

# A preliminary investigation of the mediating roles of self-compassion and emotion dysregulation in the relationship between maladaptive perfectionism and obsessive-compulsive behaviors

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## Abstract

**Introduction:** Recent research has highlighted an association between maladaptive perfectionism and obsessive-compulsive disorder (OCD). However, the mechanisms underlying this relationship are not well understood. The primary aim of this preliminary study was to investigate whether self-compassion and emotion dysregulation independently mediated this relationship. The secondary aim was to determine whether serial mediation existed between these factors. Whether these relations held for overall obsessive-compulsive (OC) symptoms, versus distinct dimensions of OCD, was also of interest.

**Method:** Three hundred and ninety-two university students ( $M_{\text{age}} = 21.81$ ,  $SD = 8.01$ ), predominantly female (79.18%), participated in an online questionnaire that included a dimensional measure of OCD. Scales assessing maladaptive perfectionism, self-compassion, emotion dysregulation, and negative emotion states were also included.

**Results:** Greater maladaptive perfectionism was related to more severe OCD. Emotion dysregulation, but not

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self-compassion, independently mediated this relationship. A serial mediation relationship was found, in that greater maladaptive perfectionism was associated with lower self-compassion, which was linked to greater emotion dysregulation, and in turn related to more severe OC behaviors. In addition, distinct patterns emerged for separate OC dimensions.

**Conclusions:** These findings highlight emotion regulation and self-compassion as potential targets for OCD prevention, especially in individuals with symptoms in the symmetry and unacceptable thoughts dimensions.

#### KEYWORDS

clinical psychology, emotion dysregulation, maladaptive perfectionism, obsessive compulsive disorder, self-compassion

Obsessive-compulsive disorder (OCD) is a severe and debilitating condition characterized by two distinct phenomena: (1) obsessions, which are recurrent and intrusive thoughts, images, or impulses that cause marked distress for most individuals, and (2) compulsions, which refer to repetitive overt or covert rituals intended to neutralize obsession-related distress (American Psychiatric Association, 2013). Affecting approximately 1%–3% of the population (Ruscio et al., 2010), OCD is associated with profound functional impairment, personal suffering, and economic burden for the individual and wider health system (Markarian et al., 2010; Torres et al., 2006).

Although broadly characterized by obsessions and compulsions, OCD is symptomatically heterogeneous, such that symptoms may manifest in various forms that are unique to the individual (Mataix-Cols et al., 2005). Despite this, the current literature is dominated by a focus on measures of overall OCD severity (e.g., Foa et al., 2002; Goodman, 1989), rather than the investigation of OCD themes or dimensions. Alternate conceptualizations and measures of OCD have sought to take into account the heterogeneity of symptom profiles, offering a dimensional perspective lying on a continuum from normal to subclinical and clinical in presentation. This includes the work of Abramowitz et al. (2010, 2014), who propose a constellation of OCD dimensions, comprising of obsessions and compulsions as they relate to: (a) germs and contamination (e.g., fear of being contaminated in public bathrooms and performing ritualistic handwashing), (b) responsibility for harm and mistakes (e.g., fear of causing a disaster if a certain ritualistic prayer is not performed), (c) unacceptable thoughts that are often sexual, religious or aggressive in nature (e.g., fear of violently hurting someone and engaging in reassurance-seeking behavior), and (d) symmetry/ordering and "just right" experiences (e.g., fear of incompleteness). It has been further argued that collapsing OCD symptoms into an overall measure of severity may be too simplistic, given the differences found in the relative risk factors and cognitive patterns associated with different symptom dimensions (e.g., Grisham et al., 2011; Taylor et al., 2006). Thus, continued exploration of the idiosyncrasies associated with certain OCD profiles is warranted and may yield additional information regarding the best treatment course for patients with particular presentations.

Currently, exposure and response prevention (ERP) remains the prevailing first-line treatment for OCD (Koran et al., 2007). However, many individuals with OCD drop out prematurely, refuse treatment, or do not sufficiently benefit from ERP (Abramowitz et al., 2005; Fisher & Wells, 2005). Indeed, less than half of all patients with OCD enter remission, with more than half of those who do experiencing relapse (Eisen et al., 2013). Given these

suboptimal outcomes, there is a need to further investigate etiological and maintenance factors of obsessive-compulsive (OC) symptoms to inform more effective treatment practices.

Perfectionism is one such factor thought to play a critical role in the development and maintenance of OCD (Limburg et al., 2017). Referring to the tendency to set excessively high standards, along with overly critical self-evaluation following perceived failure to reach such standards (Frost et al., 1990), a relationship between perfectionism and OC behaviors has been found cross-sectionally in both clinical (e.g., Frost & Steketee, 1997; Sassaroli et al., 2008) and nonclinical samples (e.g., Rhéaume et al., 2000). This link is thought to underlie the core pathology contributing to both the development and maintenance of OCD, across a range of theoretical orientations and perspectives (see Frost & Di Bartolo, 2002, for a review). As such, enhancing understanding of the nature of the perfectionism-OCD relationship offers specific promise for effective prevention, identification, and management of the disorder.

Maladaptive perfectionism has in particular been shown to negatively impact outcomes for OCD patients undergoing treatment (Chik et al., 2008; Wheaton et al., 2020). This manifestation of perfectionism is considered distinguishable from adaptive perfectionism, wherein one engages in positive strivings underpinned by high standards, but retains the ability to feel accomplished and satisfied when those standards for performance are met (Lo & Abbott, 2013). In contrast, the maladaptive perfectionist, preoccupied with evaluative concerns, is driven by a fear of failure and mistakes, and engages in a form of critical self-appraisal that has been found to bear relations with psychopathology (Slaney et al., 2001).

Longitudinal and experimental studies provide insight into the temporal order of the maladaptive perfectionism and OCD relationship, showing that maladaptive perfectionism can prospectively predict OCD, but not vice versa (e.g., Williams & Levinson, 2020). Similarly, while interventions addressing levels of negative perfectionism tend to improve OC symptoms, the reverse is not well-supported (e.g., Lloyd et al., 2015; Sadri et al., 2017). Yet, much of the variance in OCD remains unaccounted for by maladaptive perfectionism alone (e.g., Wu & Cortesi, 2009). This perhaps implicates the presence of a more complex series of relations that underscore the maladaptive perfectionism and OCD link. However, the possible mechanisms underlying this relationship remain largely unknown.

## 2 | PROPOSED MEDIATOR 1: SELF-COMPASSION

With growing understanding of its potential to protect against ill-mental health, self-compassion constitutes one possible explanatory mechanism for the maladaptive perfectionism-OC link. Rooted in Buddhist philosophy, self-compassion is conceptualized as a healthy form of self-acceptance and describes a positive, caring attitude for oneself in instances of perceived difficulty and personal suffering (Neff, 2003). Across the literature, an inverse relationship between maladaptive perfectionism and self-compassion has been demonstrated (Ferrari et al., 2018; Linnett & Kibowski, 2020), with intervention studies further showing reductions in maladaptive perfectionism lead to an improved capacity for self-compassion (Kothari et al., 2019). Similar to the purported role of self-compassion in the linkage between perfectionism and a range of mental health indicators (e.g., depression, Mehr & Adams, 2016; anxiety, Fletcher et al., 2019; and subjective well-being, Stoeber et al., 2020), it is plausible that self-compassion may also mediate the relationship between maladaptive perfectionism and OC symptoms. Moreover, given studies conducted among clinical samples have begun to underscore the differential relevance of self-compassion across OCD dimensions (Chase et al., 2019; Steinberg et al., 2012), it is possible the nature of the mediation relationship may vary for different OCD dimensions.

## 3 | PROPOSED MEDIATOR 2: EMOTION REGULATION

Defined as the ability to modulate the intensity, duration, experience, and expression of emotions (Gross & Thompson, 2007), emotion regulatory skill is widely considered to influence the course of various clinical syndromes, especially internalizing psychopathology (Aldao et al., 2010; Cludius et al., 2020). In the case of

maladaptive perfectionism, it is thought that heightened negative affect in response to a threatened perfectionistic standard may be centrally related to emotion dysregulation (Malivoire et al., 2019). This is supported by the results of clinical studies finding a positive relationship between maladaptive perfectionism and emotion dysregulation (Fletcher et al., 2019; Montano et al., 2017), with prospective studies further indicating the existence of a directional pathway from maladaptive perfectionism to emotion regulation difficulties (Vois & Damian, 2020) (Vois & Damian, 2020). Meanwhile, studies in both clinical and nonclinical samples reveal a positive relationship between emotion regulation deficits and OC symptoms (e.g., Fergus & Bardeen, 2014; Wetterneck et al., 2014), with improvements in emotion regulatory skill contributing to reductions in OCD behaviors (Allen & Barlow, 2009). Collectively, these findings provide tentative evidence that emotion dysregulation may contribute to the link between maladaptive perfectionism and OC symptoms. Interestingly, emotion dysregulation has been found to be specifically related to the unacceptable thoughts dimension, and not overall OC severity or any other dimension (Berman et al., 2018). Thus, emotion dysregulation may differentially explain the maladaptive perfectionism-OC symptom link across OCD dimensions.

#### 4 | A CASE FOR SERIAL MEDIATION?

In a systematic review across clinical and nonclinical populations, Inwood and Ferrari (2018) concluded that emotion regulation could be a mechanism of change in the relationship between self-compassion and mental health. Indeed, emotion regulation has been found to be a mediator of self-compassion and a range of psychopathology, including OCD (Chase et al., 2019; Eichholz et al., 2020). In addition to this, Fletcher et al. (2019) provided evidence for the role of self-compassion as a partial mediator of the relationship between maladaptive perfectionism and emotion regulation difficulties. Together with the results of research indicating both self-compassion and emotion regulation may be important contributors to the link between maladaptive perfectionism and OCD, it thus begs the question whether a serial mediation relationship exists between these factors. Indeed, self-compassion has been theorized to act as an inner resource that facilitates adaptive emotion regulation by encouraging the individual to approach distressing emotions with nonjudgemental awareness and respond to these experiences in a self-supportive manner that contributes to mood stabilization (Berking & Whitley, 2014; Finlay-Jones et al., 2015; Trompetter et al., 2017). It is thus plausible that impaired self-compassion and resultant deficits in emotion regulation serve as critical mechanisms of action underlying the relationship between maladaptive perfectionism and OC symptoms. That is, maladaptive perfectionism may impact emotion dysregulation via self-compassion, while self-compassion impacts OC experiences via emotion dysregulation. Unpacking the nature of these complex relations may offer a more holistic explanation of the maladaptive perfectionism-OCD link.

#### 5 | THE PRESENT STUDY

The primary aim of the current study was to investigate self-compassion and emotion dysregulation as potential mediators of the relationship between maladaptive perfectionism and overall OC symptoms. It was hypothesized that self-compassion and emotion dysregulation would independently mediate this association. A secondary aim was to determine whether a serial mediation relationship existed between these factors, such that higher maladaptive perfectionism would be related to lower self-compassion, which in turn, would be associated with greater experience of emotion dysregulation, and that this would ultimately be linked to higher levels of OC severity. Owing to past research highlighting the heterogeneity of OC symptoms (e.g., Abramowitz et al., 2014; Mataix-Cols et al., 2005), including preliminary evidence as to the differential relevance of these psychological processes for specific OCD dimensions (e.g., Berman et al., 2018; Chase et al., 2019; Steinberg et al., 2012), whether the proposed mediating patterns would hold across different dimensions of OCD, namely,

(a) contamination, (b) responsibility for harm/mistakes, (c) unacceptable thoughts, and (d) symmetry and completeness (Abramowitz et al., 2010), was also of interest. As there has been limited research investigating maladaptive perfectionism, self-compassion, and emotion dysregulation in the context of individual OCD dimensions, this was considered exploratory and no a priori hypotheses were advanced. Finally, owing to high comorbidity between OC symptoms and anxious or depressive disorders (Brakoulias et al., 2017; Klein Hofmeijer-Sevink et al., 2013), these symptoms were controlled for in all analyses. As the first of its kind to investigate these proposed relations, a key purpose of this preliminary investigation was to establish whether the above hypothesized relations were present in a nonclinical sample, with a view to future application to a clinical population.

## 6 | METHOD

### 6.1 | Participants

The sample consisted of 392 university students. Participants ranged in age from 18 to 62 years ( $M = 21.81$ ,  $SD = 8.01$ ) and were predominantly female (79.18%). Of note, despite being drawn from a nonclinical sample, nearly half of participants (47.81%) scored at or above the recommended clinical cut-off on the Dimensional Obsessive-Compulsive Scale (DOCS; Abramowitz et al., 2010).

### 6.2 | Measures

#### 6.2.1 | Maladaptive perfectionism

The Discrepancy subscale of the Almost Perfect Scale-Revised (APS-R; Slaney et al., 2001) measured maladaptive perfectionism. Participants responded to 12 items (e.g., "My best just never seems to be good enough for me") using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The APS-R has demonstrated good psychometric properties in prior research, including excellent internal consistency for the Discrepancy subscale within college student samples (Rice & Aldea, 2006; Slaney et al., 2001). The reliability alpha for the current study was 0.95.

#### 6.2.2 | Self-compassion

The Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011) is a 12-item scale measuring self-compassion. Each item is rated on a 5-point Likert scale (1 = *almost never* to 5 = *almost always*) and assesses trait self-compassion along six subscales. These included self-kindness, common humanity, and mindfulness and their inverse dimensions, self-judgment, isolation, and overidentification. Previous studies have shown the SCS-SF to have strong convergent and discriminant validity, high test-retest reliability, and internal consistency (Cronbach's  $\alpha = 0.86$ ; Raes et al., 2011). The reliability alpha in this study was 0.84.

#### 6.2.3 | Emotion regulation difficulties

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is 36-item self-report measure of emotion dysregulation across six components: nonacceptance of negative emotions, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to effective emotion regulation strategies, and lack of emotional clarity. Participants rate the extent to which each statement

(e.g., "When I'm upset, I feel ashamed with myself for feeling that way") applies to them using a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). As the emotional awareness subscale has been found to have poor psychometric properties and to be conceptually distinct from the other components of the DERS (e.g., Bardeen et al., 2012), similar to the approach taken in prior research (e.g., Yap et al., 2018), it was excluded from analysis. The resultant reliability  $\alpha$  was 0.96.

#### 6.2.4 | OC symptom severity

The Dimensional Obsessive-Compulsive Scale (Abramowitz et al., 2010) was used to measure OC symptom severity. Participants responded to 20-items using a five-point Likert scale across four OC dimensions: (a) contamination, (b) responsibility for harm and mistakes, (c) unacceptable thoughts, and (d) symmetry/ordering and "just right" experiences. Reliability  $\alpha$ 's in the good to excellent range have been found for both the full-scale score and subscale dimensions across both nonclinical and clinical adult samples (Abramowitz et al., 2010). In the current study, internal consistency for the full-scale DOCS as an overall measure of OC severity was excellent ( $\alpha = 0.94$ ) and ranged from good to excellent for the dimensional OC severity scores (contamination  $\alpha = 0.84$ , responsibility  $\alpha = 0.91$ , unacceptable thoughts  $\alpha = 0.92$ , symmetry/order  $\alpha = 0.93$ ).

#### 6.2.5 | Depression and anxiety

The 21-item Depression, Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) assesses three negative emotional states. Omission of one or more subscales is considered acceptable where the syndrome assessed by that subscale is not of interest (Psychology Foundation of Australia, 2023) and therefore a common approach in previous studies (e.g., Deltidou et al., 2018; Francis et al., 2019; Igbokwe et al., 2020). As such, for the purposes of this study, only the depression and anxiety subscales were administered. Each subscale contains seven items rated on a 4-point Likert scale (0 = *did not apply to me at all*, 3 = *applied to me very much, or most of the time*). The depression and anxiety subscales have been found to possess strong psychometric properties across clinical and community samples (Antony et al., 1998; Henry & Crawford, 2005). The reliability  $\alpha$ 's in this study were 0.92 and 0.88 for the depression and anxiety subscales, respectively.

### 6.3 | Procedure

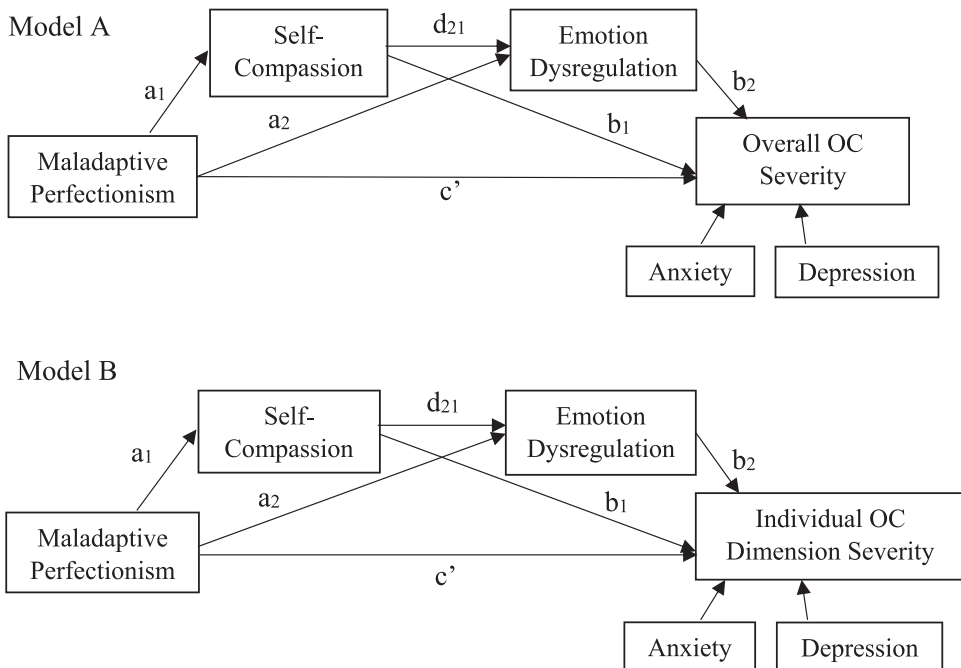
Participants were directed to the Qualtrics online survey platform, where they indicated consent. Once consent was obtained, demographic information regarding the participant's age, gender, ethnicity, and highest education level was collected. Participants were then asked to respond to a series of self-report measures that took approximately 30 min to complete. The order of presentation for these measures was randomized.

### 6.4 | Missing data

Participants who did not complete at least 50% of the item measures were excluded from analysis ( $n = 3$ ), resulting in a final sample size of 389 participants. There were very small amounts of data missing at the individual item level (0.26%). Since the Expectation-Maximisation method is considered superior to other techniques for managing missing data, such as list-wise deletion and means substitution (Little et al., 2014; Schafer & Graham, 2002), it was used to impute missing individual items before analysis.

## 6.5 | Statistical plan

Analyses were carried out using STATA or SPSS (overall significance level 0.5). As most target variables were not normally distributed, Spearman's rank-order correlations were calculated and inspected to assess the hypothesized relationship between maladaptive perfectionism and overall OC severity, as well as provide evidence for subsequent mediation models. A multiple regression was then conducted and revealed unique relationships for both anxiety ( $p < 0.001$ ) and depression ( $p = 0.03$ ) with overall OC behavior severity. Consistent with previous research investigating OCD (e.g., Yap et al., 2018), they were thus included as covariates for all subsequent analyses. Serial mediation analyses were conducted using Model 6 in PROCESS Macro (version 3.5; Hayes, 2018). Whether the effect of maladaptive perfectionism on overall OC symptom severity was independently and serially mediated through self-compassion and difficulties in emotion regulation was assessed (see Figure 1, Model A). This allowed for both independent mediation (separate indirect pathways through each mediator alone) and serial mediation (indirect pathway via both mediators) to be tested in a single analysis. Total effects, direct effects, and bias-corrected confidence intervals for the indirect effects of the proposed model were calculated. An indirect effect was considered significant if the bias-corrected confidence interval around the point estimate did not cross zero. Additional mediation analyses were then performed to test whether the proposed mediation model held for OC symptom dimensions as separate dependent variables, in place of overall OC symptom severity (see Figure 1, Model B). As recommended by Hayes (2018), mediation analyses were carried out using distribution-free, nonparametric bootstrapping with 10,000 resamples. Since bootstrapping was used, independence of observations was the only assumption of the analysis, which was met by design. As a measure of effect size, completely



**FIGURE 1** Proposed mediation models. The hypothesized models evaluate self-compassion and emotion dysregulation as mediators of the relationship between maladaptive perfectionism and overall OC severity (Model A); and between maladaptive perfectionism and separate OC dimensions (i.e., symmetry, unacceptable thoughts, responsibility for harm and contamination; Model B). Each model controls for anxious and depressive symptoms.

standardized indirect effects are reported, in line with recommendations for continuous independent variables (Cheung, 2009), and prior research using serial models to investigate similar phenomena (e.g., Norberg et al., 2018).

## 7 | RESULTS

### 7.1 | Means, standard deviations, and correlations between variables

Descriptive statistics and correlations between all variables are shown in Table 1. Maladaptive perfectionism, emotion regulation difficulties, and overall and individual dimensions of OC severity were positively correlated with each other, while self-compassion yielded negative associations with these variables.

### 7.2 | Mediation analyses: Overall OC severity

Table 2 presents the direct effects and Table 3 summarizes the indirect effects for the proposed serial mediation model, with overall OC behavior severity as the outcome variable. All paths indicated are in reference to Figure 1, Model A. The full model was significant,  $F(5, 383) = 41.48, p < 0.001, R^2 = 0.35$ . Also, individuals with greater maladaptive perfectionism reported more severe OC experiences. This total effect was significant ( $c = 0.14, SE = 0.04, p < 0.001$ ). The direct effect was also significant (path  $c'$ ). The proposed independent mediation model for emotion regulation was supported, but not for self-compassion. While higher maladaptive perfectionism was related to lower levels of self-compassion (path  $a_1$ ), self-compassion did not directly influence the overall severity of OC behaviors (path  $b_1$ ). Further, while the indirect effect of maladaptive perfectionism on global OC severity through self-compassion (path  $a_1b_1$ ) was not significant, emotion dysregulation mediated the pathway between maladaptive perfectionism and overall OC symptom severity (path  $a_2b_2$ ). Specifically, greater maladaptive perfectionism was associated with increased emotion dysregulation (path  $a_2$ ), which in turn, was linked to greater severity of obsessions and compulsions (path  $b_2$ ).

The proposed serial model was also supported. There was a significant indirect effect from maladaptive perfectionism to the overall severity of OC experiences via the serial pathway through self-compassion and emotion dysregulation (path  $a_1d_{21}b_2$ ). Specifically, greater maladaptive perfectionism was associated with lower levels of self-compassion (path  $a_1$ ), which was then related to greater emotion dysregulation (path  $d_{21}$ ). In turn, this was linked to an increased severity of obsessions and compulsions experienced (path  $b_2$ ).

### 7.3 | Mediation analyses: OC dimensions

Serial mediation models for each OC dimension were analyzed. The direct pathways between maladaptive perfectionism, self-compassion, and emotion dysregulation (i.e., paths  $a_1, a_2$ , and  $d_{21}$ ) were identical to the model for overall OC severity and significant (see Table 2;  $ps < 0.05$ ). For each serial model with individual OC dimensions as the outcome variable, the remaining direct pathways from maladaptive perfectionism, self-compassion, and emotion dysregulation to each dimension are displayed in Table 4. The bias-corrected indirect effects and their effect sizes are presented in Table 5. All paths reference Figure 1, Model B.

### 7.4 | Symmetry dimension as the outcome variable

The full model for OC-symmetry was significant,  $F(5, 383) = 20.22, p < .001, R^2 = 0.21$ . Individuals with higher scores on maladaptive perfectionism reported more severe symmetry OC behaviors. This total effect was significant



**TABLE 1** Means, standard deviations, and correlations for variables of interest.

Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1. Maladaptive perfectionism	52.31 (16.54)	-									
2. Self-compassion	2.84 (0.68)	-0.57***	-								
3. Emotion dysregulation	82.30 (23.98)	0.58***	-0.69***	-							
4. Anxiety	5.90 (5.00)	0.48***	-0.43***	0.60***	-						
5. Depression	7.11 (5.56)	0.55***	-0.55***	0.67***	0.65***	-					
6. OC-GS: Overall severity	19.47 (13.04)	0.41***	-0.34***	0.46***	0.54***	0.42**	-				
7. OC-DS: Symmetry	4.51 (4.43)	0.31***	-0.24***	0.35***	0.38***	0.30**	0.79***	-			
8. OC-DS: Unacceptable thoughts	5.44 (4.41)	0.40***	-0.38***	0.50***	0.52***	0.48***	0.80***	0.52***	-		
9. OC-DS: Responsibility	4.84 (4.08)	0.32***	-0.24***	0.34***	0.42***	0.29***	0.78***	0.47***	0.50***	-	
10. OC-DS: Contamination	4.68 (3.52)	0.17***	-0.10*	0.21***	0.29***	0.19***	0.73***	0.46***	0.43***	0.50***	-

Note:  $r_s$  was used as most variables were nonnormally distributed. N = 389.

Abbreviations: OC-DS, Obsessive-Compulsive Dimension Severity; OC-GS, Obsessive-Compulsive Global Severity.

\* $p < 0.05$ ; \*\* $p < 0.001$ .

**TABLE 2** Direct effects of maladaptive perfectionism on overall OC severity.

Path	B (SE)	95% confidence interval		$\beta$	t	p
		Lower limit	Upper limit			
MP $\rightarrow$ SC ( $a_1$ )	-0.02 (0.002)	-0.023	-0.015	-0.46	-9.92	<b>&lt;.001</b>
MP $\rightarrow$ DER ( $a_2$ )	0.15 (0.06)	0.03	0.27	0.10	2.51	<b>.012</b>
SC $\rightarrow$ DER ( $d_{21}$ )	-15.36 (1.42)	-18.16	-12.56	-0.44	-10.78	<b>&lt;.001</b>
SC $\rightarrow$ OCS ( $b_1$ )	1.49 (1.21)	-0.90	3.88	0.08	1.23	.220
DER $\rightarrow$ OCS ( $b_2$ )	0.13 (0.04)	0.05	0.20	0.23	3.30	<b>.001</b>
MP $\rightarrow$ OCS ( $c'$ )	0.11 (0.04)	0.03	0.20	0.14	2.53	<b>.012</b>

Note: Significant paths are noted in bold ( $p < 0.05$ ).

Abbreviations: DER, difficulties in emotion regulation; MP, maladaptive perfectionism; OCS, obsessive-compulsive severity; SC, self-compassion.

**TABLE 3** Indirect effects of maladaptive perfectionism on overall OC behaviors.

Indirect effects	B (SE)	95% CI		$\beta$ (SE)	Bootstrapped 95% CI	
		LL	UL		LL	UL
Total indirect effect	0.03 (0.02)	-0.02	0.08	0.03 (0.03)	-0.02	0.10
SC <sup>a</sup>	-0.03 (0.03)	-0.08	0.03	-0.04 (0.03)	-0.10	0.03
DER <sup>a</sup>	0.02 (0.01)	0.002	0.04	0.02 (0.01)	<b>0.002</b>	<b>0.05</b>
SC + DER <sup>a,b</sup>	0.04 (0.01)	0.01	0.06	0.05 (0.01)	<b>0.02</b>	<b>0.08</b>

Note: Significant paths are noted in bold (95% confidence interval does not cross 0).

Abbreviations: CI, confidence interval; DER, difficulties in emotion regulation; LL, lower limit; SC, self-compassion; UL, upper limit;  $\beta$ , completely standardized indirect effect.

<sup>a</sup>Mediator(s) for the indirect effect.

<sup>b</sup>Serial mediation.

( $c = 0.05$ ,  $SE = 0.01$ ,  $p = .002$ ) and the direct effect was also significant (path  $c'$ ). There was a positive direct effect of emotion dysregulation (path  $b_2$ ), but not self-compassion, on symmetry-related OC behaviors. Examination of the indirect effects revealed that emotion dysregulation, but not self-compassion, independently mediated the relationship between maladaptive perfectionism and OC-symmetry severity (path  $a_2b_2$ ). Furthermore, the serial indirect effect of maladaptive perfectionism on the severity of symmetry concerns through self-compassion and emotion dysregulation was significant (path  $a_1d_{21}b_2$ ).

## 7.5 | Unacceptable thoughts dimension as the outcome variable

The full model explaining the severity of OC-unacceptable thoughts was significant,  $F(5, 383) = 42.78$ ,  $p < .001$ ,  $R^2 = 0.36$ . Individuals endorsing greater maladaptive perfectionism demonstrated more severe OC-unacceptable thoughts. This total effect was significant ( $c = 0.04$ ,  $SE = 0.01$ ,  $p = .008$ ). However, this direct effect was not significant (path  $c'$ ), after controlling for the mediators and covariates. The pathway from greater emotion dysregulation to more severe OC-unacceptable thoughts was significant (path  $b_2$ ), whereas no relationship was found between self-compassion and OC-unacceptable thoughts. Examination of the indirect pathways revealed

**TABLE 4** Direct effects of serial mediation analyses for individual OC dimensions.

Outcome variable	B (SE)	95% CI		$\beta$	t	p
		LL	UL			
<b>Symmetry</b>						
Maladaptive perfectionism ( <i>c'</i> )	0.04 (0.21)	0.004	0.07	0.14	2.21	<b>.03</b>
Self-compassion ( <i>b</i> <sub>1</sub> )	0.48 (0.46)	-0.41	1.38	0.07	1.06	.29
DER ( <i>b</i> <sub>2</sub> )	0.04 (0.01)	0.01	0.07	0.23	2.96	<b>.003</b>
<b>Unacceptable Thoughts</b>						
Maladaptive perfectionism ( <i>c'</i> )	0.02 (0.02)	-0.006	0.05	0.09	1.55	.12
Self-compassion ( <i>b</i> <sub>1</sub> )	0.36 (0.41)	-0.44	1.17	0.06	0.89	.37
DER ( <i>b</i> <sub>2</sub> )	0.05 (0.01)	0.02	0.07	0.25	3.52	<b>&lt;.001</b>
<b>Responsibility</b>						
Maladaptive perfectionism ( <i>c'</i> )	0.03 (0.02)	0.005	0.06	0.14	2.30	<b>.02</b>
Self-compassion ( <i>b</i> <sub>1</sub> )	0.14 (0.41)	-0.67	0.95	0.02	0.34	.73
DER ( <i>b</i> <sub>2</sub> )	0.02 (0.01)	-0.004	0.05	0.13	1.70	.09
<b>Contamination</b>						
Maladaptive perfectionism ( <i>c'</i> )	0.02 (0.01)	-0.01	0.05	0.08	1.26	.21
Self-compassion ( <i>b</i> <sub>1</sub> )	0.51 (0.38)	-0.25	1.26	0.10	1.32	.19
DER ( <i>b</i> <sub>2</sub> )	0.02 (0.01)	-0.007	-0.04	0.11	1.37	.17

Note: Significant paths are noted in bold (*p* < .05).

Abbreviations: CI, confidence interval; DER, difficulties in emotion regulation; LL, lower limit; UL, upper limit.

that the effect of maladaptive perfectionism on OC-unacceptable thoughts was independently mediated by emotion dysregulation (path *a*<sub>2</sub>*b*<sub>2</sub>), but not self-compassion. The indirect effect through the serial pathway via both self-compassion and emotion dysregulation was significant (path *a*<sub>1</sub>*d*<sub>21</sub>*b*<sub>2</sub>).

### 7.6 | Responsibility for harm dimension as the outcome variable

The full model explaining OC-responsibility for harm was significant, *F*(5, 383) = 23.76, *p* < .001, *R*<sup>2</sup> = 0.24. The total effect of greater maladaptive perfectionism on more severe levels of OC behaviors concerning harm was significant (*c* = 0.04, *SE* = 0.01, *p* = .002). So too was the direct effect (path *c'*). However, no direct effects of self-compassion or emotion dysregulation on responsibility-related OC symptom severity were found. Indirect effects for the relationship between maladaptive perfectionism and the severity of OC-responsibility symptoms were also not found, either independently or serially.

### 7.7 | Contamination dimension as the outcome variable

The full model predicting OC-contamination was significant, *F*(5, 383) = 9.99, *p* < .001, *R*<sup>2</sup> = 0.12. The total effect of maladaptive perfectionism on the severity of contamination-related OC behaviors was not significant (*c* = 0.02, *SE* = 0.01, *p* = .22). This direct effect was also not significant. In addition, there were no direct pathways from

**TABLE 5** Indirect effects of serial mediation analyses for individual OC dimensions.

Outcome variable	B (SE)	95% CI		$\beta$ (SE)	95% CI	
		LL	UL		LL	UL
<b>Symmetry</b>						
Total indirect effect	0.01 (0.01)	-0.01	0.03	0.04 (0.03)	<b>-0.03</b>	<b>-0.10</b>
SC <sup>a</sup>	-0.01 (0.01)	-0.03	0.01	-0.03 (0.03)	-0.10	0.03
DER <sup>a</sup>	0.01 (0.004)	0.0005	0.02	0.02 (0.01)	<b>0.002</b>	<b>0.06</b>
SC + ER <sup>a,b</sup>	0.01 (0.004)	0.004	0.02	0.05 (0.02)	<b>0.02</b>	<b>0.08</b>
<b>UT</b>						
Total indirect effect	0.01 (0.008)	-0.002	0.03	0.05 (0.03)	-0.008	0.11
SC <sup>a</sup>	-0.007 (0.009)	-0.02	0.01	-0.03 (0.03)	-0.09	0.04
DER <sup>a</sup>	0.007 (0.003)	0.0007	0.01	0.03 (0.01)	<b>0.003</b>	<b>0.06</b>
SC + ER <sup>a,b</sup>	0.01 (0.004)	0.005	0.02	0.05 (0.02)	<b>0.02</b>	<b>0.08</b>
<b>Responsibility</b>						
Total indirect effect	0.007 (0.007)	-0.007	0.02	0.03 (0.03)	-0.03	0.09
SC <sup>a</sup>	-0.003 (0.008)	-0.02	0.01	-0.01 (0.03)	-0.07	0.06
DER <sup>a</sup>	0.003 (0.003)	-0.0005	0.009	0.01 (0.01)	-0.002	0.04
SC + ER <sup>a,b</sup>	0.006 (0.004)	-0.0009	0.01	0.03 (0.02)	-0.004	0.06
<b>Contamination</b>						
Total indirect effect	-0.002 (0.007)	-0.02	0.01	-0.01 (0.03)	-0.08	0.05
SC <sup>a</sup>	-0.01 (0.008)	-0.03	0.006	-0.04 (0.04)	-0.12	0.03
DER <sup>a</sup>	0.003 (0.002)	-0.001	0.008	0.01 (0.01)	-0.005	0.04
SC + ER <sup>a,b</sup>	0.005 (0.004)	-0.002	0.01	0.02 (0.02)	-0.01	0.06

Note: Significant paths are noted in bold (95% confidence interval does not cross 0).

Abbreviations: CI, confidence interval; DER, difficulties in emotion regulation; LL, lower limit; SC, self-compassion; UL, upper limit;  $\beta$ , completely standardized indirect effect.

<sup>a</sup>Mediator(s) of the indirect effect.

<sup>b</sup>Serial mediation.

self-compassion or emotion dysregulation to the severity of OC-contamination behaviors. There were also no independent or serial indirect effects for the relationship with maladaptive perfectionism.

## 8 | DISCUSSION

This preliminary study investigated potential mechanisms underlying the relationship between maladaptive perfectionism and OC symptoms. Building on prior research demonstrating relations between maladaptive perfectionism, self-compassion, emotion dysregulation, and OCD, the primary aim of this research was to investigate whether self-compassion and emotion dysregulation could individually explain the relationship between maladaptive perfectionism and overall OC symptom severity. A secondary aim was to explore whether a serial mediation relationship existed between these variables. Owing to increased recognition of the heterogeneity of

OCD (e.g., Mataix-Cols et al., 2005), whether the same pattern of relationships would emerge for individual OC dimensions as overall OC severity was also of interest.

In relation to the proposed simple mediation models, the indirect pathway through emotion dysregulation, but not self-compassion, mediated the relationship between maladaptive perfectionism and global OC behaviors. The nonsignificant direct relation between self-compassion and OC behaviors may be attributed to the shared variance with commonly comorbid anxious and depressive symptoms, typically not accounted for in previous studies (e.g., Chase et al., 2019). It may also be the case that self-compassion, conceptually, may be the inverse of one of the key components of perfectionism. For example, Leeuwrik et al. (2020) noted self-compassion to be a significant predictor of OCD symptoms when controlling for depression severity, but not when perfectionistic beliefs, were taken into account. Thus, self-compassion itself may not be necessary to understand OCD symptomology. In contrast, these results indicate emotion dysregulation may be more relevant to the simple relationship between maladaptive perfectionism and OC symptoms. This finding extends the growing body of literature emphasizing the role of emotion dysregulation as a mediator between maladaptive perfectionism and a range of negative psychological outcomes (e.g., Castro et al., 2017) to OC experiences, hitherto explored.

The prominence of emotion dysregulation in relation to OC behaviors may be due to the function of compulsions. Although compulsions are a short-term strategy used to cope with the negative affect arising from obsessions, they serve to increase the frequency and intensity of subsequent obsessions (Steketee, 2012). Thus, the inability to adaptively regulate the negative affect associated with obsessions may exacerbate and maintain the disorder by facilitating ongoing engagement in compulsions. As such, improving emotion regulation skills may be helpful in reducing the severity of OC behaviors for sufferers.

In an examination of more complex relationships between these variables, self-compassion, and emotion dysregulation were found to serially mediate the relationship between maladaptive perfectionism and overall OC severity. These findings are consistent with past research highlighting negative associations between maladaptive perfectionism and self-compassion (e.g., Ferrari et al., 2018; Fletcher et al., 2019). They further align with experimental studies showing lower levels of self-compassion can lead to emotion regulation difficulties (e.g., Odou & Brinker, 2014), while emotion dysregulation may result in more severe overall OC experiences (e.g., Yap et al., 2018). These findings further suggest that in the context of maladaptive perfectionism, the role of self-compassion on OC behaviors appears to be exclusively in the context of the impact of self-compassion on emotion regulation. That is, lower levels of self-compassion may be associated with more severe OC behaviors, owing to interference with effective emotion regulation, which in turn may negatively impact the expression of OCD for sufferers.

These results align with theory positing that self-compassion promotes emotion regulation by stabilizing mood (Berking & Whitley, 2014), and that reduced self-compassion may act as a barrier for self-supportive behaviors by hindering one's ability to defuse negative affect. As a result, emotional disturbances may not be managed effectively, thereby promoting engagement in maladaptive strategies, such as rumination or compulsions. This perpetuates the cycle of obsessions and compulsions, contributing to the overall severity of OC experiences. While best considered tentatively owing to the cross-sectional design of this study, the current findings, together with previous research, provide preliminary evidence of this suggested temporal sequence.

Interesting, differential patterns of association were revealed when examining the proposed mediation models in the context of specific OC dimensions. While the results for OC symptoms in the areas of symmetry and unacceptable thoughts mimicked those found for overall OC severity, this was not the case for OC experiences corresponding to responsibility for harm and contamination. This aligns with previous research indicating that individual OC dimensions display unique characteristics, including individual patterns of cognition, neural processes, comorbidities, and treatment response (e.g., Brakoulias et al., 2014). Overall, these preliminary findings corroborate the conceptualization of OCD as a highly heterogeneous condition with potentially distinct etiological and maintaining factors (Mataix-Cols et al., 2005), and offer support for the notion that future research should focus on investigating OC symptoms in terms of their distinct themes, rather than relying on and applying conceptualizations of OCD severity as a global, unitary construct (Smith et al., 2012). Such research would not only facilitate better

understanding of the nuanced relationships between psychological attributes and diverse OC presentations, but also has the potential to inform syndrome-specific treatment planning for OCD sufferers.

Nevertheless, this study has certain limitations that should be noted. First, while testing theoretically driven mediation models using cross-sectional data is considered appropriate (Hayes, 2018), especially in preliminary research, the correlational nature of these results suggests caution should be exercised in interpretation. It is unclear whether the primary variables in the proposed mediation models impact subsequent variables, or vice versa, or whether these bidirectional relationships are present. Future studies using longitudinal methodologies are needed to lend support to the proposed temporal order of these relationships. Furthermore, while the use of nonclinical analog samples has been argued as highly relevant to understanding OC symptoms among individuals with OCD (see Abramowitz et al., 2014), the use of a nonclinical sample in the current study limits application of these findings. Replication of the results of this study within a homogenous university student population to a clinical population of OCD patients is therefore warranted.

Despite these limitations, the present study offers valuable insight into a potential theoretical framework for understanding OCD. Taken together, the findings suggest maladaptive perfectionism may inhibit self-compassion, which in turn, might impair emotion regulatory skill, giving rise to more OC symptoms. This may be especially true for those experiencing OC symptoms as they relate to concerns for symmetry and unacceptable thoughts. These results also lend support to theorists who claim research in this area that continues to advance conceptualizations of OC severity as a unitary construct may be somewhat reductionistic and outdated in the context of a more contemporary and multidimensional understanding of the nature of OCD.

While only preliminary, the current finding pertaining to potential drivers of the relationship between maladaptive perfectionism and OC behaviors have the potential to inform tailored interventions for those diagnosed with OCD. Given the possible enduring nature of perfectionism (see Handley et al., 2015), that self-compassion and emotion regulation, both considered largely malleable (Koole, 2009; Neff, 2003), may influence the trajectory of OC symptoms represent a unique opportunity for OCD sufferers and the clinicians who treat them. Indeed, integrating these skills with standard ERP may enhance treatment response by addressing factors key to the development and maintenance of the disorder, thereby mitigating attrition, increasing therapy tolerance and acceptability, and improving residual symptoms (Allen & Barlow, 2009; Berking et al., 2008; Petrocchi et al., 2021). For example, future studies could explore the efficacy of enhanced ERP models, augmented with skills training drawing on strategies from compassion-focused therapy (Gilbert, 2014) and affect regulation training (Berking & Whitley, 2014), compared with standard ERP. Moreover, given ever-increasing rates of perfectionism in the population (Curran & Hill, 2019), targeted interventions designed to improve self-compassion and support effective emotion regulation perhaps offer a promising avenue for OCD prevention among individuals high in maladaptive perfectionism.

## ACKNOWLEDGEMENTS

Open access publishing facilitated by Macquarie University, as part of the Wiley - Macquarie University agreement via the Council of Australian University Librarians.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## ETHICS STATEMENT

The study was approved by the Macquarie University Human Research Ethics Committee (Approval Number: 52021976627785).

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## PEER REVIEW

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1002/jclp.23640>.

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**How to cite this article:** Sher, A., Wootton, B. M., & Paparo, J. (2024). A preliminary investigation of the mediating roles of self-compassion and emotion dysregulation in the relationship between maladaptive perfectionism and obsessive-compulsive behaviors. *Journal of Clinical Psychology*, 80, 591–609. <https://doi.org/10.1002/jclp.23640>