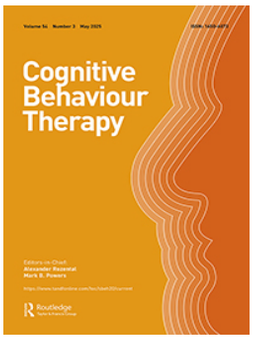

Cognitive Behaviour Therapy

ISSN: 1650-6073 (Print) 1651-2316 (Online) Journal homepage: www.tandfonline.com/journals/sbeh20

Perfectionism as a risk factor for psychopathology in a community sample of young women: disorder-specific pathways to disordered eating or obsessive-compulsive symptoms

Nathalie Claus, Barbara Cludius, Sarah J. Egan, Roz Shafran, Thomas Ehring, Keisuke Takano & Karina Limburg

To cite this article: Nathalie Claus, Barbara Cludius, Sarah J. Egan, Roz Shafran, Thomas Ehring, Keisuke Takano & Karina Limburg (11 Feb 2025): Perfectionism as a risk factor for psychopathology in a community sample of young women: disorder-specific pathways to disordered eating or obsessive-compulsive symptoms, Cognitive Behaviour Therapy, DOI: 10.1080/16506073.2025.2461472

To link to this article: https://doi.org/10.1080/16506073.2025.2461472

COGNITIVE BEHAVIOUR THERAPY
https://doi.org/10.1080/16506073.2025.2461472

Routledge
Taylor & Francis Group

Perfectionism as a risk factor for psychopathology in a community sample of young women: disorder-specific pathways to disordered eating or obsessive-compulsive symptoms

Nathalie Claus[a,b], Barbara Cludius[a,b], Sarah J. Egan[c,d], Roz Shafran[e], Thomas Ehring[a], Keisuke Takano[a,f] and Karina Limburg[a]

[a]LMU Munich, Department of Psychology, Division of Clinical Psychology and Psychological Treatment, Munich, Germany; [b]Institute of Psychology, Division of Clinical Psychology and Psychotherapy in Adults, University of Bremen, Bremen, Germany; [c]enAble Institute, Faculty of Health Sciences, Curtin University, Perth, Australia; [d]Discipline of Psychology, School of Population Health, Curtin University, Perth, Australia; [e]Department of Population, Policy, & Practice, UCL Great Ormond Street Institute of Child Health, London, UK; [f]National Institute of Advanced Industrial Science and Technology, Human Informatics and Interaction Research Institute, Tsukuba, Ibaraki, Japan

ABSTRACT

Perfectionism has been suggested as a risk factor relevant to multiple psychological disorders, including obsessive-compulsive disorder (OCD) and eating disorders (ED). However, it remains unclear how perfectionism contributes to general and specific psychopathology. Disorder-specific processes (e.g. body dissatisfaction, responsibility) between perfectionism and subsequent symptoms may offer an explanation. The current study examined longitudinal associations between perfectionism, body dissatisfaction or responsibility, and symptoms of ED or OCD. A community sample of 499 women (18–30) completed a three-wave online study, assessing perfectionism, ED and OCD symptoms, body dissatisfaction, and responsibility/threat overestimation. Temporal relations between perfectionism and symptoms were analyzed using a structural equation model. Effects of body dissatisfaction and responsibility/threat overestimation were analyzed using multiple hierarchical regressions. Results showed that perfectionism predicted subsequent OCD symptoms, but not ED symptoms. ED symptoms, but not OCD symptoms, predicted subsequent perfectionism. No interaction effects between perfectionism and the disorder-specific processes were found. Instead, body dissatisfaction independently contributed to both ED and OCD symptoms, whereas inflated responsibility/threat overestimation predicted specifically OCD symptoms. To conclude, perfectionism appears to increase the risk of psychological symptoms. However, in this sample this

ARTICLE HISTORY
Received 25 February 2024
Accepted 22 January 2025

KEYWORDS
Perfectionism; transdiagnostic process; Psychopathology; longitudinal design

CONTACT Nathalie Claus nclaus@uni-bremen.de Division of Clinical Psychology and Psychotherapy in Adults, Institute of Psychology, University of Bremen, Grazer Str. 6, Bremen 28359, Germany
Supplemental data for this article can be accessed online at https://doi.org/10.1080/16506073.2025.2461472

was specific to OCD symptoms. Given ED symptoms predicted later perfectionism, bidirectional effects need to be considered.

Introduction

Perfectionism has been proposed as a risk and maintenance factor relevant to multiple disorders (Egan et al., 2011). It has been found to be associated with various symptoms, including obsessive-compulsive disorder (OCD) and eating disorders (Callaghan et al., 2023; Limburg et al., 2017; Lunn et al., 2023; Stackpole et al., 2023). Longitudinal evidence suggests that perfectionism precedes psychopathology (e.g. Kehayes et al., 2019). However, it is unclear in which ways perfectionism increases a general risk for psychopathology and how perfectionism can lead to different specific disorders (e.g. OCD in one person and bulimia nervosa in another). A transdiagnostic model of psychopathology would suggest disorder-specific processes[1] that can explain the link between perfectionism and resulting psychological symptoms (Nolen-Hoeksema & Watkins, 2011), such as body dissatisfaction interacting with perfectionism to contribute to eating pathology and inflated responsibility for OCD. The aim of this study was to examine temporal relations between perfectionism, body dissatisfaction and inflated responsibility as possible disorder-specific processes, and symptoms of eating disorders or OCD in a longitudinal design with an analogue sample.

A common model of perfectionism combines two dimensions: perfectionistic strivings and perfectionistic concerns (Bieling et al., 2004; Stöber & Otto, 2006). Whereas perfectionistic strivings refer to a tendency to set exceedingly high standards in striving for perfection (Gaudreau, 2019), perfectionistic concerns encompass excessive self-criticism regarding one's performance (Bieling et al., 2004). Results of meta-analyses have shown that both dimensions of perfectionism are strongly tied to a wide range of symptoms in both clinical and non-clinical samples (Limburg et al., 2017). Across diagnoses, higher perfectionism scores are found in clinical samples compared to healthy controls, and perfectionism is correlated with the severity of psychological symptoms in clinical as well as non-clinical samples (Limburg et al., 2017; Stackpole et al., 2023). This includes symptoms of OCD (Callaghan et al., 2023; Lunn et al., 2023) and disordered eating (Bills et al., 2023; Stackpole et al., 2023). Of note, these disorders are frequently comorbid and assumed to share etiological relationships (Altman & Shankman, 2009; Swinbourne & Touyz, 2007). However, perfectionistic concerns yield larger and more consistent cross-sectional effects across multiple disorders, whereas perfectionistic strivings are most strongly related with eating disorders (Callaghan et al., 2023; Limburg et al., 2017; Lunn et al., 2023). Given the two dimensions of perfectionism appear differentially related to psychopathology, their respective effects should be investigated separately (Stoeber & Gaudreau, 2017). In addition, the concept of "clinical perfectionism" may be used to measure a central emphasis on the reliance of one's self-worth on the achievement of high standards despite adverse effects (Shafran et al., 2002, 2023).

When investigating transdiagnostic factors, previous work has emphasized a need to differentiate between "descriptively transdiagnostic" (i.e. observed in a range of diagnoses)

and "mechanistically transdiagnostic" (i.e. reflecting a shared causal mechanism) (Harvey et al., 2011). Whereas the cross-sectional evidence cited above implicates perfectionism as a descriptively transdiagnostic factor, we can approach an understanding of the causal mechanics by using longitudinal evidence and exploring temporal relations between variables. Previous longitudinal studies have shown that perfectionism, predominately perfectionistic concerns, predicts symptoms of both OCD (Hawley et al., 2021) and eating disorders, such as drive for thinness or binge eating (Dickie et al., 2012; Kehayes et al., 2019; Smith et al., 2017). However, evidence has been inconsistent on whether predictive effects of perfectionism are unidirectional (i.e. perfectionism predicts increased psychopathology) or reciprocal (i.e. psychopathology also predicts increased perfectionism). Whereas we would assume a potentially causal risk factor such as perfectionism to be a vulnerability to psychopathology (Hewitt & Flett, 2002; McGrath et al., 2012), it is unclear whether it might be a complication of psychopathology as well (Coyne & Whiffen, 1995). Additionally, all studies to date have focused on only one group of disorders, i.e. either OCD or eating disorders. To better understand how a single risk factor such as perfectionism could result in different disorders, multiple disorders need to be examined at the same time.

These questions can be addressed using a model developed by Nolen-Hoeksema and Watkins (2011) to empirically assess transdiagnostic risk factors. This model assumes that one risk factor (e.g. perfectionism) may lead to multiple types of disorders (e.g. OCD, eating disorders). This is referred to as multifinality. The development of a specific type of symptomatology (e.g. OCD instead of bulimia nervosa) is determined by a disorder-specific process which is present in addition to the risk factor. This is referred to as the question of divergent trajectories. Whereas the model allows for disorder-specific processes to occur either concurrently with or after the risk factor, we choose to assume temporal succession in order to parse potential causality. The model by Nolen-Hoeksema and Watkins (2011) has yet to be applied to perfectionism.

Previous research would suggest body dissatisfaction and inflated responsibility are disorder-specific processes between perfectionism and eating disorders or OCD, respectively. Body dissatisfaction (i.e. a negative subjective evaluation of one's body) has been deemed a robust risk factor for eating pathology (Shagar et al., 2017; Stice & Shaw, 2002) and is associated with a reliance of self-worth on weight and shape, a factor which is considered the core psychological feature of eating disorders (Wilksch & Wade, 2009). Further, body dissatisfaction seems closely related to perfectionism. In young women in particular, perfectionistic concerns are cross-sectionally associated with higher levels of body dissatisfaction (Chang et al., 2016; Wade & Tiggemann, 2013). In a longitudinal study, adolescent girls elevated on both perfectionism and body dissatisfaction showed the highest levels of eating disorder symptoms after one year (Boone et al., 2014).

Inflated responsibility has been defined as a core belief in OCD (Obsessive Compulsive Cognitions Working Group & Obsessive Compulsive Cognitions Working Group, 2005). The cognitive model of OCD posits a causal role of responsibility in the development and maintenance of OCD, where individuals with OCD, in situations where they feel personal responsibility for preventing potential harm, will engage in various repetitive behaviors to reduce the risk of the perceived negative outcome (Rachman, 2002). Inflated responsibility is specifically correlated with symptoms of OCD (Pozza & Dèttore, 2014a; Romero-Sanchiz et al., 2015), and individuals with OCD display significantly higher

responsibility than controls (Pozza & Dèttore, 2014b). Preliminary results from a cross-sectional study showed a moderating effect of responsibility between perfectionism and OCD symptoms in a non-clinical sample (Yorulmaz et al., 2006).

The aim of the current study was to investigate perfectionism as a transdiagnostic risk factor, with a focus on questions of multifinality and divergent trajectories. The use of a non-clinical sample allowed an examination of symptoms before and as they developed, as a crucial first step in the translational process (Ehring et al., 2022). Longitudinal data was used to map the temporal relations between perfectionism and symptoms of more than one disorder at a time (multifinality), namely eating disorders and OCD. We hypothesized that 1) perfectionism would positively predict subsequent symptoms of eating disorder and OCD, but that 2) we would observe no prospective effect of psychological symptoms on perfectionism. Additionally, the study examined body dissatisfaction and inflated responsibility as possible disorder-specific processes between perfectionism and symptoms of eating disorders or OCD (divergent trajectories). We also hypothesized that 3) perfectionism and body dissatisfaction would interact to increase subsequent eating disorder symptoms, and 4) perfectionism and inflated responsibility would interact to increase subsequent OCD symptoms. To account for the differential impact of perfectionism dimensions, we considered perfectionistic strivings and perfectionistic concerns separately.

Materials and methods

Study design

The current study employed an observational repeated-measures design. It was preregistered on OSF (https://osf.io/39nx7/).

Procedure

Data was collected via the REDCap platform (Harris et al., 2019) hosted by LMU Munich, between April 2022 and October 2023, with online measurements at baseline, six-month and twelve-month follow-up. Follow-up assessments could be completed within a four-week period (average of 180 days, i.e. 26 weeks, elapsed between measurement points). All participants received the same questionnaires at all three measurement points. Surveys included two attention check items ("to show you have read this question, please click on [specified response option]") to control for inattention (Curran, 2016; Shamon & Berning, 2020). Of the sample included for analysis, 91.2% completed the six-month and 90.4% completed the twelve-month follow-up, with 84.6% full-completers. Participants either received course credit (6.6% of the sample) or payment (10€ at baseline, an additional 15€ at six-month follow-up, an additional 25€ at twelve-month follow-up). They also had the opportunity to receive feedback on their survey results after the final assessment.

Participants

The sample consisted of 499 participants. A priori power analysis was based on previous studies on the relationship between perfectionism and eating disorders (Bardone-Cone et al., 2017; Boone et al., 2014; Campbell et al., 2018; Smith et al., 2017) and used computer-generated random data in variable sample sizes assuming previously reported effect sizes (Smith et al., 2017). In order to reach a power of 0.80, results indicated a required sample size of $N = 350$ (under $\alpha = 0.05$). Based on drop-out rates of similar longitudinal studies (Bardone-Cone et al., 2017; Boone et al., 2014; Smith et al., 2017), we aimed to recruit 500 participants. The sample was recruited through advertisements in online social networks (i.e. Facebook, Instagram), mailing lists, and a public university website.

Informed consent was obtained from all participants included in the study. An online screening at the beginning of the baseline assessment determined eligibility. We included only participants who indicated they were female, between 18 and 30 years old, and had no self-reported previous/current psychological diagnosis or experience with psychotherapy. With these criteria, we aimed to reach a sample in which symptoms had not yet developed but had a higher chance of developing within the twelve months observed, compared to an unrestricted sample. A peak of onset has been reported for late adolescence and early adulthood for both OCD (Anholt et al., 2014; Delorme et al., 2005) and eating disorders (Volpe et al., 2016).

Measures

Perfectionism: Frost Multidimensional Perfectionism Scale (FMPS)

The FMPS (Frost et al., 1990; German version:; Stöber, 1995) consists of 35 items rated on a 5-point scale (1 = strong disagreement to 5 = strong agreement). Items are divided into the six subscales parental criticism, parental expectation, doubts about actions, concern over mistakes, personal standards, and order and organization. The FMPS is a well-established measure for perfectionism with good psychometric properties (Frost et al., 1990; Stöber, 1995). Internal consistency in the current sample was good (Cronbach's $\alpha = 0.89$).

For analyses, rather than using the sum of all six subscales, we summed scores for the subscales "concern over mistakes" to represent perfectionistic concerns (9 items measuring excessively negative reactions to mistakes; Cronbach's $\alpha = 0.87$), and "personal standards" to represent perfectionistic strivings (7 items measuring the setting of perfectionistic standards; Cronbach's $\alpha = 0.81$). They are the subscales most closely aligned with clinically relevant perfectionism (Shafran & Mansell, 2001).

Clinical perfectionism: Clinical Perfectionism Questionnaire (CPQ)

As a second perfectionism measure, the CPQ (Fairburn et al., 2003b; German version: Roth et al., 2021) was used. It consists of 12 items rated on a 4-point scale (1 = never to 4 = always). The CPQ was developed based on the model of clinical perfectionism (Shafran et al., 2002) and displays high internal reliability (Steele et al., 2011). Internal consistency in the current sample was acceptable (Cronbach's $\alpha = 0.76$).

Eating disorder symptoms: Eating Disorder Examination Questionnaire (EDE-Q)

The EDE-Q (Fairburn & Beglin, 1994; German version; Hilbert et al., 2007) is frequently used as a self-report measure of eating disorder symptoms, with good reliability and validity (Hilbert et al., 2007; Mond et al., 2004). There are 22 items rated on a 7-point scale (0 = never to 6 = every day, across the last 28 days), divided into the four subscales restraint, shape concern, weight concern, and eating concern. The total score is calculated as a mean across subscales. Internal consistency in the current sample was excellent (Cronbach's $\alpha = 0.96$).

Obsessive compulsive symptoms: Obsessive-Compulsive Inventory-Revised (OCI-R)

The OCI-R (Foa et al., 2002; German version:; Gönner et al., 2008) is a widely used self-report measure of OCD symptom severity and shows good psychometric properties (Gönner et al., 2008). 18 items are rated on a 5-point scale (0 = not at all impaired to 4 = strongly impaired by a symptom, across the last month) and divided into six subscales: obsessing, washing, checking, ordering, hoarding, neutralizing. Internal consistency in the current sample was good (Cronbach's $\alpha = 0.88$).

Body dissatisfaction: Eating Disorder Inventory (EDI-II)

To measure the disorder-specific process body dissatisfaction, we used the EDI-II (Garner, 1991; German version:; Paul & Thiel, 2005). The EDI-II is a widely-used self-report measure of eating disorder symptoms and has good psychometric properties (Garner, 1991). The 9 items of the subscale "body dissatisfaction" are rated on a 6-point scale (1 = never to 6 = always). Internal consistency in the current sample was excellent (Cronbach's $\alpha = 0.90$).

Responsibility/Overestimation of threat: Obsessive Beliefs Questionnaire (OBQ)

To measure the disorder-specific process responsibility, we used the OBQ (Obsessive Compulsive Cognitions Working Group & Obsessive Compulsive Cognitions Working Group, 2005; German version: Ertle et al., 2008). The OBQ is a self-report measure of cognitions typical of OCD and shows good psychometric properties (Obsessive Compulsive Cognitions Working Group & Obsessive Compulsive Cognitions Working Group, 2005). The 7 items of the subscale "responsibility and overestimation of threat" are rated on a 7-point scale (1 = strong disagreement to 7 = strong agreement). Internal consistency in the current sample was good (Cronbach's $\alpha = 0.84$).

Statistical analyses

All statistical analyses were performed using R (R Core Team, 2022), version 4.2.2.

Data exclusion and missing data

Details on exclusions are provided in the Supplement. There were no significant differences on any clinical or sociodemographic variables between full-completers and participants who missed at least one assessment (all $p > 0.05$).

Multifinality (structural equation modelling)

To test our hypothesis that perfectionism predicts psychological symptoms and not vice versa, we used an approach similar to Smith et al. (2017). Cross-lagged panel modelling was used to investigate construct relations of perfectionism (both perfectionistic strivings and perfectionistic concerns), eating disorder symptoms, and OCD symptoms over time. To examine influences on subsequent variables, cross-lagged paths (i.e. paths between different constructs) were evaluated. The targets of interest were the prospective effects of perfectionism on symptoms and vice versa.

We tested for multivariate normality using Mardia's test (Mardia, 1970). Given the test revealed non-normality, we used Maximum Likelihood with robust standard errors. In building the model (using the *lavaan* package), we first formulated a baseline model with no constraints, accounting only for covariance between the two perfectionism dimensions at each time point. We then determined the best model fit through stepwise introduction of additional constraints. These were: equality constraints (identical unstandardized coefficients for each specific association across measurements points, i.e. baseline → 6-month follow-up would mirror 6-month follow-up → 12-month follow-up); covariance terms (between each set of variables at identical measurement points). At each step, an analysis of variance (*anova* function) was used to choose the model with the best fit. To then improve model fit further, we used the *modindices* function (*sem* package) to choose additional paths for inclusion, based on both theoretical and data-driven considerations.

Divergent trajectories (hierarchical multiple regressions)

To test our hypotheses about interaction effects between perfectionism and the disorder-specific processes (i.e. body dissatisfaction and inflated responsibility) on symptom development, two sets of hierarchical multiple regression analyses were used (using either perfectionistic strivings or perfectionistic concerns as the perfectionism variable). The first set predicted symptoms of eating disorders at 12 months.[2] In step one, eating disorder symptom levels (baseline) were included as a predictor. In step two, the additional predictors perfectionism (baseline), body dissatisfaction (at 6 months) and responsibility/overestimation of threat (at 6 months) were added. Step three included the interactions between perfectionism and body dissatisfaction or responsibility/overestimation of threat, respectively. These three models were compared to determine the model with the best fit. For the second set, the same analyses were conducted to predict OCD symptoms at 12 months[2]. For each model, we tested for assumptions of non-multicollinearity and homoscedasticity.

Exploratory analyses

In addition to the pre-registered analyses, following the same analysis plan, we computed both the structural equation models and the multiple hierarchical regressions with the CPQ as the perfectionism measure, instead of the FMPS subscales.

Table 1. Demographic characteristics of sample at baseline.

	M (*SD*) or % Total sample (*N* = 499)
Age at enrollment in years	23.3 (3.24)
Range	18–30
Education in years[a]	15.8 (2.54)
Status of employment	
Student	74.1%
Full-time employment	13.2%
Part-time employment	5.6%
Internship or vocational training	2.8%
Unemployed	1.8%
Other	2.4%

Note. [a]Total amount, including school, vocational training, university.

Table 2. Clinical characteristics of sample across measurement points.

Measure	Baseline *M* (*SD*) or % (*n* = 499)	Follow-Up (6 month) *M* (*SD*) or % (*n* = 456)	Follow-Up (12 month) *M* (*SD*) or % (*n* = 451)
OCD symptoms (OCI-R)	17.2 (11.1)	15.6 (10.9)	14.8 (11.0)
Eating Disorder symptoms (EDE-Q)	1.75 (1.36)	1.53 (1.26)	1.52 (1.31)
Perfectionism (FMPS)	112.0 (18.6)	111.2 (18.6)	110.7 (19.0)
Perfectionistic Concerns (FMPS-CM)	27.3 (7.52)	27.2 (7.78)	27.0 (7.88)
Perfectionistic Strivings (FMPS-PS)	25.3 (5.15)	25.1 (4.84)	24.9 (5.05)
Clinical Perfectionism (CPQ)	30.7 (5.56)	30.2 (5.24)	29.9 (5.72)
Responsibility/Overestimation of Threat (OBQ-RT)	31.3 (8.29)	30.5 (8.68)	30.2 (8.57)
Body Dissatisfaction (EDI-II-BD)	30.1 (10.5)	30.3 (10.6)	30.1 (10.7)
Diagnosis of a psychological disorder[a]	n.a.	3.9%	5.5%
In psychotherapeutic treatment[b]	n.a.	4.2%	5.1%

Note. [a]Diagnosis as indicated by participants ("Since the last measurement, have you been diagnosed with a psychological disorder?"). [b]Current treatment as indicated by participants ("Since the last measurement, have you entered psychotherapeutic treatment?"). OCI-R = Obsessive-Compulsive Inventory-Revised. EDE-Q = Eating Disorder Examination Questionnaire. FMPS-CM = Frost Multidimensional Perfectionism Scale, subscale "concern over mistakes". FMPS-PS = Frost Multidimensional Perfectionism Scale, subscale "personal standards". CPQ = Clinical Perfectionism Questionnaire. OBQ-RT = Obsessive Beliefs Questionnaire, subscale "responsibility/threat overestimation". EDI-II-BD = Eating Disorder Inventory, subscale "body dissatisfaction".

Results

Bivariate correlations between all variables can be found in Table S1 in the Supplement. The Supplement also includes statistical values used for data-driven model selection.

Sample description

Tables 1 and 2 show demographic and clinical characteristics of the sample. At baseline, participants showed levels of psychopathology below clinical cut-offs, with subclinical degrees of OCD and eating disorder symptoms. Compared to previously reported community samples (Egan et al., 2016), scores on the perfectionism measures were elevated, particularly for perfectionistic concerns. Scores on the measures of psychopathology appeared relatively stable across time at a group level, with no significant changes over time.

Table 3. Results of the final structural equation Model ($N = 499$).

	β	*95% CI*	*SE*	*z*	*p*
H1: Dependent variable: OCD symptom severity (OCI-R) at follow-up[a]					
Perfectionistic concerns (FMPS-CM) at previous measurement	0.10	0.04–0.17	0.03	3.13	**< 0.01**
Perfectionistic strivings (FMPS-PS) at previous measurement	−0.10	−0.20 – −0.01	0.05	−2.10	**< 0.05**
OCD symptoms (OCI-R) at previous measurement	0.75	0.67–0.82	0.04	20.61	**< 0.001**
H1: Dependent variable: eating disorder symptom severity (EDE-Q) at follow-up[a]					
Perfectionistic concerns (FMPS-CM) at previous measurement	0.00	−0.01–0.01	0.00	0.92	0.360
Perfectionistic strivings (FMPS-PS) at previous measurement	0.00	−0.02–0.01	0.01	−0.52	0.603
Eating disorder symptoms (EDE-Q) at previous measurement	0.75	0.69–0.81	0.03	24.22	**< 0.001**
H2: Dependent variable: perfectionistic concerns (FMPS-CM) at follow-up[a]					
OCD symptoms (OCI-R) at previous measurement	0.00	−0.03–0.03	0.01	−0.01	0.995
Eating disorder symptoms (EDE-Q) at previous measurement	0.45	0.18–0.72	0.14	3.31	**< 0.01**
Perfectionistic concerns (FMPS-CM) at previous measurement	0.64	0.58–0.70	0.03	21.14	**< 0.001**
H2: Dependent variable: perfectionistic strivings (FMPS-PS) at follow-up[a]					
OCD symptoms (OCI-R) at previous measurement	0.01	−0.01–0.03	0.01	1.06	0.290
Eating disorder symptoms (EDE-Q) at previous measurement	0.20	0.04–0.36	0.08	2.43	**< 0.05**
Perfectionistic strivings (FMPS-PS) at previous measurement	0.73	0.67–0.79	0.03	22.89	**< 0.001**

Model fit: $\chi^2 = 128.35$, df = 33, $p < 0.01$, CFI = 0.98, RMSEA = 0.08. OCI-R = Obsessive-Compulsive Inventory-Revised. EDE-Q = Eating Disorder Examination Questionnaire. FMPS_CM = Frost Multidimensional Perfectionism Scale, "concern over mistakes" subscale. FMPS_PS = Frost Multidimensional Perfectionism Scale, "personal standards" subscale. [a]Results for outcomes at 6-month and 12-month follow-up are presented together seeing as they are identical due to equality constraints within the model. Bold *p* values denote significance below α = 0.05.

Multifinality (structural equation modelling)

Mardia's test revealed skewed data (Skewness: $p < 0.001$; Kurtosis: $p = 0.20$). Results of the final model are presented in Table 3. After contrasting models, the model with the best fit included equality constraints across time points, but no covariance terms for variables measured at identical time points. Further details are provided in the Supplement. The final model showed reasonable approximate fit (CFI = 0.98, RMSEA = 0.08).

Hypothesis 1: Perfectionism as a predictor of subsequent symptoms

Results revealed that perfectionism does predict subsequent OCD symptoms, with opposite effects for the two perfectionism dimensions. Perfectionistic concerns (FMPS-CM) were positively associated ($\beta = .10$, $p < 0.01$), perfectionistic strivings (FMPS-PS) were negatively associated ($\beta = -.10$, $p < 0.05$) with subsequent OCD symptoms. In contrast, neither perfectionistic concerns (FMPS-CM) nor perfectionistic strivings (FMPS-PS) were significantly associated with subsequent eating disorder symptoms (both $p > 0.05$).

Hypothesis 2: Symptoms as a predictor of subsequent perfectionism

Results revealed that OCD symptoms did not predict subsequent perfectionism, on either perfectionism dimension (both $p > 0.05$). However, eating disorder symptoms did positively predict subsequent perfectionism, both perfectionistic concerns (FMPS-CM: $\beta = .45$, $p < 0.01$) and perfectionistic strivings (FMPS-PS: $\beta = .20$, $p < 0.01$).

Table 4. Results of final steps of the multiple hierarchical regressions ($N = 422$).

	β	*95% CI*	*SE*	*t*	*p*
H3: Dependent variable: eating disorder symptom severity (EDE-Q) at 12-month follow-up, with predictor FMPS-CM					
Intercept	−0.62	−1.00 – −0.23	0.24	−2.62	**< 0.01**
Eating disorder symptoms (EDE-Q) at baseline	0.58	0.50–0.65	0.06	9.89	**< 0.001**
Perfectionistic concerns (FMPS-CM) at baseline	0.00	−0.01–0.01	0.01	−0.02	0.99
Body dissatisfaction (EDI-2 BD) at 6-month follow-up	0.03	0.02–0.04	0.01	5.53	**< 0.001**
Responsibility/Threat Overestimation (OBQ RT) at 6-month follow-up	0.01	0.00–0.02	0.01	1.05	0.29
H3: Dependent variable: eating disorder symptom severity (EDE-Q) at 12-month follow-up, with predictor FMPS-PS					
Intercept	−0.45	−0.92–0.03	0.26	−1.59	0.065
Eating disorder symptoms (EDE-Q) at baseline	0.58	0.50–0.66	0.06	10.52	**< 0.001**
Perfectionistic strivings (FMPS-PS) at baseline	−0.01	−0.02–0.01	0.01	−1.06	0.313
Body dissatisfaction (EDI-2 BD) at 6-month follow-up	0.03	0.02–0.04	0.01	5.50	**< 0.001**
Responsibility/Threat Overestimation (OBQ RT) at 6-month follow-up	0.01	0.00–0.02	0.01	1.25	0.195
H4: Dependent variable: OCD symptom severity (OCI-R) at 12-month follow-up, with predictor FMPS-CM					
Intercept	−3.56	−7.31–0.19	1.95	−1.83	0.062
OCD symptoms (OCI-R) at baseline	0.64	0.56–0.71	0.05	12.70	**< 0.001**
Perfectionistic concerns (FMPS-CM) at baseline	0.02	−0.09–0.14	0.06	0.40	0.682
Body dissatisfaction (EDI-2 BD) at 6-month follow-up	0.12	0.04–0.20	0.04	2.98	**< 0.01**
Responsibility/Threat Overestimation (OBQ RT) at 6-month follow-up	0.11	0.00–0.21	0.06	1.78	**< 0.05**
H4: Dependent variable: OCD symptom severity (OCI-R) at 12-month follow-up, with predictor FMPS-PS					
Intercept	0.47	−4.21–5.15	2.58	0.18	0.843
OCD symptoms (OCI-R) at baseline	0.65	0.58–0.72	0.05	13.42	**< 0.001**
Perfectionistic strivings (FMPS-PS) at baseline	−0.18	−0.33 – −0.02	0.08	−2.33	**< 0.05**
Body dissatisfaction (EDI-2 BD) at 6-month follow-up	0.12	0.05–0.20	0.04	3.20	**< 0.01**
Responsibility/Threat Overestimation (OBQ RT) at 6-month follow-up	0.13	0.03–0.23	0.06	2.36	**< 0.01**

EDE-Q = Eating Disorder Examination Questionnaire. OCI-R = Obsessive-Compulsive Inventory-Revised. FMPS-CM = Frost Multidimensional Perfectionism Scale, "concern over mistakes" subscale. FMPS-PS = Frost Multidimensional Perfectionism Scale, "personal standards" subscale. EDI-2 BD = Eating Disorder Inventory-2, "body dissatisfaction" subscale. OBQ RT = Obsessive Beliefs Questionnaire, "responsibility and overestimation of threat" subscale. Bold *p* values denote significance below α = 0.05.

Divergent trajectories (hierarchical multiple regressions)

Results of the final models are presented in Table 4, with separate models for each perfectionism component (FMPS-CM to measure perfectionistic concerns and FMPS-PS to measure perfectionistic strivings). All final models fulfilled the assumptions of non-multicollinearity (all VIF < 2) and normal distribution of residuals (visual inspection), but violated the assumption of homoscedasticity (all $p < 0.05$). Hence, we report heteroscedasticity-robust standard errors.

Hypothesis 3: Interaction between perfectionism and body dissatisfaction on subsequent eating disorder symptoms

After contrasting models, the model with the best fit included the predictors eating disorder symptoms (baseline), perfectionism (baseline), body dissatisfaction (6-month follow-up) and responsibility/overestimation of threat (6-month follow-up), but no interaction terms ($R^2 = 0.63$ for the model using FMPS-CM; $R^2 = 0.64$ for the model using FMPS-PS). Models containing the interaction terms are included in Table S4 in the Supplement. Thus, we did not find the hypothesized interaction effects. Eating disorder symptoms at 12-month follow-up were positively predicted by eating disorder symptoms (baseline; β = .58, $p < 0.001$) and body dissatisfaction (6-month follow-up; β = .03, $p <$

0.001), but not by baseline perfectionism (neither perfectionistic concerns nor perfectionistic strivings; both $p > 0.05$) or responsibility/overestimation of threat (6-month follow-up; $p > 0.05$).

Hypothesis 4: Interaction between perfectionism and responsibility/overestimation of threat on subsequent OCD symptoms

After contrasting models, the models with the best fit included the predictors OCD symptoms (baseline), perfectionism (baseline), body dissatisfaction (6-month follow-up) and responsibility/overestimation of threat (6-month follow-up), but no interaction terms ($R^2 = 0.47$ for the model using FMPS-CM; $R^2 = 0.48$ for the model using FMPS-PS). Models containing the interaction terms are included in Table S4 in the Supplement. Thus, we did not find the hypothesized interaction effects. In the model using FMPS-CM, OCD symptoms were positively predicted by OCD symptoms (baseline; $\beta = .64$, $p < 0.001$), body dissatisfaction (6-month follow-up; $\beta = .12$, $p < 0.01$) and responsibility/overestimation of threat (6-month follow-up; $\beta = .11$, $p < 0.05$), but not by baseline perfectionistic concerns ($p > 0.05$). In the model using FMPS-PS, OCD symptoms were positively predicted by baseline OCD symptoms (baseline; $\beta = .65$, $p < 0.001$), body dissatisfaction (6-month follow-up; $\beta = .12$, $p < 0.01$), responsibility/overestimation of threat (6-month follow-up; $\beta = .13$, $p < 0.01$), and negatively predicted by baseline perfectionistic strivings ($\beta = -.18$, $p < 0.05$).

Exploratory analyses

Structural Equation Model

Results of the final model are presented in Table S2 in the Supplement. After contrasting models, the model with the best fit included equality constraints across time points, but no covariance terms for variables measured at identical time points. The final model showed reasonable approximate fit (CFI = 0.98, RMSEA = 0.07). Results revealed that perfectionism (CPQ) did not predict symptoms ($p > 0.05$ for both eating disorder and OCD symptoms). However, symptoms did positively predict subsequent perfectionism (CPQ), for both eating disorder ($\beta = .32$ $p < 0.01$) and OCD ($\beta = .03$, $p < 0.01$) symptoms.

Multiple Hierarchical Regressions

Results of the final models are presented in Table S3 in the Supplement ($R^2 = 0.63$ for outcome eating disorder symptoms; $R^2 = 0.47$ for outcome OCD symptoms). After contrasting models, the models with the best fit included the predictors psychopathology (baseline), perfectionism (baseline), body dissatisfaction (6-month follow-up) and responsibility/overestimation of threat (6-month follow-up), but no interaction terms. Thus, we could not find the hypothesized interaction effects. Eating disorder symptoms at 12-month follow-up were positively predicted by eating disorder symptoms (baseline; $\beta = .58$, $p < 0.001$) and body dissatisfaction (6-month follow-up; $\beta = .03$, $p < 0.001$), but not by baseline perfectionism (CPQ; $p > 0.05$) or responsibility/overestimation of threat (6-month follow-up; $p > 0.05$). In contrast, OCD symptoms at 12-month follow-up were positively predicted by OCD symptoms (baseline; $\beta = .65$, $p < 0.001$), body dissatisfaction (6-month follow-up; $\beta = .13$, $p < 0.01$) and responsibility/overestimation of threat (6-month follow-up; $\beta = .12$, $p < 0.05$), but not by baseline perfectionism (CPQ; $p > 0.05$).

Discussion

The present study investigated longitudinal associations between perfectionism and psychological symptoms. More specifically, the aim was to examine perfectionism as a transdiagnostic risk factor and address questions of multifinality (i.e. does perfectionism increase the risk for more than one disorder at a time) and divergent trajectories (i.e. which factors determine the development of a specific disorder) in an analogue sample.

OCD symptoms were positively predicted by earlier perfectionistic concerns and negatively predicted by earlier perfectionistic strivings. OCD symptoms did not predict either dimension of perfectionism. This is partially in line with previous research. Meta-analyses suggested detrimental associations between both perfectionism dimensions and OCD symptoms, with a smaller association for strivings than concerns (Callaghan et al., 2023; Limburg et al., 2017; Lunn et al., 2023). Only one study so far has investigated longitudinal relations between perfectionism (using the OBQ subscale "perfectionism/intolerance of uncertainty") and OCD, yielding bidirectional effects (Hawley et al., 2021). Using a perfectionism-specific measure, our results suggest there is a component of perfectionism which does contribute to later symptoms of OCD, particularly an elevated concern over mistakes, namely perfectionistic concerns. However, the positive impact of perfectionistic strivings is surprising. Whereas some studies have found benefits of perfectionistic strivings (e.g. Chou et al., 2019; Gnilka et al., 2012), meta-analyses would suggest perfectionistic strivings to be detrimental to mental health (Callaghan et al., 2023; Limburg et al., 2017; Lunn et al., 2023; Stackpole et al., 2023). To further disentangle the effect of perfectionism as a risk factor for psychopathology, it could be beneficial to compare the change in symptoms of psychopathology in individuals high in perfectionistic strivings with the change in symptoms in non-perfectionistic high-achievers. A suitable construct in this context may be excellencism (Gaudreau, 2019; Gaudreau et al., 2022). In contrast to perfectionism, the focus lies on striving for excellent rather than flawless results. Taking excellencism into account might explain positive outcomes which would otherwise be attributed to perfectionistic strivings. Considering the scarcity of longitudinal evidence on perfectionism and OCD, our results call for replication and extension in further studies.

In contrast to our hypotheses, eating disorder symptoms were not significantly predicted by either perfectionism dimension. This result is counter to theoretical models which assume perfectionism to be an etiological factor for eating disorders (Fairburn et al., 2003a; Shafran et al., 2002). Meta-analyses of predominantly cross-sectional evidence have shown significant associations between both perfectionism dimensions and eating disorder symptoms (Limburg et al., 2017; Stackpole et al., 2023). Previous longitudinal evidence, however, has been less consistent. In some studies, perfectionistic concerns have predicted symptoms of eating disorders in community samples, with perfectionistic strivings either showing no effects or not having been included in analyses (Boone et al., 2011; Dickie et al., 2012; Kehayes et al., 2019; Smith et al., 2017). Other studies, relying on a variety of different perfectionism measures, have failed to find a direct predictive effect of perfectionism on eating disorder symptoms, often in young female samples similar to the current study (Bachar et al., 2010; Brosof & Levinson, 2017; Liu et al., 2016; Shaw et al., 2004).

Rather than predicting, perfectionism was predicted by symptoms of eating disorders. Both perfectionistic concerns and, to a lesser extent, perfectionistic strivings were positively associated with earlier eating disorder symptoms. On the one hand, it is possible that perfectionism and eating disorder symptoms are bidirectionally related, as previously observed in clinical samples of adolescents with eating disorders (Drieberg et al., 2019). However, current results support only one direction of effects (i.e. eating disorder symptoms predicting perfectionism, and not vice versa). Alternatively, perfectionism may be part of eating disorder symptomatology, rather than preceding it. Thus, perfectionism could be considered a coping mechanism. For instance, perfectionistic concerns may impact strategies for regulating one's own emotions (see Malivoire et al., 2019 for a review), predicting the use of strategies such as experiential avoidance (Moroz & Dunkley, 2019) and expressive suppression (Tran & Rimes, 2017). Once developed, perfectionism may thus spread to domains other than eating behavior and contribute to the onset of comorbid symptoms such as symptoms of OCD. Indeed, preliminary evidence implicates perfectionistic concerns as a bridge variable in symptom networks (Claus et al., 2023). However, these explanations are speculative and require further investigation.

In our exploratory analyses using the CPQ as an alternative perfectionism measure, perfectionism also did not predict, but was predicted by psychological symptoms (both eating disorder and OCD symptoms). It is possible that this measure of clinical perfectionism was not ideally suited to our non-clinical sample, and considering insufficient internal consistency, we will not further discuss CPQ results.

Neither of our hypothesized disorder-specific processes, body dissatisfaction and inflated responsibility, interacted significantly with perfectionism. Instead, both variables acted as separate additional predictors of psychological symptoms. Firstly, inflated responsibility positively predicted subsequent OCD symptoms, but not eating disorder symptoms. Responsibility has long been assumed to play a causal role in the development and maintenance of OCD (Obsessive Compulsive Cognitions Working Group & Obsessive Compulsive Cognitions Working Group, 2005; Rachman, 2002), with experimental inductions of inflated responsibility yielding elevated OCD symptoms (Mantz et al., 2019; Radomsky et al., 2022). We expected a moderation between perfectionism and responsibility in line with a previous cross-sectional study (Yorulmaz et al., 2006). Our longitudinal results confirm a strong association between OCD and inflated responsibility that seems to be specific to OCD, but independent from perfectionism. Similarly, body dissatisfaction acted as a predictor of OCD and eating disorder symptoms independent from perfectionism, contrasting previous evidence which showed an interaction between body dissatisfaction and perfectionism which increased subsequent eating disorder symptoms (Boone & Soenens, 2015; Boone et al., 2014). However, results are in line with cross-sectional evidence that body dissatisfaction shares unique associations with checking, cleaning, and obsessive rituals which cannot be explained by perfectionism (Pollack & Forbush, 2013). Beyond that, body dissatisfaction has been deemed a risk factor that is relevant to many different disorders, including not only eating disorders (Shagar et al., 2017; Stice & Shaw, 2002), but also anxiety disorders (Vannucci & Ohannessian, 2018) and depression (Sharpe et al., 2018). As a transdiagnostic risk factor, body dissatisfaction may be particularly relevant to a sample of college-age women, a population strongly affected by disordered eating behaviors (Sonneville et al., 2013;

Wade et al., 2012) and with up to 40% indicating high body dissatisfaction (Eck et al., 2022). In young women especially, there is a strong cross-sectional association between perfectionistic concerns and body dissatisfaction (Chang et al., 2016; Wade & Tiggemann, 2013).

Taken together, our results suggest that temporal relations between perfectionism and psychological well-being may not be clear-cut. We could not demonstrate multifinality, with perfectionism predicting only symptoms of one type of disorder specifically, nor could we answer the question of divergent trajectories, seeing as disorder-specific processes failed to interact significantly with perfectionism.

Limitations and implications

The current study is limited by its sample as well as its methodology. Firstly, we recruited a sample of young women with no history of psychopathology. Whereas the recruitment of analogue samples poses a crucial first step in translational research (Abramowitz et al., 2014; Ehring et al., 2022), it also carries the risk of a lack of observable symptoms or insufficient variance of symptoms across measurements. Against expectation, we observed little variation over time in the variables we observed, limiting the effect sizes which were reasonably detectable. The specific nature of our sample also limits generalizability of results, meaning the observed effects may not apply to more diverse populations. Future studies should consider including a broader range of participants and a longer period of data collection to increase the chance of symptoms developing during the duration of the study. Secondly, several assumptions of our statistical models were violated (multivariate normal distribution, homoscedasticity). Despite compensating for these violations (skewness-robust estimator, heteroscedasticity-robust standard errors), results should be interpreted with caution. Additionally, we measured responsibility using a subscale which combines both responsibility and overestimation of threat. Hence, results may not be specific to responsibility alone. In fact, overestimation of threat may be less specific to OCD and instead applicable to anxious pathology overall (Tolin et al., 2006), calling for the use of more specific responsibility measures in future.

Despite these limitations, the present study adds to a research field which has so far focused on single disorders at a time and largely relied on cross-sectional associations. Our results confirm that perfectionism, particularly perfectionistic concerns, does indeed increase the risk of subsequent psychological symptoms. However, in this non-clinical sample the effect was specific to OCD. It is important to also consider the reverse effect, given eating disorder symptoms positively predicted subsequent perfectionism. In addition to perfectionism, factors such as inflated responsibility and body dissatisfaction also appear to play a role independent from perfectionism, the latter of which appears to have a transdiagnostic role in a non-clinical sample of young women.

Notes

1. The authors of the model cited here (Nolen-Hoeksema & Watkins, 2011) use the term "moderator" for those variables which operate between a risk factor such as perfectionism

and the resulting specific psychopathology. However, those variables are not meant to represent moderators in the statistical sense. To avoid confusion, the present manuscript uses the term "disorder-specific process" instead.

2. Preregistration stated we would separately predict psychopathology at 6 months and 12 months, respectively. However, to test the assumption that perfectionism would need to be present first, followed by disorder-specific processes later, in order to *subsequently* increase psychopathology, only testing the outcome at 12 months is suitable. Thus, we decided to only include the models predicting psychopathology at 6 months in the Supplement, without discussing them in the manuscript.

Disclosure statement

Sarah Egan and Roz Shafran receive royalties for the books *Overcoming perfectionism: A self-help guide using scientifically supported cognitive behavioural techniques and Cognitive-behavioral treatment of perfectionism*. All research at Great Ormond Street Hospital NHS Foundation Trust and UCL Great Ormond Street Institute of Child Health is made possible by the NIHR Great Ormond Street Hospital Biomedical Research Centre. The views expressed are those of the author (s) and not necessarily those of the NHS, the NIHR or the Department of Health.

Funding

This work was supported by the German Research Foundation (DFG), Deutsche Forschungsgemeinschaft [CL 784/2-1].

ORCID

Nathalie Claus https://orcid.org/0000-0002-4081-4952
Barbara Cludius https://orcid.org/0000-0003-4814-1497
Sarah J. Egan https://orcid.org/0000-0002-3715-4009
Roz Shafran https://orcid.org/0000-0003-2729-4961
Thomas Ehring https://orcid.org/0000-0001-9502-6868
Keisuke Takano https://orcid.org/0000-0003-0406-8654

Author contributions

NC–Methodology, Investigation, Data Curation, Formal Analysis, Writing—Original Draft, Project Administration
BC-Conceptualization, Funding Acquisition, Resources, Writing—Review & Editing, Supervision
SE–Writing—Review & Editing, Funding Acquisition
RS–Writing—Review & Editing, Funding Acquisition
TE–Writing—Review & Editing, Funding Acquisition, Supervision
KT–Methodology, Writing—Review & Editing, Funding Acquisition, Supervision
KL–Conceptualization, Funding Acquisition, Writing—Review & Editing, Supervision

Data availability statement

Data have been anonymized and uploaded to OSF, along with the R code (https://osf.io/39nx7/).

Open scholarship

This article has earned the Center for Open Science badges for Open Data and Preregistered. The data and materials are openly accessible at https://osf.io/39nx7/

Ethical approval & consent

All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the 1964 helsinki Declaration and its later amendments. The study was approved by the Ethics Commission for Psychology and the Learning Sciences at LMU Munich. Informed consent was obtained from all participants included in the study.

References

Abramowitz, J. S., Fabricant, L. E., Taylor, S., Deacon, B. J., McKay, D., & Storch, E. A. (2014). The relevance of analogue studies for understanding obsessions and compulsions. *Clinical Psychology Review*, *34*(3), 206–217. https://doi.org/10.1016/j.cpr.2014.01.004

Altman, S. E., & Shankman, S. A. (2009). What is the association between obsessive-compulsive disorder and eating disorders? *Clinical Psychology Review*, *29*(7), 638–646. https://doi.org/10/bhh9bs

Anholt, G. E., Aderka, I. M., Van Balkom, A. J. L. M., Smit, J. H., Schruers, K., Van Der Wee, N. J. A., Eikelenboom, M., De Luca, V., & Van Oppen, P. (2014). Age of onset in obsessive-compulsive disorder: Admixture analysis with a large sample. *Psychological Medicine*, *44*(1), 185–194. https://doi.org/10.1017/S0033291713000470

Bachar, E., Gur, E., Canetti, L., Berry, E., & Stein, D. (2010). Selflessness and perfectionism as predictors of pathological eating attitudes and disorders: A longitudinal study. *European Eating Disorders Review*, *18*(6), 496–506. https://doi.org/10.1002/erv.984

Bardone-Cone, A. M., Lin, S. L., & Butler, R. M. (2017). Perfectionism and contingent self-worth in relation to disordered eating and anxiety. *Behavior Therapy*, *48*(3), 380–390. https://doi.org/10.1016/j.beth.2016.05.006

Bieling, P. J., Israeli, A. L., & Antony, M. M. (2004). Is perfectionism good, bad, or both? Examining models of the perfectionism construct. *Personality & Individual Differences*, *36*(6), 1373–1385. https://doi.org/10.1016/S0191-8869(03)00235-6

Bills, E., Greene, D., Stackpole, R., & Egan, S. J. (2023). Perfectionism and eating disorders in children and adolescents: A systematic review and meta-analysis. *Appetite*, *187*, 106586. https://doi.org/10.1016/j.appet.2023.106586

Boone, L., & Soenens, B. (2015). In double trouble for eating pathology? An experimental study on the combined role of perfectionism and body dissatisfaction. *Journal of Behavior Therapy and Experimental Psychiatry*, *47*, 77–83. https://doi.org/10.1016/j.jbtep.2014.11.005

Boone, L., Soenens, B., & Braet, C. (2011). Perfectionism, body dissatisfaction, and bulimic symptoms: The intervening role of perceived pressure to be thin and thin ideal internalization. *Journal of Social & Clinical Psychology*, *30*(10), 1043–1068. https://doi.org/10.1521/jscp.2011.30.10.1043

Boone, L., Soenens, B., & Luyten, P. (2014). When or why does perfectionism translate into eating disorder pathology? A longitudinal examination of the moderating and mediating role of body dissatisfaction. *Journal of Abnormal Psychology*, *123*(2), 412–418. https://doi.org/10.1037/a0036254

Brosof, L. C., & Levinson, C. A. (2017). Social appearance anxiety and dietary restraint as mediators between perfectionism and binge eating: A six month three wave longitudinal study. *Appetite*, *108*, 335–342. https://doi.org/10.1016/j.appet.2016.10.015

Callaghan, T., Greene, D., Shafran, R., Lunn, J., & Egan, S. J. (2023). The relationships between perfectionism and symptoms of depression, anxiety and obsessive-compulsive disorder in adults: A systematic review and meta-analysis. *Cognitive Behaviour Therapy*, *53*(2), 1–12. https://doi.org/10.1080/16506073.2023.2277121

Campbell, R., Boone, L., Vansteenkiste, M., & Soenens, B. (2018). Psychological need frustration as a transdiagnostic process in associations of self-critical perfectionism with depressive symptoms and eating pathology. *Journal of Clinical Psychology*, *74*(10), 1775–1790. https://doi.org/10.1002/jclp.22628

Chang, E. C., Yu, T., Chang, O. D., & Jilani, Z. (2016). Evaluative concerns and personal standards perfectionism as predictors of body dissatisfaction in Asian and European American female college students. *Journal of American College Health*, *64*(7), 580–584. https://doi.org/10.1080/07448481.2016.1178121

Chou, C.-C., Huang, M.-Y., Lin, T.-W., Lu, F. J.-H., Chiu, Y.-H., & Chen, J.-F. (2019). Moderating effect of self-esteem on the relationship between perfectionism and creative thinking among collegiate dancers. *Creativity Research Journal*, *31*(2), 188–197. https://doi.org/10.1080/10400419.2019.1606620

Claus, N., Limburg, K., Egan, S. J., Shafran, R., Ehring, T., Takano, K., & Cludius, B. (2023). The transdiagnostic role of perfectionism: Insights from longitudinal network analyses. Manuscript submitted for publication.

Compulsive Cognitions Working Group, O., & Obsessive Compulsive Cognitions Working Group. (2005). Psychometric validation of the obsessive belief questionnaire and interpretation of intrusions inventory—part 2: Factor analyses and testing of a brief version. *Behaviour Research and Therapy*, *43*(11), 1527–1542. https://doi.org/10/fd6cjx

Coyne, J. C., & Whiffen, V. E. (1995). Issues in personality as diathesis for depression: The case of sociotropy-dependency and autonomy-self-criticism. *Psychological Bulletin*, *118*(3), 358–378. https://doi.org/10.1037/0033-2909.118.3.358

Curran, P. G. (2016). Methods for the detection of carelessly invalid responses in survey data. *Journal of Experimental Social Psychology*, *66*, 4–19. https://doi.org/10.1016/j.jesp.2015.07.006

Delorme, R., Golmard, J.-L., Chabane, N., Millet, B., Krebs, M.-O., Mouren-Simeoni, M. C., & Leboyer, M. (2005). Admixture analysis of age at onset in obsessive-compulsive disorder. *Psychological Medicine*, *35*(2), 237–243. https://doi.org/10.1017/S0033291704003253

Dickie, L., Wilson, M., McDowall, J., & Surgenor, L. J. (2012). What components of perfectionism predict drive for thinness? *Eating Disorders*, *20*(3), 232–247. https://doi.org/10.1080/10640266.2012.668484

Drieberg, H., McEvoy, P. M., Hoiles, K. J., Shu, C. Y., & Egan, S. J. (2019). An examination of direct, indirect and reciprocal relationships between perfectionism, eating disorder symptoms, anxiety, and depression in children and adolescents with eating disorders. *Eating Behaviors*, *32*, 53–59. https://doi.org/10.1016/j.eatbeh.2018.12.002

Eck, K. M., Quick, V., & Byrd-Bredbenner, C. (2022). Body dissatisfaction, eating styles, weight-related behaviors, and health among young women in the United States. *Nutrients*, *14*(18), 3876. https://doi.org/10.3390/nu14183876

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*(1), 79–91. https://doi.org/10.1017/S1352465814000629

Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical Psychology Review*, *31*(2), 203–212. https://doi.org/10.1016/j.cpr.2010.04.009

Ehring, T., Limburg, K., Kunze, A. E., Wittekind, C. E., Werner, G. G., Wolkenstein, L., Guzey, M., & Cludius, B. (2022). (When and how) does basic research in clinical psychology lead to more effective psychological treatment for mental disorders? *Clinical Psychology Review*, *95*, 102163. https://doi.org/10.1016/j.cpr.2022.102163

Ertle, A., Wahl, K., Bohne, A., Moritz, S., Kordon, A., & Schulte, D. (2008). Dimensionen zwangsspezifischer Einstellungen. *Zeitschrift für Klinische Psychologie und Psychotherapie*, *37* (4), 263–271. https://doi.org/10.1026/1616-3443.37.4.263

Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, *16*(4), 363–370. https://doi.org/10/gntvd8

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003a). Cognitive behaviour therapy for eating disorders: A "transdiagnostic" theory and treatment. *Behaviour Research and Therapy*, *41*(5), 509–528. https://doi.org/10.1016/S0005-7967(02)00088-8

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003b). *Clinical Perfectionism Questionnaire (CPQ)*. APA PsycTests. https://doi.org/10.1037/t59141-000

Foa, E. B., Huppert, J. D., Leiberg, S., Langner, R., Kichic, R., Hajcak, G., & Salkovskis, P. M. (2002). The obsessive-compulsive inventory: Development and validation of a short version. *Psychological Assessment*, *14*(4), 485. https://doi.org/10.1037/1040-3590.14.4.485

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, *14*(5), 449–468. https://doi.org/10.1007/BF01172967

Garner, D. M. (1991). *Eating disorder inventory-2 manual*. Psychological Assessment Resources.

Gaudreau, P. (2019). On the distinction between personal standards perfectionism and excellencism: A theory elaboration and research agenda. *Perspectives on Psychological Science*, *14*(2), 197–215. https://doi.org/10.1177/1745691618797940

Gaudreau, P., Schellenberg, B. J. I., Gareau, A., Kljajic, K., & Manoni-Millar, S. (2022). Because excellencism is more than good enough: On the need to distinguish the pursuit of excellence from the pursuit of perfection. *Journal of Personality & Social Psychology*, *122*(6), 1117–1145. https://doi.org/10.1037/pspp0000411

Gnilka, P. B., Ashby, J. S., & Noble, C. M. (2012). Multidimensional perfectionism and anxiety: Differences among individuals with perfectionism and tests of a coping-mediation Model. *Journal of Counseling & Development*, *90*(4), 427–436. https://doi.org/10.1002/j.1556-6676.2012.00054.x

Gönner, S., Leonhart, R., & Ecker, W. (2008). The obsessive-compulsive inventory-revised (OCI-R): Validation of the German version in a sample of patients with OCD, anxiety disorders, and depressive disorders. *Journal of Anxiety Disorders*, *22*(4), 734–749. https://doi.org/10/dsb77j

Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., & Duda, S. N. (2019). The REDCap consortium: Building an international community of software platform partners. *Journal of Biomedical Informatics*, *95*, 103208. https://doi.org/10.1016/j.jbi.2019.103208

Harvey, A. G., Murray, G., Chandler, R. A., & Soehner, A. (2011). Sleep disturbance as transdiagnostic: Consideration of neurobiological mechanisms. *Clinical Psychology Review*, *31*(2), 225–235. https://doi.org/10.1016/j.cpr.2010.04.003

Hawley, L. L., Rector, N. A., & Richter, M. A. (2021). Technology supported mindfulness for obsessive compulsive disorder: The role of obsessive beliefs. *Journal of Anxiety Disorders*, *81*, 102405. https://doi.org/10.1016/j.janxdis.2021.102405

Hewitt, P. L., & Flett, G. L. (2002). Perfectionism and stress in psychopathology. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 255–284). American Psychological Association.

Hilbert, A., Tuschen-Caffier, B., Karwautz, A., Niederhofer, H., & Munsch, S. (2007). Eating disorder examination-questionnaire. *Diagnostica*, *53*(3), 144–154. https://doi.org/10.1026/0012-1924.53.3.144

Kehayes, I.-L.-L., Smith, M. M., Sherry, S. B., Vidovic, V., & Saklofske, D. H. (2019). Are perfectionism dimensions risk factors for bulimic symptoms? A meta-analysis of longitudinal studies. *Personality & Individual Differences*, *138*, 117–125. https://doi.org/10.1016/j.paid.2018.09.022

Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2017). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of Clinical Psychology*, *73*(10), 1301–1326. https://doi.org/10.1002/jclp.22435

Liu, C.-Y., Tseng, M.-C. M., Chang, C.-H., Fang, D., & Lee, M.-B. (2016). Comorbid psychiatric diagnosis and psychological correlates of eating disorders in dance students. *Journal of the Formosan Medical Association*, *115*(2), 113–120. https://doi.org/10.1016/j.jfma.2015.01.019

Lunn, J., Greene, D., Callaghan, T., & Egan, S. J. (2023). Associations between perfectionism and symptoms of anxiety, obsessive-compulsive disorder and depression in young people: A meta-analysis. *Cognitive Behaviour Therapy*, *52*(5), 460–487. https://doi.org/10.1080/16506073.2023.2211736

Malivoire, B. L., Kuo, J. R., & Antony, M. M. (2019). An examination of emotion dysregulation in maladaptive perfectionism. *Clinical Psychology Review*, *71*, 39–50. https://doi.org/10.1016/j.cpr.2019.04.006

Mantz, S. C., O'Brien, M., Waters, F. A., & Abbott, M. J. (2019). The impact of enhanced responsibility and threat beliefs on self-report and behavioural indices during a sorting task for young people with OCD. *Cognitive Therapy and Research*, *43*(2), 498–513. https://doi.org/10.1007/s10608-018-9946-1

Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, *57*(3), 519–530. https://doi.org/10.1093/biomet/57.3.519

McGrath, D. S., Sherry, S. B., Stewart, S. H., Mushquash, A. R., Allen, S. L., Nealis, L. J., & Sherry, D. L. (2012). Reciprocal relations between self-critical perfectionism and depressive symptoms: Evidence from a short-term, four-wave longitudinal study. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *44*(3), 169–181. https://doi.org/10.1037/a0027764

Mond, J. M., Hay, P. J., Rodgers, B., Owen, C., & Beumont, P. J. V. (2004). Validity of the eating disorder examination questionnaire (EDE-Q) in screening for eating disorders in community samples. *Behaviour Research and Therapy*, *42*(5), 551–567. https://doi.org/10.1016/S0005-7967(03)00161-X

Moroz, M., & Dunkley, D. M. (2019). Self-critical perfectionism, experiential avoidance, and depressive and anxious symptoms over two years: A three-wave longitudinal study. *Behaviour Research and Therapy*, *112*, 18–27. https://doi.org/10.1016/j.brat.2018.11.006

Nolen-Hoeksema, S., & Watkins, E. R. (2011). A heuristic for developing Transdiagnostic models of psychopathology: Explaining multifinality and divergent trajectories. *Perspectives on Psychological Science*, *6*(6), 589–609. https://doi.org/10.1177/1745691611419672

Paul, T., & Thiel, A. (2005). Eating disorder inventory-2 (EDI-2): Deutsche version. Hogrefe Verlag.

Pollack, L. O., & Forbush, K. T. (2013). Why do eating disorders and obsessive-compulsive disorder co-occur? *Eating Behaviors*, *14*(2), 211–215. https://doi.org/10.1016/j.eatbeh.2013.01.004

Pozza, A., & Dèttore, D. (2014a). Are inflated responsibility beliefs specific to OCD? meta-analysis of the relations of responsibility to OCD, anxiety disorders, and depression symptoms. *Clinical Neuropsychiatry: Journal of Treatment Evaluation*, *11*(6), 170–181.

Pozza, A., & Dèttore, D. (2014b). The specificity of inflated responsibility beliefs to OCD: A systematic review and meta-analysis of published cross-sectional case-control studies. *Research in Psychology and Behavioral Sciences*, *2*(4), 75–85. https://doi.org/10.12691/rpbs-2-4-1

Rachman, S. (2002). A cognitive theory of compulsive checking. *Behaviour Research and Therapy*, *40*(6), 625–639. https://doi.org/10.1016/S0005-7967(01)00028-6

Radomsky, A. S., Alcolado, G. M., Dugas, M. J., & Lavoie, S. L. (2022). Responsibility, probability, and severity of harm: An experimental investigation of cognitive factors associated with checking-related OCD. *Behaviour Research and Therapy*, *150*, 104034. https://doi.org/10.1016/j.brat.2022.104034

R Core Team. (2022). *R: A language and environment for statistical computing. (version 4.2.2). Computer software*. R Foundation for Statistical Computing. https://www.R-project.org

Romero-Sanchiz, P., Nogueira-Arjona, R., Godoy-Ávila, A., Gavino-Lázaro, A., & Freeston, M. H. (2015). Narrow specificity of responsibility and intolerance of uncertainty in obsessive-compulsive behavior and generalized anxiety symptoms. *International Journal of Cognitive Therapy*, *8*(3), 239–257. https://doi.org/10.1521/ijct_2015_8_04

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 SE–Research Articles), 1–16. https://doi.org/10/gkq2m6

Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: A cognitive-behavioural analysis. *Behaviour Research and Therapy*, *40*(7), 773–791. https://doi.org/10/c9mc7m

Shafran, R., Egan, S. J., & Wade, T. D. (2023). Coming of age: A reflection of the first 21 years of cognitive behaviour therapy for perfectionism. *Behaviour Research and Therapy*, *161*, 104258. https://doi.org/10.1016/j.brat.2023.104258

Shafran, R., & Mansell, W. (2001). Perfectionism and psychopathology: A review of research and treatment. *Clinical Psychology Review*, *21*(6), 879–906. https://doi.org/10.1016/S0272-7358(00)00072-6

Shagar, P. S., Harris, N., Boddy, J., & Donovan, C. L. (2017). The relationship between Body image concerns and weight-related behaviours of adolescents and emerging adults: A systematic review. *Behaviour Change*, *34*(4), 208–252. https://doi.org/10.1017/bec.2018.3

Shamon, H., & Berning, C. (2020). Attention check items and instructions in online surveys with Incentivized and non-Incentivized samples: Boon or bane for data quality? *Survey Research Methods*, *14*(1), 55–77. https://doi.org/10/ghkvb5

Sharpe, H., Patalay, P., Choo, T.-H., Wall, M., Mason, S. M., Goldschmidt, A. B., & Neumark-Sztainer, D. (2018). Bidirectional associations between body dissatisfaction and depressive symptoms from adolescence through early adulthood. *Development & Psychopathology*, *30*(4), 1447–1458. https://doi.org/10.1017/S0954579417001663

Shaw, H. E., Stice, E., & Springer, D. W. (2004). Perfectionism, body dissatisfaction, and self-esteem in predicting bulimic symptomatology: Lack of replication. *International Journal of Eating Disorders*, *36*(1), 41–47. https://doi.org/10.1002/eat.20016

Smith, M. M., Sherry, S. B., Gautreau, C. M., Stewart, S. H., Saklofske, D. H., & Mushquash, A. R. (2017). Are perfectionistic concerns an antecedent of or a consequence of binge eating, or both? A short-term four-wave longitudinal study of undergraduate women. *Eating Behaviors*, *26*, 23–26. https://doi.org/10.1016/j.eatbeh.2017.01.001

Sonneville, K. R., Horton, N. J., Micali, N., Crosby, R. D., Swanson, S. A., Solmi, F., & Field, A. E. (2013). Longitudinal associations between binge eating and overeating and adverse outcomes among adolescents and young adults: Does loss of control matter? *JAMA Pediatrics*, *167*(2), 149. https://doi.org/10.1001/2013.jamapediatrics.12

Stackpole, R., Greene, D., Bills, E., & Egan, S. J. (2023). The association between eating disorders and perfectionism in adults: A systematic review and meta-analysis. *Eating Behaviors*, *50*, 101769. https://doi.org/10.1016/j.eatbeh.2023.101769

Steele, A., O'Shea, A., Murdock, A., & Wade, T. D. (2011). Perfectionism and its relation to overevaluation of weight and shape and depression in an eating disorder sample. *International Journal of Eating Disorders*, *44*(5), 459–464. https://doi.org/10.1002/eat.20817

Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology. *Journal of Psychosomatic Research*, *53*(5), 985–993. https://doi.org/10.1016/S0022-3999(02)00488-9

Stöber, J. (1995). *Frost multidimensional perfectionism scale-Deutsch (FMPS-D)*. Institut für Psychologie.

Stöber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*(4), 295–319. https://doi.org/10.1207/s15327957pspr1004_2

Stoeber, J., & Gaudreau, P. (2017). The advantages of partialling perfectionistic strivings and perfectionistic concerns: Critical issues and recommendations. *Personality & Individual Differences*, *104*, 379–386. https://doi.org/10.1016/j.paid.2016.08.039

Swinbourne, J. M., & Touyz, S. W. (2007). The co-morbidity of eating disorders and anxiety disorders: A review. *European Eating Disorders Review*, *15*(4), 253–274. https://doi.org/10.1002/erv.784

Tolin, D. F., Worhunsky, P., & Maltby, N. (2006). Are "obsessive" beliefs specific to OCD?: A comparison across anxiety disorders. *Behaviour Research and Therapy*, *44*(4), 469–480. https://doi.org/10.1016/j.brat.2005.03.007

Tran, L., & Rimes, K. A. (2017). Unhealthy perfectionism, negative beliefs about emotions, emotional suppression, and depression in students: A mediational analysis. *Personality & Individual Differences*, *110*, 144–147. https://doi.org/10.1016/j.paid.2017.01.042

Vannucci, A., & Ohannessian, C. M. (2018). Body image dissatisfaction and anxiety trajectories during adolescence. *Journal of Clinical Child & Adolescent Psychology*, *47*(5), 785–795. https://doi.org/10.1080/15374416.2017.1390755

Volpe, U., Tortorella, A., Manchia, M., Monteleone, A. M., Albert, U., & Monteleone, P. (2016). Eating disorders: What age at onset? *Psychiatry Research*, *238*, 225–227. https://doi.org/10.1016/j.psychres.2016.02.048

Wade, T. D., & Tiggemann, M. (2013). The role of perfectionism in body dissatisfaction. *Journal of Eating Disorders*, *1*(1), 2. https://doi.org/10.1186/2050-2974-1-2

Wade, T. D., Wilksch, S. M., & Lee, C. (2012). A longitudinal investigation of the impact of disordered eating on young women's quality of life. *Health Psychology*, *31*(3), 352–359. https://doi.org/10.1037/a0025956

Wilksch, S. M., & Wade, T. D. (2009). An investigation of temperament endophenotype candidates for early emergence of the core cognitive component of eating disorders. *Psychological Medicine*, *39*(5), 811–821. https://doi.org/10.1017/S0033291708004261

Yorulmaz, O., Karancı, A. N., & Tekok-Kılıç, A. (2006). What are the roles of perfectionism and responsibility in checking and cleaning compulsions? *Journal of Anxiety Disorders*, *20*(3), 312–327. https://doi.org/10.1016/j.janxdis.2005.02.009