, this study regards a rather small sample which makes the results weak in terms of generalizability. Future research should therefore include a greater sample, with various therapists to increase the reliability of the results.

Lastly, there might also be limitations of MISC as an operationalization of motivation. Whether this construct capture the most relevant aspects of internal motivation for change could be questioned as some of the categories did not significantly correlate with treatment outcome. However, this could also be as a result of MISC being more suited for MI than MCT. Future studies should investigate how the characteristics of motivation could be operationalized optimally and adjusted to therapy method. It is also worth noting that in this study strength (not frequency) variables were used in the statistical analyses. This should be taken into consideration when comparing these results with other research where the frequency variable was used.

Implications

Our findings highlight the importance of being attentive of clients' motivational language in g-MCT for GAD. This regards especially CT and CCT in session four. The negative effect of counter change talk in relation to therapy outcome implies that this kind of utterances should be monitored and preferably reduced during the course of therapy. Future studies should investigate what interventions and therapeutic characteristics that are useful in responding to, and reducing counter change utterances. Using MI (Miller & Rollnick, 2012) to enhance motivation for changing a problem behavior and reduce resistance to change might be a useful tool. Apodaca et al. (2016) have shown this method to increase change talk and to reduce sustain talk in MI treatment for substance abuse, especially where therapists were being affirmative towards the client. Furthermore, e.g., Westra et al. (2016) found MI-CBT in comparison to CBT alone to give a five times higher odds at 1-year follow-up for no longer satisfying the diagnostic criteria for GAD. This could indicate that it might be useful to implement MI before starting MCT for GAD to enhance therapy effectiveness and to stimulate to increase CT and reduce CCT. Whether this could be replicated should be investigated in future studies.

Furthermore, utterances of *taking steps* and *commitments* should be carefully monitored and possibly enhanced. Therapists should add more questions regarding the patient's commitments to therapy goals in order to stimulate to patients actively making such

commitments which could have a congruently effect on future behavior, thus making patients held more responsible for their behavior change. Moreover, encouraging patients to start acting in accordance with the therapy goals despite various types of resistance to change could be profitable as uttering *taking steps* in front of a group could have positive spillover effects. When comparing patients with zero or negative values on *taking steps* in session four with the ones with positive values, the groups were significantly different on PSWQ with an average difference of 11.2 points. This indicates that therapists should be alert of patients lacking such utterances as this could indicate that these patients might have a weaker effect of the therapy. At follow-up, the average difference was 8.6 points, but not significant. Future studies should therefore investigate possible cut-off values on the motivational categories in order to give therapists a more precise way to differentiate the ones that possibly will have a weaker effect of therapy. Whether therapeutic strategies such as MI could be implemented in such cases in order to overcome this should also be investigated further. Future studies should also investigate the predictive capacity of all the motivational categories of MISC, as this will give a more precise indication of what facets of motivation that are important for therapy outcome. This regards especially *ability*, as this category significantly correlated with treatment outcome, which is similar to previous findings of this category (Joramo, 2019).

Conclusion

Our findings indicated that patient motivational language in session four predicted treatment outcome in g-MCT for GAD. More CT in session four was associated with less worry at post-treatment and follow-up, and more CCT in session four was associated with more worry at post-treatment. The predictive value of CCT was weaker than previous studies which might be a result of social desirability effects appearing in a group setting which could hinder group members to utter oppositional utterances. When it comes to CT, the categories *taking steps* and *commitment* emerged as significant predictors of outcome. This might have reflected that the speed in the process of changing the problem behavior was indicative of whom would accomplish more successful therapy outcomes later. Also, verbal statements of commitments to act in accordance with the therapy goals could have had a congruent effect on future behavior. Increases in CT from session one to four was also associated with less worry at post-treatment and follow-up. Lack of utterances in general in session one might explain this finding. All in all, these findings confirm the predictive value of MISC in g-MCT for GAD and highlights the

importance of therapists being attentive to- and addressing patient motivational utterances as this possibly could enhance therapy effectiveness.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.

Apodaca, T. R., Borsari, B., Jackson, K. M., Magill, M., Longabaugh, R., Mastroleo, N. R., & Barnett, N. P. (2014). Sustain talk predicts poorer outcomes among mandated college student drinkers receiving a brief motivational intervention. *Psychology of Addictive Behaviors*, *28*(3), 631. https://doi.org/https://doi.org/10.1037/a0037296

Apodaca, T. R., Jackson, K. M., Borsari, B., Magill, M., Longabaugh, R., Mastroleo, N. R., & Barnett, N. P. (2016). Which individual therapist behaviors elicit client change talk and sustain talk in motivational interviewing? *Journal of substance abuse treatment*, *61*, 60-65. https://doi.org/https://doi.org/10.1016/j.jsat.2015.09.001

Bonsaksen, T., Lerdal, A., Borge, F.-M., Sexton, H., & Hoffart, A. (2011). Group climate development in cognitive and interpersonal group therapy for social phobia. *Group Dynamics: Theory, Research, and Practice*, *15*(1), 32–48. https://doi.org/10.1037/a0020257

Borsari, B., Apodaca, T. R., Jackson, K. M., Fernandez, A., Mastroleo, N. R., Magill, M., Barnett, N. P., & Carey, K. B. (2018). Trajectories of in-session change language in brief motivational interventions with mandated college students. *Journal of consulting and clinical psychology*, *86*(2), 158. https://doi.org/http://dx.doi.org/10.1037/ccp0000255

Brown, T. A., Antony, M. M., & Barlow, D. H. (1992). Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behaviour research and therapy*, *30*(1), 33-37. https://doi.org/https://doi.org/10.1016/0005-7967(92)90093-V

Brown, T. A., Barlow, D. H., & DiNardo, P. A. (1994). *Anxiety disorders interview schedule adult version: Client interview schedule*. Graywind Publications Incorporated.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance.

D'Amico, E. J., Houck, J. M., Hunter, S. B., Miles, J. N., Osilla, K. C., & Ewing, B. A. (2015). Group motivational interviewing for adolescents: change talk and alcohol and marijuana outcomes. *Journal of consulting and clinical psychology*, *83*(1), 68-80. https://doi.org/https://doi.org/10.1037/a0038155

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The Journal of Abnormal and Social Psychology*, *51*(3), 629-636. https://doi.org/10.1037/h0046408

Dozois, D. J., Westra, H. A., Collins, K. A., Fung, T. S., & Garry, J. K. (2004). Stages of change in anxiety: Psychometric properties of the University of Rhode Island Change Assessment (URICA) scale. *Behaviour research and therapy*, *42*(6), 711-729. https://doi.org/https://doi.org/10.1016/S0005-7967(03)00193-1

Ewbank, M., Cummins, R., Tablan, V., Catarino, A., Buchholz, S., & Blackwell, A. (2020). Understanding the relationship between patient language and outcomes in internet-enabled cognitive behavioural therapy: A deep learning approach to automatic coding of session transcripts. *Psychotherapy Research*, 1-13. https://doi.org/https://doi.org/10.1080/10503307.2020.1788740

Festinger, L. (1957). *A theory of cognitive dissonance* (Vol. 2). Stanford university press.

Gaume, J., Gmel, G., & Daeppen, J.-B. (2008). Brief alcohol interventions: Do counsellors' and patients' communication characteristics predict change? *Alcohol & Alcoholism*, *43*(1), 62-69. https://doi.org/https://doi.org/10.1093/alcalc/agm141

Glynn, L. H., & Moyers, T. B. (2009). Manual for the motivational interviewing skill code (MISC), Version 1.1: Addendum to MISC 1.0. *Unpublished manuscript. Center on Alcoholism, Substance Abuse, and Addictions, University of New Mexico. Retrieved from Center on Alcoholism, Substance Abuse, and Addictions.* https://casaa.unm.edu/download/MISC_1.1_Manual.pdf

Glynn, L. H., & Moyers, T. B. (2012). Manual for the Client Language Easy Rating (CLEAR) coding system: Formerly 'Motivational Interviewing Skill Code (MISC) 1.1'. *Retrieved November*, *13*, 2017. http://casaa.unm.edu/download/CLEAR.pdf

Haseth, S., Solem, S., Sørø, G. B., Bjørnstad, E., Grøtte, T., & Fisher, P. (2019). Group Metacognitive Therapy for Generalized Anxiety Disorder: A Pilot Feasibility Trial [Original Research]. *Frontiers in Psychology*, *10*(290). https://doi.org/10.3389/fpsyg.2019.00290

Houck, J. M., Moyers, T. B., Miller, W. R., Glynn, L. H., & Hallgren, K. A. (2011). Elicit Coding Manual: Motivational Interviewing Skill Code (MISC) 2.5. . *Albuquerque, NM: Center on Alcoholism, Substance Abuse, and Addictions, The University of New Mexico*. https://casaa.unm.edu/download/misc25.pdf

Hunter, J. A., Button, M. L., & Westra, H. A. (2014). Ambivalence and alliance ruptures in cognitive behavioral therapy for generalized anxiety. *Cognitive behaviour therapy*, *43*(3), 201-208. https://doi.org/https://doi.org/10.1080/16506073.2014.899617

Joramo, I. (2019). *The predictive capacity of patients' change- and counter-change talk: Results from a randomized controlled trial of cognitive behavioral therapy vs. metacognitive therapy for generalized anxiety disorder*. Graduate thesis, Norwegian University of Science and Technology. https://ntnuopen.ntnu.no/ntnu-xmlui/handle/11250/2641343

Kahneman, D. (2011). Thinking, fast and slow. *New York: Farrar, Straus and Giroux.*

Kampman, M., Keijsers, G. P., Hoogduin, C. A., & Hendriks, G.-J. (2008). Outcome prediction of cognitive behaviour therapy for panic disorder: Initial symptom severity is predictive for treatment outcome, comorbid anxiety or depressive disorder, cluster C personality disorders and initial motivation are not. *Behavioural and Cognitive Psychotherapy*, *36*(1), 99-112. https://doi.org/10.1017/S1352465807004018

Kroenke, K., Spitzer, R. L., Williams, J. B. W., Monahan, P. O., & Löwe, B. (2007). Anxiety Disorders in Primary Care: Prevalence, Impairment, Comorbidity, and Detection. *Annals of Internal Medicine*, *146*(5), 317-325. https://doi.org/10.7326/0003-4819-146-5-200703060-00004

Lieb, R., Becker, E., & Altamura, C. (2005). The epidemiology of generalized anxiety disorder in Europe. *European Neuropsychopharmacology*, *15*(4), 445-452. https://doi.org/https://doi.org/10.1016/j.euroneuro.2005.04.010

Lombardi, D. R., Button, M. L., & Westra, H. A. (2014). Measuring motivation: Change talk and counter-change talk in cognitive behavioral therapy for generalized anxiety. *Cognitive behaviour therapy*, *43*(1), 12-21. https://doi.org/10.1080/16506073.2013.846400

Marker, I., Salvaris, C. A., Thompson, E. M., Tolliday, T., & Norton, P. J. (2019). Client motivation and engagement in transdiagnostic group cognitive behavioral therapy for anxiety disorders: Predictors and outcomes. *Cognitive Therapy and Research*, *43*(5), 819-833. https://doi.org/https://doi.org/10.1007/s10608-019-10014-1

Meyer, T., Miller, M., Metzger, R., & Borkovec, T. (1990). Development and validity of the Penn State Worry Scale. *Behaviour research and therapy*, *28*, 487-495. https://www.sciencedirect.com/science/article/abs/pii/0005796790901356

Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change*. Guilford press.

Moyers, T. B., Martin, T., Christopher, P. J., Houck, J. M., Tonigan, J. S., & Amrhein, P. C. (2007). Client language as a mediator of motivational interviewing efficacy: Where is the evidence? *Alcoholism: clinical and experimental research*, *31*, 40s-47s. https://doi.org/https://doi.org/10.1111/j.1530-0277.2007.00492.x

National Institute for Health and Care Excellence [NICE]. (2019). Generalised anxiety disorder and panic disorder in adults: management Clinical guideline (NICE Guideline No. 113). https://www.nice.org.uk/guidance/cg113/chapter/1-Guidance#principles-of-care-for-people-with-generalised-anxiety-disorder-gad

Nordahl, H. M., Borkovec, T. D., Hagen, R., Kennair, L. E., Hjemdal, O., Solem, S., Hansen, B., Haseth, S., & Wells, A. (2018). Metacognitive therapy versus cognitive–behavioural therapy in adults with generalised anxiety disorder. *BJPsych open*, *4*(5), 393-400. https://doi.org/10.1192/bjo.2018.54

Normann, N., & Morina, N. (2018). The efficacy of metacognitive therapy: a systematic review and meta-analysis. *Frontiers in Psychology*, *9*, 2211. https://doi.org/10.3389/fpsyg.2018.02211

Poulin, L. E., Button, M. L., Westra, H. A., Constantino, M. J., & Antony, M. M. (2019). The predictive capacity of self-reported motivation vs. early observed motivational language in cognitive behavioural therapy for generalized anxiety disorder. *Cognitive behaviour therapy*, *48*(5), 369-384. https://doi.org/10.1080/16506073.2018.1517390

Prochaska, J. O., & DiClemente, C. C. (2005). The transtheoretical approach. *Handbook of psychotherapy integration*, *2*, 147-171.

Putnam, D. E., Finney, J. W., Barkley, P. L., & Bonner, M. J. (1994). Enhancing commitment improves adherence to a medical regimen. *Journal of consulting and clinical psychology*, *62*(1), 191. https://doi.org/10.1037/0022-006X.62.1.191

Sijercic, I., Button, M. L., Westra, H. A., & Hara, K. M. (2016). The interpersonal context of client motivational language in cognitive–behavioral therapy. *Psychotherapy*, *53*(1), 13-21. https://doi.org/10.1037/pst0000017

Solem, S., Husby, Å. S., Håland, Å. T., Launes, G., Hansen, B., Vogel, P. A., & Hagen, R. (2016). The University of Rhode Island change assessment as predictor of treatment outcome and dropout in outpatients with obsessive-compulsive disorder treated with exposure and response prevention. *Psychotherapy and psychosomatics*, *85*(2), 119-120. https://doi.org/10.1159/000441361

Touil, M. (2020). *The Importance of Clients' Early Motivational Language for Treatment Outcome: An Open Trial of Group Metacognitive Therapy for Generalized Anxiety Disorder*. Graduate thesis, Norwegian University of Science and Technology.

van der Heiden, C., Melchior, K., & de Stigter, E. (2013). The effectiveness of group metacognitive therapy for generalised anxiety disorder: a pilot study. *Journal of Contemporary Psychotherapy*, *43*(3), 151-157. https://doi.org/10.1007/s10879-013-9235-y

van der Heiden, C., Muris, P., & van der Molen, H. T. (2012). Randomized controlled trial on the effectiveness of metacognitive therapy and intolerance-of-uncertainty therapy for generalized anxiety disorder. *Behaviour research and therapy*, *50*(2), 100-109. https://doi.org/https://doi.org/10.1016/j.brat.2011.12.005

Wells, A. (2011). *Metacognitive therapy for anxiety and depression*. Guilford press.

Wells, A., & King, P. (2006). Metacognitive therapy for generalized anxiety disorder: An open trial. *Journal of behavior therapy and experimental psychiatry*, *37*(3), 206-212. https://doi.org/10.1016/j.jbtep.2005.07.002

Wells, A., Welford, M., King, P., Papageorgiou, C., Wisely, J., & Mendel, E. (2010). A pilot randomized trial of metacognitive therapy vs applied relaxation in the treatment of adults

with generalized anxiety disorder. *Behaviour research and therapy*, *48*(5), 429-434. https://doi.org/10.1016/j.brat.2009.11.013

Westra, H. A. (2011). Comparing the predictive capacity of observed in-session resistance to self-reported motivation in cognitive behavioral therapy. *Behaviour research and therapy*, *49*(2), 106-113. https://doi.org/https://doi.org/10.1016/j.brat.2010.11.007

Westra, H. A., Constantino, M. J., & Antony, M. M. (2016). Integrating motivational interviewing with cognitive-behavioral therapy for severe generalized anxiety disorder: An allegiance-controlled randomized clinical trial. *Journal of consulting and clinical psychology*, *84*(9), 768. https://doi.org/http://dx.doi.org/10.1037/ccp0000098

Wittchen, H.-U. (2002). Generalized anxiety disorder: prevalence, burden, and cost to society. *Depression and Anxiety*, *16*(4), 162-171. https://doi.org/10.1002/da.10065

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