Title: The Eating Disorder Examination-Questionnaire 8: A Brief Measure of Eating Disorder Psychopathology (EDE-Q8)

Authors: Sören Kliem[a], Thomas Mößle[a], Markus Zenger[b,c], Bernhard Strauß[d], Elmar Brähler[b,e], & Anja Hilbert[b,f]

Author Affiliations:

[a]Criminological Research Institute of Lower Saxony, Hanover, Germany

[b]Department of Medical Psychology and Medical Sociology, University of Leipzig, Germany

[c]Faculty of Applied Human Studies, University of Applied Sciences Magdeburg and Stendal, Stendal, Germany

[d]Institute of Psychosocial Medicine and Psychotherapy, University Hospital Jena, Germany

[e]Department of Psychosomatic Medicine and Psychotherapy, University of Mainz, Germany

[f]Integrated Research and Treatment Center Adiposity Diseases, University of Leipzig, Germany

Corresponding Author:

Sören Kliem, Dipl-Psych.

Criminological Research Institute of Lower Saxony

Lützerodestraße 9

30161 Hanover, Germany

Phone: +49 (0) 511 34836-70

Fax: +49 (0) 511 34836-10

E-mail: Soeren.Kliem@kfn.de

Abstract: 142 words

Manuscript: 1.541 words

THE EATING DISORDER EXAMINATION-QUESTIONNAIRE 8

BRIEF REPORT

Abstract

Objective: The aim of this study was to develop, evaluate, and standardize a short form of the well-established *Eating Disorder Examination-Questionnaire* (*EDE-Q*). The newly developed *EDE-Q8* was required to reflect the originally postulated structure of the *EDE-Q*.

Method: Data were drawn from two nationwide representative population surveys in Germany: a survey conducted to develop the *EDE-Q8* in 2009 ($N = 2520$); and a survey conducted in 2013 ($N = 2508$) for the evaluation and calculation of *EDE-Q8* percentiles.

Results: The *EDE-Q8* had excellent item characteristics, very good reliability and a very good model fit for the postulated second-order factorial structure. Furthermore, a strong correlation between the *EDE-Q8* and a 13 item short form of the *Eating Attitudes Test* was observed.

Discussion: The *EDE-Q8* appears to be particularly suitable in epidemiological research, when an economical assessment of global eating disorder psychopathology is required.

Keywords: Eating disorder psychopathology, Eating disorder, Eating Disorder Examination-Questionnaire (EDE-Q), Symptom assessment, Obesity

Introduction

The Eating-Disorder-Examination-Questionnaire (EDE-Q; 1) is a well-established self-report questionnaire for the comprehensive assessment of eating disorder (ED) psychopathology. It is based on the *Eating Disorder Examination* (EDE; 2), a structured clinical interview, considered the method of choice for diagnosis and assessment of EDs. The *EDE-Q* consists of 22 items allocated to four subscales (restraint, eating concern, weight concern, shape concern). Items refer to the last 28 days and are rated on seven-point rating scales (0 = *characteristic was not present* to 6 = *characteristic was present every day* or *in extreme form*). Subscale scores and a mean global score of the overall ED psychopathology can be calculated. Six additional key behavioral items measure diagnostically relevant information, e.g., binge eating, self-induced vomiting, laxative misuse, or excessive exercising. Psychometric quality of the *EDE-Q* is well-established (3). There is evidence of construct validity, sensitivity to change, and diagnostic efficiency.

With a total of 28 items, the EDE-Q is of limited suitability in epidemiological research, primary care, and other clinical settings in which assessment burden is a concern. Grilo and colleagues (4) recently suggested a 7-item 3-factor brief form of the EDE interview on the basis of an exploratory factor analysis in a sample of mostly female binge-eating disorder patients. Though confirming the 7-item 3-factor structure of the questionnaire in two different samples (5) that were again predominantly female, it was not assessed whether the items chosen allowed for the computation of a global score and how closely the short form resembles the long form. Hence, the aim of this study was to develop a short form of the *EDE-Q* for a condensed assessment of the global ED psychopathology while retaining the original factor structure using representative population samples.

Method

Phase 1: Development of the Short Form of the EDE-Q

The development of the short form was based on data from a representative sample of the German population from 2009 ($N = 2520$; for further detail see 6, 7 and Table 1). Criteria for the shortened scale were: (a) optimal internal consistency as indicated by Cronbach's α, (b) uni-dimensionality (necessary to calculate a global score), (c) a small number of items to provide an economical assessment, and (d) containing the same number of items from each of the originally postulated dimensions.

The *alphamax* macro for SPSS (8, see 9 for an example) calculates Cronbach's α for any possible combination of item subsets of a given number. It can thus be used for scale-shortening in order to identify combinations of items that result in an optimal α coefficient. Subsequently, confirmatory factor analyses (CFA) were conducted to compare potential shortened item sets.

Based on these criteria, 8 items were selected. This short scale showed a very strong correlation with the *EDE-Q* global score ($r = .97$; $p < .001$) as well as with the *EDE-Q* global score not including the items of the short form ($r = .90$; $p < .001$). The newly created questionnaire (*EDE-Q8*) was subsequently analyzed and standardized in a separate survey.

Phase 2: Validation Study

An initial sample of 4360 individuals representative of the Federal Republic of Germany was selected using a random route procedure in combination with a Kish selection grid (for further detail see 9). Participants were contacted at home. A total of 2508 individuals (response rate = 57.5%) participated in the study (54.0% female). Main reasons for non-participation were refusal to participate (13.6%) and absence during all 4 visits (12.9%) Participants' age ranged from 14 to 92 years ($M = 49.67$, $SD = 18.32$). Sample characteristics are displayed in Table 1. The study was approved by the Ethics Committee of the Medical

Faculty of the University of Leipzig (Az.: 050/13-03.05.2013). Informed consent was

obtained from each participant (for minor participants, informed consent was additionally

obtained from one parent).

Measures

The German version of the EDE-Q (6, 10) was used. Correlation coefficients with

several risk factors for ED psychopathology, such as female gender, younger age, and obesity

(BMI $\geq$ 30 kg/m^2) were computed. To examine convergent validity and construct validity of

the *EDE-Q8*, correlations with the *EAT-13* (11; short form of the Eating Attitudes Test; 12),

the *Patient Health Questionnaire-2* depression scale (PHQ-2) (13), and the *Generalized*

Anxiety Disorder-2 scale (GAD-2) (13) were computed.

Statistical Analyses

At the item level, means, standard deviations, item difficulties, and item-total

correlations were determined. Missing data (0.1% to 0.4% per item) were imputed using

chained equation modeling (14) based on the following variables: gender, age, income,

education, and partnership status. Predictive mean matching was used for imputation (i.e.,

only realistic values were computed).

Factorial validity was analyzed using CFA. Two different models were tested: (a) the

simple general factor model with all items loading on one factor, (b) a higher order general

factor model with four first-order factors comprising the postulated subscales. Robust

maximum likelihood estimation with the mean-adjusted Satorra-Bentler χ^2 test statistic was

used (15). To evaluate goodness of fit of the relevant model, we considered four different

criteria. Although the *Standardized Root Mean Square Residual* (SRMR), *Root Mean Square*

Error of Approximation (RMSEA), and 90% confidence interval assess absolute model fit,

the two additionally calculated criteria [*Comparative Fit Index* (CFI) and *Tucker Lewis Index*

(TLI)] are measures of relative model fit, compared with the "null" model. RMSEA and

SRMR values of < .080 as well as CFI and TLI scores > .900 are suggested for a good model

fit (16).

Measurement invariance tests across gender, age, weight status, educational level, and

household income were conducted in accordance with the sequential strategy developed by

Meredith and Teresi (17, for definition of variables see Table 1). As recommended by Chen

(18), a change of ΔCFI $\leq -.010$ in CFI, supplemented by a change of ΔRMSEA $\geq .015$, was

regarded as indicative of non-invariance. Data analysis was carried out using the *R* packages

lavaan (19) and *mice* (20).

Results

Item Characteristics

Table 2 displays means, standard deviations, item difficulties, and corrected item-total

correlations for the *EDE-Q8* items. The mean global score of the *EDE-Q8* was 0.94 (*SD* =

1.14). At the item level, there were significant differences between men and women,

however, with small effect sizes (*d* = 0.19 to 0.44). A two-factorial analysis of variance with

the factors gender and age resulted in a significant interaction effect (*F*(6, 2480) = 3.61; *p* <

.001). Age- and gender-specific norms are provided in Appendix A of the online supplement.

Internal Consistency

With regard to the global score of the *EDE-Q8*, the internal consistency for the total

sample was α = .93 (men: α = .92; women: α = .93).

Factorial Validity

CFA revealed good fit parameters for the second-order general factor model (*SRMR* =

.044; *RMSEA* = .079, 90% CI [.074; .084]; *CFI* = .950; *TLI* = .922). The simple general factor

model produced a worse model fit (SRMR = .065; RMSEA = .116, 90% CI [.109, .124), CFI

= .769, TLI = .676) and was therefore rejected. Second-order corrected factor loadings were medium to high (.50 to .91). A figure with detailed results can be found in Appendix B of the online supplement.

Measurement invariance analyses indicated strict invariance for all of the analyzed subgroups. A table with detailed results can be found in Appendix C of the online supplement.

Construct Validity

Correlations of the EDE-Q8 with other test scores as well as gender, age, and weight status were calculated. The correlation coefficients are as follows: *EAT-13: r = .75; p < .001; PHQ-2: r = .25; p < .001; GAD-2: r = .27; p < .001;* gender: *r = .22; p < .001;* weight status: *r = .28; p < .001.* There were no significant correlations between the *EDE-Q8* and age *(r = .01; p = .664).*

Discussion

In this study, an eight item short form of the *EDE-Q* was developed and evaluated using two separate representative German population samples. Internal consistency of the short form was satisfactory. Strict measurement invariance was found for various sample characteristics using second-order CFA. Regarding the construct validity, convergent validity of the *EDE-Q8* with another ED measure was satisfactory.

Limitations

The response rate was relatively low (57.5%), which is, however, common in general population research (9). Despite the sample's representativeness, obese as well as underweight individuals were slightly underrepresented when compared to the 2013 German census of the Federal Statistics Office. We addressed this shortcoming by providing weighted norms based on the actual distribution of weight categories as obtained by the Federal

Statistics Office (see online supplement Appendix D). As the key behavioral items of the EDE-Q (binge eating, purging, exercising) are not included in the calculation of the global score, they were not incorporated in the EDE-Q8. However, for clinical purposes these items should be assessed in addition to the EDE-Q8.

Conclusions

Self-report instruments are more economical, allow for group assessment, and record painful and shame-ridden experiences less intrusively than diagnostic interviews (6). Therefore, the *EDE-Q8* appears to be particularly suitable within an epidemiological framework as well as in treatment evaluation, especially if face-to-face interviews or more extensive instruments cannot be applied due to a lack of time or financial reasons. Based on good psychometric properties, including an excellent correlation with the *EDE-Q* the use of the *EDE-Q8* appears to be appropriate. Future research is warranted to compare and evaluate the existing *EDE-Q* short forms in different samples.

References

1. Fairburn, CG, Beglin, SJ. Assessment of eating disorders: Interview or self-report questionnaire? Int J Eat Disord, 1994; 16: 363-370.

2. Fairburn CG,Cooper Z,O'Connor M. Eating disorder examination. In: Fairburn CG, editor. Cognitive Behavior Therapy and Eating Disorders, 16th edition. New York: Guilford Press, 2008, pp. 265–308.

3. Berg KC, Peterson CB, Frazier P, Crow SJ. Psychometric evaluation of the eating disorder examination and eating disorder examination-questionnaire: A systematic review of the literature. Int J Eat Disord 2012; 45: 428-438.

4. Grilo CM, Crosby RD, Peterson CB, Masheb RM, White MA, Crow SJ, et al. Factor structure of the Eating Disorder Examination Interview in patients with binge-eating disorder. *Obesity* 2010; 18: 977-981.

5. Grilo CM, Reas DL, Hopwood CJ, Crosby RD. Factor structure and construct validity of the eating disorder examination-questionnaire in college students: Further support for a modified brief version. *Int J Eat Disord* 2015; 48: 284-289.

6. Hilbert A, de Zwaan M, Brähler E. How frequent are eating disturbances in the population? Norms of the Eating Disorder Examination-Questionnaire. *PloS one* 2012; 7: e29125.

7. Peterson CB, Crosby RD, Wonderlich SA, Joiner T, Crow SJ, Mitchell JE, et al. Psychometric properties of the eating disorder examination-questionnaire: Factor structure and internal consistency. *Int J Eat Disord* 2007; 40: 386-389.

8. Hayes A. A computational tool for survey shortening applicable to composite attitude, opinion, and personality measurement scales. Midwestern Association for Public Opinion Research, Chicago 2005.

9. Kliem S, Mößle T, Rehbein F, Hellmann DF, Zenger M, Brähler E. A brief form of the Perceived Social Support Questionnaire (F-SozU) was developed, validated, and standardized. J Clin Epidemiol 2015; 68: 551-562.

10. Hilbert A, Tuschen-Caffier B, Karwautz A, Niederhofer H, Munsch S. Eating Disorder Examination-Questionnaire. Diagnostica 2007; 53: 144-154.

11. Berger U, Hentrich I, Wick K, Bormann B, Brix C, Sowa M, et al. Psychometric quality of the "Eating Attitudes Test"(German Version EAT-26D) for measuring disordered eating in pre-adolescents and proposal for a 13-Item Short Version. Psychother Psychosom Med Psychol 2012; 62: 223-226.

12. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. Psychol Med 1982; 12: 871-878.

13. Kroenke K, Spitzer RL, Williams JB, Löwe B. An ultra-brief screening scale for anxiety and depression: the PHQ–4. Psychosom 2009; 50: 613-621.

14. White IR, Royston P, Wood AM. Multiple imputation using chained equations: Issues and guidance for practice. Stat Med 2011; 30: 377-399.

15. Chou CP, Bentler PM, Satorra A. Scaled test statistics and robust standard errors for non-normal data in covariance structure analysis: a Monte Carlo study. Brit J Math Stat Psy 1991; 44: 347-357.

16. Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Equ Modeling 1999; 6: 1-55.

17. Meredith W, Teresi JA. An essay on measurement and factorial invariance. Med Care 2006; 44: 69-77.

18. Chen FF. Sensitivity of goodness of fit indexes to lack of measurement invariance. Struct Equ Modeling 2007; 14: 464-504.

19. Rosseel Y. lavaan: An R Package for Structural Equation Modeling. Journal of Statistical Software 2012;48:1-36.

20. Buuren S, Groothuis-Oudshoorn K. MICE: Multivariate imputation by chained equations in R. *J Stat Softw* 2011; 45: e1-e67.

TABLE 1. Demographic characteristics of the study samples

	Phase 2			Phase 1		
	Total Sample (*N* = 2508)	Men (*N* = 1174)	Women (*N* = 1334)	Total Sample (N=2520)	Men (N=1166)	Women (N=1354)
Age						
Mean (*SD*)	49.67 (18.30)	49.16 (18.18)	50.12 (18.44)		49.90 (18.50)	51.02 (18.66)
Median	50	50	50	51	50	51
Range	14-92	14 -92	14-92	14-95	14-95	14-93
Age group, *N* (%)						
< 25 years	257 (10.2)	134 (11.4)	123 (9.2)	270 (10.7)	133 (11.4)	137 (10.1)
25 to 34 years	360 (14.4)	152 (12.9)	208 (15.6)	293 (11.6)	132 (11.3)	161 (11.9)
35 to 44 years	382 (15.2)	180 (15.3)	202 (15.1)	410 (16.3)	201 (17.2)	209 (15.4)
45 to 54 years	445 (17.7)	213 (18.1)	232 (17.4)	436 (17.3)	198 (17.0)	238 (17.6)
55 to 64 years	454 (18.1)	225 (19.2)	229 (17.2)	416 (16.5)	181 (15.5)	235 (17.4)
65 to 74 years	381 (15.2)	177 (15.1)	204 (15.3)	443 (17.6)	232 (19.9)	211 (15.6)
≥ 75 years	229 (9.1)	93 (7.9)	136 (10.2)	252 (10.0)	89 (7.6)	163 (12.0)

Weight status N (%)						
Underweight (< 18.5 kg/m^2)	24 (1.0)	3 (0.3)	21 (1.6)	51 (2.0)	15 (1.3)	36 (2.7)
Normal weight (18.5 to 24.9 kg/m2)	1231 (49.1)	494 (42.1)	737 (55.2)	1241 (29.3)	503 (43.1)	738 (54.5)
Overweight (25.0 to 29.9 kg/m2)	999 (39.8)	565 (48.1)	434 (32.5)	922 (36.6)	527 (45-2)	395 (29.2)
Obesity (≥ 30 kg/m2)	239 (9.6)	107 (9.1)	132 (9.9)	268 (10.6)	111 (9.5)	157 (11.6)
Missing	15 (0.6)	5 (0.4)	10 (0.7)	38 (1.5)	10 (0.9)	28 (2.1)
Living with a partner, N (%)	1315 (52.4)	663 (56.5)	652 (48.9)	1433 (56.9)	720 (61.7)	713 (52.7)
Education, N (%)						
≤ 8 years	67 (2.7)	29 (2.5)	38 (2.8)	51 (2.0)	19 (1.6)	32 (2.4)
9 to 11 years	1810 (72.2)	810 (69.0)	1000 (75.0)	1954 (77.5)	877 (75.2)	1077 (79.5)
≥ 12 years	543 (21.7)	284 (24.2)	259 (19.4)	411 (16.3)	220 (18.9)	191 (14.1)
Current student	78 (3.1)	45 (3.8)	33 (2.5)	104 (4.1)	50 (4.3)	54 (4.0)
Missing	10 (0.4)	6 (0.5)	4 (0.3)	0	0	0
Household income per month						
< 1250 €	517 (20.6)	197 (17.3)	320 (24.0)	514 (20.4)	187 (16.0)	327 (24.2)
1250 to 2499 €	1156 (45.7)	527 (44.9)	619 (46.4)	1306 (51.8)	646 (55.4)	660 (48.7)

>2500 €	769 (97.0)	417 (35.5)	352 (26.4)	622 (24.7)	287 (24.6)	335 (24.7)
Missing	6 (3.0)	33 (2.8)	43 (3.2)	78 (3.1)	46 (3.9)	32 (2.4)

TABLE 2. Mean (*M*), standard deviation (*SD*), item difficulty (p_i), item-total correlation (r_{it}), and gender differences for the *EDE-Q8* items and global score

	Total				Men				Women				Group Differences			
	M	*SD*	P_i	r_{it}	*M*	*SD*	P_i	r_{it}	*M*	*SD*	P_i	r_{it}	*t*	*df*	*p*	*d*
Restraint over Eating	0.97	1.72	16	.74	0.71	1.52	12	.69	1.20	1.85	20	.75	−7.24	2423	< .001	0.29
Food Avoidance	0.89	1.64	15	.73	0.60	1.40	10	.73	1.15	1.79	19	.72	−8.48	2423	< .001	0.34
Preoccupation with Food	0.39	1.09	7	.54	0.28	.92	5	.53	0.48	1.20	8	.53	−4.73	2423	< .001	0.19
Feelings of Fatness	1.04	1.90	17	.83	0.68	1.56	11	.80	1.35	2.11	23	.84	−8.93	2423	< .001	0.36
Desire to Lose Weight	1.05	1.91	18	.89	0.67	1.52	11	.84	1.39	2.14	23	.87	−9.64	2423	< .001	0.39

TABLE 2. Mean (*M*), standard deviation (*SD*), item difficulty (p_i), item-total correlation (r_{it}), and gender differences for the *EDE-Q8* items and global score (continued)

	Total				Men				Women				Group Differences			
	M	*SD*	P_i	r_{it}	*M*	*SD*	P_i	r_{it}	*M*	*SD*	P_i	r_{it}	*t*	*df*	*p*	*d*
Guilt about Eating	0.64	1.21	11	.79	0.40	.99	7	.81	0.84	1.35	14	.77	–9.19	2423	< .001	0.37
Dissatisfaction with Weight	1.37	1.90	23	.82	0.99	1.65	17	.79	1.70	2.04	28	.82	–9.52	2423	< .001	0.38
Discomfort Seeing Body	1.20	1.76	20	.81	0.81	1.47	14	.77	1.55	1.92	26	.82	–10.87	2423	< .001	0.44
Global mean score	0.94	1.14	16	-	0.64	1.12	11	-	1.21	1.50	20	-	–10.54	2423	< .001	0.43

Appendix A. **Normative data from the general population (*N* = 2508) for the *EDE-Q8***

EDE-Q8	Total 14 to 91 y	Men							Women						
		14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2508	*N* = 134	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 123	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
.00	41	63	61	50	49	48	44	43	30	36	31	31	29	34	39
.13	45	65	66	57	53	50	50	46	33	40	32	36	32	39	47
.25	52	73	74	64	60	56	58	58	39	44	38	42	37	43	55
.38	56	77	78	71	63	58	62	58	39	50	42	48	41	48	59
.50	59	78	80	75	66	64	67	58	44	52	46	52	45	53	63
.63	62	80	81	78	70	67	70	62	46	55	50	54	50	56	65
.75	66	83	83	81	76	71	73	63	48	58	53	58	56	61	67
.88	69	87	84	83	77	74	75	69	53	60	58	62	58	63	71

(continued)

Appendix A. Normative data from the general population (N = 2508) for the *EDE-Q8 (continued)*

EDE-Q8	Total 14 to 91 y	Men							Women						
		14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2508	N = 134	N = 152	N = 180	N = 213	N = 225	N = 177	N = 93	N = 123	N = 208	N = 202	N = 232	N = 229	N = 204	N = 136
1.00	71	88	85	85	79	77	77	72	56	62	62	65	61	66	72
1.13	73	88	88	86	82	79	78	74	59	63	63	66	64	68	75
1.25	75	89	88	87	83	81	79	75	62	66	66	68	66	70	80
1.38	76	89	90	87	84	83	80	77	63	66	68	69	66	71	81
1.50	78	92	92	87	85	84	82	79	66	70	69	69	67	73	81
1.63	79	92	92	88	86	85	82	83	70	70	71	73	69	75	82
1.75	80	92	92	89	86	87	83	84	72	70	72	74	70	75	83
1.88	81	92	93	90	86	87	83	85	73	73	75	75	72	75	85

(continued)

Appendix A. Normative data from the general population (*N* = 2508) for the *EDE-Q8 (continued)*

EDE-Q8	Total	Men							Women						
	14 to 91 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2508	*N* = 134	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 123	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
2.00	82	93	94	90	87	88	84	85	75	75	77	75	72	77	86
2.13	83	93	94	91	88	89	86	87	76	75	79	77	72	79	87
2.25	84	93	95	91	89	90	87	87	78	78	79	77	73	80	88
2.38	85	95	95	92	91	90	90	87	79	79	81	79	74	82	89
2.50	86	95	95	92	92	90	90	89	80	80	81	80	75	83	89
2.63	87	95	96	94	93	91	91	90	80	81	83	80	78	83	89
2.75	88	95	97	94	93	92	91	90	80	82	85	82	79	84	90
2.88	89	96	97	95	93	92	92	90	82	84	86	83	81	84	92

Appendix A. **Normative data from the general population (*N* = 2508) for the *EDE-Q8 (continued)***

EDE-Q8	Total 14 to 91 y	Men							Women						
		14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2508	*N* = 134	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 123	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
3.00	89	96	98	95	93	93	92	91	83	85	88	84	81	86	92
3.13	90	97	98	95	94	94	94	93	84	86	88	84	82	88	92
3.25	91	97	99	96	95	94	94	93	84	87	89	86	83	89	92
3.38	92	97	99	96	95	95	94	93	84	88	91	87	86	91	93
3.50	93	97	99	97	96	96	94	93	85	89	93	88	87	91	93
3.63	93	97	99	97	96	96	94	93	85	90	93	88	89	92	94
3.75	93	97	99	97	96	96	94	95	85	92	95	88	90	93	94
3.88	94	97	99	97	96	96	95	96	87	92	95	89	91	93	94

Appendix A. Normative data from the general population (*N* = 2508) for the *EDE-Q8 (continued)*

EDE-Q8	Total 14 to 91 y	Men							Women						
		14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	14 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2508	*N* = 134	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 123	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
4.00	94	97	99	97	96	96	95	97	87	94	96	90	91	94	94
4.13	95	99	99	97	97	96	95	97	88	94	96	91	93	95	94
4.25	96	99	99	98	98	96	97	98	89	95	97	93	95	95	95
4.38	96	99	99	98	98	96	97	99	89	95	98	94	95	96	95
4.50	97	99	99	98	98	97	97	99	89	96	98	94	96	96	97
4.63	97	99	99	99	98	97	97	99	91	96	98	95	97	96	97
4.75	98	> 99	99	99	99	98	97	99	93	97	98	95	98	98	97
4.88	98	> 99	99	99	99	98	97	> 99	94	98	98	96	99	98	97
5.00	98	> 99	99	> 99	99	98	98	> 99	94	99	99	96	99	98	97

5.13	99	> 99	99	> 99	99	99	99	> 99	95	99	99	97	99	99	98
5.25	99	> 99	99	> 99	99	99	99	> 99	95	> 99	99	97	> 99	99	99
5.38	99	> 99	> 99	> 99	99	99	99	> 99	96	> 99	99	98	> 99	99	99
5.50	> 99	> 99	> 99	> 99	> 99	> 99	99	> 99	97	> 99	> 99	99	> 99	> 99	99
5.63	> 99	> 99	> 99	> 99	> 99	> 99	99	> 99	98	> 99	> 99	> 99	> 99	> 99	99
5.75	> 99	> 99	> 99	> 99	> 99	> 99	99	> 99	99	> 99	> 99	> 99	> 99	> 99	99
5.88	> 99	> 99	> 99	> 99	> 99	> 99	99	> 99	99	> 99	> 99	> 99	> 99	> 99	99
6.00	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99	> 99

Note: Normative data are presented as EDE-Q8 EDE-Q8 global mean score with corresponding percentiles. Percentiles are shown for the total sample and for subsamples based on age and gender.

Appendix B. Confirmatory factor analysis of the higher order general factor model.

Note: The model was estimated using MLM estimation. Loadings are standardized. Grey loading indicates the second-order corrected factor loadings (item loading * one-order-

factor loading).

Appendix C. Analysis of factorial invariance using multigroup confirmatory factor analyses

	χ^2	df	CFI	ΔCFI	RMSEA	ΔRMSEA	Measurement Invariance Test[a]
Gender (men; women)							
Configural invariance	287.48	36	.947	-	.075	-	
Weak invariance (equal loadings)	299.99	43	.946	−.001	.069	−.006	√
Strong invariance (equal loadings + intercepts)	392.49	51	.928	−.018	.073	.004	√
Strict invariance (equal loadings + intercepts + residuals)	447.26	59	.918	−.010	.073	.000	√
Age (< 25 y; 25 to 34 y; 35 to 44 y; 45 to 54 y; 55 to 64 y; 65 to 74 y; ≥ 75 y)							
Configural invariance	426.61	126	.946	-	.082	-	
Weak invariance (equal loadings)	481.82	168	.943	−.003	.073	−.009	√
Strong invariance (equal loadings + intercepts)	584.41	216	.934	−.009	.069	−.004	√
Strict invariance (equal loadings + intercepts + residuals)	602.96	258	.938	−.004	.061	−.008	√

Appendix C. Analysis of factorial invariance using multigroup confirmatory factor analyses (continued)

	χ^2	*df*	CFI	ΔCFI	RMSEA	ΔRMSEA	Measurement Invariance Test[a]
Gender * Age							
Configural invariance	339.90	72	.943	-	.077	-	
Weak invariance (equal loadings)	371.24	93	.941	−.002	.069	−.008	√
Strong invariance (equal loadings + intercepts)	508.09	117	.917	−.024	.073	.004	√
Strict invariance (equal loadings + intercepts + residuals)	671.59	141	.906	−.009	.078	.005	√
Educational level (≤ 8 y; 9 to 11 y; ≥ 12 y)							
Configural invariance	353.55	54	.947	-	.082	-	
Weak invariance (equal loadings)	384.27	68	.944	−.003	.075	−.007	√
Strong invariance (equal loadings + intercepts)	454.06	84	.935	−.009	.073	−.002	√
Strict invariance (equal loadings + intercepts + residuals)	433.65	100	.941	.004	.064	−.009	√

Appendix C. Analysis of factorial invariance using multigroup confirmatory factor analyses (continued)

	χ^2	df	CFI	ΔCFI	RMSEA	ΔRMSEA	Measurement Invariance Test[a]
Household income (< 1250 EUR; 1250 to 2500 EUR; > 2500 EUR)							
Configural invariance	332.95	54	.951	-	.080	-	
Weak invariance (equal loadings)	364.61	68	.948	−.003	.074	−.006	√
Strong invariance (equal loadings + intercepts)	422.69	84	.940	−.008	.071	−.003	√
Strict invariance (equal loadings + intercepts + residuals)	406.744	100	.946	.006	.062	−.009	√
Obesity status (≤ 30 kg/m^2; > 30 kg/m^2)							
Configural invariance	356.67	36	.954	-	.085	-	
Weak invariance (equal loadings)	394.49	43	.949	−.005	.082	−.003	√
Strong invariance (equal loadings + intercepts)	571.27	51	.925	−.024	.091	.009	√
Strict invariance (equal loadings + intercepts + residuals)	428.01	59	.947	.022	.072	−.019	√

Note. CFI = Comparative Fit Index; Δ_{CFI} = Differences between models (1 and 2; 2 and 3; 3 and 4); RMSEA = root mean square error of approximation; Δ_{RMSEA} = Differences between models 1 and 2; 2 and 3; 3 and 4); [a] = $\mathit{\Delta CFI \leq -.010}$ supplemented by $\mathit{\Delta RMSEA \geq .015}$ indicates non-invariance. √ marks invariance

Appendix D. Weighted normative data from the general population (*N* = 2425) for the *EDE-Q8*

EDE-Q8	Total 18 to 91 y	Men							Women						
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2425	*N* = 87	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 87	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
.00	39	68	58	49	45	43	39	44	36	35	31	32	27	33	38
.13	44	69	63	56	49	46	45	47	37	39	32	37	31	38	46
.25	50	74	71	62	56	50	53	58	42	43	37	43	36	43	53
.38	54	80	76	68	59	52	59	58	42	48	41	48	40	47	57
.50	57	81	78	72	63	58	63	58	49	50	45	52	44	52	61
.63	60	83	78	74	66	61	67	63	51	53	49	54	48	55	63
.75	64	84	80	77	72	66	70	63	53	56	52	58	55	60	65
.88	67	88	81	80	74	68	73	68	58	58	57	62	58	62	68

(continued)

Appendix D. Weighted normative data from the general population ($N = 2425$) for the *EDE-Q8 (continued)*

EDE-Q8	Total 18 to 91 y	Men								Women					
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	$N =$ 2425	$N =$ 87	$N =$ 152	$N =$ 180	$N =$ 213	$N =$ 225	$N =$ 177	$N =$ 93	$N = 87$ 208	$N =$ 202	$N =$ 232	$N =$ 229	$N =$ 204	$N =$ 136	$N =$
1.00	69	89	82	81	75	71	75	71	59	59	62	65	60	65	69
1.38	74	90	89	83	81	79	79	77	67	65	68	69	65	70	78
1.50	76	92	91	83	82	79	80	78	69	69	69	70	65	73	78
1.63	77	92	91	84	84	81	81	82	71	69	71	73	68	74	79
1.75	78	92	91	84	84	82	82	83	73	70	72	74	68	74	81
1.88	79	92	92	85	84	83	82	84	74	73	74	75	70	74	83
2.00	80	92	93	86	85	84	83	84	75	74	76	75	70	76	84
2.13	81	92	93	88	86	85	85	86	75	75	78	77	71	78	85

Appendix D. Weighted normative data from the general population (*N* = 2425) for the *EDE-Q8 (continued)*

EDE-Q8	Total 18 to 91 y	Men							Women						
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2425	*N* = 87	*N* = 152	*N* = 180	*N* = 213	*N* = 225	*N* = 177	*N* = 93	*N* = 87	*N* = 208	*N* = 202	*N* = 232	*N* = 229	*N* = 204	*N* = 136
2.25	82	92	94	88	87	86	86	86	77	78	79	77	71	79	86
2.38	83	96	94	88	89	86	88	86	77	79	80	79	72	81	87
2.50	84	96	94	88	91	86	88	88	79	80	80	80	73	82	87
2.63	85	96	95	90	91	87	90	89	79	81	82	80	76	82	87
2.75	86	96	97	90	92	88	90	89	80	82	84	82	77	83	88
2.88	87	97	97	91	92	89	91	89	82	83	85	83	79	83	89
3.00	88	97	97	91	92	90	91	90	83	85	88	84	79	85	89

Appendix D. Weighted normative data from the general population ($N = 2425$) for the *EDE-Q8 (continued)*

EDE-Q8	Total 18 to 91 y	Men							Women						
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	$N =$ 2425	$N =$ 87	$N =$ 152	$N =$ 180	$N =$ 213	$N =$ 225	$N =$ 177	$N =$ 93	$N = 87$	$N =$ 208	$N =$ 202	$N =$ 232	$N =$ 229	$N =$ 204	$N =$ 136
3.13	89	99	97	91	93	91	93	91	83	86	88	84	80	88	89
3.25	89	99	98	92	94	91	93	91	83	87	88	86	81	88	89
3.38	90	99	98	92	94	93	93	91	83	88	90	87	84	90	91
3.50	91	99	99	94	95	93	93	91	84	88	93	88	86	91	91
3.63	92	99	99	94	95	94	93	91	84	90	93	88	88	92	92
3.75	93	99	99	94	95	94	93	94	84	91	95	88	89	92	92
3.88	93	99	99	94	95	94	94	95	85	92	96	89	90	93	92
4.00	93	99	99	94	95	94	94	96	85	93	96	91	91	94	92

Appendix D. Weighted normative data from the general population ($N = 2425$) for the *EDE-Q8 (continued)*

EDE-Q8	Total 18 to 91 y	Men							Women						
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	$N =$ 2425	$N =$ 87	$N =$ 152	$N =$ 180	$N =$ 213	$N =$ 225	$N =$ 177	$N =$ 93	$N = 87$	$N =$ 208	$N =$ 202	$N =$ 232	$N =$ 229	$N =$ 204	$N =$ 136
4.13	94	99	99	94	96	94	94	96	86	93	96	92	92	94	92
4.25	95	99	99	96	98	94	96	98	87	94	97	94	95	94	92
4.38	96	99	99	98	98	94	96	99	88	95	98	94	95	95	92
4.50	96	>99	99	98	98	95	96	99	88	95	98	94	95	96	96
4.63	97	>99	99	>99	98	95	96	99	90	95	98	95	96	96	96
4.75	97	>99	99	>99	98	96	96	99	92	97	98	95	98	97	96
4.88	98	>99	99	>99	98	96	96	>99	93	98	98	96	99	98	96

Appendix D. Weighted normative data from the general population (*N* = 2425) for the *EDE-Q8 (continued)*

EDE-Q8	Total 18 to 91 y	Men								Women						
		18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y	18 to 24 y	25 to 34 y	35 to 44 y	45 to 54 y	55 to 64 y	65 to 74 y	≥ 75 y
	N = 2425	*N =* 87	*N =* 152	*N =* 180	*N =* 213	*N =* 225	*N =* 177	*N =* 93	*N =* 87	*N =* 208	*N =* 202	*N =* 232	*N =* 229	*N =* 204	*N =* 136
5.00	98	>99	99	>99	98	97	98	>99	93	99	99	96	99	98	96
5.13	98	>99	99	>99	99	98	99	>99	94	99	99	96	99	99	97
5.25	99	>99	99	>99	99	99	99	>99	94	>99	99	97	>99	99	97
5.38	99	>99	>99	>99	99	99	99	>99	95	>99	99	98	>99	99	97
5.50	99	>99	>99	>99	>99	>99	99	>99	96	>99	>99	99	>99	>99	99
5.75	>99	>99	>99	>99	>99	>99	99	>99	99	>99	>99	>99	>99	>99	99
5.88	>99	>99	>99	>99	>99	>99	99	>99	99	>99	>99	>99	>99	>99	99
6.00	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99	>99

Note: Normative data are presented as EDE-Q8 EDE-Q8 global mean score with corresponding percentiles. Percentiles are shown for the total sample and for subsamples based on age and gender. Norms are weighted based on weight group prevalence from the Micro census 2013 (21).

Conflict of Interest

There are no conflicts of interest.