



The Effect of a Meaning-Centered Intervention on
Perceived Meaning in Life, Eating Disorder Symptoms
and Clinical Perfectionism in Young Women

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Abstract

Van Doornik et al. (2022; under review) showed that a meaning-centered intervention increased perceived meaning in life (MiL) and decreased eating disorder symptoms (EDS) in female first-year university students at high risk for developing an eating disorder (ED) during the Covid-19 lockdown. The main aim of the present research was to examine whether perceived MiL and EDS can be in- and decreased, respectively, in the same population outside of lockdown. Since many behaviours shown by people who have EDs are also examples of perfectionistic behaviours (Fairburn et al., 2003a), and MiL was shown to be negatively correlated with certain facets of clinical perfectionism (CP; Chang, 2006), it was additionally investigated whether CP was decreased by the intervention. Female first-year students ($N = 85$) at the Rijksuniversiteit Groningen were assigned either to the intervention or to a waiting-list, and filled out questionnaires assessing their levels of MiL, EDS and CP at pre- and post-assessment. After completing the intervention, the participants showed increased levels of MiL and decreased levels of EDS. There was no significant effect on CP. The main implication of the findings is that young women who perceive their lives as meaningful might have better chances at overcoming their EDs, but not necessarily their perfectionistic urges.

Keywords: Analysis of Covariance, Young Women, Meaning in Life, Eating Disorder Symptoms, Clinical Perfectionism, Meaning-Centered Intervention

The Effect of a Meaning-Centered Intervention on Perceived Meaning in Life, Eating Disorder Symptoms and Clinical Perfectionism in Young Women

‘You give my life meaning’. ‘This is what matters to me the most’. ‘Only this is my purpose in life’. Various expressions of meaning in life (MiL) are often loosely used in everyday language. But what exactly is the ‘meaning’ of MiL?

One of the most important psychiatrists who has written about and shaped the concept of MiL is Victor Frankl, a man who survived four concentration camps during the holocaust (Gerwood, 1994). According to him, people can endure even the most miserable times and still feel like their life has meaning, and even learn something and grow with the challenge, because they have the freedom to choose with which attitude they want to confront their distressing surroundings (Frankl, 1946/1986). Particularly the experience of love and focusing on the future, for example by setting yourself a goal or task to accomplish, is meaningful and helpful in overcoming adverse circumstances. Although these principles are valid for all people, the experience of meaning is still unique and different for every person (Frankl, 1946/1986).

Apart from Frankl’s view on MiL, the construct has been defined in many different ways (George & Park, 2017), amongst others as feeling like everything is clear and coherent (Heintzelman & King, 2014), feeling accomplished and actualized (Reker & Wong, 1988) and doing things you enjoy and rate highly (Scheier et al., 2006). George and Park (2017) criticise that the amount of differing and vague conceptualizations of the term MiL makes it difficult to examine it in research. They introduce a tripartite view of MiL, according to which it can be defined as consisting of the three parts: Comprehension, which describes to what degree one experiences their life in a clear, coherent way, purpose, which expresses to what degree one goes through life determinedly and knowing what one aspires, and mattering, which describes to what degree one’s existence is of consequence and impactful (George and Park,

2017). These three distinct dimensions constitute not necessarily all the layers of MiL, but the most important ones that have so far been the focus of studies. They are supposed to largely summarize the content of past definitions, but at the same time deliver a more detailed view on MiL (George & Park, 2017).

During the last years, researchers have developed more interest in the role of MiL in psychotherapy (Breitbart et al., 2018). Part of this discussion has been the acknowledgement of meaning as a transdiagnostic variable, which means that an impaired sense of personal meaning can be detected in various psychological disorders, for example in anorexia, bulimia, OCD and depression (Brown et al., 2008). Hence, researchers have raised the question in what way the extent to which one experiences one's life as meaningful can affect the development of various psychological disorders, amongst others eating disorders (EDs; van Doornik et al., 2021).

At least one young woman out of ten is diagnosed at one point in her life with an eating disorder (EDs), for example anorexia nervosa and bulimia nervosa (Stice et al., 2009). This can lead to detrimental health consequences, including distress, risk of becoming obese, substance abuse and relapse, depression, anxiety disorders, and morbidity (Stice et al., 2013). Furthermore, EDs are more strongly associated with attempting suicide, being functionally impaired, and being in in- or outpatient treatment than other psychological disorders (Newman et al., 1996).

The core symptom of EDs such as anorexia nervosa is attaching too much importance to controlling one's weight, shape and eating habits, and orienting one's goals toward this value by trying to control one's diet and losing weight, while avoiding overeating and gaining weight (Fairburn et al., 2003a). Most of the other symptoms develop from this main symptom. These are controlling one's weight in an extreme way by for example restricting food intake in a rigid and extreme way, over-exercising and vomiting, avoiding looking at one's body,

and examining one's body for faults, and constantly having to think about one's weight, shape and eating behaviour (Fairburn et al., 2003a).

The aim to lose weight may be increasingly reinforced during a vicious cycle, in which cues that draw attention to the goal of becoming thinner (for example body parts perceived as too fat) catch the eye of the affected person more easily and are then processed thoroughly, which in turn redirects the person's focus to the aim of losing weight (Fairburn et al., 2003a). Consequently, young women affected by EDs might focus extensively on activities connected to the pathological weight and shape concerns, and lose sight of those inducing a sense of MiL (Schnell, 2011). Research findings showing a negative correlation between EDs and MiL (Marco et al., 2019) support this hypothesis.

Many people with high weight and shape concerns also show perfectionistic traits (Egan et al., 2011), which may additionally contribute to the development and maintenance of EDs (Fairburn et al., 2003a). Through the years, different views developed about how perfectionism is best conceptualized. According to Shafran et al., (2002), it is a one-factorial construct, and is defined as only rating oneself sufficiently worthy if one manages to meet ambitious aims one sets for oneself in a specific field. In other words, perfectionistic people expect themselves to give a performance that is better than is usually achievable (Shafran et al., 2002), and value their level of performance disproportionately highly in comparison to how they value themselves (Hamacheck, 1978). Furthermore, they pay attention selectively on ways in which they fail, rather than on ways in which they succeed (Hollender, 1965). This behaviour is considered to be of pathological nature (i.e., clinical perfectionism (CP)) if the individual performs it even though the resulting struggle may turn out to be harmful, and if their self-worth is defined only by their achievements (Shafran et al., 2002).

According to Fairburn et al. (2003a), there is an overlap between the symptoms of EDs and the symptoms of CP since many behaviours shown in the attempt to losing weight

are examples of perfectionistic behaviours: Perfectionistic people are characterized by being afraid of failing, which presents itself in EDs as being afraid of gaining weight, and by being overly focused on how 'well' they are performing, which manifests as making sure that they are performing 'well' by checking how many calories they eat. Furthermore, perfectionistic people appraise their performance not in an objective way, but with an expectation of failure, and are very self-critical as a result, which in turn makes them work even harder toward their goal of - in this case - controlling their weight, shape and eating habits. Therefore, Fairburn et al. (2003a) conclude that if one could learn to let go of their perfectionistic urges, their worries about weight and shape might be easier to tackle.

In conclusion, EDs and CP are interwoven disorders with detrimental health consequences. As was mentioned before, psychologists have recognized that MiL is a transdiagnostic concept that affects various disorders (Brown et al., 2008), and are examining more and more to what extent the concept of MiL can be used in psychotherapy (Breitbart et al., 2018). Thus, it would be of interest to find out whether increasing young women's sense of MiL can positively affect their EDS and perfectionistic urges.

A study that focussed on alcohol consumption found that when people's attention is directed to life goals unrelated to alcohol and they start to commit to these, they are less easily distracted and seduced by stimuli that remind them of the drug (Ostafin & Feyel, 2019). It is hypothesized that this principle might apply to disordered eating as well: young women might be able to learn to focus less on maladaptive appearance-related goals by emphasizing adaptive goals unrelated to body image (van Doornik et al., 2021). A meaning-centered intervention developed by van Doornik et al. (2022; under review) has indeed demonstrated a decrease in EDS. The goal of the intervention was to enhance the perceived sense of MiL and to help the participants to lessen their weight and shape concerns (van Doornik et al., 2022; under review).

Although this intervention was originally focused on improving weight and shape concerns, it might help with perfectionism as well, since researchers have found a connection between MiL and two different dimensions of perfectionism. These were explained by a multidimensional approach of perfectionism (e.g. Egan et al., 2016), according to which perfectionism consists of both perfectionistic concerns (PC; also called evaluative concerns perfectionism) and perfectionistic strivings (PS; also called personal standards perfectionism; Stoeber & Otto, 2006). PC can be further divided into facets such as worrying about making mistakes, being uncertain about one's actions, feeling like one does not perform in accordance to one's expectations, and being afraid of being judged and rejected by others in case of failure. PS comprises facets such as high personal standards and self-oriented perfectionism. According to the multidimensional approach, PC is supposed to be associated to negative attributes, PS on the other hand is supposed to be connected to positive attributes. Thus, the multidimensional approach claims that perfectionism can be positive as well as negative (Stoeber & Otto, 2006).

As a critical response to the multidimensional approach of perfectionism, Shafran et al. (2002) constructed the concept of CP, which was described above. To measure this unidimensional construct, the Clinical Perfectionism Questionnaire was developed (CPQ; Fairburn et al., 2003b). Various researchers found evidence that the CPQ actually does not only measure one construct, but instead has a two-factorial structure and captures the two dimensions PS and PC (e.g. Dickie et al., 2012; Stoeber & Damian, 2014). However, the researchers who developed the unidimensional construct CP (Shafran et al., 2002), stressed that according to their view, perfectionism cannot be positive, and thus not only PC, but also PS are viewed as dysfunctional and leading to various psychological consequences (Dickie et al., 2012).

Not many researchers have investigated the relationship between MiL and perfectionism (Park & Jeong, 2016). But since people with EDs are excessively focused on maintaining and losing their weight that they forget about the things that make their life meaningful (Schnell, 2011), and CP shares many symptoms with EDs (as discussed above), it seems not unlikely that clinically perfectionistic people perceive low levels of MiL. Indeed, various researchers have reported negative correlations between MiL and PC in particular, such as Chang (2006), who found socially-prescribed perfectionism (SPP, which is one of the facets underlying CP) to be negatively associated with purpose in life. Hence, it would be of interest to know whether the meaning-centered intervention by van Doornik et al. (2022; under review) reduces CP too.

The present study aimed to replicate the results of the meaning-centered intervention previously conducted by van Doornik et al. (2022; under review) which showed that the intervention increased the participants' sense of MiL and decreased their EDS. However, since the original study was conducted during a lockdown period due to COVID-19, it is unclear whether the improved scores were purely results of the intervention, or whether these effects were possibly distorted because the well-being of the socially isolated students improved through the regular contact to their trainer. Since this was (and still is) a new intervention that was tested for the first time, a college sample instead of a clinical sample was targeted. The sample consisted of only female first-year Bachelor students, because the probability for young women to develop an ED is substantially higher than for young men (Nagl et al., 2016).

As mentioned before, the intervention aimed to increase the young women's sense of life meaning and to reduce their EDS. During six weekly individual one-hour online sessions, they worked with four sources of meaning ('personal life story', 'dealing with life's limitations', 'creating your own life', and 'experiences'; van Doornik et al., 2022; under

review). Apart from that, the theory behind MiL and its connection to weight and shape concerns was discussed, and (homework) assignments were written down in the participants' own workbook (van Doornik et al., 2020b).

The intervention was inspired by the 'Individual Meaning-Centered Psychotherapy for Patients with Advanced Cancer' (IMCP; Breitbart et al., 2018), and by 'Kanker en persoonlijke zingeving' (van der Spek et al., 2018). The English version helped patients with terminal cancer to deal with their fears about dying and existential distress by finding out what made their life meaningful, the Dutch translation was designed for patients in curative treatment (van Doornik et al., 2020a). Both the meaning-centered intervention and the IMCP are based on the principles laid out by Victor Frankl: Amongst others, that by choosing the right attitude, people can endure even extremely negative circumstances, that especially the experience of love and the focus on the future can be meaningful, and that meaningfulness is unique for everyone (Frankl 1946/1986).

In conclusion, this study tested the following hypotheses: 1) A meaning-centered intervention increases the perceived sense of MiL. 2) A meaning-centered intervention decreases EDS such as restrained eating, and concerns about eating behaviours, shape and weight. 3) A meaning-centered intervention decreases CP.

Method

Participants and Procedure

The participants ($N = 100$) consisted of female first-year Psychology students at the Rijksuniversiteit Groningen who were recruited via the first-year Sona-practicum pool and compensated with sona-credits. The mean age was 19.3 years ($SD = 1.5$), the mean BMI was 23.5 ($SD = 3.9$). The necessary sample size was calculated a priori with a power analysis using G*Power (Faul et al., 2009; Version 3.1.9.7). Based on $\alpha (= .05)$, power ($= .80$), and

effect size $f(= .25)$ for an analysis of covariance (ANCOVA), a sample size of $N = 128$ was calculated. Taking into account a dropout rate of 15%, this number was raised to a final necessary sample size of 140. Because the recruitment process took too long to adhere to this number, the dataset used for the present thesis consisted of 100 individuals. A second a priori power analysis revealed that with $\alpha (= .05)$, power $(= .80)$, and the available sample size ($N = 85$) only large effects can be detected ($f = .40; n \geq 52$), not medium ($f = .25; n \geq 128$) and small ($f = .10; n \geq 787$) effects. After exclusion of dropouts, ($n = 15, 15\%$), the final sample size consisted of 85 female students. Reasons for dropping out were of personal nature, such as sickness, and a lack of time for participation.

The study protocol was approved by the Ethics Committee of the Faculty of Behavioural and Social Sciences at the University of Groningen (EC-BSS). At the initial screening, the Weight Concern Scale (WCS; Killen et al., 1994) was used to capture the extent of the students' ($N = 468$) weight and shape concerns. Participants were invited to take part in the study if they expressed above average concern regarding their shape and weight and could thus be regarded to be at high risk for developing an ED. To meet this requirement, they either had to score ≥ 47 , or answer the question 'Do you ever feel fat?' with 'Often' or 'Always'. Furthermore, they had to be fluent in at least one of the languages English, Dutch or German. An exclusion criterium was being currently diagnosed with and/or being in treatment for an ED. Out of the 180 individuals who were invited, 147 agreed to participate and were informed about the purpose and goals of the research and gave their informed consent.

In a process of about 30 minutes, they filled out online baseline measures, amongst others demographics and the three pre-test questionnaires that are relevant for the present thesis, which were supposed to capture baseline sense of MiL, EDS (such as restrained eating and concerns about eating behaviour, shape and weight) and CP. All questionnaires were

hosted on Qualtrics, and were completed in Dutch (50.6%), English (42.4%), or German (7.1%).

As mentioned above, out of the 147 participants who completed the pre-test measurements, 100 were included in the analysis of the present research. After random assignment to either the experimental condition or the control condition, they took part in the meaning-centered intervention ($n = 52$) or were put on a waiting-list ($n = 48$). For the randomization, the generator random.org was used, including ten participants in one block (RANDOM.ORG, 2023). To ensure protection of privacy, personal data was anonymised and sensible information, for example notes that were taken during the sessions, were only stored on the y-drive of the university's server. As soon as the last session was completed, the 85 individuals from both conditions (intervention $n = 38$, waiting list $n = 47$) who had not dropped out filled out the post-test questionnaires, which were the same as the ones used at baseline assessment. Four weeks after the intervention had ended, this process was repeated for follow-up measurement, to assess whether the hypothesized change regarding the three outcome variables MiL, EDS and CP had stayed constant.

The variables EDS and MiL were assessed by two additional questionnaires that were not included in the present research's statistical analysis: Eating Disorder Inventory 2 (Garner, 1991) and Meaning in Life Questionnaire (Steger et al., 2006). Furthermore, other variables that were examined but are not relevant for the present thesis, are: Need for autonomy, competence and relatedness (Balanced Measure of Basic Psychological Needs; Sheldon & Hilpert, 2012), depression, anxiety and stress (Depression Anxiety Stress Scales-21; Lovibond & Lovibond, 1995), self-esteem (Rosenberg Self-Esteem Scale; Rosenberg, 1965), mood intolerance (Difficulties in Emotion Regulation Scale; Gratz & Roemer, 2004), and satisfaction with normative life domains (Brief Multidimensional Students' Life Satisfaction Scale-College version; Zullig et al., 2009).

Design

This experimental research is a randomized controlled trial including one between-subject factor condition (experimental, waiting-list control), and one within-subject factor time (pre-, post-, and follow-up measurements). The follow-up assessments were not included in the statistical analysis of the present thesis, because this would exceed its scope.

Consequently, the present study has a pre-test – post-test design.

Materials

Screening

At the initial screening, the variable weight and shape concerns was assessed with the Weight Concern Scale (WCS; Killen et al., 1994). It consists of five items which are representative of cultural preoccupation with weight and body shape, measuring worry about weight and body shape (item 1), fear of gaining weight (item 2), diet history (item 3), importance of weight (item 4), and perceived fatness (item 5). Three items are scored on a 7-point Likert-scale, one on a 5-point Likert-scale, and one on a 4-point Likert-scale. A sample item is ‘Do you ever feel fat’ (item 5). In line with Jacobi et al. (2004), all the items were adjusted so that their maximum score equals 20 (range of total score: 0 – 100). A higher score reflects higher concerns. For our study, participants who either scored ≥ 47 or answered the question ‘Do you ever feel fat?’ with ‘Often’ or ‘Always’ were qualified as having high weight and shape concerns (Jacobi et al., 2004), and were thus invited to participate.

Intervention

The meaning-centered intervention (van Doornik et al., 2022; under review) was previously called ‘Meaning-Centered Psychotherapy for Eating Disorders (MCP-ED)’. It entailed six weekly hour-long sessions with a trainer that took place online in an individual setting via platforms such as google meets. It aimed to increase the young women’s sense of life meaning and decrease their EDS by working with four sources of meaning (‘personal life

story', 'dealing with life's limitations', 'creating your own life', and 'experiences'). Apart from that, the theory behind MiL and its connection to weight and shape concerns was discussed, and (homework) assignments were written down in the participants' own workbook (van Doornik et al., 2020b). The sessions were held in English, Dutch and German. For a more detailed description the study of van Doornik et al. (2022; under review) can be consulted.

Primary Outcome Measures

Meaning in Life. The variable MiL was measured at pre-, post- and follow-up assessment with the 15-item Multidimensional Existential Meaning Scale (MEMS) developed by George and Park (2017), which features a 7-point Likert-scale on which the items range from '*very strongly disagree*' to '*very strongly agree*'. There are three 5-item subscales capturing the three subconstructs of meaning: purpose, mattering, and comprehension. For each subscale a separate score is computed by taking the average of its items (range 1 – 7; George & Park, 2017). Since the MEMS was interpreted as a comprehensive measure of MiL, a total score was computed by summarizing the three subscales and taking their average (range 1 – 7). A higher score reflects higher purpose, mattering, or comprehension. Sample items are 'I have aims in my life that are worth striving for' (purpose, item 3), 'Whether my life ever existed matters even in the grand scheme of the universe' (mattering, item 11), and 'My life makes sense' (comprehension, item 1). Item 2 is reverse scored and was recoded. Cronbach's alphas ranged across the measurement points from .81 to .86 (total score), from .91 to .93 (purpose subscore), and from .83 to .87 (comprehension subscore), implying reliable internal consistency (Taber, 2018). For the mattering subscore however, Cronbach's alphas varied from .29 to .49, implying unsatisfactory reliability (Taber, 2018).

Depending on the participants' choice of language, the MEMS was also available in German (back-and-forth multistep translation validated by two native German speaking

professionals at the Rijksuniversiteit Groningen) and Dutch (van Doornik et al., 2022; under review).

Secondary Outcome Measures

Eating Disorder Symptoms. To assess EDS at pre-, post-, and follow-up assessment, the 28-item Eating Disorder Examination-Questionnaire (EDE-Q) by Fairburn and Beglin (2008) was applied. It consists of four different subscales which indicate the severity of the psychopathology of EDs by measuring restraint (five items), eating concern (five items), shape concern (eight items), and weight concern (five items; Fairburn & Beglin, 2008). These 22 items are scored on a 7-point Likert-scale (ranging from ‘*no days*’ to ‘*every day*’ and from ‘*not at all markedly*’ to ‘*moderately*’). Sample items are ‘Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?’ (restraint, item 5), ‘Have you had a definite fear of losing control over eating?’ (eating concern, item 9), ‘Have you felt fat’ (shape concern, item 11), and ‘How dissatisfied have you been with your weight?’ (weight concern, item 25). Furthermore, there are six items showing how frequently key behaviors of EDs are displayed (Fairburn & Beglin, 2008), for which a number has to be filled in. However, these were not submitted to the participants and thus not included in the analysis. A subscale score is computed by summing the corresponding item scores up and calculating the average (range 0 – 6). A global score is obtained by adding the four subscale scores together and taking their average (range 0 – 6; Fairburn & Beglin, 2008). A higher score reflects greater eating disorder psychopathology. Cronbach’s alphas for global scores ranged from .91 (pre-test) to .94 (post-test), indicating excellent internal consistency (Taber, 2018).

Depending on the participants’ choice of language, the EDE-Q was also available in German (Hilbert & Tuschen-Caffier, 2016) and Dutch (Nauta et al., 2000).

Clinical Perfectionism. CP was assessed at pre-, post- and follow-up measurement by the Clinical Perfectionism Questionnaire (CPQ) developed by Fairburn et al. (2003b). The individual items measure “the establishing of goals and striving to meet these, and how self-evaluation is affected when they are (not) reached” (Fairburn et al., 2003b). The participants indicated to what extent the 12 items posed accurate descriptions of them over the past four weeks with a 4-point Likert-scale ranging from 1 (*‘not at all’*) to 4 (*‘all of the time’*). Items 2 and 8 are reverse scored and were recoded. According to several researchers (e.g. Dickie et al., 2012; Stoeber and Damian, 2014), there is evidence that the CPQ is not a one-dimensional measure, but has a two-factorial structure: The first factor supposedly captures predominantly PS, while the second one is supposed to be mainly an indicator of PC (Stoeber & Damian, 2014). Sample items for PS and PC are ‘Have you pushed yourself really hard to meet your goals?’ (item 1) and ‘Have you felt a failure as a person because you have not succeeded in meeting your goals?’ (item 4), respectively. A total score is computed by summarizing the items (range 12 – 48). A higher score reflects higher CP. Factor scores for PS and PC each are obtained by summarizing the respective items and taking their average (range: 1 – 4; Stoeber & Damian, 2014). For the total score, Cronbach’s alphas ranged across the measurement points from .77 to .75, indicating acceptable reliability (Taber, 2018). For the factor scales PS and PC, α s ranged from .77 to .72 and from .57 to .54, respectively, implying acceptable internal consistency for PS (Taber, 2018), but below acceptable internal reliability for PC (George & Mallery, 2003).

Depending on the participants’ choice of language, the CPQ was also available in German (Roth et al., 2012) and Dutch (The questionnaire was back-and-forth translated twice by professionals and validated by native speakers).

Data Analysis

All analyses were conducted with IBM SPSS Statistics (version 26.0). To test whether the meaning-centered intervention increased MiL, and decreased EDS and CP, the post-assessment MEMS total, EDE-Q total and CPQ total scores were subjected to an ANCOVA, with between-subjects factor condition (meaning-centered intervention vs waiting-list). For every ANCOVA, the pre-test scores on the respective variable were used as the covariate.

To find out whether the general effect of the intervention on MiL would be reflected in its three dimensions purpose, mattering and commitment, an ANCOVA was executed for each of them in a post-hoc analysis. Thus, a total amount of six ANCOVA's was conducted.

In an additional post-hoc analysis it was examined to what extent the increase of the perceived sense of MiL and its three dimensions purpose, mattering and commitment could be responsible for changed scores on the variables EDS and CP, and furthermore, whether a potential change in EDS and CP were connected to each other. To find this out, the Pearson correlations between the change from pre- to post-assessment between these variables were determined.

An exploratory analysis was conducted with the aim of finding out whether the two dimensions PS and PC can be detected in the CPQ, and if yes, whether these two are differently related to EDS and differently influenced by the potential (negative) effect of the intervention on perfectionism. To that end, the reliability of each subscale (Cronbach's alpha) and the Pearson correlations between the subscales was assessed.

Results

Missing Data and Outliers

Out of 100 participants, 15 dropouts were identified and deleted from the dataset (final $N = 85$). By inspecting the boxplot diagrams of the outcome variables, for each of the

following dependent variables one potential outlier was found: CP, PS, PC, MiL, and its comprehension dimension. However, an analysis of Cook's distance did not reveal any extreme values (all between 0 and 1). To make sure that no outliers would strongly influence the results, a stricter cut-off score was then applied for Cook's distance ($4 / N = 0.047$), and the corresponding outliers were deleted. However, this did not have a significant impact on the results, which is why in this research paper the analysis that was conducted without exclusion of possible outliers is described.

Test of Assumptions

In the following, the results of assumption testing for the ANCOVA's are presented: The error scores were normally distributed for all outcome variables except for the purpose dimension of MiL, which showed a significant Shapiro-Wilk statistic ($p < 0.001$). Furthermore, for this variable the points deviated a little more from the line on the Q-Q-Plot than for the other outcome variables. Nothing was done about this however, since the skewness statistic (-.821) indicated that the purpose dimension was a little skewed to the left, but still within an acceptable range between -3 and 3 (Brown, 2006). Levene's tests were insignificant for all outcome variables, indicating that homogeneity of variances was met without exception. Scatter plots showed a linear relationship between each dependent variable and the covariate, indicating that the assumption of linearity was met for all outcome variables. Lastly, a test of between-subject effects showed that the assumption of homogeneity of regression slopes was violated for the variable EDS, with an interaction effect presented between the independent variable (condition) and the covariate (pre-test; $p = .003$). After inspecting the residual plot and plot of estimated marginal means this violation was deemed to be a minor one, thus it was decided to proceed with the main analyses and to interpret the results carefully.

Statistical Analyses

Analyses of Correlation

First, the descriptive statistics and correlations between the primary and secondary outcome measures were computed. The descriptive statistics of each variable are presented in Table 1., the correlations between the variables in Table 2.

Table 1

Means and Standard Deviations of Primary and Secondary Outcome Measures at Pre-Assessment (T1) and Post-Assessment (T2) per Condition.

	Meaning Condition		Waitlist Condition	
	T1	T2	T1	T2
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
MEMS Total	4.2 (0.8)	4.6 (0.7)	3.8 (0.6)	4.0 (0.7)
Purpose	5.3 (1.0)	5.6 (0.8)	4.7 (1.0)	4.7 (1.1)
Mattering	3.2 (0.9)	3.5 (0.8)	3.1 (0.7)	3.1 (0.9)
Comprehension	4.1 (1.2)	4.7 (1.0)	3.7 (0.8)	4.1 (1.0)
EDE-Q	2.8 (0.9)	2.0 (1.0)	2.8 (1.1)	2.7 (1.24)
CPQ Total	31.1 (5.8)	29.2 (5.8)	31.7 (5.6)	30.5 (4.9)
PS	2.5 (0.6)	2.5 (0.5)	2.5 (0.6)	2.5 (0.5)
PC	2.8 (0.5)	2.5 (0.5)	2.7 (0.5)	2.6 (0.4)

Note. MEMS = Multidimensional Existential Meaning Scale, Total = Averaged Sum Score (range 1-7, higher scores indicate higher perceived overall meaning), subscales Purpose, Mattering, Comprehension (range 1-7, higher scores indicate higher perceived meaning); EDE-Q = Eating Disorder Examination Questionnaire (range 0-6, higher scores indicate greater eating disorder psychopathology); CPQ = Clinical Perfectionism Questionnaire, Total = Sum Score (range 12-48, higher scores indicate higher CP), subscales PS and PC (range 1-4, higher scores indicate higher PS and PC).

Table 2*Pearson Correlations between Primary and Secondary Outcome Measures.*

Variable	1	2	3	4	5	6	7	8
1 MEMS Total		.81**	.61**	.80**	-.15	-.09	.02	-.16
2 Purpose			.26*	.46**	-.02	.25*	.30**	.16
3 Mattering				.26*	-.10	-.29**	-.23*	-.26*
4 Comprehension					-.21	-.23*	-.10	-.30**
5 EDE-Q						.21	.08	.28**
6 CPQ Total							.92**	.83**
7 PS								.58**
8 PC								

* $p < .05$, ** $p < .01$ *Analyses of Covariance*

Primary Outcome Measures. The ANCOVAs including the comprehensive post-test MEMS measure showed a significant, moderate effect of condition ($F(1, 82) = 9.94, p < .001, \eta_p^2 = .11$). Thus, participants who had taken part in the intervention reported significantly higher levels of MiL directly after the last session than their counterparts who had been placed on the waiting list.

Secondary Outcome Measures. For the ANCOVA including the post-test global EDE-Q score, the Levene's test was significant ($= .027$), implying that the assumption of equal variances might have been violated. However, since for this variable Bartlett's test statistics ($B = 0.067, p = .796$) was insignificant as well, and both boxplots and residual scatterplots showed a lot of overlap between the groups' variances, it was again decided to interpret the results carefully. The output showed a significant and large effect of the intervention ($F(1,82) = 14.36, p < .001, \eta_p^2 = .15$). This means that at the end of the

intervention, participants who had taken part in it had significantly lower EDS than those who had not taken part.

For the post-measurement including the CPQ measure, the ANCOVA showed an insignificant, small effect ($F(1, 82) = 1.035, p = .312, \eta_p^2 = .01$). Thus, directly after the intervention had ended the CP levels of participants in the experimental condition were not significantly lower than the levels of those in the control condition.

Post-hoc Analyses

Dimensions Purpose, Mattering and Commitment. To assess whether the general effect of the intervention on overall MiL would be reflected its three dimensions, an ANCOVA was conducted for each of them. For post-assessment MEMS mattering ($F(1, 82) = 4.99, p = .028, \eta_p^2 = .06$) and comprehension ($F(1, 82) = 4.38, p = .039, \eta_p^2 = .05$), the intervention was found to have a significant moderate and small effect, respectively. For the post-measurement MEMS purpose, the Levene's test that was conducted simultaneously with the ANCOVA was significant ($p = .010$), hinting at a possible violation of the assumption of equal variances between the groups. To test whether the variances between the groups are really heterogenous, Bartlett's test calculator (Statology, 2019) was used to calculate Bartlett's test statistic B ($= 0.074, p = 0.786$). Bartlett's test was insignificant, and a visual inspection of boxplot and residual scatterplots showed that there was not much difference between the group's variances, indicating that the group variances are still equally distributed and Levene's test only became significant because of small deviations. Therefore, it was decided to interpret the results of the ANCOVA while keeping the potential violation in mind. The intervention had a significant moderate effect on MEMS purpose ($F(1, 82) = 9.47, p = .003, \eta_p^2 = .10$).

Pearson Correlations between Difference Scores. Pearson correlations between the difference scores of the outcome variables are presented in Table 3.

Table 3.*Pearson Correlations between Difference Scores of Primary and Secondary Outcome**Measures.*

Variable	1	2	3	4	5	6
1 Change in MEMS Total		.65**	.62**	.86**	-.45**	-.35*
2 Change in Purpose			.06	.43**	-.08	.21
3 Change in Mattering				.36*	-.34*	-.16
4 Change in Comprehension					-.49**	-.35*
5 Change in EDE-Q						.45**
6 Change in CPQ Total						

Note. All change variables were calculated by subtracting the pre-measurement score from the post-measurement score.

* $p < .05$, ** $p < .01$

One important finding displayed in the table is that the decrease in EDS was associated with the increase of perceived overall MiL and the dimensions comprehension and mattering. It was not significantly correlated with the increase of the dimension purpose, though. Furthermore, contrary to the absence of a decrease in overall CP in response to the intervention, a negative association between change in CP and change in perceived MiL could be found for overall MiL and the dimension comprehension. Lastly, change in CP was positively correlated to change in EDS.

Exploratory Analysis

Perfectionistic Strivings and Perfectionistic Concerns. For the PS subscale, Cronbach's alphas ranged across the measurement points from .77 to .72, and for the PC subscale from .57 to .54, implying acceptable internal consistency for PS (Taber, 2018), but unacceptable internal reliability for PC (George & Mallery, 2003). Pearson correlations between the two subscales were .58** ($p < .001$) and .57** ($p < .001$) at pre- and post-measurement, respectively, meaning that the two scales are connected with each other, but the

correlation does not seem strong enough to consider them as two related, but separate dimensions.

Discussion

The main aim of this study was to replicate the results of the meaning-centered intervention previously conducted by van Doornik et al. (2022; under review), which led to an increased perceived sense of MiL and decreased EDS in the participants during the Covid-19 lockdown. Furthermore, the intervention's effect on CP was examined.

Before discussing the outcomes, it should be kept in mind that because the sample size ($N = 85$) was smaller than originally planned, there was limited power to reliably detect smaller effects. The main findings can be summarized as follows: the meaning-centered intervention increased the perceived sense of MiL and decreased EDS, thus the findings of van Doornik et al. (2022; under review) were replicated without social isolation due to restrictions like a lockdown. However, the intervention did not decrease CP.

The intervention significantly increased the overall sense of MiL, with a moderate effect size, supporting hypothesis 1) A meaning-centered intervention increases the perceived sense of MiL. This general effect on MiL was reflected in its three dimensions, with moderate effects for purpose and mattering, and a small effect for comprehension. It should be remembered that the mattering subscale had low internal reliability, thus this result should be interpreted carefully.

During the intervention, the participants worked with four sources of meaning. Regarding the question which parts of the intervention led to an increase of which dimension of MiL, it can be assumed that the first source of meaning, 'personal life story', which consists of thinking about meaningful experiences and relationships of the past (van Doornik et al., 2022; under review), was responsible for increasing the dimension comprehension,

which is about experiencing life in a clear, coherent way (George & Park, 2017). The source ‘experiences’, which let the students focus on day-to-day activities that make their life meaningful (van Doornik et al., 2022; under review), might have improved their levels on the dimension mattering, which encompasses the extent to which someone perceives their life as being of consequence and impactful (George & Park, 2017). The dimension purpose, which comprises the degree to which someone goes through life determinedly and knowing what one aspires (George & Park, 2017), might have been improved by the sources of meaning ‘creating your own life’ and ‘dealing with life’s limitations’, during which the participants set meaningful goals for the future and think about how to purposefully shape their life and mindset when being confronted with setbacks (van Doornik et al., 2022; under review). According to Frankl (1946/1986), focusing on the future in particular can help to overcome adverse circumstances.

The intervention also decreased EDS significantly, with a large effect size. Thus hypothesis 2) A meaning-centered intervention decreases EDS such as restrained eating, and concerns about eating behaviours, shape and weight, was supported by the findings as well. This outcome should be interpreted carefully though, since there was a threat against the assumption of equal variances. The change of EDS from pre- to post-measurement was negatively correlated with the change of overall MiL, and the dimensions mattering and comprehension. Based on the above explained connection between the sources of meaning and the three dimensions, it is possible that the sources ‘personal life story’ and ‘experiences’ were responsible for this change. This pattern is consistent with Marco et al. (2019), who found MiL to be negatively correlated with EDs, and with van Doornik et al. (2021), who hypothesized that by focusing on meaningful goals unrelated to body image, young women might learn to let go of maladaptive appearance-related goals. The decline of eating disorder

psychopathology might not have happened via the dimension purpose, since the corresponding change variables are not correlated.

Another mechanism that might have facilitated the effect of the intervention on EDS is self-compassion: the source of meaning ‘Dealing with Life’s Limitations’ was about allowing yourself the room for mistakes and taking things step by step, helping the participants learn to be less harsh with themselves. While self-compassion in itself was not measured in the present research, a study by Kelly et al. (2014) found that not being compassionate with yourself may lead to eating disorder psychopathology in female university students, which makes the authors assume that interventions that increase self-compassion, like the meaning-centered intervention, may prove successful in preventing and treating EDs. Thus it is possible that an increase of self-compassion as an effect of the intervention reduces the young women’s EDS. This should be tested in future research.

CP was not significantly decreased by the intervention. Thus, hypothesis 3) A meaning-centered intervention decreases CP, was not supported by the findings. Nevertheless, there was a significant negative relationship between change in CP and both overall MiL and its dimension comprehension, indicating that the increase of MiL was associated with a decrease in CP. This finding is in line with Chang (2006), who found a negative correlation between purpose in life and socially-prescribed perfectionism (SPP, one of the facets underlying CP). Consequently, it is possible that the power in the sample was too small to detect a negative effect of MiL on EDS. Future research should examine this potential effect with a larger sample and consequently, larger power.

If the intervention actually successfully decreased CP, the source of meaning ‘personal life story’ in particular might have been responsible for that (since the dimension comprehension was the only change variable associated with change in MiL). Apart from that, self-compassion may again be an important mechanism, since in an acceptance and

commitment therapy (ACT) for CP higher self-compassion levels were found to predict a decrease in concern over mistakes, which is one of the facets of PC (Ong et al., 2019a). This further indicates the relevance of including self-compassion as a variable in future research on the intervention's effects.

If the intervention did in fact fail to improve CP, one reason for this might be that CP is too complex to be treated by an intervention that does not specifically target this disorder and the participants' distinct maladaptive thoughts. A better suited treatment might be ACT, in which maladaptive processes are the main focus, and skills that help to work against them (for example skills helping not to avoid situations or activities in which the patients perceive themselves to be failing) are taught (Ong et al., 2019b). An alternative approach would be cognitive-behavioral therapy for clinical perfectionism (CBT-P), in which behavioural experiments and cognitive restructuring techniques are used to modify maladaptive beliefs that are connected to high standards imposed by the patients themselves, until they resemble reality again (Ong et al., 2019b).

Moreover, change in CP was not only negatively related to change in MiL, but also positively to change in EDS. Since there was no direct effect of the meaning-centered intervention on CP in itself, this seems to imply that any insignificant decreases in CP might be due to the improvement of EDS which can be attributed to the increase of MiL, and not directly due to the increase of perceived MiL. This would be in line with Fairburn et al. (2003a), who pointed out that many behaviours typically seen in people with EDs are of perfectionistic nature. As was mentioned before, the intervention might decrease EDS by increasing self-compassion. If clinical perfectionistic people are less unhappy with their body, they do not have to engage in as many perfectionistic behaviours to keep or attain their perfect body shape or weight, making it likely that their levels of perfectionism will decrease.

Looking at the correlations between the change variables, for the most part they indicate that people with elevated EDS and CP characteristics lack a sense of purpose in life. Thus, the view of Brown et al. (2008) that MiL is a transdiagnostic variable which is impaired in multiple disorders, seems to be supported by these outcomes. Taking this into account, it is surprising that the Pearson correlations between the variables show no significant associations between MiL and eating disorder psychopathology. It is not clear why this happened. Future research should examine in a new sample whether there really is no correlation, or whether there was an issue with the sample or the analysis.

To find out whether the two dimensions PS and PC can be detected in the CPQ, the Pearson correlation between them and Cronbach's alpha as a measure of internal reliability were calculated. As presented in the results section, the Pearson correlation between PS and PC varies between .58** and .57** from pre- to post-measurement, and is thus low enough to consider them as two related, but separate dimensions. Cronbach's alphas varied across the measurement points from .77 to .72 for PS, and from .57 to .54 for PC, implying acceptable internal consistency for PS (Taber, 2018), but unacceptable reliability for PC (George & Mallery, 2003). Thus, the PC subscale with its current composition does not seem to be reliable enough to test the effect of the intervention on the two dimensions separately, and it remains unclear whether the PC subscale can be seen as a coherent scale at all. This finding does not concur with the opinion of Dickie et al. (2012) and Stoeber and Damian (2014), who claimed that both PS and PC are captured by the two-factorial structure of the CPQ. Based on the research of Stoeber and Damian (2014), the PC subscale of the present study was made up of the following items: 2, 4, 5, 7, 8, and 12. Items 7 and 8 were shared with subscale PS. If the item composition for PC was changed, for example if based on Dickie et al. (2012) only items 2, 4, 5, and 12 were used, its internal consistency and relation to PS might change for the better. This should be tested in future research. If PC's internal reliability does not improve

with a different item composition, another possible reason for this might be that this sample of female first-year Bachelor students is simply not a good fit for PC. In that case, the two-factorial structure of the CPQ should be tested on other samples that differ in characteristics such as age or gender. If this option does not turn out to be a solution, then it is possible that the CPQ has a one-factorial structure after all, which cannot capture two subscales and should therefore be interpreted as a single scale.

It is surprising that based on the present findings, PC does not seem to be a coherent subscale of the CPQ, while PS seems to be a better fit to its hypothetical two-factorial structure, when the exact opposite was implied by the discourse between representatives of the multidimensional approach of perfectionism and the construct CP: Stoeber and Otto (2006) stated that PS is connected to positive characteristics. The Pearson correlations showed that PS with its current item composition is in fact predominantly related to positive characteristics, and PC mostly to negative ones. Consequently, the question arises why PS seems to be a more coherent subscale than PC, although Shafran et al. (2002) insisted that perfectionism cannot be positive, and that both PC and PS are dysfunctional (Dickie et al., 2012).

Strengths of this study were the inclusion of a randomized controlled trial and validated and standardized measures, ensuring the collection of strong evidence. However, there were also some limitations that should be mentioned: First, because the final sample size ($N = 85$) was lower than the necessary sample size that was calculated a priori ($N = 140$), and thus power was limited, it is possible that not all effects were found, and that smaller effect sizes could have been detected with a larger sample and, consequently, larger power. Second, the internal reliability of the mattering subscale of the MEMS was inadequate, which makes it impossible to interpret its corresponding ANCOVA with certainty. Another limitation is the fact that the meaning-centered intervention was not compared to already existing treatment

options, thus it is unclear to what extent it brings about additional improvement than treatment as usual already does. Furthermore, with the present follow-up period of four weeks it is not possible to predict whether the effects will remain stable in the long-term. Finally, since the current sample only consisted of female university students, it is unclear to what extent this study's findings apply to people of different ages and genders and who come from less educated and/or affluent backgrounds.

Although this study delivered important findings about the effects of the meaning-centered intervention, there are still some unanswered questions that should be addressed during future research: First, the study should be repeated with a larger sample size and thus larger power, to find out whether the intervention really has no effect on CP, and whether smaller effects can be detected. In such a follow-up study, self-compassion should be included as an additional variable to find out whether it is increased by the intervention, and whether it in turn decreases EDS and CP. The correlation between MiL and EDS should be re-examined, too. Additionally, it should be further researched whether PC can form a subscale on its own, and if yes, out of which items it would consist. To that end, sample characteristics such as age or gender could be varied. Moreover, as mentioned in the limitations section, it should be examined to what extent the meaning-centered intervention improves low perceived MiL and high eating disorder psychopathology on top of already established treatments when it is added to treatment as usual. Lastly, future studies should implement a follow-up measurement period that stretches over at least six months, so that potential long-term effects can be investigated.

In summary, the present research is a replication study by van Doornik et al. (2022; under review), which came to the same conclusion as its predecessor: a meaning-centered intervention increased young women's subjective sense of MiL, and decreased their EDS. In addition, the study showed that the participants' MiL and EDS improved not only when

socially isolated, but outside of lockdown as well. Moreover, the intervention was unsuccessful in lessening CP, and the CPQ (Fairburn et al., 2003b) can possibly not be simply divided into the two dimensions PS and PC, since the PC subscale is not stable enough with its current composition. All in all, this study's main conclusion is that MiL seems to be a rich source for improvement of several psychological disorders, which is why more thorough research into its effects could be worthwhile.

References

- Breitbart, W., Pessin, H., Rosenfeld, B., Applebaum, A. J., Lichtenthal, W. G., Li, Y., Saracino, R. M., Marziliano, A. M., Masterson, M., Tobias, K., & Fenn, N. (2018). Individual meaning-centered psychotherapy for the treatment of psychological and existential distress: A randomized controlled trial in patients with advanced cancer. *Cancer, 124*, 3231–3239. <https://doi.org/10.1002/cncr.31539>
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.
- Brown, G. P., Roach, A., Irving, L., & Joseph, K. (2008). Personal meaning: A neglected transdiagnostic construct. *International Journal of Cognitive Therapy, 1*(3), 223–236. <https://doi.org/10.1521/ijct.2008.1.3.223>
- Chang, E. C. (2006). Perfectionism and dimensions of psychological well-being in a college student sample: A test of a stress-mediation model. *Journal of Social and Clinical Psychology, 25*(9), 1001–1022. <https://doi.org/10.1521/jscp.2006.25.9.1001>
- Dickie, L., Surgenor, L. J., Wilson, M., & McDowall, J. (2012). The structure and reliability of the Clinical Perfectionism Questionnaire. *Personality and Individual Differences, 52*, 865–869. <https://doi.org/10.1016/j.paid.2012.02.003>
- Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical Psychology Review, 31*, 203–212. <https://doi.org/10.1016/j.cpr.2010.04.009>
- Egan, S. J., Shafran, R., Lee, M., Fairburn, C. G., Cooper, Z., Doll, H. A., Palmer, R. L., & Watson, H. J. (2016). The reliability and validity of the clinical perfectionism questionnaire in eating disorder and community samples. *Behavioural and Cognitive Psychotherapy, 44*, 79–91. <https://doi.org/10.1017/S1352465814000629>

- Fairburn, C. G., Cooper, Z., & Shafran, R. (2003a). Cognitive behaviour therapy for eating disorders: A “transdiagnostic” theory and treatment. *Behavior Research and Therapy*, *41*, 509–528. [https://doi.org/10.1016/S0005-7967\(02\)00088-8](https://doi.org/10.1016/S0005-7967(02)00088-8)
- Fairburn, C. G., Cooper, Z., & Shafran, R. (2003b). Clinical Perfectionism Questionnaire (CPQ). [Database record]. APA PsycTests. <https://doi.org/10.1037/t59141-000>
- Fairburn, C. G., & Beglin, S. (2008). Eating disorder examination questionnaire (EDE-Q 6.0). In C. G. Fairburn (Ed.), *Cognitive behavior therapy and eating disorders*. Guilford Press.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1.9.7: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Fankl, V. E. (1986). *The doctor and the soul*. (3rd ed.) (L. Wiston & C. Wiston, Transl.) Vintage. (Original work published in 1946)
- Garner, D. M. (1991). *Eating Disorder Inventory-2. Professional Manual*. Psychological Assessment Resources.
- George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference, 11.0 update (4th ed.)*. Allyn & Bacon.
- George, L. S. & Park, C. L. (2017). The Multidimensional Existential Meaning Scale: A tripartite approach to measuring meaning in life. *The Journal of Positive Psychology*, *12*(6), 613–627. <https://doi.org/10.1080/17439760.2016.1209546>
- Gerwood, J. B. (1994). Meaning and love in Viktor Frankl’s writing: Reports from the holocaust. *Psychological Reports*, *75*, 1075–1081. <http://dx.doi.org.proxy-ub.rug.nl/10.2466/pr0.1994.75.3.1075>
- 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(1), 41–54. <https://doi.org/10.1023/b:joba.0000007455.08539.94>
- Heintzelman, S. J. & King, L. A. (2014). (The feeling of) meaning-as-information. *Personality and Social Psychology Review*, 18(2), 153–167. <https://doi.org/10.1177/1088868313518487>
- Hilbert, A., & Tuschen-Caffier, B. (2016). *Eating Disorder Examination-Questionnaire*. Deutschsprachige Übersetzung (2 ed.). dgvt-Verlag.
- Hollender, M. H. (1965). Perfectionism. *Comprehensive Psychiatry*, 6, 94–103.
- Jacobi, C., Abascal, L., & Taylor, C. B. (2004). Screening for eating disorders and high-risk behavior: Caution. *International Journal of Eating Disorders*, 36(3), 280–295. <https://doi.org/10.1002/eat.20048>
- Kelly, A. C., Vimalakanthan, K., & Carter, J. C. (2014). Understanding the roles of self-esteem, self-compassion, and fear of self-compassion in eating disorder pathology: An examination of female students and eating disorder patients. *Eating Behaviors*, 15, 388–391. <http://dx.doi.org/10.1016/j.eatbeh.2014.04.008>
- Killen, J. D., Taylor, C. B., Hayward, C., Wilson, D. M., Haydel, K. F., Hammer, L. D., Simmonds, B., Robinson, T. N., Litt, I., Varady, A., & Kraemer, H. (1994). Pursuit of thinness and onset of eating disorder symptoms in a community sample of adolescent girls: A three-year prospective analysis. *International Journal of Eating Disorders*, 16(3), 227–238. [http://dx.doi.org.proxy-ub.rug.nl/10.1002/1098-108X\(199411\)16:3<227::AID-EAT2260160303>3.0.CO;2-L](http://dx.doi.org.proxy-ub.rug.nl/10.1002/1098-108X(199411)16:3<227::AID-EAT2260160303>3.0.CO;2-L)
- Lovibond, S. H. & Lovibond, P. F. (1995). Depression anxiety stress scales. *PsycTESTS Dataset*. <https://doi.org/10.1037/t01004-000>

- Marco, J. H., Cañabate M., & Pérez, S. (2019). Meaning in life is associated with the psychopathology of eating disorders: Differences depending on the diagnosis. *Eating Disorders*, 27(6), 550–564. <https://doi.org/10.1080/10640266.2018.1560852>
- Nagl, M., Jacobi, C., Paul, M., Beesdo-Baum, K., Höfler, M., Lieb, R., & Wittchen, H.-U. (2016). Prevalence, incidence, and natural course of anorexia and bulimia nervosa among adolescents and young adults. *European Child and Adolescent Psychiatry*, 25, 903–918. <https://doi.org/10.1007/s00787-015-0808-z>
- Nauta, H., Hospers, H., Kok, G., & Jansen, A. (2000). A comparison between a cognitive and a behavioral treatment for obese binge eaters and obese non-binge eaters. *Behavior Therapy*, 31(3), 441–461. [https://doi.org/10.1016/s0005-7894\(00\)80024-6](https://doi.org/10.1016/s0005-7894(00)80024-6)
- Newman, D. L., Moffitt, T. E., Caspi, A., Magdol, L., Silva, P. A., & Stanton, W. R. (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *Journal of Consulting and Clinical Psychology*, 64, 552–562. <https://doi.org/10.1037/0022-006X.64.3.552>
- Ong, C. W., Barney, J. L., Barrett, T. S., Lee, E. B., Levin, M. E., & Twohig, M. P. (2019a). The role of psychological inflexibility and self-compassion in acceptance and commitment therapy for clinical perfectionism. *Journal of Contextual Behavioral Science*, 13, 7–16. <https://doi.org/10.1016/j.jcbs.2019.06.005>
- Ong, C. W., Lee, E. B., Krafft, J., Terry, C. L., Barrett, T. S., Levin, M. E., & Twohig, M. P. (2019b). A randomized controlled trial of acceptance and commitment therapy for clinical perfectionism. *Journal of Obsessive-Compulsive and Related Disorders*, 22. <https://doi.org/10.1016/j.jocrd.2019.100444>

- Ostafin, B. D. & Feyel, N. (2019). The effects of a brief meaning in life intervention on the incentive salience of alcohol. *Addictive Behaviors, 90*, 107–111.
<https://doi.org/10.1016/j.addbeh.2018.10.035>
- Park, H.-J., Jeong, D. Y. (2016). Moderation effects of perfectionism and meaning in life on depression. *Personality and Individual Differences, 98*, 25–29.
<http://dx.doi.org/10.1016/j.paid.2016.03.073>
- RANDOM.ORG (2023). True random number service. [RANDOM.ORG - True Random Number Service](#)
- Reker, G. T., & Wong, P. T. P. (1988). Aging as an individual process: Toward a theory of personal meaning. In J. E. Birren & V. L. Bengston (Eds.), *Emergent theories of aging* (pp. 214–246). Springer.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books.
- Roth, I., Cludius, B., Egan, S. J., & Limburg, K. (2021). Evaluation of the factor structure and psychometric properties of the German version of the Clinical Perfectionism Questionnaire: The CPQ-D. *Clinical Psychology in Europe, 3*(2). <https://doi.org/10.32872/cpe.3623>
- Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., Schulz, R., & Zdzienicka, B. (2006). The life engagement test: Assessing purpose in life. *Journal of Behavioral Medicine, 29*, 291–298. <https://doi.org/10.1007/s10865-005-9044-1>
- Schnell, T. (2011). Individual differences in meaning-making: Considering the variety of sources of meaning, their density and diversity. *Personality and Individual Differences, 51*(5), 667–673. <https://doi.org/10.1016/j.paid.2011.06.006>
- Sheldon, K. M., Hilpert, J. C. (2012). The balanced measure of psychological needs (BMPN) scale: An alternative domain general measure of need satisfaction. *Motivation and Emotion, 36*(4), 439–451. <https://doi.org/10.1007/s11031-012-9279-4>

- Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: a cognitive-behavioural analysis. *Behaviour Research and Therapy*, *40*, 773–791.
[https://doi.org/10.1016/S0005-7967\(01\)00059-6](https://doi.org/10.1016/S0005-7967(01)00059-6)
- Statology (2019, January 13). Bartlett's Test Calculator. [Bartlett's Test Calculator - Statology](#)
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, *53*(1), 80–93. <https://doi.org/10.1037/0022-0167.53.1.80>
- Stice, E., Marti, C. N., & Rohde, P. (2009). Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. *Journal of Abnormal Psychology*, *122*(2), 445–457.
<https://doi.org/10.1037/a0030679>
- Stoeber, J. & Damian, L. E. (2014). Perfectionism Questionnaire: Further evidence for two factors capturing perfectionistic strivings and concerns. *Personality and Individual Differences*, *61–62*, 38–42. <http://dx.doi.org/10.1016/j.paid.2014.01.003>
- Stoeber, J. & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*(4), 295–319.
http://dx.doi.org.proxy-ub.rug.nl/10.1207/s15327957pspr1004_2
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48* (6), 1273–1296.
<https://doi.org/10.1007/s11165-016-9602-2>
- van der Spek, N., Willemsen, V., Knipscheer-Kuipers, K., & Verdonck-de Leeuw, I. (2018). *Kanker en persoonlijke zingeving*. Bohn Stafleu van Loghum Houten. Kanker en persoonlijke zingeving: Werkboek voor cliënten. SpringerLink.
- Van Doornik, S., Glashouwer, K.A., & De Jong, P.J. (2022). *Geauthoriseerde Nederlandsevertaling van de MEMS* © (2022). Rijksuniversiteit Groningen.

- van Doornik, S. F. W., Glashouwer, K. A., Ostafin, B. D., & de Jong, P. J. (2020a). *Meaning-centered intervention for youth worrying about their weight and shape* [unpublished manual]. Faculty of Behavioral and Social Sciences, Department of Clinical Psychology and Experimental Psychopathology, University of Groningen.
- van Doornik, S. F. W., Glashouwer, K. A., Ostafin, B. D., & de Jong, P. J. (2020b). *Meaning-centered intervention for youth worrying about their weight and shape* [unpublished workbook] University of Groningen.
- van Doornik, S. F. W., Glashouwer, K. A., Ostafin, B. D., & de Jong, P. J. (2021). The causal influence of life meaning on weight and shape concerns in women at risk for developing an eating disorder. *Frontiers in Psychology, 12*, Section Eating Behavior. <https://doi.org/10.3389/fpsyg.2021.593393>
- van Doornik, S. F. W., Glashouwer, K. A., Ostafin, B. D., & de Jong, P. J. (2022). The effects of a meaning-centered intervention on meaning in life and eating disorder symptoms in undergraduate women with high weight and shape concerns: A randomized controlled trial [unpublished manuscript]. Faculty of Behavioral and Social Sciences, Department of Clinical Psychology and Experimental Psychotherapy, University of Groningen.
- Zullig, K. (2009). The brief multidimensional students' life satisfaction scale-college version. *American Journal of Health Behavior, 33*(5), 483–493. <https://doi.org/10.5993/ajhb.33.5.1>