Self-expressed motivation as a predictor of treatment outcome in internet administered depression treatment

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Depression is a common mental health disorder putting a major weight on the global burden of disease. The number of individuals suffering from depression is increasing and one solution to tackle this challenge could be internet administered therapy. The purpose of this explorative study was to gain knowledge about the possible predictive value that self-expressed motivation has on treatment outcome. This study analyzed a data set obtained from a previous study evaluating therapist supported internet administered treatments. With the intention to quantify self-expressed motivations, three scales for motivation assessment were created: subjective, objective and answer length. 173 individuals results were coded and a correlation analyses with Spearman's Rho were implemented. When different treatment groups were considered, a significant positive correlation between the self-expressed motivation measured with the subjective measurement scale (r_s=.420 p<.01) as well as with the objective measurement scale (r_s=.318 p<.05) was detected in the treatment module based on Martell's model of Behavioral Activation. Nevertheless, the overall correlations between self-expressed motivations and treatment outcomes (r_s=.142, r_s=.114, r_s=.082) were found not to be statistically significant. This explorative study indicated that motivation can be considered as a possible indicator of the treatment outcome, but further research should be done to gain greater understanding on the subject.

Keywords: Motivation, Depression, Motivational Interview (MI)

Motivation is a complex psychological concept that can be defined as a process that influences goal-directed behavior (Holt et al., 2015). One theory seems often to be mentioned in the context of psychological treatments, Self-Determination Theory (Ryan, Patrick, Deci & Williams, 2008; Ryan, Lynch, Vansteenkiste & Deci 2011; Mansour et al., 2012; Poulin et al., 2018). Self-Determination Theory describes motivation as a producing force, an intention that moves one towards action (Ryan & Deci, 2000). The theory has its roots in year 1985 when it was suggested that motivation is not only about having low or high motivation towards a goal, but also has different forms, or more specifically different origins (Ryan & Deci, 2000). Two distinctions of motivation were presented: intrinsic and extrinsic motivation. Intrinsic motivation holds a meaning of that a willingness to perform an action comes from within an individual, as an inner curiosity to learn or as a desire to experience pleasure. The extrinsic motivation, on the other hand, refers to a pressure coming from outside of the individual. Extrinsic motivation drives one to reach some separable outcome (Ryan & Deci, 2000).

Previous studies have shown that motivation can be associated with the general treatment adherence and with completing treatment modules in the psychological field (Alfonsson, Olsson & Hursti, 2016; Alfonsson, Johansson, Uddling & Hursti, 2017; Poulin et al., 2018). Intrinsic motivation might be an essential factor when it comes to the ability to engage and commit oneself to counseling (Ryan et al., 2011). Extrinsic motivation to go through a treatment could in turn predict poor treatment outcomes (Alfonsson, Olsson & Hursti, 2016).

Another aspect of motivation that could be applied into treatment success is goal setting. According to Goal Setting Theory (Locke & Latham, 1990), having high and clear goals will lead to one putting greater effort into a task in comparison to not have any goals at all or to have very unclear goals such as "do your best". Specific, high goals are seen to be more motivating since there is more to gain in them (Latham & Locke, 2006). Further, two different factors can affect a goal: one being the importance of the goal and the other being the self-confidence of an individual on being able to actually reach the goal in sight (Latham & Locke, 2007). What is also pointed out, is that it is of importance that an individual is able to justify her own goals to herself and that the best way to achieve this could be by having the person in question to participate in the process of designing a goal (Tolli & Schmidt, 2008). Since actions such as working out more often or performing difficult behavioral exercises are most often pressured from outside (and therefore creating extrinsic motivation), understanding why change would be beneficial for oneself could help an individual to experience more autonomous motivation (Ryan et al., 2008). Patients experience volitional engagement towards treatment when the need for competence, autonomy, and relatedness are being supported (Ryan et al., 2008). This in turn should lead into better treatment outcomes. Ryan et al. (2008) propose that these benefits could be achieved by providing patients a rationale that holds relevant information as well as meaningful reasoning about change.

Empirical research suggests that client talk can be of a relevance as a predictor of a treatment outcome (Mussell et al., 2000; Lombardi, Button & Westra, 2014; Pinto, Pinto, Neziroglu & Yaryura-Tobias, 2007; Amrhein et al., 2003). Motivational Interviewing (MI) is a client-centered counselling style which is based on the idea of counselor helping the client to elicit a behavior change (Rollnick & Miller, 1995). Farbring and Rollnick (2015) describe the benefits of MI and reference to the first study that showed a connection between the words and actions of a patient when it comes to behavioral therapy (Amrhein et al., 2003). It is important to note that what is to be achieved with MI is that the willingness to change comes from within the client. It is a task of the client him- or herself to express ambivalence and be willing to resolve it as the counselor is there to help and guide but not to express feelings for them (Rollnick & Miller, 1995). Amrhein et al. (2003) explain that an utterance of commitment to a change is a verbally expressed proposition that "obligate the speaker to perform some action in the future" (Amrhein et al., 2003, p. 863) and therefore an utterance of commitment could be a promise for individuals themselves of a changed future behavior. A connection has been seen both in positive as well as in negative aspect when it comes to talking oneself into a change (Farbring & Rollnick, 2015). Though, it is pointed out that the effect of negative expression towards a change has been proved to be stronger than the positive (Feldstein Ewing et al., 2011). However, not every individual who seeks help is actually ready to commit to making a change. Individuals who enter treatment might have begun the process of change on their own whereas others do not even want to admit there being a problem (Miller & Rollnick, 2010).

There are several different ways to approach the assessment of motivation and choosing the right method is relative to the aspect of motivation one is interest in to focus on (Touré-Tillery & Fishback, 2014). A common measurement tool for the assessment of motivation is Client

Language Assessment in Motivational Interviewing (CLAMI), a manual focused on the client speech (Miller, Moyers, Manuel, Christopher & Armhein, 2008). It is used together with The Motivational Interviewing Skill Code (MISC) that is a tool to evaluate the quality in MI and is focused on the therapist language. However, it is emphasized that CLAMI should only be used for assessing client language within therapy sessions and that not even a transcript of a session should be used without a voice record since it excludes voice tone, speech pace and inflections that are considered to hold essential information (Miller et al., 2008). Therefore, the manual CLAMI was considered an unfitting tool for assessment of motivation in the current study. Another measurement tool to mention is Client Motivation for Therapy Scale (CMOTS) which was created to measure different types of motivation: intrinsic, extrinsic and amotivation (Pelletier et al., 1997). CMOTS comes in a form of questionnaire and it was therefore as well considered unsuitable as the data was already in form of self-expression. It seems as there was a lack of a measurement tool to be applied on data such as self-expressed freely written motivation. Thus, it was considered appropriate to create scales fitting to the purpose.

There seems to be plenty of research done on motivational interviewing, change talk as well as intrinsic motivation when it comes to intervention of addictions such as drug or alcohol abuse or treatment for behavioral diagnoses such as eating disorders or obsessive-compulsive disorder (Poulin et al., 2018; Feldstein Ewing et al., 2011; Pinto et al., 2007; Mussell et al., 2000; Mansour et al., 2012). However, there seems to be gap in research on this subject when it comes to treating depression. To understand the possible predictors of treatment success is of significance due the increasing number of major depressive disorder diagnoses given each year (World Health Organization [WHO], 2019). Depression is a worldwide common illness that puts an extensive weight on the overall burden of disease on a global scale (WHO, 2019). Depression can cause major negative effects on individual's quality of life and hinder one's daily activities. American Psychiatric Association determines major depressive disorder by the following criteria: An individual should experience at least 5 of the symptoms during the majority of the day, over the minimum period of two weeks to be diagnosed with depression (American Psychiatric Association, 2013). The symptoms may include 1. constant depressed mood, 2. loss of interest or decreased pleasure 3. significant unintentional changes in weight, 4. excessive sleepiness or insomnia 5. agitation or slowness so significant that it is noticeable by others, 6. fatigue and loss of energy, 7. disproportional feelings of guilt or worthlessness, 8. indecisiveness or concentration difficulties, and 9. recurring thoughts of death. The symptoms may not be explained by another diagnosis or medical causes such as vitamin deficiency or a brain tumor (American Psychiatric Association, 2017). Depression have three categorizations that are mild, moderate or severe, depending of the severity and extent of the symptoms experienced. As depression gets deeper, an individual's ability to continue daily activities gets poorer and even impossible (WHO, 2019). A widescale study on worldwide health indicated that over 264 million people suffer from depression (WHO, 2019) and in Sweden, every fifth person has been diagnosed with depression during their lifetime (Johansson, Carlbring, Heedman, Paxling & Andersson, 2013).

New, efficient and cost-effective treatment practices are to be developed and improved to meet the need of growing number of patients diagnosed with depression and internet administered treatments could offer a solution (Andersson, Titov, Dear, Rozental & Carlbring, 2019). Internet administered depression treatment can be described as a guided self-help intervention, which, instead of physically going to a counselor, individual can carry out at home (Cuijpers & Schuurmans, 2007). A patient works independently through a standardized protocol accepted by a psychologist in the combination of internet-based support by a psychologist. The contact between a patient and a therapist is only for the aim of support and not for developing a

relationship such in more traditional treatment formats (Cuijpers, Riper & Andersson, 2015). Internet administered psychological treatments are becoming more common and research indicates that various forms of internet administered depression treatments are proved to be effective (Andersson, Carlbring, Titov & Lindefors, 2019).

A study by Nyström et al. (2017) compared internet-administered depression treatments through a randomized controlled trial. The primary aim of the study was to evaluate and compare the treatments and the secondary aim was to find out "whether there would be differences in anti-depressive effects between the respective treatment groups" (Nyström et al., 2017, p. 90). The study included a 12-week treatment period with 286 participants who were randomized into four different treatments groups. Each treatment included 8 modules with exercises and participants had email contact with a therapist on a weekly basis. The different treatment types were physical activity without rationale (PA), physical activity with rationale (PAR), Lewinshon's model of behavioral activation (BA-L) and Martell's model of behavioral activation (BA-M). More specific information of each treatment can be found in appendix A.

The primary outcome measure in the study by Nyström et al. (2017) was a module from Primary Health Questionnaire called PHQ-9. PHQ is a measurement instrument based on self-assessment of one's own symptoms that aims to measure degree of depression and seven other mental disorders such as panic disorder (Kroenke et al., 2001). PHQ-9 is a module from PHQ that focus on assessment of depression and contains 9 questions that are based on DSM-IV diagnostic depression criteria. Score from PHQ-9 questionnaire can range from 0 to 27. Each question can be rated from 0 to 3, 0 being "not at all", 1"several days", 2 "more than half the days" and 3 "nearly every day" (Kroenke et al., 2001). Therefore, higher score in PHQ-9 indicates more depressive symptoms.

The results of the study indicated that the internet administered treatments were successful as each treatment group showed a significant decrease in the depressive symptoms. Yet were there individuals who did not benefit from the treatment or who did not complete the treatment. The study showed that there was no statistically significant difference when it comes to gender, age or symptom severity between individuals who completed the whole treatment of 12-weeks, and those who dropped out (Nyström et al., 2017). Therefore, it was of interest in the current study to investigate a possibility to predict treatment fit as well as treatment outcome from self-expressed motivation towards the treatment. In other words, the aim of this study was to explore whether there could be a predictive value of self-expressed motivation for treatment success in Internet-based depression treatment. This was done by investigating the relationship between self-expressed motivation and treatment outcome (change score in PHQ-9).

Method

Participants

The participant selection process took place in Sweden and the recruiting was done through advertisements on various websites, newspapers as well as through social media. Participants had to fulfill certain requirements to be included in the study, such as to be at the age of 18 years or older, have access to computer with internet connection and to have proficiency in Swedish language as well as to be a resident in Sweden. Other important requirements were to "meet the criteria for mild to moderate depression according to DSM-IV-TR (American Psychiatric Association, 2000)" and to "score between 15 and 35 on the Montgomery Åsberg Depression Rating Scale – self-rated version (MADRS-S; Svanborg and Åsberg, 1994)" (Nyström et al., 2017). Out of 1179 individuals who initiated interest for the study, 312 were considered to be suitable participants. They were then block randomized into the four different

treatment groups and one control group. The received dataset for the current study contained information from 296 participants of which 190 participants had both prior and post treatment measures of the primary outcome PHQ-9. 14 of those were randomized to the control group which was not of interest in this study and therefore they were excluded. Three participants were marked as dropouts. The sample size was narrowed down to 173 participants (n=173).

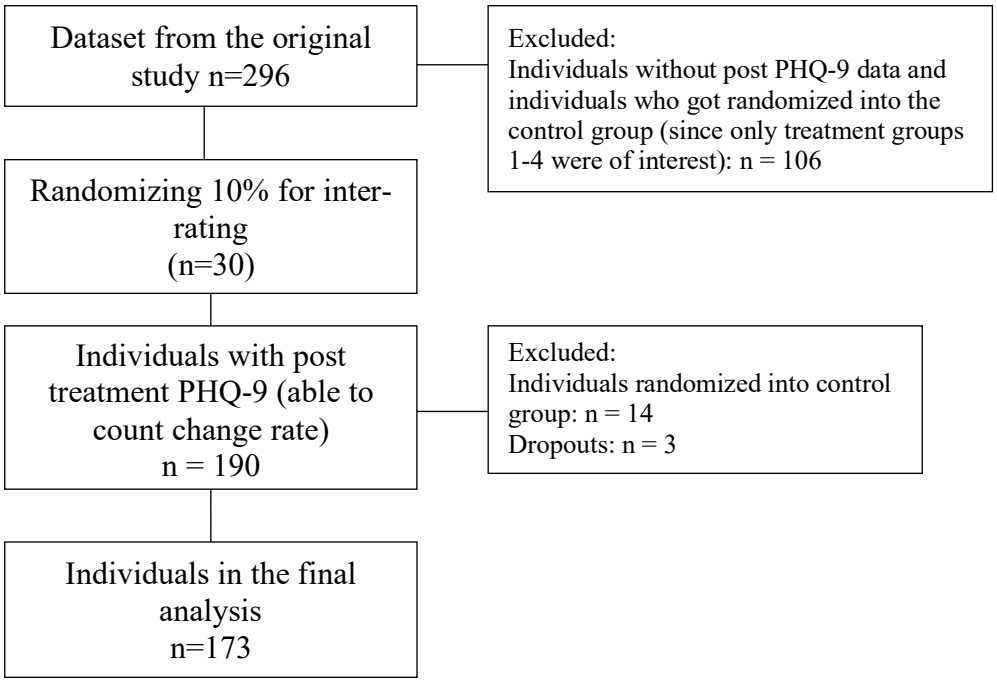

Figure 1.
Flow chart to illustrate the sample.

Ethical aspects
The data was obtained from a study that was approved by Regional Ethical Board in Umeå Sweden. The participants were acquired to have given their written informed consent as for to be included in the study (Nyström et al., 2017).

Collection of data
The data used in the current study was obtained from a randomized controlled study on an internet-based depression treatment by Nyström et al. (2017) in which the access was gained through the supervisor of this thesis (who is the principal investigator of the study). The individuals were given a question prior treatment to express their motivation towards the treatment. They were to answer freely to the following question:

" *This treatment will include a whole lot of work. On one hand it is expected of you to during the upcoming 12 weeks work with a treatment worksheet on the internet. Each chapter include text and exercises and thereafter ends with homework. You should send the answers to these homework assignments via our website to your therapist who in turn gives you feedback once a week. In addition to the treatment itself, the research project will ask you to answer to two short questionnaires (16 cross questions) each week for 12 weeks and thereafter respond to a few web forms once a month for 24 months. Finally, during this two-year period, you will be called a total of 8 times for a short interview (about 10 minutes). Tell us about your motivation for all this.* "

Measures of motivation
After the literature research and familiarizing with the pilot data, three different scales were created by the author of this thesis for the purpose of assessing motivation in the self-expressions, to enable the quantification of the dataset in hand (freely written self-expressed motivation towards internet administered treatment).

Answer length scale was created as a measurement that is based on the number of characters in the self-expressed motivation, where greater quantity of characters works as an indicator of higher motivation. A person who express themselves briefly, with only few characters in their answer would have lower sense of motivation and that bigger quantity of characters would in turn indicate higher motivation towards the treatment. One could suspect that an individual with truly high motivation shows it by taking time to express their motivation thoroughly and by with several words.

Subjective scale for assessment of self-expressed motivation was created to assess the motivation in the client speech (freely written expressions of motivation). The thought behind this scale was to not only read the words one has written, but also interpret what is being said and read between the lines, so to say. It was a five-point scale (1-5) where:1=not motivated, 2=barely motivated, 3=motivated, 4=very motivated and 5=extremely motivated. Further explanation of the scale as well as examples of how to rate sentences can be found in appendix B and D.

Objective scale for assessment of self-expressed motivation was created to assess the motivation by concentrating solely on words, by focusing what is said literally, without further pondering or understanding underlying thoughts. The scale has five points where 1=not motivated, 2=barely motivated, 3=motivated, 4=very motivated, 5=extremely motivated). Further explanation of the objective scale as well as examples of sentences and how to assess them can be found in appendix C and D.

Pilot study
In prior to the initial study, a pilot study was performed with the intention to practice motivation assessment on written expression with the scales created. Moreover, to reach a consensus in coding through an interrater agreement for the reliability of the measurement. The pilot study was performed on 450 self-expressed motivations from individuals who were excluded from the treatment yet had showed an interest towards participating. These self-expressed motivations were coded with the three motivation scales. Out of 450 self-expressed motivations, 21 were randomly chosen for inter-rater reliability analysis. The inter-raters were two psychology students studying at Stockholm University who had no connection to the previous or current study whatsoever. The inter-raters were given the subjective motivation scale and objective motivation scale together with written instructions and examples (appendix D). Inter-raters were to perform the task individually. An analysis of inter-rater reliability was performed with the program SPSS (IBM Statistical Package for the Social Sciences) and the statistical analysis implemented was Fleiss kappa.

Procedure
Self-expressed motivations were coded by the author of this thesis with the three scales presented. Out of 296 self-expressions of motivation, 30 were randomly chosen for inter-rater reliability analysis and were rated by two students with no connection to the previous or current study whatsoever. Thereafter, Fleiss kappa was implemented on the data for inter-rater agreement performed with the program SPSS. An analysis for possible outliers was performed

and thereafter correlation calculations with Spearman's Rho were implemented with the help of SPSS. Thereafter the categorization of different treatment groups was taken into account and additional statistical analysis of correlations with Spearman's Rho was performed. A flowchart of the procedure can be seen in appendix E.

Results

Inter-rater reliability in the pilot study was identified as fair (McHugh, 2012) on both objective scale (k=.363, p<.001, 95 %CI 0.234, 0.492) as well as subjective scale (k=.309, p<.001, 95%CI 0.189, 0.437). Statistical analysis of inter-rater agreement on the actual study was identified as moderate both on the subjective scale (k=.488, p<.001, 95%CI 0.377, 0.600) as well as on the objective scale (k=.548, p<.001, 95%CI 0.442, 0.654) when the coding of the author and the two other students were compared. No significant correlations were identified between the self-expressed motivation and treatment outcome (change score in PHQ-9) when Spearman's Rho was implemented on the data without treatment groups taken into account. The correlations are presented in the table 1 and figures 2, 3 and 4 illustrate the results.

Table 1.
Correlation between self-expressed motivation and treatment outcome (PHQ-9)

Motivational scale	r_s	p	N
Answer length	.142	.062	173
Subjective scale	.114	.135	173
Objective scale	.082	.284	173

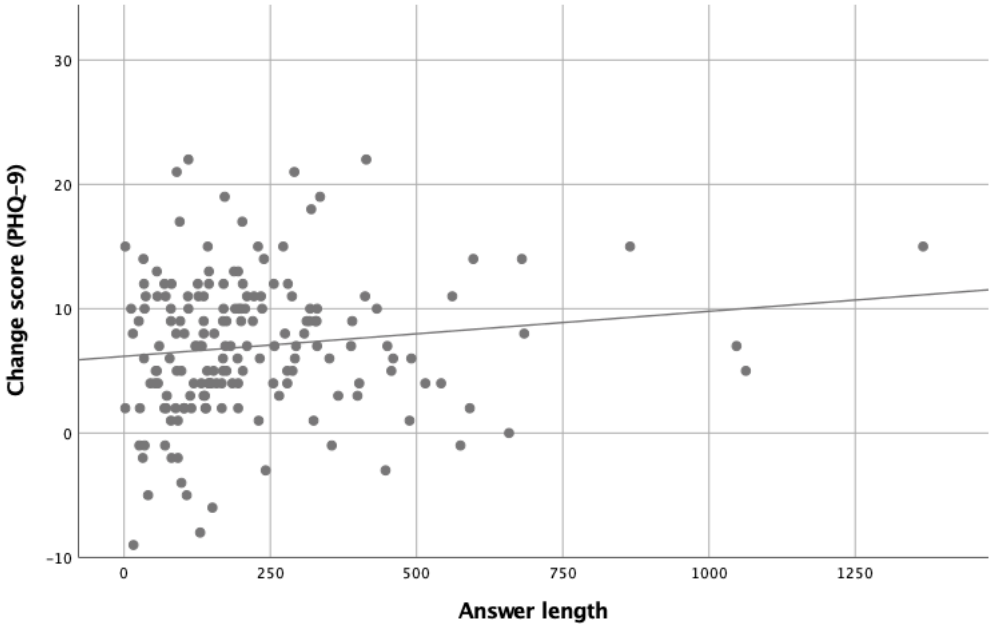

Figure 2.
Scatterplot of change score (PHQ-9) and answer length.

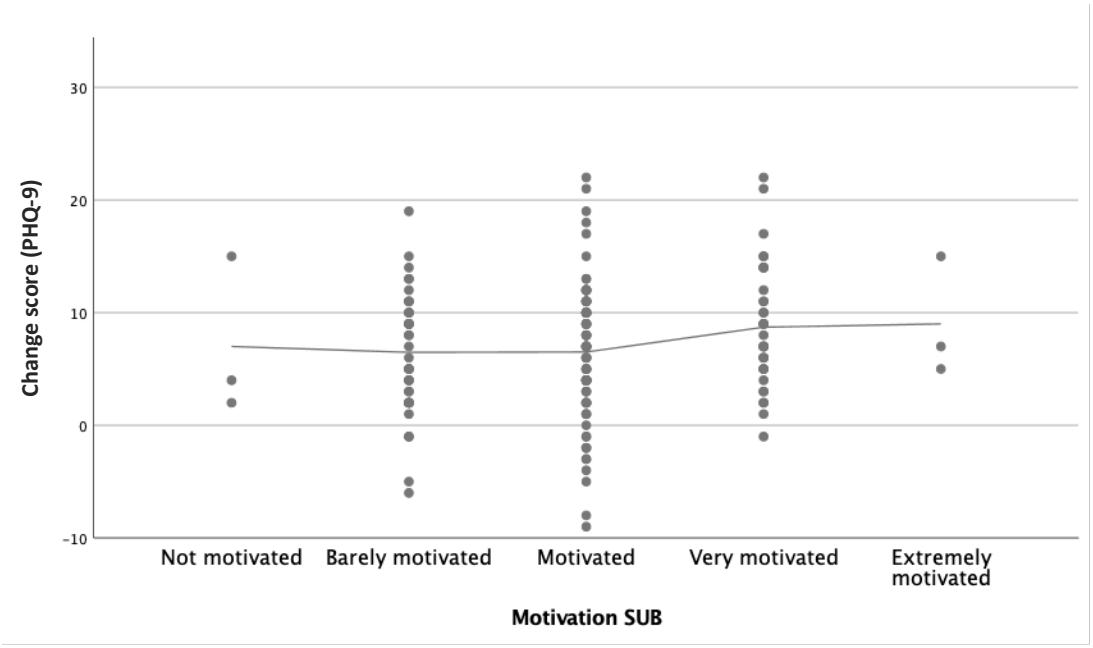

Figure 3.
Scatterplot over change score (PHQ-9) and subjective motivation.

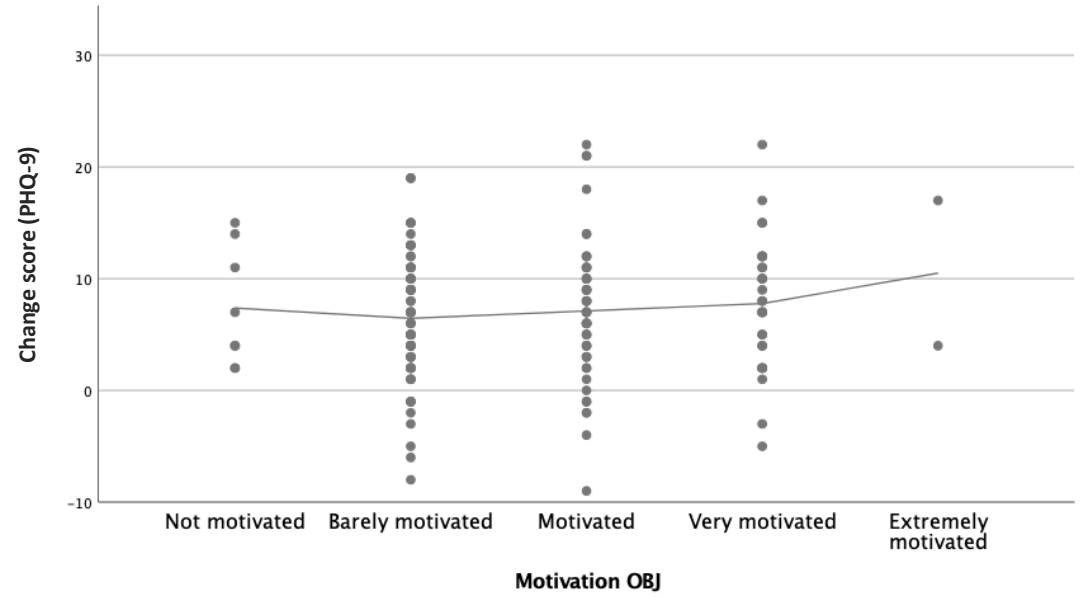

Figure 4.
Scatterplot over change score (PHQ-9) and objective motivation.

No significant correlations were detected between the self-expressed motivation and treatment outcome within the treatment groups 1, 2, 3 or 4 with Spearman's rho. These results can be seen in table 2.

Table 2.
Correlation of change score (PHQ-9) and answer length

Group	r_s	p	N
1: Physical Activity without rationale	.008	.960	39

2: Physical Activity with rationale	.235	.140	41
3: Lewinshon's model of Behavioral Activation	.093	.517	51
4: Martell's model of Behavioral Activation	.271	.083	42

Results from the Spearman's rho correlation analysis indicated that no significant correlations were identified between the self-expressed motivation and treatment outcome within the treatment groups 1, 2 or 3. A positive association could be seen between the self-expressed motivation and treatment outcome in treatment group number four (r_s=.420 p<.01). Results can be seen in table 3.

Table 3.
Correlation of change score (PHQ-9) and subjective motivation

Group	r_s	p	N
1: Physical Activity without rationale	-.050	.762	39
2: Physical Activity with rationale	.005	.977	41
3: Lewinshon's model of Behavioral Activation	.097	.498	51
4: Martell's model of Behavioral Activation	.420	.006	42

As seen in table 4, no significant correlations were identified between the self-expressed motivation and treatment outcome within the treatment groups 1, 2 or 3 when an analysis with Spearman's rho was implemented. However, there seemed to be a significant positive correlation between the self-expressed motivation and treatment outcome in treatment group number four (r_s=.318 p<.05).

Table 4.
Correlation change score (PHQ-9) and objective motivation

Group	r_s	p	N
1: Physical Activity without rationale	-.140	.395	39
2: Physical Activity with rationale	.188	.240	41
3: Lewinshon's model of Behavioral Activation	.062	.666	51
4: Martell's model of Behavioral Activation	.318	.040	42

Discussion

To sum up the results, the overall correlations between self-expressed motivations and treatment outcomes were found to be weak (Akoglu, 2018) or nearly non existing and not to be statistically significant. This indicates that there was no predictive value of self-expressed motivation when it comes the treatment outcome. However, when focusing on the motivations

group by group, high motivation could be associated with bigger change grade among those individuals who received treatment based on Martell's model of behavioral activation (BA-M) when measured with the objective as well as the subjective scale.

An interesting observation about the results was that the treatment groups showed different results regarding the connection between the motivation prior treatment and the treatment outcome. A statistically significant, weak to moderate positive correlation (Akoglu, 2018) was detected with the *objective measurement scale* as well as with the *subjective measurement scale* only in the treatment group BA-M. Even the scale *answer length* showed a weak positive correlation, but the result was not statistically significant. These findings are in line with the previous research that mostly has focused on motivation in more traditional forms of therapy, that the BA-M resemble. The exercises in BA-M focused on active observation and detection of one's own behavior and thoughts. This kind of awareness seems to be important for laying a foundation of a behavior change, since understanding one's own behavior and its connection with the outcome of completing a treatment is associated with better treatment outcomes (Ryan & Deci, 2000). Exercises included goal setting with the purpose of improving one's own mood through pleasant experiences and the significant results can be argued to be in consistence with the research on transparent goals leading to greater results (Latham & Locke, 2006). Individuals with strong intrinsic motivation may have benefitted from this particular treatment structure by having been able to maintain motivation and therefore carry out the treatment successfully.

In contrast, the motivation of those who underwent treatment PA (group 1) actually seemed to be negatively correlated with the treatment outcome or as with the scale of *answer length*, it was almost non-existing. This could be speculated to have something to do with unclear goals such as "go for a walk with a length and speed that feels comfortable for you" that would be unspecific and therefore not so effective in maintaining motivation and reaching a goal (Latham & Locke, 2006). Although, the correlations were not statistically significant. Other possible factors affecting the outcome could be the differences of effectiveness in the treatment methods. The original study (Nyström et al., 2017), showed that treatment results of PA (group 1) did not differ from the control group in a statistically significant way when it comes to the decreasing of depressive symptoms.

As explained, with the intention to quantify self-expressed motivations, three scales for assessment of self-expressed motivation were created. The scales were based on the theoretical frame stressing the importance of an individual's inner motivation for completing a task and achieving a goal (Ryan et al., 2008). Equally, the principles of MI and change talk were taken into account as research speaks of the predictive value in the utterance of commitment (Amrhein et al., 2003). The major focus on the scales was on the client expression. As has been noted, negative expressions towards change have been shown to have an effect on future behavior (Feldstein Ewing et al., 2011). Therefore "not being motivated" could be considered a trustworthy indicator of truly not being motivated and reliably predict poor treatment results or dropout. This was an important view to consider since it is not necessary that an individual is ready to commit to a change even though they have sought help or begun a treatment (Miller & Rollnick, 2010). Naturally, this non-motivation would not come forward with the measurement scale *answer length* and therefore, in the light of previous research, it was also less likely to get significant results with this scale. Another thing to point out about the method is that one should be cautious regarding the trustworthiness of objectivity in the objective measurement scale, since it can be difficult if not even impossible to be completely objective when it comes to language and interpretation. The *subjective scale* seemed to offer the best value in the assessment of the individual motivations. This suggests that when

assessing motivation towards a treatment, it is of importance to focus on the subjective experience of motivation from an understanding approach that does not only focus on what or how much is being said, but how it is said. What makes this interesting is that it seemed to be possible to be read the motivation between the lines so to say, even if in example CLAMI emphasizes the importance of hearing patients voice tone. All in all, having three different scales for motivation assessment could be considered a strength.

Because of the exploratory nature of the current study, it was considered appropriate to use data gained from a previous study instead of conducting an explorative study in this particular context. Since the data at hand for the current study was obtained from a published study with significant results, the data source could be considered trustworthy. The inclusion-criteria of the participants could be viewed as a further strength in the current study. Individuals participating in other psychological treatments or who had had made changes in their anti-depressant medication during the last three months were excluded. Thus, it can be considered that the identified results are accurate for the treatments in the original study, and therefore for the current study as well. Further, the fact that participants had to understand and be able to express themselves in Swedish, can be seen as a positive limitation as that the data of the current study was based on linguistic expressions. Also, the large sample of participants in the current study contributes to the reliability and extern validity as well as can be said to have enabled high power.

Performing a pilot prior to the current study worked as a practice for data coding as well as a support for the reliability of the scales through the inter-rater agreement. Fleiss kappa showed a fair agreement. A better consensus within inter-rater agreement could probably be reached in the future with more practice of coding since the results of Fleiss kappa got higher in the actual study in comparison with the pilot. This is understandable since the author, the creator of the scales, had practiced the coding process excessively more than the independent inter-raters.

Limitations and Suggestions for future studies

An obvious challenge with the method was to be a proficient assessor of the self-expressed motivation. Regardless that this had been taken into account by doing research on the subject as well as through the pilot study, it could have been taken into account more precisely, in example by adjusting the established coding CLAMI to work with a written text. Albeit the same challenge goes for spoken expressions, the base for assessing motivation in MI that is widely used as a tool for assessing motivation in patients.

The question regarding the motivation of going through treatment and completing exercises resulted in a variety of answers that might simply have been misinterpreted, which could affect the results. It was discovered during the coding of motivations, that there seemed to be two different ways that the participants had interpreted the question about motivation towards treatment and how they thereof formulated their answers. Firstly, an explanation of what was the driving force and motive to attend to the treatment such as “I want to be able to work again”. Secondly, expressions of the degree of their motivation, answers such as “my motivation is very high”. Given these points, if a future study will include freely expressed motivation, it should clearly be explained and defined what is meant by motivation. Another challenge of this method was the fact that individuals may have differences in their ability and skills of verbal and written expression. One might be a very talented writer and in example most often use several adjectives and therefore might seem more motivated than a person with poorer verbalization skills. These issues could be tackled in the future by including a percentual self-assessment scale of one’s own motivation as an addition.

Individuals who expressed their motivation thoroughly, often expressed what they wanted to achieve from completing the treatment and that could be interpreted as setting goals, which according to previous studies has shown to lead in enhanced performance (Latham & Locke, 1990). Since all the treatments included planning of activities, and therefore also setting goals, it should be noted that the individual goals expressed prior to the treatment, and the goals within a treatment, might have been too different. In other words, it might have been difficult to associate that the goals given in the treatment, were to lead to the same goal of successful treatment outcome that one wanted to achieve. It is also difficult to determine whether those goals have been high or concrete enough for each individual per se or relevant enough for the treatment outcome and therefore to be considered as reliable indicators of motivation.

It is good to acknowledge the fact that to become a participant of the original study (Nyström et al., 2017) the individuals had to take the effort to come forward and sign up for the possibility to take part of a treatment. Therefore, it could be expected that the individuals already have had a motivation of some kind to carry out the treatment. Though the treatment was free of charge, which in turn could make the threshold for participation lower, in particular among those who would not otherwise be willing to put the financial effort that a treatment most often requires and therefore possibly have a lower motivation to change. Further, the participants in the current study did not know beforehand into which treatment groups they were to be randomized to. In case that individuals would have had the opportunity to describe a motivation towards a specific treatment and then end up in some of the other treatments could have an effect on the treatment outcome. That is, if a participant expressed motivation towards one treatment but received another. This is something that could be interesting to take a look at in future studies.

Conclusion

It can only be debated, whether the results can be associated with Self-Determination Theory and the concepts of intrinsic and extrinsic motivation. One could say that the goal for each individual was the same: to experience fewer depressive symptoms by completing the treatment. Only that it is not this simple. To put a name on benefits gained from the current study, a better understanding about the complexity as well as subjectivity of motivation and treatment fit was achieved. Each individual had their own personal motivations, some driving force that has led to the action of seeking help. It could have been out of the intention to improve their physical health, or a desire of a career achievement that seems impossible to achieve in the current state of mind. It might have been pressure from family, an urge to be a better parent or spouse. But even these factors could be argued to be either or. Is it really their own desire to be there for their loved ones? Or is someone else causing pressure for the action? The motivation for going through a treatment seemed to vary from (only to name few) “not wanting to feel sad anymore” to “want to be a better mother” to “need to be able to finish my studies”. Objectively, the first one could be interpreted as an inner, biological need to survive and experience joy as the second could be interpreted as a pressure to meet the standards of one’s family. The third one could likewise be interpreted as pressure from outside, from society or a partner in example. A subjective point of view could in turn interpret the second one as a biological instinct, feelings of guilt for not being able to take care of her offspring. The third one could be of an inner motivation as well, an inner joy of learning and willingness to gain academic success. It is still to be understood, which individuals could benefit from a specific type of treatment. In future studies, it could be suggested to lay focus more on the manifold nature of motivation in particular in depression treatment. How could it be harnessed successfully as a predictor for treatment success, specifically in those types of internet administered therapies for depression, which did not benefit with significant results of this

study? All in all, this explorative study indicated that motivation can be considered as an indicator of the treatment outcome, albeit it is to be kept in mind, that it seemed to be the case only within the behavioral activation treatment and therefore further research is needed.

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Appendix A

Explanations of the different treatment groups in previous study by Nyström et al. (2017)

Group 1 - Physical activity without rationale (PA):
Each participant received a booklet with basic information about depression and instructions of the treatment plan and was mailed a pedometer for logging of their physical activity. The treatment included 8 chapters that each ended with instructions of contact with a counselor through internet. The treatment begun with slow walks and each week the amount of physical activity was increased incorporating such as body weight exercises. The treatment module incorporated furthermore planning of future activities as well as an activity diary.
Group 2 - Physical activity with rationale (PAR):
The treatment was in other ways similar to the treatment of physical activity without rationale (PA), the difference being a rationale that was given to the participants together with the treatment plan. The thought behind the rationale was to provide better understanding of depression.
Group 3 - Lewinshon's model of behavioral activation (BA-L):
The treatment was based on Lewinshon's model of behavioral activation that is based on the idea of mapping out one's own interests to identify and increase pleasant experiences (Nyström et al, 2017). The treatment begun with a task of filling out a diary of daily activities, continuing into practice of increasing pleasant events. Thereafter some physical activation was to be incorporated as well as social exercises. Finally, goal setting and handling of emotions was taken up as a topic to encounter and practice these skills. All eight chapters included activity log and internet administered contact with a counselor.
Group 4 - Martell's model of behavioral activation (BA-M):
Treatment module based on Martell's model of behavioral activation included likewise tasks and exercises throughout the treatment body. The goal for this treatment was to make the participant aware of their own behavioral patterns and thereafter incorporate new patterns of behavior with the goal of an enhanced overall mood. All eight chapters included an activity log and internet administered contact with a counselor.

Appendix B

Subjective measurement scale:

Explanations for the different scores on the subjective scale of motivation.

Score	Example
1=Not motivated	a) An expression of not being motivated b) The answer being completely irrelevant regarding the treatment without indicators of interest in treatment
2=Barely motivated	a) Very brief answer which indicates positivity towards the treatment b) An answer that indicates direct or indirect interest towards the treatment but includes as well an expression of uncertainty about being capable to finish the treatment module c) The answer indicates prioritizing of other matters, even though one expresses willingness to change or take part of the treatment. Suspicion towards treatment and the possible outcome d) The responsibility of getting better is laid on other individuals or purely to the treatment itself
3=Motivated	a) The answer clearly, straightforward expresses motivation but it is brief and has no further reflection b) Elongated answer which clearly indicates motivation but individual is scared of failure or uncertain/insecure c) Relatively brief reflection of change together with the expressions of being motivated d) Relatively brief answer that indicates that one has taken action towards change or sought treatment e) Elongated answer that indirectly expresses either motivation and/or positivity towards change as well as the treatment (the distinction from 4. is that the reflection of thoughts about the goal is brief or one has other priorities or expression includes irrelevant information).
4=Very motivated	a) Powerful words being used, strong motivation comes forward in the answer, but the answer is quite brief. b) An answer that reasons the motivation and/or expressions of a goal or a change, that one would like to achieve through the treatment.
5=Extremely motivated	a) A lengthy answer with several reflections about the motivation, treatment and/or a changed behavior is being expressed. It is obvious that one has put time and effort into the answer. (Even utterance of having taken steps towards the change or have had help sought before this treatment) b) Utterance of hopelessness and desperation together with longer and deeper reflections c) An utterance of several different reasons for the treatment or different ways of describing one's own motivation. It is obvious that one has reflected on treatment and its possible outcome

Appendix C

Objective measurement scale:

Explanations for the different scores on the objective scale of motivation

Score	Example
1=Not motivated	a) No words expressing motivation, the answer is completely irrelevant for the question of motivation b) An expression of not being motivated
2=Barely motivated	a) Words that indicate motivation indirectly/a simple expression of change (in example in words such as “vilja”=want, “önska”=wish. Though there is no direct expression of motivation or willingness to change *regarding the treatment.* b) The word ‘motivation’ might be expressed but the answer is otherwise irrelevant regarding the treatment
3=Motivated	a) Words that clearly express motivation towards the treatment (without any excessive adjectives to strengthen the expression) b) Expression of positive feelings *towards treatment* (Similar to 2.b, the difference is being made in the literal words about/of/clear expression of positivity towards the treatment itself)
4=Very motivated	Direct expression of motivation with *an adjective to strengthen the expression* of being motivated.
5=Extremely motivated	a) Several *direct* expressions of motivation to go through the treatment, with adjectives to strengthen the expression of being motivated and/or superlative form of an adjective used when describing the motivation b) Expression of willingness to commitment fully or willingness to do whatever needed, despair

Appendix D

Subjective scale:

1. not motivated
2. barely motivated
3. motivated
4. very motivated
5. extremely motivated

Explanations and examples:
****mistakes in spelling might occur due to the examples being based on real expressions***

1. An expression of not being motivated and/or the answer being irrelevant regarding the treatment.

In example:

"Låter jobbigt"
"Inte säker om tid räcker till"

2. a) Very brief answer which indicates positivity towards the treatment

In example:

"Det känns bra"
"Jag är med på detta"

b) An answer that indicates direct or indirect interest towards the treatment but includes aswell an expression of uncertainty about being capable to finish the treatment module

In example:

"Jag tycker det låter lång tid men kan jag bli hjälpt så är det ju värt det, så jag vill försöka, blir det för mycket får jag sluta då?"

"Om det finns en möjlighet att lära mig hantera min nedstämdhet på ett bättre sätt är jag mycket motiverad och intresserad av att få hjälp. I mitten februari åker jag till Kanarieöarna under två veckor och kommer att må bättre under ca en månad efteråt vilket kanske gör att jag inte platsar i den här undersökningen."

c) The answer indicates prioritizing of other matters, even though one expresses willingness to change or take part of the treatment. Suspicion towards treatment and the possible outcome

In example:

"Ger det resultat så ser jag inte detta som något hinder. snarare tvärtom"
"Jag tror att det kommer att fungera"

d) The responsibility of getting better is laid on other individuals or purely to the treatment itself

In example:

"Jag önskar att det är ett bra sätt, att få hjälp.."

"Låter lite jobbigt men tror man kommer in i det på nått sätt. Om jag inte gör detta så kommer jag ändå ta kontakt med någon att prata med så det är vilket som."

3. a) The answer clearly, straightforward expresses motivation but it is brief and has no further reflection

In example:

"Jag vill ändras och må bra"
"Jag är klart motiverad. "
"Mycket motiverad till projektet."

b) Elongated answer which clearly indicates motivation but individual is scared of failure or uncertain/insecure

In example:

"När jag läser om detta så känns det skönt.
Att kanske till slut få hjälp med mina problem,
känner lite rädsla att misslyckas, men vill ta chansen."

"Känns jobbigt men jag vill verkligen bli bättre.
Känner att jag står och stampar. Svåraste är telefonsamtalen"

c) Relatively brief reflection of change together with the expressions of being motivated

In example:

“Känner mig motiverad eftersom jag vill få tillbaka glädjen och glöden i tillvaron”

“Motivation för förändring har jag jag, men saknar en vägledare. Det är därför jag det är plus minus noll.... Ser inte hur jag ensam kan reda upp detta.”

d) Relatively brief answer that indicates that one has taken action towards change or seeked treatment

In example:

“*Har sökt både på VC o försäkringskassan om hjälp med KBT på remiss men tyvärr inte fått ngn hjälp!*

e) Elongated answer that indirectly expresses either motivation and/or positivity towards change as well as the treatment (the distinction from 4. is that the reflection of thoughts about the goal is brief or one has other priorities or expression includes irrelevant information).

In example:

”Det skulle passa mig att få sköta det på en webbplats. Att göra läxor och att vara strukturerad blir som mitt jobb, lärare - där jag är intresserad av utveckling. Jag tror att det här kan vara en möjlighet för mig att utvecklas. Jag vill heller inte gå ifrån mina jobbtider för att ta mig till samtal.“

“Jag har insett att jag mått dåligt av och till under lång tid. Medicinering hjälper (hyfsat) för stunden men depressionen kommer krypande tillbaka när jag slutar. Jag vill ha hjälp att ta itu med mitt beteende och bryta dåliga vanor och tankemönster. Med undantag för samtal med kurator under hösten 2012 har jag bara blivit erbjuden medicinering av sjukvården. Har pratat med min man om privat behandling men har inte blivit något av det, framför allt på grund av den höga kostnaden. Såg den här studien av en slump på nätet och blev intresserad.“

4. a) Powerful words being used, strong motivation comes forward in the answer, but the answer is quite brief.

In example:

“Jag gör vad som helst att må bättre”
“Är beredd att göra vad som helst för att känna mig levande igen.”

b) An answer that reasons the motivation and/or expressions of a goal or a change, that one would like to achieve through the treatment.

In example

*"**Jag vill må bättre och har både vilja och ambition** till att vidta egna åtgärder för att ta itu med de problem som ligger till grund för min nedstämdhet. Eftersom jag själv förstått att jag mått dåligt, och också insett behovet av hjälp så är **jag givetvis mycket inställd på att ta ansvar genom att uppfylla de krav/förväntningar som ställs på mig i behandlingen**. "*

*"Då jag under flera år har velat få (och sökt, men inte fått) psykologisk hjälp för min depression/ångest är detta något jag gärna vill delta i. En annan **drivkraft är att jag är väldigt intresserad av psykologi/psykiatri. Det känns också motiverande att delta i en studie som kan bidra till att det blir lättare för personer med depression att få behandling via nätet.**"*

5. a) A lengthy answer with several reflections about the motivation, treatment and/or a changed behavior is expressed. It is obvious that one has put time and effort into the answer. (Even utterance of having taken steps towards the change or having seeked help before this treatment in hand)

In example:

*"Jag vet vad KBT-behandling går ut på och **jag är väldigt motiverad att utmana mig själv samt genomföra de övningar som krävs**. Jag har under det senaste året funderat mycket över att jag behöver hjälp för att komma vidare, det känns som jag står och stampar på samma ställe och har gjort det en längre tid. Men om jag får stöd, struktur och feedback i och med den här behandlingsmetoden **så vet jag att jag kommer att ta chansen och medverka fullt ut.** Jag är mer ärlig mot mig själv idag och vet när jag behöver be om hjälp. Om jag får medverka i behandlingen så **kommer jag att avsätta tid varje dag för detta,** eftersom jag vet sedan tidigare behandlingar att det är väldigt viktigt. **Jag ställer även gärna upp och medverkar i de forskningsprojekt som är anslutna till behandlingen**. "*

b) Utterance of hopelessness and desperation together with longer and deeper reflections

In example:

*"**Min motivation till detta är lika stark som om någon skulle säga att det var min sista chans till ett värdigt liv**. **Jag kommer göra allt som krävs av mig**,*

och behandlingsformen i sig verkar väldigt bra för mig då jag behöver ganska lång tid på mig för att verkligen hinna tänka efter och vara sanningsenlig. Att få tid att fylla i tester via internet istället för berätta allt på 45 minuter vore fantastiskt. ***Samtalen ser jag inte heller som annat än positivt. Min motivation är helt enkelt 100%ig****"*

c) An utterance of several different reasons for the treatment or different ways of describing one's own motivation. It is obvious that one has reflected on treatment and its possible outcome

In example:

*"****Jag vill prova om jag kan klara av ta mig ur mig svårigheter på egen hand****, undvika medicin om det går. Jag har provat kbt, tycker att det funkat bra för mig, förvånansvärt faktiskt, dock har jag inte provat det för hur jag mår nu, och jag har alltid tidigare tagit medicin samtidigt.* ***Jag har vid något tillfälle kontaktat öppenvårdspsykiatrin för att få hjälp prova kbt och våga sluta med medicin.*** *Det har jag inte kunnat få tyvärr. I grunden är jag en nyfiken person som vill prova nya saker, jag skulle vilja veta om jag mer kan förändra mitt sätt att fungera utan hjälp av antidepressiv medicin.* ***Jag vill gärna träna fysiskt mera*** *under vinterperioden då jag inte kan röra mig utomhus som under sommaren pga köldastma. Jag brukar tappa sugen under vintern och bli inaktiv och det brukar alltid påverka mitt sinnestillstånd till det sämre.* ***Jag vill ha fler strategier att genomföra detta, klara träna regelbundet/ vidmakthålla andra bra saker i livet för att må bättre utan medicin.*** *Jag är ingen medicinmotståndare egentligen, men jag vill prova, däremot kan jag tillstå att en medicinbiverkningar är mycket sköna att slippa, magproblem och minskad sexlust o sköra slemhinnor främst."*

Objective scale

1. not motivated
2. barely motivated
3. motivated
4. very motivated
5. extremely motivated

Explanations and examples:

****mistakes in spelling might occur due to the examples being based on real expressions***

1. No words expressing motivation, the individual answers something irrelevant for the question of motivation (*pratar helt förbi ämnen*) or an expression of not being motivated.

In example:

*"****Är ej rekommenderad för detta****, enligt mina läkare."*

"Känner att jag har kört fast, både i relationen till min sambo/snart förra sambo. Likaså på jobbet, har tagit ett karriärmässigt steg tillbaka efter att vi i ledningsgruppen fick sluta på

förra jobbet, berodde inte på mig personligen utan hände efter ett uppköp av firman."

2. a) Words that indicate motivation indirectly/a simple expression of change (in example in words such as "vilja"=want, "önska"=wish. Though there is no direct expression of motivation or willingness to change *regarding the treatment.*

In example:

"Det har tagit hårt på mig, speciellt de senaste åren och har påverkad mitt liv väldigt mycket. ***Vill bli en glad och fungerande människa*** *som kan ha ett normalt liv."*

"Förbättra min livskvalité, ***bli stimulerad att aktivt ändra mitt liv****, bryta negativa tankebanor"*

"Detta har stört mig länge och ***jag vill komma förbi*** *det men känner att jag inte kan göra det utan hjälp utifrån"*

b) The word 'motivation' might be expressed but the answer is otherwise irrelevant regarding the treatment

In example:

*"****Min motivation är att*** *jag ska klara skolan, läser till undersköterska.. Om 1 år är jag klar och då har jag även mitt slutbetyg.. Så att ifall jag klarar mitt slutbetyg och blir färdig uska, så tänker jag ge mig själv 3 veckors volontärresa till Ghana där jag ska jobba med att sprida kunskap om sexuella trakasserier."*

3. a) Words that clearly express motivation towards the treatment (without any excessive adjectives to strengthen the expression).

In example:

*"****Är motiverad*** *till behandling. Vill inte ha det så här längre."*

"Ogillar tanken att behöva prata i telefon, samtidigt som jag känner att ***jag behöver genomföra detta****."*

b) Expression of positive feelings *towards treatment (OBS! similar to 2.b, the difference is that the answer here should be directed clearly towards the treatment)*

In example:

*"**Låter bra** att ha fasta ramar och rutiner under en längre period."*

*"**Känns bra att deltaga**. Behöver nog det själv."*

*"**Jag vill delta** för att få tips om vad jag kan göra i min situation eftersom ingen klarat hjälpa mig (läkare, kurator, mannen, mamma)."*

4. Direct expression of motivation with an adjective to strengthen the expression of being motivated.

In example:

*"**Hög motivation** då jag är villig att arbeta med mig själv för att få leva det liv jag önskar."*

*"Vill **verkligen** ta tag i min situation"*

*"Som det är nu har jag funderat många gånger på att söka professionell hjälp för att jag känner att **jag behöver gå djupare in i det som skapar problemen och jag vill inte må som jag mår idag. Jag vill så gärna komma vidare med mig själv och det jobb det krävs av detta åtagande skulle ge mer,** än den tid jag ändå skulle lägga ner i att grubbla och känna efter på egen hand ändå. Samt det faktum att **jag verkligen behöver lägga ner tid på att jobba med mig själv**.*

5. a) Several **direct** expressions of motivation to go through the treatment, with adjectives to strengthen the expression of being motivated and/or superlative form of an adjective used when describing the motivation.

In example:

*"**Jag är mycket motiverad** att arbeta med min depression. Jag står för tillfället i kö för terapi men de säger att det kommer att dröja och jag känner att jag behöver hjälp nu. Jag tycker att ert upplägg om aktivering är något väldigt viktigt och som jag tror mycket på. **Jag är desperat efter förändring** och jag tar emot all hjälp jag kan få. **Jag är villig att lägga ner mycket tid och arbete på behandlingen. Jag tror att jag kan hjälpa mig själv** men jag behöver handledning. Jag skulle vara mycket tacksam om ni kunde ta med mig i studien."*

b) Expression of willingness to commitment fully or willingness to do whatever needed, despair.

In example:

*"**Min motivation är 110 procent. Jag vill må bra igen och vet att jag kan det**. Behöver bara hjälp på traven. Det skulle vara en fantastisk möjlighet för mig och min största motivation är att få behålla mitt jobb. Om jag inte får hjälp kommer jag inte längre kunna sköta mitt jobb, det är en gräns, har fått tillsägelse från min chef. Ingen vill ha en journalist som inte orkar skriva."*

*"**Ja, absolut jag vill inte något hellre än att bli av med mina tvångstankar om mat.** Eftersom jag har slutat mitt arbete som hushållslärare **kan jag ägna mig helhjärtat åt det här**."*
*"**Jag är motiverad att göra allt** som får mig att må bättre än jag gör nu"*

Appendix E

Flow chart to illustrate processing of the data.