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A Meaning-Centered Intervention Concerning Meaning in Life and Eating Disorder Symptoms and its Influence on Meaning in Life, Self-Esteem and Heightened Concerns about Weight and Shape for Undergraduate Women.

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Abstract

Low meaning in life (MIL) can be a contributing factor in development and maintenance of eating disorders. A study by Van Doornik et al. (2023) found that a meaning-centered intervention for eating disorders (MCI-ED) increased MIL and reduced weight and shape concerns for women. However, COVID lockdown restrictions may have influenced their outcomes. The current randomized controlled trial replicates the study by Van Doornik et al. (2023) to see whether the MCI-ED increases MIL and self-esteem and reduces weight and shape concerns for women. For this study 104 undergraduate female psychology students (mean age = 19) with weight and shape concerns were randomly assigned to a waitlist condition (n=58) or an experimental condition, the MCI-ED (n=46). The MCI-ED consists of 6 weekly online sessions of one hour guided by a personal therapist. Before the MCI-ED, baseline measures on MIL, weight and shape concerns and self-esteem were taken. Post-assessment was done after a waiting period of seven weeks or after finishing the MCI-ED. Results indicated higher MIL and self-esteem for participants on the MCI-ED in comparison to participants in the waitlist condition. Furthermore, a reduction in weight and shape concerns was found for participants on the MCI-ED compared to participants in the waitlist condition. These results imply that the MCI-ED is effective in increasing MIL. Furthermore, since the MCI-ED decreased weight and shape concerns, outcomes indicate that adding a component of MIL in treatment of eating disorders might be beneficial.

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> Recovery is the process of striving for life. It is gaining a second chance to live life and the process of finding out what life means, what life means for me, including my purpose for being here. (Recovered Professionals Exploring Eating Disorder Recovery: A Qualitative Investigation of Meaning; Bowbly, 2015).

Recovering from an eating disorder (ED) is a major challenge. Studies indicate that the lifetime prevalence for ED in Western countries lies between 3.7 and 32.9 percent for young females (Silén & Rahkonen, 2022). Health and quality of life can be greatly impacted by ED (Van Hoeken & Hoek, 2020). People with ED can become obsessive, internally critical or depressed (Noordenbos, 2013). ED are also accompanied by great costs and are a burden for people and the public health care system (Schmidt et al., 2016). Current treatment mainly focused on cognitive behavioural therapy (CBT) is not always effective, an example is relapse after a treatment (Berends et al., 2018). Research indicates that around 30 to 50 percent of patients with ED continue to have symptoms after CBT (Fairburn 2008; Wilson 2005). Therefore, alternative treatments should be considered in order to maximize effectiveness on ED treatment and enhance accessibility (Van Doornik et al., 2023).

Van Doornik et al. (2023) did a randomized controlled trial (RCT) with 134 participants on whether a meaning-centered intervention (MCI-ED) increases meaning in life (MIL) and improves weight and shape concerns. Their study was based on previous research including the study by Breitbart et al. (2010, 2015) who developed a meaning-centered psychotherapy to increase meaning for cancer patients. Two RCT's showed increased MIL, quality of life and reduced depressive symptoms after the meaning-centered psychotherapy

(Breitbart et al., 2010, 2015). Therefore, Van Doornik et al. (2023) developed the MCI-ED tailored to ED symptoms. Components of the MCI-ED were chosen with aid of the framework by George and Park (2016) that divides MIL into three sub constructs. Namely comprehension, purpose and mattering. Comprehension is defined as the degree to which someone understands coherence and experience in their life, thus whether people make sense of their experience. Purpose is defined as the degree to which a person feels direction and motivation in lifegoals which they value. Mattering is defined as acknowledging that a person's existence is of value, significant and thus important (George & Park 2016). The MCI-ED consisted of six weekly online sessions of one hour in which exercises concerning MIL and weight and shape concerns were guided by a personal therapist.

In the study by Van Doornik et al. (2023) participants filled in baseline assessment after which they were randomly assigned to the MCI-ED or to a control waitlist condition. Participants in the experimental condition completed post-assessment immediately after the MCI-ED. For the waitlist condition post-assessment was completed seven weeks after baseline assessment. Results indicated positive intervention effects on increasing MIL and reducing weight and shape concerns. However, lockdown restrictions during COVID might have influenced these results. People might have benefited more from the intervention since during that time social contacts were restricted and the lockdown had a detrimental effect on mental health (Troisi, 2023). In this study, the RCT by Van Doornik et al. (2023) is replicated to see whether the effects of the intervention are still found without lockdown conditions.

MIL

MIL can be conceptualized through the framework of George and Park (2016) as Van Doornik et al. (2023) did. Nevertheless, there is no consensus on the conceptualization (Steger et al., 2006). MIL has been described as purpose, coherence, orientation, significance

or belonging by Schnell (1972). Whilst McKnight and Kashdan (2009) define MIL as the values someone has, views on what matters in life and what factors make life worthwhile. In the current study we measure MIL as Van Doornik et al. (2023) did, which is through the conceptualization of Steger et al. (2006). Steger et al. (2006) view MIL as the sense and significance felt in the nature of a person's being and existence. The main components measuring MIL are the search and presence of MIL. Nevertheless, they belief that a person uniquely constructs their own values of MIL (Steger et al., 2006). Despite differences in conceptualization, researchers agree on the crucial benefits of MIL (Steger et al., 2006). A higher MIL results in positive consequences such as better quality of life, lower depression, stress resistance (Barnett et al., 2018). Whereas lack of MIL is associated with suicide risk (Lin, 2021) and psychopathology (Steger et al., 2006).

MIL and ED

Besides the general positive effects of MIL on well-being, research indicates that strengthening MIL could lead to less focus on ED related goals (Marco et al., 2021; De Vos et al., 2017). De Vos et al. (2017) for example found that MIL during recovery was a substantial criteria for effectiveness of ED treatment. A qualitative study on perspectives of clinicians indicated that finding MIL makes real participation and experience in life besides constant focus on ED behaviours easier (Bowlby, 2012). A perspective of MIL further helped people with ED to escape their obsession with weight and food and made them believe that their life is worth living (Garrett, 1997). Nevertheless, not much research has been conducted on the relation between MIL and ED, especially when looking at the effects of increasing MIL on ED in RCT's, like Van Doornik et al. (2023) did.

Self-Esteem

Part of this replication is to study whether the MCI-ED increases self-esteem. Self-esteem can be conceptualized as the overall psychological evaluation of the self (Lin, 2021). Self-esteem gives people a sense of significance and value which is important for psychological functioning (Routledge, 2010). In general, lower self-esteem has a negative impact on health and well-being (De Pasquale et al., 2022). Self-esteem is considered a core part in the pathology of ED (Gunnard et al., 2011). Low self-esteem is correlated with higher ED behaviours (De Pasquale et al., 2022).

Self-Esteem and MIL

Self-esteem determines your self-evaluation in the worldview created by MIL (Barnett et al., 2019). People with higher self-esteem evaluate themselves more positively and more competently and a positive self-value increases MIL (Lin, 2021). When one has higher self-esteem, perception of being a valuable person in a meaningful universe is more prominent (Wang & Ollendick, 2001).

One of the theories on self-esteem and MIL is the sociometer theory (Stillman et al., 2009). According to the sociometer theory, self-esteem comes from social inclusion. Ongoing loneliness has been associated with less MIL (Stillman et al., 2009). Creating the feeling of being surrounded by a caring social network increases MIL (Baumeister, 1991). Being of value and being included connects to the values of MIL such as mattering (George & Park, 2016). Furthermore, reflection on experiences in life can enhance a meaningful feeling and a feeling of unity of the self (McLean, 2008). This connects to MIL since coherence and understanding experiences can be important for MIL (George & Park, 2016). In general, studies indicate that MIL and self-esteem influence each other, low self-esteem relates to less MIL (Lin, 2021; Stillman et al., 2009; Wang & Ollendick, 2001; Barnett, 2019). Since low

self-esteem is one of the main contributors to development of ED, it is interesting to study whether the MCI-ED increases self-esteem for young females.

Actual Study

Taken together this study will examine how a meaning-centered intervention on MIL and weight and shape concerns influences MIL, self-esteem and high weight and shape concerns for undergraduate women. For this study, undergraduate women with weight and shape concerns were chosen because women are generally highly affected by ED (Silén & Rahkonen, 2022). The outcomes of this study can be beneficial to the treatment of ED patients. If the MCI-ED is deemed successful, studies could be done with ED patients, after which this treatment form could be applied in clinical settings. Positive effects of the MCI-ED on MIL and weight and shape concerns have been found by Van Doornik et al. (2023). Nevertheless, due to COVID lockdown restrictions, results may have been biased. Therefore, this current study replicates the study by Van Doornik et al. (2023). It is hypothesized that similar results will be found, meaning that the MCI-ED increases MIL. Furthermore, it is hypothesized that the MCI-ED decreases weight and shape concerns. Lastly, as an addition to the replication, it is hypothesized that the MCI-ED increases self-esteem.

Method

The protocol of this study was approved by the ethics committee from the Rijksuniversiteit Groningen (RUG).

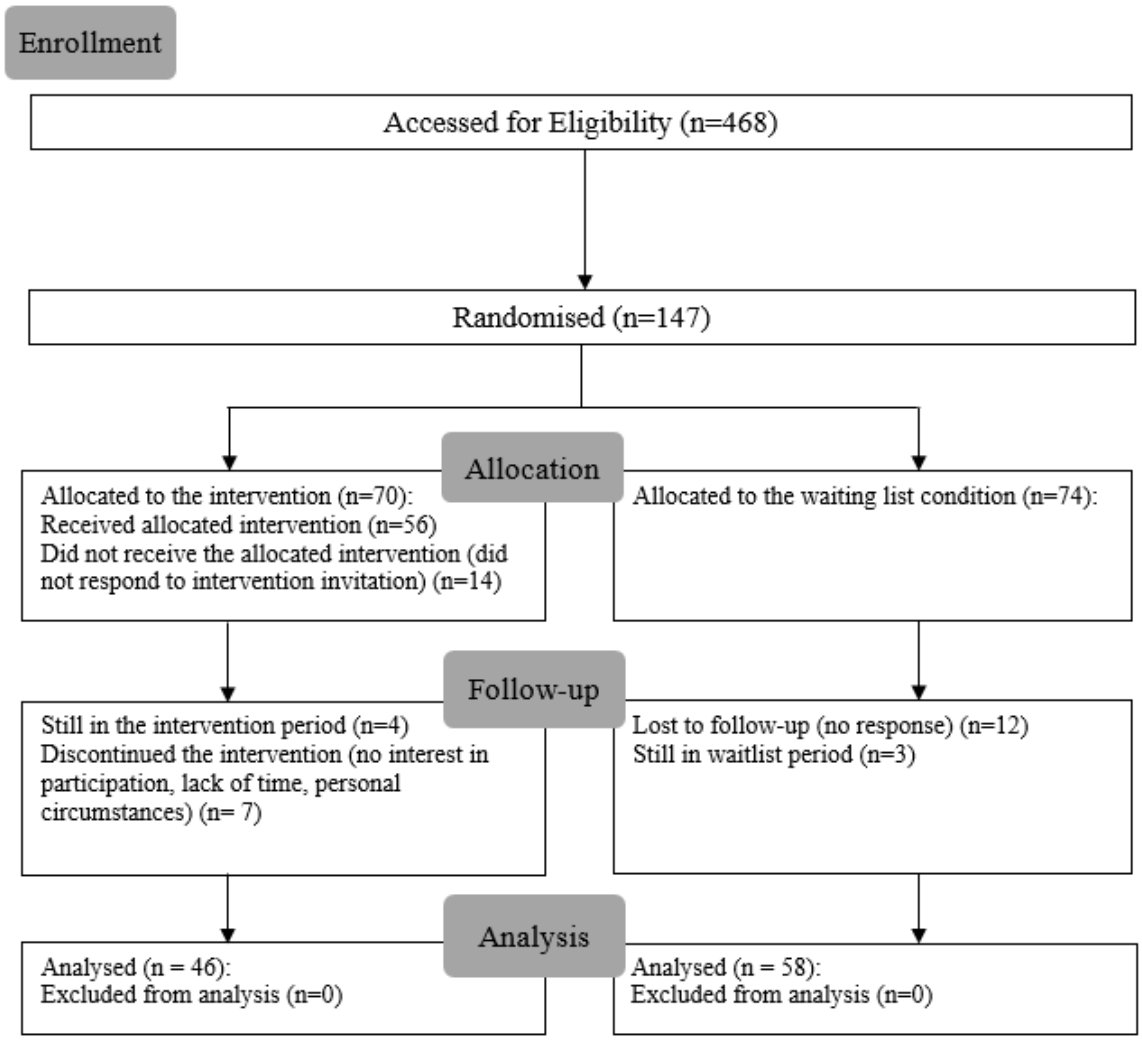
Participants

In this study, 104 previously sampled first year female psychology students from the RUG participated. Students participated in exchange for SONA credit, 3.6 credit points after completion of the pre and post measures. Participants needed to be fluent in Dutch, German or English. They were screened through the Weight Concern Scale (WCS; Killen et al.,

1994). A score above 47, or reporting “often” or “always” when asked “do you ever feel fat” resulted in an invitation to participate in the study. Participants that followed psychotherapy for ED during the study were excluded. The flow diagram depicts the participation process (figure 1). Participants were randomly assigned to the experimental (n=46) or control condition (n=58). Forty-nine participants completed the questionnaires in Dutch, 45 in English and 10 in German. The average age was 19 years. Demographics include Dutch (43.3%), German (15.4%), English (9.6%), bilingual (9.6%) and other (22.1%).

Figure 1

Flow Diagram



A priori power analysis was conducted based on the study by Van Doornik et al. (2023). With an alpha of .05, a large effect size (d = .40), two groups, one covariate and the df = 1, a sample of 84 was required for a power of .95 (Faul, Erdfelder, Lang, & Buchner, 2007).

Material

Multiple questionnaires were conducted due to collaboration in this study (appendix A). The questionnaires included are the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 2008), Eating Disorder Inventory 2 (EDI-2; Garner, 1991), Meaning in Life Questionnaire (MLQ; Steger et al., 2006), Multidimensional Existential Meaning Scale (MEMS; George & Park, 2017), Balanced Measure of Basic Psychological Needs (BMPN; Sheldon & Hilpert, 2012), Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995), Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), Clinical Perfectionism Questionnaire (CPQ; Fairburn et al., 2003), Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). For the current research question only the MLQ-P scale from the MLQ, the EDE-Q and the RSES were used.

Primary Outcome Measures

Meaning in life. The meaning in life questionnaire (MLQ; Steger et al., 2006) assesses MIL with two scales, namely the search for MIL scale (MLQ-S) and the presence of MIL scale (MLQ-P) (appendix A). We use the MLQ-P scale, as a primary outcome measure. The MLQ-P included statements on presence such as “I understand my life’s meaning” answered on seven-point Likert scales ranging from 1 (Absolutely Untrue) to 7 (Absolutely True). Higher reported scores indicate a higher perception of MIL. Cronbach’s alpha ranges between .878 and .895 for the MLQ-P.

Eating disorder symptoms. The Eating Disorder Examination Questionnaire 6.0 (EDE-Q; Fairburn & Beglin, 2008) measures eating disorder symptoms over the last 28 days (appendix A). The EDE-Q is a primary outcome measure. The questionnaire consists of 28 items with questions such as "Have you had a definite fear of losing control over eating?" scored on scales ranging from 0 (No days/Not at all) to 6 (Every day/Markedly). For this study only 22 items on restraint, weight concerns, shape concerns and eating concerns subscales are used in the analysis. Reponses on the items are averaged, higher scores indicate more ED symptoms. The Cronbach's alpha ranges between .915 and .948 for the EDE-Q.

Secondary Outcome Measures

Self-esteem. The Rosenberg's Self-Esteem Scale (RSES; Rosenberg, 1965) measures self-esteem (appendix A). The questionnaire has 10 items with statements such as "I feel that I'm a person of worth" scored on a Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The RSES can be scored by using the total sum of the individually four scaled items after reverse-scoring negative items (2, 5, 6, 8 and 9). A higher score indicate higher self-esteem. The Cronbach's alpha ranges between .879 and .887 for the RSES.

Meaning-Centered Intervention for Eating Disorders (MCI-ED)

The MCI-ED is a six week manualized intervention that was designed to increase MIL. The manual consists of exercises, information, discussions and homework focussed on the concepts of MIL and ED. This manual is an adaptation of the Dutch Meaning Centered Psychotherapy (MCP) manuals (Van der Spek & Verdonck-de Leeuw, 2017) and the individualized MCP manuals (Breitbart et al., 2018) originally developed for cancer patients. Changes were made regarding exercises, word of choice and inclusion of topics in order to make the manual more fit for the current complaints and the younger age group. Furthermore, the original MCP's consist of eight sessions and this MCI-ED consists of six sessions. The

intervention was designed around four sources of MIL. Frankl (1959) originally described these sources, namely; your personal life story, dealing with life's limitations, creating your own life and meaningful experiences. These four sources of MIL are described as tools from a toolbox in the MCI-ED in order to make participating more appealing for the students. All sources of MIL are discussed during specific online sessions in the six week period (table 1). Development of the MCI-ED was done in collaboration with ED therapists, two young individuals with ED and three master students. This collaboration improved lay-out and choice of wording regarding language adaptation to the similar generation of the master students.

Table 1

Topics Covered per Session Regarding the MCI-ED

Session	MCI-ED	Exercises	Homework
1	Introductory part. Theory regarding MIL, the sources of MIL, and how MIL relates to ED.	The definition of MIL, meaningful personal experiences and those of others related to MIL and ED (video).	Write down a meaningful experience on each day of the week.
2	Personal life story (1): How does your environment influence this?	Define who you are as a person in a word web. Writing down relations, memories, life lessons that define you. Talking about joy, sadness and regret in relation to experiences or memories.	Create an overview consisting of important experiences, memories, relations and people and habits which developed you as today's person.
3	Personal life story (2): How does your personality influence this?	The creation of a timeline showing past and current important experiences and what you want in the future.	The timeline created should be discussed with important people or one important person.
4	How does someone deal with limitations in life?	Writing down current limitations in life which you experience and these are handled. Looking at what already works well and what can work better in dealing with limitations. List five future goals.	A goal was chosen from a list, a plan with specific steps to achieve the goal is set up.
5	The creation of your personal life and the	Experiences that show your courage, how responsible you	Everything that was learned during the MCI-

	experiences in it regarded as meaningful.	are and how committed you are.	ED is discussed in an overview. The next step for last week's goal is implemented.
6	The presentation of lessons learned in life and a reflection on the MCI-ED.	Discussing your life lessons and evaluating on the overview from session five. Room for questions on the MCI-ED.	

Note: MCI-ED, Meaning-centered intervention on eating disorders. - All exercises are first discussed and talked about, once a clear answer or choice is established it is written down.

Procedure

Students were asked to participate in the study through the SONA program from the RUG. This means students were conveniently sampled. Once students signed up for the experiment they were screened through the WCS. After screening participants received automatically generated email invitations to fill out the online questionnaires and informed consent generated in QUALTRICS (https://rug.eu.qualtrics.com/jfe/form/SV_9pBROjFYsE0xwwu). Reminders were sent if participants did not respond or complete assessment. Completion of baseline assessment takes around 30 minutes. After assessment, participants were randomly allocated to the waitlist condition (control) or to the MCI-ED (experimental). An online program by the random integer generator (https://www.random.org) was used to generate the randomization process.

For the experimental condition, participants were assigned a personal therapist who performed the sessions on the MCI-ED. These therapists were master students trained on the intervention. These master students were supervised on a weekly basis. Six weekly sessions of one hour were conducted in either Dutch, English or German. Participants used a hardcopy or online version of the workbook in either Dutch or English during the sessions. After the last session, the post-assessment was conducted in the same manner as the baseline measures. For the participants on the waitlist condition, post-assessment was done seven weeks after the

baseline measures. They did not receive the MCI-ED or any other intervention. A follow-up was done one month after the post-assessment, nevertheless data on this is not used in the current study. People on the waitlist condition were able to follow the MCI-ED after all data was collected.

Method of Analyses

ANCOVA was used to test the short-term effects of the MCI-ED on MIL. The post-assessment from the MLQ-P was used as the dependent variable and its baseline assessment as the covariate. The condition (experimental or waitlist) was used as the between-subjects factor. Furthermore ANCOVA was used to measure the effects of the MCI-ED on weight and shape concerns. Post-assessment from the EDE-Q was the dependent variable and its baseline assessment as the covariate. Condition was used as the between-subjects factor. Lastly, ANCOVA was used for the effects of the MCI-ED on self-esteem. Here, post-assessment of the RSES was the dependent variable and its baseline scores as covariate. Condition was used as the between-subjects factor.

Results

Dropouts and Missing Data

During the course of the study there were six dropouts. These people did not finish the post-assessment and were therefore excluded from the study. Boxplots of the scores on the MLQ-P, EDE-Q and RSES were generated in order to detect outliers (appendix B). One outlier was found for the baseline measure of MLQ-P on the waitlist condition (figure B1). This outlier was kept in the analysis since it does not influence the results of the study. Thus data from 104 participants were used in the analysis.

Furthermore, it was analysed whether dropouts differed significantly on scoring in comparison to those who participated in the study. For the MLQ-P, EDE-Q and RSES no significant differences in scoring were found (appendix C).

ANCOVA Assumptions

For the first hypothesis, the Shapiro-Wilk test showed evidence of non-normality (table D1). This means that the normality assumption for the MLQ-P is not met. For all hypotheses, homogeneity of regression slopes was significant (table D2, D3, D4). This means that the assumption for homogeneity on the MLQ-P, EDE-Q and the RSES is not met. All other assumption checks were met.

Primary Outcome Measures

Table 2 shows the means and standard deviations for all outcome measures at pre and post-assessment. The ANCOVA analysis indicates a significant effect of the MCI-ED on MIL (MLQ-P) when controlling for the baseline measure of the MLQ-P, with a large effect size (Table 3). Thus, participants in the experimental condition report significantly higher MIL after the intervention compared to participants in the waitlist condition who did not receive the MCI-ED.

Table 2

Means and Standard Deviations for all Measures on the Pre and Post-assessment on the Experimental and Control Condition.

	Experimental condition		Waitlist condition	
	Pre-intervention (n= 70) *Mean (SD)*	Post-intervention (n= 46) *Mean (SD)*	Pre-intervention (n= 74) *Mean (SD)*	Post-intervention (n= 58) *Mean (SD)*

MLQ-P	22.04(6.32)	25.76(5.39)	20.05(5.68)	20.79(5.93)
EDE-Q	3.02(.95)	2.06(1.06)	2.99(1.13)	2.78(1.29)
RSES	25.52(5.29)	28.39(5.31)	24.76(4.81)	25.12(4.89)

Note: MLQ-P = Meaning in Life Questionnaire, Higher scores mean higher perception of meaning. EDE-Q = Eating Disorder Examination Questionnaire, higher scores indicate higher pathology on eating disorder symptoms. RSES = Rosenberg Self-Esteem Scale, higher scores indicate higher self-esteem.

Table 3

ANCOVA Outcomes for the Post-intervention on all Outcome Measures

	ANCOVA Post-intervention (n= 104)		
	F	*p*	η_p^2
MLQ-P	19.71	<.001	.16
EDE-Q	19.62	<.001	.16
RSES	18.09	<.001	.15

Note: MLQ-P = Meaning in Life Questionnaire, EDE-Q = Eating Disorder Examination Questionnaire, RSES = Rosenberg Self-Esteem Scale.

Secondary Outcome Measures

` The ANCOVA analysis showed that there was a significant effect of the MCI-ED on weight and shape concerns (EDE-Q) when controlling for the baseline measure of the EDE-Q, with a large effect size (table 3). Outcomes indicate that participants in the experimental condition report significantly lower scores on weight and shape concerns after the intervention compared to participants in the waitlist condition who did not receive the MCI-ED.

Lastly, the ANCOVA analysis showed that there was a significant effect of the MCI-ED on self-esteem (RSES) when controlling for the baseline measure of the RSES, with a large effect size (table 3). Outcomes indicate that participants in the experimental condition report significantly higher self-esteem after the intervention compared to participants in the waitlist condition who did not receive the MCI-ED.

During the data analysis there were no detections of harms or unintended effects for any group.

Discussion

Summarizing Study Results

The purpose of this study was to gain a better understanding on whether a meaning-centered intervention on MIL and ED influences MIL, self-esteem and weight and shape concerns for undergraduate women. The first and main finding supports the hypothesis that the MCI-ED increases MIL. Regarding the secondary outcomes, results support the second hypothesis that the MCI-ED decreases weight and shape concerns. Finally, results support the third hypothesis that the MCI-ED increases self-esteem. Therefore the current results indicate that a six weekly one-hour intervention to increase MIL, increases MIL, self-esteem and decreases weight and shape concerns.

Explanation of Results and Previous Studies

Findings from the current study build on evidence for the effectiveness of the MCI-ED as an intervention to increase MIL. The main finding indicates that the MCI-ED results in higher MIL. These findings are consistent with the study by Van Doornik et al. (2023) who previously examined the influence of the MCI-ED on MIL and ED symptoms. Their study was based on research indicating that MIL in psychotherapy for cancer patients and cancer survivors was beneficial (Van der Spek et al., 2017). Van Doornik et al. (2023) developed the MCI-ED tailored to ED symptoms to increase MIL and decrease ED symptoms. The results

of the current study indicate that that positive effects can be found regardless of COVID lockdown restrictions. Thus, it seems that the results of Van Doornik et al. (2023) were not mainly driven by higher psychopathology and loneliness.

Furthermore, the secondary outcome findings from the current study support evidence on the effectiveness of the MCI-ED as an intervention to decrease weight and shape concerns. These findings are again in agreement with results found by Van Doornik et al. (2023) who found that the MCI-ED decreased ED symptoms. These outcomes combined imply that it could be beneficial to add a meaningfulness component in treatment for ED. This is in agreement with a narrative study on ED recovered professionals by Bowbly et al. (2015), who state that inclusion of meaning, in a manner of comprehensiveness, identity and purpose can result in higher and advanced long-term recovery rates. The focus of recovery then lies beyond behavioural symptoms and obsessive thinking, which enhances effectiveness in recovery (Bowbly et al., 2015).

Lastly, findings from the current study support evidence on the effectiveness of the MCI-ED as an intervention to increase self-esteem. Low self-esteem is one of the main contributors of development and maintenance of ED (De Pasquale et al., 2022). The MCI-ED resulted in higher self-esteem which indicates that participants reported, for example, higher satisfaction with themselves, felt more worthy, and had more respect for themselves. One explanation for this increase might be that self-esteem increases due to the MCI-ED. Research indicates that MIL and self-esteem are strongly intertwined (Du et al., 2021; Lin, 2021; Pérez-Fuentes et al., 2019; Siwek et al., 2017). Marco et al. (2021) found that young women with lower self-esteem experienced lower MIL. According to a model of Marco et al. (2021) people with low self-esteem and further vulnerabilities such as perfectionism, in combination with a dysfunctional scheme of values such as “I need control my food intake”, develop a MIL guided by weight and shape-related goals, such as the need to lose weight in

order to be attractive. This focus towards dysfunctional goals makes them avoid anxious situations and face their negative emotions (Marco et al., 2021). This avoidance retains them from developing a sense of MIL on an authentic and genuine level. Their constant negatively oriented focus results in no MIL (Marco et al., 2021). An increase of MIL through the MCI-ED could therefore result in an increase in self-esteem. Another explanation could be that the increase in self-esteem comes from the decrease in weight and shape concerns. Previous studies indicate a strong relation between ED and low self-esteem, for example lower self-esteem is related to ED symptoms (Vitousek & Hollon, 1990; Gunnard et al., 2011; De Pasquale et al., 2022). Nevertheless, further studies should be done in order to study the relationship between the MCI-ED and self-esteem.

Study Limitations

One strength in this study is the use of a RCT to examine the effects of the MCI-ED. A RCT contributes to limiting the possibility of bias and provides strong evidence for causal relations. Furthermore, the use of standardized testing in this study is beneficial due to, for example, consistency and unambiguous results. Lastly, since this is a replication study, stronger evidence is provided on the effectiveness of the MCI-ED.

Nevertheless, there were also limitations in the current research. Due to the small sample size, the power is large enough to detect large effect sizes, nevertheless it is not possible to measure small effects.

The sample further consists only of female undergraduate psychology students conveniently recruited through the RUG. These females do not have ED, only weight and shape concerns. This limits the generalizability of results.

A third limitation concerns presentation of the intervention. The intervention is given by psychology students, who are trained on the MCI-ED. During this training, all sessions are discussed and exercises are practiced through roleplay. This training is supervised by a

certified psychologist. Nevertheless, the students who eventually perform the training are not certified psychologists. There is no assurance on whether a student is rightfully performing the intervention. Due to responsibility and training, it is fair to assume that these sessions are conducted professionally. Therefore, this shortcoming might not influence the study that much.

The fourth limitation concerns biases that can occur due to the nature of the MCI-ED. This intervention is not double blind, thus demand characteristics or placebo effects can occur. Furthermore, participants in the study are psychology students. Their knowledge on interventions and protocols might influence their perspective on the intervention. Nevertheless, these students are first years. Therefore, they have not been exposed to many subjects and thereby knowledge on psychology.

Furthermore, in this study a follow-up was obtained. However, due to thesis limitations, such data is not included in the current paper. Follow-up results would have given a better overview of the significance of the outcomes in this study. Mid- and long-term benefits of the MCI-ED can currently not be considered.

Lastly, the ANCOVA assumption checks indicated violations of normality and homogeneity (appendix D). The normality violation was minor. Due limitations regarding the thesis, no adjustments such as alternative analyses or data transformations were carried out. This might influence the validity of inferences drawn on the results of the study.

Study Implications

Despite these limitations, results of this study suggest theoretical and practical implications. On a theoretical level this study contributes to the expansion of knowledge on the effectiveness of meaning related interventions. Due to this replication, evidence is build surrounding the effectiveness of the MCI-ED on increase of MIL and decrease in ED symptoms. Increased MIL might buffer against ED development and maintenance. It further

shows that this MCI-ED also increased self-esteem. This study therefore adds to knowledge on the relationship between MIL, self-esteem and weight and shape concerns.

On a practical level this study generates possibilities in evidence based development of psychotherapeutic treatment in ED. The MCI-ED resulted in decreased weight and shape concerns. This means that adding a component on MIL in psychological treatment for people with ED might be beneficial.

Future Research

Future research should implement the MCI-ED within a clinical sample, meaning people diagnosed with ED. This should be done in order to test the effectiveness of treatment for whom the intervention was developed. It would be interesting to see whether certified psychologists develop even better results than the current study did. This study was performed online, sessions in person might result in stronger outcomes. Therefore, it would be interesting to see how MIL, weight and shape concerns and self-esteem are influenced when sessions are done in person within a therapeutic context.

Furthermore, since results are promising, it might be interesting to see whether the MCI-ED can be used preventative of ED, since the sample in our study was not diagnosed with ED and it was still beneficial for them. The MCI-ED might be helpful in preventing ED since weight and shape concerns are a risk factor in developing ED.

Regarding self-esteem, it would be interesting to see whether the MCI-ED causes an increase in self-esteem or whether this increase is due to the decrease in weight and shape concerns. Studying this relation might enhance further treatment effectiveness. If the increase in self-esteem is due to the decrease in weight and shape concerns besides the effectiveness of the MCI-ED, then adding self-esteem as a component to the MCI-ED could result in even better intervention outcomes.

Conclusion

In summary, the present study contributes further to evidence supporting that the MCI-ED is effective in increasing MIL, self-esteem and decreasing weight and shape concerns. Furthermore, it contributes to further understanding on whether MIL contributes to effectiveness of treatment for people with ED. An important next step should be introducing the MCI-ED to a clinical sample to see whether this treatment is effective for people with ED.

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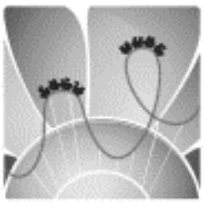
Appendix A

Questionnaires Used in the Current Study

The EDE-Q



Eating Disorder examination questionnaire (EDE-Q 6.0)

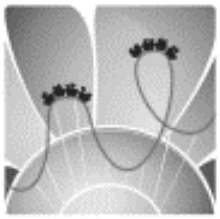
Instructions: The following questions are concerned with the past four weeks (28 days) only.

Please read each question carefully. Please answer all the questions. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

	ON HOW MANY OF THE PAST 28 DAYS ...	NO DAYS	1-5 DAYS	6-12 DAYS	13-15 DAYS	16-22 DAYS	23-27 DAYS	EVERY DAY
1	Have you been deliberately **trying** to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you **tried** to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you **tried** to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an **empty** stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a **totally fla**t stomach?	0	1	2	3	4	5	6
7	Has thinking about **food, eating or calories** made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about **shape or weight** made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11	Have you felt fat?	0	1	2	3	4	5	6
12	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

PAGE 1/3 PLEASE GO TO THE NEXT PAGE



Eating Disorder examination questionnaire (EDE-Q 6.0)

Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to th past four weeks (28 days).

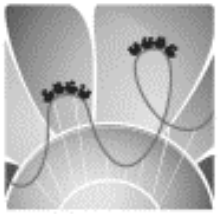
Over the past four weeks (28 days)….

13	Over the past 28 days, how many **times** have you eaten what other people would regards as an **unusually large amount of food** (given the circumstances)?	
14	… On how many of these times did you have a sense of having lost control over your eating (at the time you were eating)?	
15	Over the past 28 days, on how many **DAYS** have such episodes of overeating occurred (i.e. you have eaten an unusually large amount of food **and** have had a sense of loss of control at the time)?	
16	Over the past 28 days, how many **times** have you made yourself sick (vomit) as a means of controlling your shape or weight?	
17	Over the past 28 days, how many **times** have you taken laxatives as a means of controlling your shape or weight?	
18	Over the past 28 days, how many **times** have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	

Questions 19 to 21: Please circle the appropriate number. <u>Please note that for these questions the term "binge eating" means</u> eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

		NO DAYS	1-5 DAYS	6-12 DAYS	13-15 DAYS	16-22 DAYS	23-27 DAYS	EVERY DAY
19	Over the past 28 days, on how many days have you eaten in secret (ie, furtively)? … Do not count episodes of binge eating.	0	1	2	3	4	5	6
		None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
20	On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? … Do not count episodes of binge eating.	0	1	2	3	4	5	6
			Not at all	Slightly	Moderately		Markedly	
21	Over the past 28 days, how concerned have you been about other people seeing you eat? … Do not count episodes of binge eating.	0	1	2	3	4	5	6

PAGE 2/3 PLEASE GO TO THE NEXT PAGE



Eating Disorder examination questionnaire (EDE-Q 6.0)

Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

	ON HOW MANY OVER THE PAST 28 DAYS ...	NOT AT ALL MARKEDLY		SLIGHTLY			MODERATELY	
22	Has your **weight** influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23	Has your **shape** influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24	How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25	How dissatisfied have you been with your **weight**?	0	1	2	3	4	5	6
26	How dissatisfied have you been with your **shape**?	0	1	2	3	4	5	6
27	How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28	How uncomfortable have you felt about **others** seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate.): .....

What is your height? (Please give your best estimate.): .....

If female: Over the past three to four months have you missed any menstrual periods?: YES ○ NO ○

If so, how many?: ○

Have you been taking the "pill"?: YES ○ NO ○

PAGE 3/3

THANK YOU

degree not quite severe enough to justify a rating of 6. A rating of 3 should be used for degrees of severity midway between 0 and 6. *If it is difficult to decide between two ratings, the lower rating (i.e., the less symptomatic) should be chosen.* [The exception is the first item "Pattern of eating" in which higher scores are (with the exception of nocturnal eating) less symptomatic.] This general rating scheme is summarised in Table 1.

SCORING

The EDE, and its self-report version, the EDE-Q, generate two types of data. First, they provide frequency data on key behavioural features of eating disorders in terms of number of episodes of the behaviour and in some instances number of days on which the behaviour has occurred. Second, they provide subscale scores reflecting the severity of aspects of the psychopathology of eating disorders. The subscales are Restraint, Eating Concern, Shape Concern and Weight Concern. To obtain a particular subscale score, the ratings for the relevant items (listed below) are added together and the sum divided by the total number of items forming the subscale. If ratings are only available on some items, a score may nevertheless be obtained by dividing the resulting total by the number of rated items so long as more than half the items have been rated. To obtain an overall or 'global' score, the four subscales scores are summed and the resulting total divided by the number of subscales (i.e. four). Subscale scores are reported as means and standard deviations.

Subscale Items (the numbers are the item number on the EDE-Q):
Restraint
1 Restraint over eating
2 Avoidance of eating
3 Food avoidance
4 Dietary Rules
5 Empty stomach

Eating Concern
7 Preoccupation with food, eating or calories
9 Fear of losing control over eating
19 Eating in secret
21 Social eating
20 Guilt about eating

Shape Concern
6 Flat stomach
8 Preoccupation with shape or weight
23 Importance of shape
10 Fear of weight gain
26 Dissatisfaction with shape
27 Discomfort seeing body
28 Avoidance of exposure
11 Feelings of fatness

Weight Concern
22 Importance of weight
24 Reaction to prescribed weighing
8 Preoccupation with shape or weight
25 Dissatisfaction with weight
12 Desire to lose weight

COMMUNITY NORMS

The data below are from a community-based sample of 243 young women assessed using the EDE and EDE-Q (see Fairburn and Beglin, 1994).

Measure	Mean	SD	N
EDE interview			
Global EDE (4 subscales)	0.932	0.805	243
Restraint subscale	0.942	1.093	243
Eating Concern subscale	0.266	0.593	243
Shape Concern subscale	1.339	1.093	243
Weight Concern subscale	1.181	0.929	243
EDE Q			
Global EDE (4 subscales)	1.404	1.130	241
Restraint subscale	1.251	1.323	241
Eating Concern subscale	0.624	0.859	241
Shape Concern subscale	2.149	1.602	241
Weight Concern subscale	1.587	1.369	241

GENERATING DSM-5 EATING DISORDER DIAGNOSES

ANOREXIA NERVOSA

Criterion A – Restriction of energy requirements leading to a significantly low weight in the context of age, sex, developmental trajectory, and physical health.
Definition

- The participant's height and weight should be measured and age ascertained. Then the DSM-5 guidelines (p. 339-340) for deciding what constitutes a "significantly low weight" should be applied
- **And** "Maintained low weight" should have been rated 1or 2.

Criterion B – Intense fear of gaining weight or of becoming fat, or persistent behaviour that interferes with weight gain, even though significantly low weight.
Definition

The EDI-2

APPENDIX: Questionnaire Format

EDI

Name: _____ Date: _____

Age: _____

Present weight: _____ Height: _____ Sex: _____

Highest past weight: _____ (lbs)
(excluding pregnancy)

How long ago? _____ (months)

How long did you weigh this? _____ (months)

Lowest past adult weight: _____ (lbs)

How long ago? _____ (months)

How long did you weigh this? _____ (months)

What do you consider your ideal weight to be? _____ (lbs)

Age at which weight problem began (if any) _____

Father's occupation: _____

Instructions: This is a scale which measures a variety of attitudes, feelings and behaviours. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and place an (X) under the column which applies best for you. Please answer each question *very* carefully. Thank you.

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	1. I eat sweets and carbohydrates without feeling nervous.
( )	( )	( )	( )	( )	( )	2. I think that my stomach is too big.
( )	( )	( )	( )	( )	( )	3. I wish that I could return to the security of childhood.
( )	( )	( )	( )	( )	( )	4. I eat when I am upset.
( )	( )	( )	( )	( )	( )	5. I stuff myself with food.
( )	( )	( )	( )	( )	( )	6. I wish that I could be younger.
( )	( )	( )	( )	( )	( )	7. I think about dieting.

(Continued on next page)

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	8. I get frightened when my feelings are too strong.
( )	( )	( )	( )	( )	( )	9. I think that my thighs are too large.
( )	( )	( )	( )	( )	( )	10. I feel ineffective as a person.
( )	( )	( )	( )	( )	( )	11. I feel extremely guilty after overeating.
( )	( )	( )	( )	( )	( )	12. I think that my stomach is just the right size.
( )	( )	( )	( )	( )	( )	13. Only outstanding performance is good enough in my family.
( )	( )	( )	( )	( )	( )	14. The happiest time in life is when you are a child.
( )	( )	( )	( )	( )	( )	15. I am open about my feelings.
( )	( )	( )	( )	( )	( )	16. I am terrified of gaining weight.
( )	( )	( )	( )	( )	( )	17. I trust others.
( )	( )	( )	( )	( )	( )	18. I feel alone in the world.
( )	( )	( )	( )	( )	( )	19. I feel satisfied with the shape of my body.
( )	( )	( )	( )	( )	( )	20. I feel generally in control of things in my life.
( )	( )	( )	( )	( )	( )	21. I get confused about what emotion I am feeling.
( )	( )	( )	( )	( )	( )	22. I would rather be an adult than a child.
( )	( )	( )	( )	( )	( )	23. I can communicate with others easily.
( )	( )	( )	( )	( )	( )	24. I wish I were someone else.
( )	( )	( )	( )	( )	( )	25. I exaggerate or magnify the importance of weight.
( )	( )	( )	( )	( )	( )	26. I can clearly identify what emotion I am feeling.
( )	( )	( )	( )	( )	( )	27. I feel inadequate.
( )	( )	( )	( )	( )	( )	28. I have gone on eating binges where I have felt that I could not stop.
( )	( )	( )	( )	( )	( )	29. As a child, I tried very hard to avoid disappointing my parents and teachers.
( )	( )	( )	( )	( )	( )	30. I have close relationships.
( )	( )	( )	( )	( )	( )	31. I like the shape of my buttocks.
( )	( )	( )	( )	( )	( )	32. I am preoccupied with the desire to be thinner.
( )	( )	( )	( )	( )	( )	33. I don't know what's going on inside me.

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	34. I have trouble expressing my emotions to others.
( )	( )	( )	( )	( )	( )	35. The demands of adulthood are too great.
( )	( )	( )	( )	( )	( )	36. I hate being less than best at things.
( )	( )	( )	( )	( )	( )	37. I feel secure about myself.
( )	( )	( )	( )	( )	( )	38. I think about bingeing (overeating).
( )	( )	( )	( )	( )	( )	39. I feel happy that I am not a child anymore.
( )	( )	( )	( )	( )	( )	40. I get confused as to whether or not I am hungry.
( )	( )	( )	( )	( )	( )	41. I have a low opinion of myself.
( )	( )	( )	( )	( )	( )	42. I feel that I can achieve my standards.
( )	( )	( )	( )	( )	( )	43. My parents have expected excellence of me.
( )	( )	( )	( )	( )	( )	44. I worry that my feelings will get out of control.
( )	( )	( )	( )	( )	( )	45. I think that my hips are too big.
( )	( )	( )	( )	( )	( )	46. I eat moderately in front of others and stuff myself when they're gone.
( )	( )	( )	( )	( )	( )	47. I feel bloated after eating a normal meal.
( )	( )	( )	( )	( )	( )	48. I feel that people are happiest when they are children.
( )	( )	( )	( )	( )	( )	49. If I gain a pound, I worry that I will keep gaining.
( )	( )	( )	( )	( )	( )	50. I feel that I am a worthwhile person.
( )	( )	( )	( )	( )	( )	51. When I am upset, I don't know if I am sad, frightened or angry.
( )	( )	( )	( )	( )	( )	52. I feel that I must do things perfectly, or not do them at all.
( )	( )	( )	( )	( )	( )	53. I have the thought of trying to vomit in order to lose weight.
( )	( )	( )	( )	( )	( )	54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
( )	( )	( )	( )	( )	( )	55. I think that my thighs are just the right size.
( )	( )	( )	( )	( )	( )	56. I feel empty inside (emotionally).

(Continued on next page)

APPENDIX. (Continued)

Always	Usually	Often	Sometimes	Rarely	Never	
( )	( )	( )	( )	( )	( )	57. I can talk about personal thoughts or feelings.
( )	( )	( )	( )	( )	( )	58. The best years of your life are when you become an adult.
( )	( )	( )	( )	( )	( )	59. I think that my buttocks are too large.
( )	( )	( )	( )	( )	( )	60. I have feelings I can't quite identify.
( )	( )	( )	( )	( )	( )	61. I eat or drink in secrecy.
( )	( )	( )	( )	( )	( )	62. I think that my hips are just the right size.
( )	( )	( )	( )	( )	( )	63. I have extremely high goals.
( )	( )	( )	( )	( )	( )	64. When I am upset, I worry that I will start eating.

The MLQ

Appendix

The Meaning in Life Questionnaire

MLQ Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

Absolutely Untrue	Mostly Untrue	Somewhat Untrue	Can't Say True or False	Somewhat True	Mostly True	Absolutely True
1	2	3	4	5	6	7

1. ____ I understand my life's meaning.
2. ____ I am looking for something that makes my life feel meaningful.
3. ____ I am always looking to find my life's purpose.
4. ____ My life has a clear sense of purpose.
5. ____ I have a good sense of what makes my life meaningful.
6. ____ I have discovered a satisfying life purpose.
7. ____ I am always searching for something that makes my life feel significant.
8. ____ I am seeking a purpose or mission for my life.
9. ____ My life has no clear purpose.
10. ____ I am searching for meaning in my life.

MLQ syntax to create Presence and Search subscales:
Presence = 1, 4, 5, 6, & 9-reverse-coded
Search = 2, 3, 7, 8, & 10

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The MEMS

The Multidimensional Existential Meaning Scale

Please read the following items carefully. Using the response scale listed next to each item indicate the extent to which *you agree or disagree with that statement.*

(1) My life makes sense
(2) There is nothing special about my existence[a]
(3) I have aims in my life that are worth striving for
(4) Even a thousand years from now, it would still matter whether I existed or not
(5) I have certain life goals that compel me to keep going
(6) I have overarching goals that guide me in my life
(7) I know what my life is about
(8) I can make sense of the things that happen in my life
(9) I have goals in life that are very important to me
(10) I understand my life
(11) Whether my life ever existed matters even in the grand scheme of the universe
(12) My direction in life is motivating to me
(13) I am certain that my life is of importance
(14) Looking at my life as a whole, things seem clear to me
(15) Even considering how big the universe is, I can say that my life matters

[a]Reverse scored

Responses are rated on a 7-point scale (*very strongly disagree, strongly disagree, disagree, neither disagree nor agree, agree, strongly agree, very strongly agree*)

Scoring syntax:

Comprehension = 1, 7, 8, 10, 14

Purpose = 3, 5, 6, 9, 12

Mattering = 2, 4, 11, 13, 15

The BMPN

Administration

Items should be alternated from the three subscales. Participants might rate their lives in general, their experience during some recent period of time, or their experience within some particular context or setting. Item wording may be modified slightly to fit (items above pertain to participants' recent experiences).

Scoring

Satisfaction (odd items) and Satisfaction (even items) scores should be computed for each need (6 subscale scores in all). These may be examined separately, or, three aggregate need satisfaction scores can be computed by subtracting the dissatisfaction score for a particular need from the satisfaction score for that need.

Relatedness

1. I felt a sense of contact with people who care for me, and whom I care for.

2. I was lonely.

3. I felt close and connected with other people who are important to me.

4. I felt unappreciated by one or more important people.

5. I felt a strong sense of intimacy with the people I spent time with.

6. I had disagreements or conflicts with people I usually get along with.

Competence

7. I was successfully completing difficult tasks and projects.

8. I experienced some kind of failure, or was unable to do well at something.

9. I took on and mastered hard challenges.

10. I did something stupid, that made me feel

incompetent.

11. I did well even at the hard things.

12. I struggled doing something I should be good at.

Autonomy

13. I was free to do things my own way.

14. I had a lot of pressures I could do without.

15. My choices expressed my ‘‘true self.’’

16. There were people telling me what I had to do.

17. I was really doing what interests me.

18. I had to do things against my will.

The DASS-21

DASS21

Name: Date:

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree or a good part of time
3 Applied to me very much or most of the time

1 (s)	I found it hard to wind down	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
6 (s)	I tended to over-react to situations	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
11 (s)	I found myself getting agitated	0	1	2	3
12 (s)	I found it difficult to relax	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I wasn't worth much as a person	0	1	2	3
18 (s)	I felt that I was rather touchy	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3
21 (d)	I felt that life was meaningless	0	1	2	3

DASS-21 Scoring Instructions

The DASS-21 should not be used to replace a face to face clinical interview. If you are experiencing significant emotional difficulties you should contact your GP for a referral to a qualified professional.

Depression, Anxiety and Stress Scale - 21 Items (DASS-21)

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress.

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items.

The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The assumption on which the DASS-21 development was based (and which was confirmed by the research data) is that the differences between the depression, anxiety and the stress experienced by normal subjects and clinical populations are essentially differences of degree. The DASS-21 therefore has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the DSM and ICD.

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows:

NB Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Lovibond, S.H. & Lovibond, P.F. (1995). Manual for the Depression Anxiety & Stress Scales. (2nd Ed.)Sydney: Psychology Foundation.

The RSES

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Rosenberg Self-Esteem Scale (RSE)

Author: Morris Rosenberg

The purpose of the 10 item RSE scale is to measure self-esteem. Originally the measure was designed to measure the self-esteem of high school students. However, since its development, the scale has been used with a variety of groups including adults, with norms available for many of those groups.

Scoring: As the RSE is a Guttman scale, scoring can be a little complicated. Scoring involves a method of combined ratings. Low self-esteem responses are "disagree" or "strongly disagree" on items 1, 3, 4, 7, 10, and "strongly agree" or "agree" on items 2, 5, 6, 8, 9. Two or three out of three correct responses to items 3, 7, and 9 are scored as one item. One or two out of two correct responses for items 4 and 5 are considered as a single item; items 1,8, and 10 are scored as individual items; and combined correct responses (one or two out of two) to items 2 and 6 are considered to be a single item.

The scale can also be scored by totalling the individual 4 point items after reverse-scoring the negatively worded items.

Reliability: The RSE demonstrates a Guttman scale coefficient of reproducibility of .92, indicating excellent internal consistency. Test-retest reliability over a period of 2 weeks reveals correlations of .85 and .88, indicating excellent stability.

Validity: Demonstrates concurrent, predictive and construct validity using known groups. The RSE correlates significantly with other measures of self-esteem, including the Coopersmith Self-Esteem Inventory. In addition, the RSE correlates in the predicted direction with measures of depression and anxiety.

Reference:

Rosenberg, M. (1979). *Conceiving the Self.* New York: Basic Books.

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RSE

Please record the appropriate answer for each item, depending on whether you Strongly agree, agree, disagree, or strongly disagree with it.

1 = Strongly agree
2 = Agree
3 = Disagree
4 = Strongly disagree

_____ 1. On the whole, I am satisfied with myself.

_____ 2. At times I think I am no good at all.

_____ 3. I feel that I have a number of good qualities.

_____ 4. I am able to do things as well as most other people.

_____ 5. I feel 1do not have much to be proud of.

_____ 6. I certainly feel useless at times.

_____ 7. I feel that I'm a person of worth.

_____ 8. I wish I could have more respect for myself.

_____ 9. All in all, I am inclined to think that I am a failure.

_____ 10. I take a positive attitude toward myself.

The CPQ

1. Have you pushed yourself really hard to meet your goals?

2. Have you tended to focus on what you have achieved, rather than on what you have not achieved? (R)

3. Have you been told that your standards are too high?

4. Have you felt a failure as a person because you have not succeeded in meeting your goals?

5. Have you been afraid that you might not reach your standards?

6. Have you raised your standards because you thought they were too easy?

7. Have you judged yourself on the basis of your ability to achieve high standards?

8. Have you done just enough to get by? (R)

9. Have you repeatedly checked how well you are doing at meeting your standards (for example, by comparing your performance with that of others)?

10. Do you think that other people would have thought of you as a ‘‘perfectionist’’?

11. Have you kept trying to meet your standards, even if this has meant that you have missed out on things?

12. Have you avoided any tests of your performance (at meeting your goals) in case you failed?

The DERS

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1----------2----------3----------4----------5

almost never	sometimes	about half the time	most of the time	almost always
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)

_____ 1) I am clear about my feelings.
_____ 2) I pay attention to how I feel.
_____ 3) I experience my emotions as overwhelming and out of control.
_____ 4) I have no idea how I am feeling.
_____ 5) I have difficulty making sense out of my feelings.
_____ 6) I am attentive to my feelings.
_____ 7) I know exactly how I am feeling.
_____ 8) I care about what I am feeling.
_____ 9) I am confused about how I feel.
_____ 10) When I'm upset, I acknowledge my emotions.
_____ 11) When I'm upset, I become angry with myself for feeling that way.
_____ 12) When I'm upset, I become embarrassed for feeling that way.
_____ 13) When I'm upset, I have difficulty getting work done.
_____ 14) When I'm upset, I become out of control.
_____ 15) When I'm upset, I believe that I will remain that way for a long time.
_____ 16) When I'm upset, I believe that I will end up feeling very depressed.
_____ 17) When I'm upset, I believe that my feelings are valid and important.
_____ 18) When I'm upset, I have difficulty focusing on other things.
_____ 19) When I'm upset, I feel out of control.
_____ 20) When I'm upset, I can still get things done.
_____ 21) When I'm upset, I feel ashamed at myself for feeling that way.
_____ 22) When I'm upset, I know that I can find a way to eventually feel better.
_____ 23) When I'm upset, I feel like I am weak.
_____ 24) When I'm upset, I feel like I can remain in control of my behaviors.
_____ 25) When I'm upset, I feel guilty for feeling that way.
_____ 26) When I'm upset, I have difficulty concentrating.
_____ 27) When I'm upset, I have difficulty controlling my behaviors.
_____ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
_____ 29) When I'm upset, I become irritated at myself for feeling that way.
_____ 30) When I'm upset, I start to feel very bad about myself.
_____ 31) When I'm upset, I believe that wallowing in it is all I can do.
_____ 32) When I'm upset, I lose control over my behavior.
_____ 33) When I'm upset, I have difficulty thinking about anything else.
_____ 34) When I'm upset I take time to figure out what I'm really feeling.
_____ 35) When I'm upset, it takes me a long time to feel better.
_____ 36) When I'm upset, my emotions feel overwhelming.

Reverse-scored items (place a subtraction sign in front of them) are numbered 1, 2, 6, 7, 8, 10, 17, 20, 22, 24 and 34.

Calculate total score by adding everything up. Higher scores suggest greater problems with emotion regulation.

SUBSCALE SCORING:** The measure yields a total score (SUM) as well as scores on six sub-scales:

1. Nonacceptance of emotional responses (NONACCEPT): 11, 12, 21, 23, 25, 29
2. Difficulty engaging in Goal-directed behavior (GOALS): 13, 18, 20R, 26, 33
3. Impulse control difficulties (IMPULSE): 3, 14, 19, 24R, 27, 32
4. Lack of emotional awareness (AWARENESS): 2R, 6R, 8R, 10R, 17R, 34R
5. Limited access to emotion regulation strategies (STRATEGIES): 15, 16, 22R, 28, 30, 31, 35, 36
6. Lack of emotional clarity (CLARITY): 1R, 4, 5, 7R, 9

Total score: sum of all subscales

**"R" indicates reverse scored item

REFERENCE:

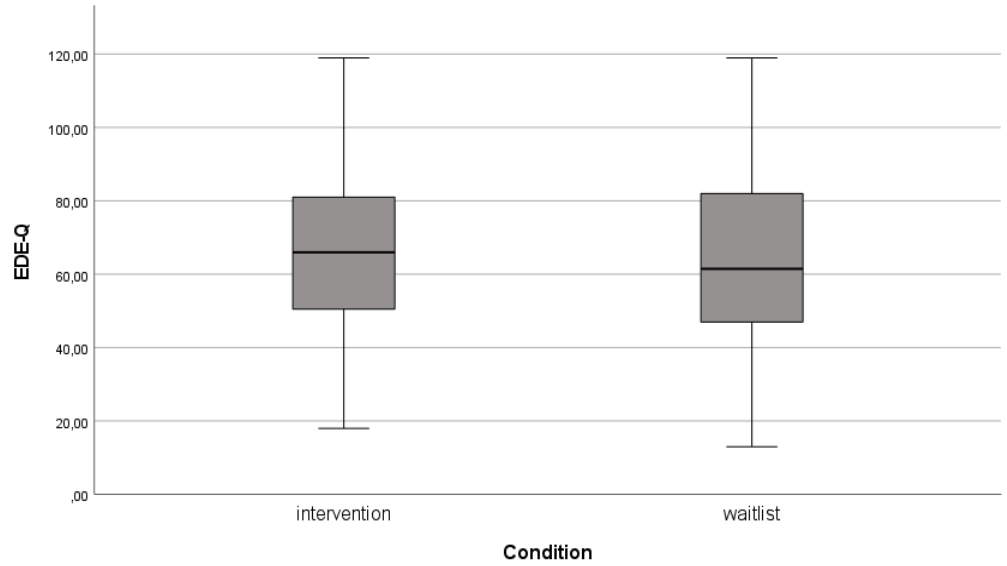
Gratz, K. L. & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment, 26,* 41-54.

Appendix B

Boxplots for all Participants on the MLQ-P, EDE-Q and RSES

Figure 1

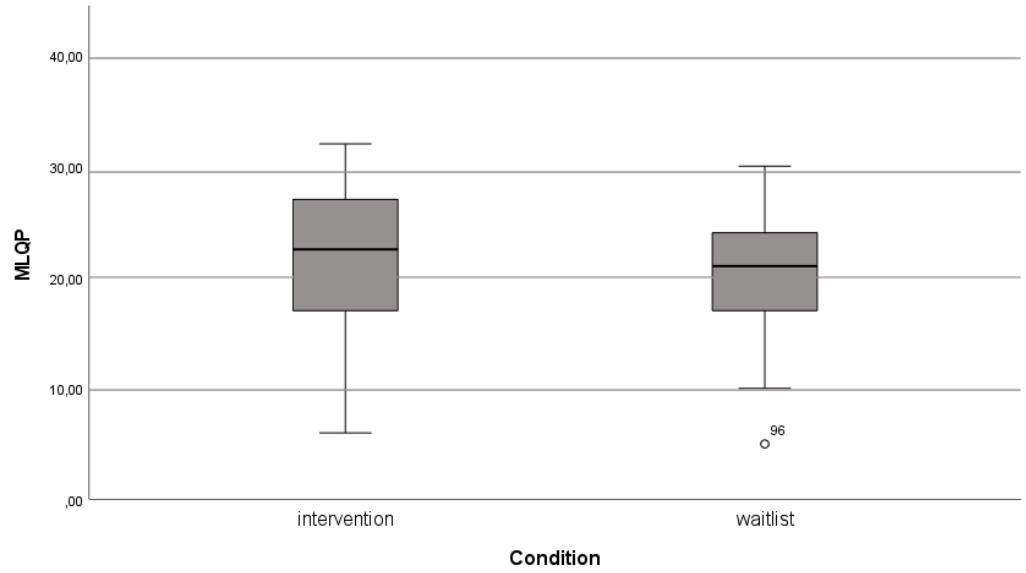
Boxplot on the Scores for all Participants in the Baseline Measure on the MLQ-P



Note: MLQ-P = Meaning in Life Questionnaire. Conditions; Intervention = MCI-ED, control condition = Waitlist.

Figure 2

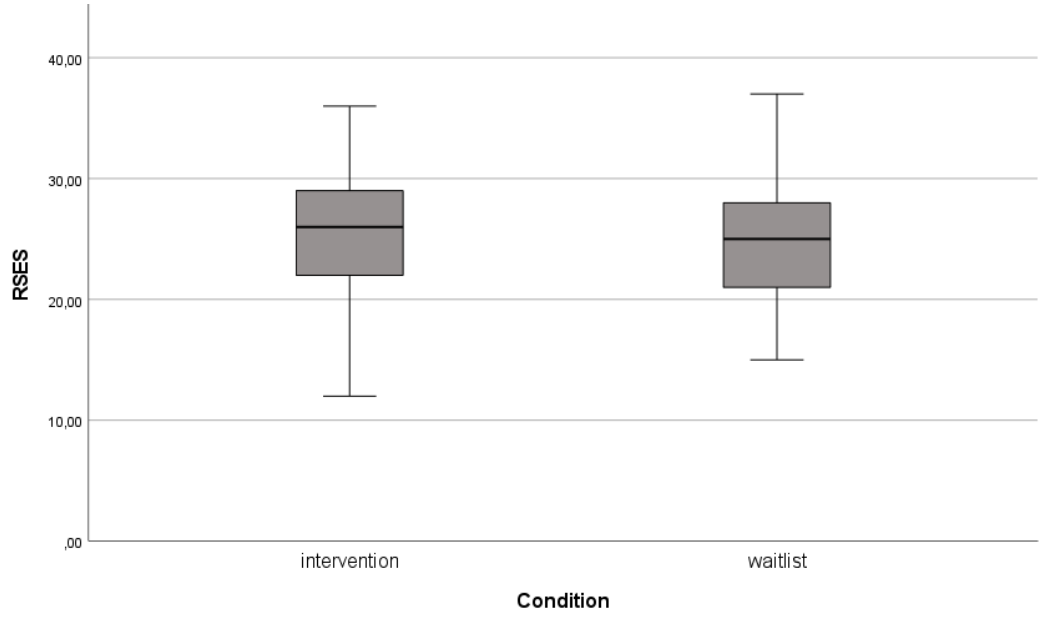
Boxplot on the Scores for all Participants in the Baseline Measure on the EDE-Q



Note: EDE-Q = Eating Disorder Examination Questionnaire. Conditions; Intervention = MCI-ED, control condition = Waitlist.

Figure 3

Boxplot on the Scores for all Participants in the Baseline Measure on the RSES



Note: RSES = Rosenberg Self-Esteem Scale. Conditions; Intervention = MCI-ED, control condition = Waitlist.

Appendix C

Dropouts in Comparison to Participants

Table 1

Independent Sample T-test for Differences Between Dropouts and Participants

	Dropout		Participant					
	M	*SD*	*M*	*SD*	*df*	*t*	*p*	Cohen's *d*
MLQ-P	19.67	6.86	20.93	9.02	108	-.497	.617	6.06
EDE-Q	2.80	1.05	2.98	1.05	108	-.403	.438	1.05
RSES	26.83	6.55	25.10	5.02	108	.812	.863	5.10

Note: MLQ-P = Meaning in Life Questionnaire, EDE-Q = Eating Disorder Examination Questionnaire, RSES = Rosenberg Self-Esteem Scale. Cohen's *d* uses the pooled standard deviation.

Appendix D

ANCOVA Assumption Checks

Table 1

Shapiro-Wilk Test on Normality for MLQP_T2 ANCOVA Assumptions Check

		W	*df*	*p*
MLQP_T2	Intervention	,966	46	,193
	Waitlist	,959	58	,049

Note: MLQP_T2 = Meaning in Life Questionnaire post-assessment. Conditions; Intervention = MCI-ED, control condition = Waitlist.

Table 2

Homogeneity of Regression Slopes for MLQ-P ANCOVA Assumptions Check

Model	Sum of Squares	*df*	*Mean Square*	*F*	*p*	η_p^2
Condition * MLQP_T1	2211,081	2	1105,540	64,398	< ,000	,560

*Note:*MLQP_T1 = Meaning in Life Questionnaire baseline assessment. Condition = Intervention. MLQP_T2 = Meaning in Life Questionnaire post-assessment. Dependent Variable = MLQP_T2. R Squared = ,560 (Adjusted R Squared = ,552). Homogeneity of regression and other interactions were significant. *p < .05

Table 3

Homogeneity of Regression Slopes for EDE-Q ANCOVA Assumptions Check

Model	Sum of Squares	*df*	*Mean Square*	*F*	*p*	η_p^2
Condition * EDEQ_T1	85,577	2	42,789	59,530	< ,000	,541

Note: EDE_T1 = Eating Disorder Examination Questionnaire bassline assessment. Condition = Intervention. EDEQ_T2 = Eating Disorder Examination Questionnaire post-assessment. EDEQ_T2 = dependent variable. R Squared = ,541 (Adjusted R Squared = ,532). Homogeneity of regression and other interactions were significant. *p < .05

Table 4

Homogeneity of Regression Slopes for RSES ANCOVA Assumptions Check

Model	Sum of Squares	*df*	*Mean Square*	*F*	*p*	η_p^2
Condition * RSES_T1	1780,224	2	890,112	86,668	< ,000	,632

Note: RSES_T1 = Rosenberg Self-Esteem Scale baseline assessment. Condition = Intervention. RSES_T2 = Rosenberg Self-Esteem Scale post-assessment. RSES_T2 = dependent variable. R Squared = ,632 (Adjusted R Squared = ,625). Homogeneity of regression and other interactions were significant. *p < .05