Eating disorders, perfectionism and quality of life: Maladaptive perfectionism as a mediator between symptoms of disordered eating and quality of life

Article

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Abstract

Individuals with disordered eating behaviours exhibit significantly impaired quality of life (QoL). Maladaptive perfectionism is consistently associated with both eating disorders (EDs) and QoL, but its role in the relationship between eating pathology and QoL has remained largely unexplored. The current study investigated whether maladaptive perfectionism mediates the ED–QoL relationship. 286 university students completed an online survey which consisted of self-report questionnaires assessing ED symptomology, QoL, maladaptive perfectionism, and anxiety and depression symptoms. Maladaptive perfectionism mediated the relationship between ED symptomology and QoL, but this effect did not persist when body mass index, depression, and anxiety were controlled for. The results suggest the mediatory effect of maladaptive perfectionism is masked by depression and anxiety symptomology. Recommendations for further research are proposed to clarify the role of maladaptive perfectionism in the ED–QoL relationship, and to explore the mediatory role of depression and anxiety in this relationship.

Key words: Generic quality of life; Eating disorder-specific quality of life; Disordered Eating; Maladaptive Perfectionism; Mediation.

1. Introduction

Eating disorders (EDs) are characterised by a persistent disturbance of eating behaviour or behaviour intended to control weight, which results in the altered consumption or absorption of food (American Psychiatric Association, 2013). Although 12-month prevalence rates in adults of around 6.4% have been reported (McManus et al., 2009), ED symptomology exists along a continuum of severity. Individuals may exhibit disordered eating attitudes or behaviours, such as a preoccupation with body image or compulsive overeating, but present below threshold for a clinical diagnosis (Power, 2016; Tyrka et al., 2000).

The impact of ED symptomology on an individual's physical and psychosocial functioning has recently been considered, with increasing investigation into the study of quality of life (QoL) in individuals with EDs (Engel et al., 2009; Jenkins et al., 2011). QoL is defined by the World Health Organization as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL Group, 1993, p. 153). Two types of QoL measure have been developed for use within ED research: generic and ED-specific. Measures of generic QoL are utilised across a broad spectrum of health conditions but lack sensitivity in detecting QoL differences across different ED diagnoses (Jenkins et al., 2011). Conversely, ED-specific QoL (EDQoL) measures demonstrate superior precision in capturing the unique impact of ED symptomology on QoL (Baiano et al., 2014) and it has therefore been recommended that both measures are used in conjunction (Mond et al., 2005). Research has demonstrated that generic QoL and EDQoL are consistently more impaired in individuals with ED symptomology compared to non-ED individuals, including those with other psychiatric or physical health problems (de la Rie et al., 2005; Jenkins et al., 2011). This prevails in subclinical populations, whereby the level of QoL impairment increases with ED symptom severity (Jenkins et al., 2011).

In order to further understand the link between EDs and QoL, it may be relevant to consider the relationship between EDs and perfectionism. Perfectionism can be defined as a multidimensional construct with distinct adaptive and maladaptive dimensions (Hamachek, 1978; Rice et al., 1998). Both adaptive and maladaptive perfectionism encompass the features of high self-prescribed standards and persistent striving for excellence in personal performance (Rice and Ashby, 2007; Slaney et al., 2002). The distinguishing feature of maladaptive perfectionism is a chronic tendency to perceive oneself as consistently failing to attain these high standards (Slaney et al., 2002).

A review by Bardone-Cone et al. (2007) found that maladaptive perfectionism was more consistently associated with disordered eating than adaptive perfectionism. For example,

Ashby et al. (1998) demonstrated that female ED patients scored significantly higher on measures of maladaptive perfectionism, but not adaptive perfectionism, compared to non-ED controls. Additionally, Shafran et al. (2002) contend that EDs may be an expression of maladaptive perfectionism within the domain of eating, shape or weight.

Recently, research has also explored the relationship between perfectionism and life satisfaction, an indicator of QoL (Schalock, 2000). For example, maladaptive perfectionism has been found to be negatively associated with life satisfaction in both university (Gnilka et al., 2013) and adolescent students (Gilman et al., 2005; Ongen, 2009). Additionally, maladaptive perfectionists express lower global life satisfaction in comparison to their adaptive perfectionist counterparts (Ashby et al., 2012; Gilman et al., 2005).

In summary, relationships have been established between: ED symptomology and QoL; ED symptomology and maladaptive perfectionism; and maladaptive perfectionism and QoL. While prior research has only examined simple bivariate associations between ED symptomology, QoL and maladaptive perfectionism, a recent study by Brosof et al. (2018) extended this literature by examining the role of maladaptive perfectionism in the relationship between ED symptomology and clinical impairment, a construct closely related to QoL. Results demonstrated that maladaptive perfectionism moderated the relationship between ED symptomology and clinical impairment, whereby individuals with higher levels of both maladaptive perfectionism and ED symptomology were more clinically impaired. However, Brosof et al. did not account for other variables which may have confounded the results, such as body mass index (BMI) and symptoms of depression or anxiety (e.g., see Adair et al., 2007; Kawamura et al., 2001; Spitzer et al., 1995).

No study has yet investigated whether maladaptive perfectionism plays a mediatory role in the relationship between ED symptomology and QoL, while accounting for relevant covariates. Therefore, the current study aimed to investigate whether maladaptive perfectionism acts as a mediator in the relationship between ED symptomology and QoL using simple mediation analyses. A sample of university students was utilised to address this research question due to the high levels of ED symptomology in student populations (Saekow et al., 2015). The study formed part of an online, cross-sectional survey. Online survey methodology was utilised given the following advantages: it enables access to a large number of potential respondents; respondents can complete the survey at their own convenience; and the risk of social desirability bias, which is especially problematic when investigating sensitive topics, is reduced given the increased anonymity associated with online participation compared to face to face settings (Rhodes et al., 2003). In light of

existing literature, it was hypothesised that maladaptive perfectionism would mediate the associations between ED symptomology and both EDQoL and generic QoL.

2. Methods

2.1. Participants

286 (86.8% female, 12.8% male, 0.4% non-binary) undergraduate and postgraduate students were recruited from the University of Reading. Participants were aged between 18 and 51 years (*M* = 20.51, *SD* = 4.19), and described themselves as white (71.7%), Asian (19.2%), black (3.5%), mixed (3.1%) and other (2.4%). 89% of participants had never received an ED diagnosis and mean BMI was 22.34kg/m^2 (*SD* = 3.46).

Prior to recruitment, it was determined that a minimum sample size of 72 participants would be required (Faul et al., 2009), adopting an alpha level of .05 (one-tailed) and power of .80.

2.2. Procedure

Participants were recruited through student mailing lists and an online research panel which redeemed them with research credits for participation. Participants completed demographic questions and the measures of interest, presented in the order given below. Upon completion of the survey, participants were provided with a debrief page, detailing sources of psychological support. The study took approximately 15 minutes to complete.

2.3. Measures

2.3.1. Demographics

Participants were asked to answer questions regarding their age, gender, ethnicity, height and weight.

2.3.2. Disordered eating

The 7-item Eating Disorder Examination Questionnaire Short Form (EDE-QS; Grilo et al., 2015) is a measure of ED symptom severity, assessed over the last 28 days on a 7-point scale. Higher scores are indicative of higher ED symptom levels. The construct validity of this measure has received empirical support through several confirmatory factor analyses (e.g., Machado et al., 2018) and excellent internal consistency for the total score was demonstrated in the current sample (α = .90).

2.3.3. Generic quality of life

The RAND 36-Item Health Survey 1.0 (SF-36; Hays et al., 1995; Ware and Sherbourne, 1992) is a 36-item measure of generic QoL, which demonstrated excellent internal consistency in the current sample (α = .91). The standardised mental summary score (MCS)

of the SF-36 was used to index mental health QoL, as this is most consistently associated with eating pathology (Baiano et al., 2014; González-Pinto et al., 2004). Scores range from 0-100, with higher scores denoting higher generic QoL.

2.3.4. ED-specific quality of life

The Eating Disorders Quality of Life Instrument (EDQOL; Engel et al., 2006) is a 25-item measure of EDQoL assessed over the last 30 days on a 5-point scale. This scale demonstrated excellent internal consistency in the present study (α = .95). Higher scores reflect poorer EDQoL.

2.3.5. Maladaptive perfectionism

The Almost Perfect Scale-Revised (APS-R; Slaney et al., 2001) is a 23-item measure of perfectionistic attitudes assessed on a 7-point scale. The 12-item Discrepancy subscale assesses respondent's perception of themselves as failing to meet personal performance standards (e.g., "I am never satisfied with my accomplishments") and is a commonly utilised measure of maladaptive perfectionism (Ozbilir et al., 2015). Higher scores are indicative of higher levels of maladaptive perfectionism. This subscale demonstrated excellent internal consistency in the current sample (α = .95).

2.3.6. Depression and anxiety

The 4-item Patient Health Questionnaire (PHQ-4; Kroenke et al., 2009) is a validated screening tool for depression and anxiety. Symptoms are assessed over the previous two weeks on a 4-point scale. Good internal consistency was demonstrated in the current sample (α = .87). The four items consist of two core anxiety symptoms and two core depression symptoms derived from the Generalized Anxiety Disorder-7 scale (Spitzer et al., 2006) and Patient Health Questionnaire-9 (Spitzer et al., 1999), respectively. Higher scores represent greater symptom severity.

2.4. Ethical issues

The study was granted ethical approval by the University of Reading School of Psychology and Clinical Language Sciences Research Ethics Committee. The study was carried out in line with ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments.

2.5. Data analysis

Hypotheses were tested using simple mediation analyses (Hayes, 2013), whereby a mediator variable (maladaptive perfectionism) is proposed to explain the relationship

between an independent variable (ED symptomology) and dependent variable (QoL: generic and EDQoL). Mediation models consist of an indirect and direct effect. In the current study, the indirect effect refers to the effect of ED symptomology on QoL through maladaptive perfectionism. The indirect effect (*ab*) is quantified as the product of the effect of ED symptomology on maladaptive perfectionism (*a*) and the effect of maladaptive perfectionism on QoL (*b*). This model was tested using EDQoL and generic QoL as dependent variables, both with and without covariates (BMI, PHQ-4).

Proportion of missing data was low and no question was omitted by more than seven participants (2.45%). 284 participants (99.30%) completed the EDE-QS and PHQ-4, 280 participants (97.90%) completed the APS-R and 276 (96.50%) the EDQOL. A smaller proportion (n = 269; 94.06%) completed the SF-36. Missing scores were calculated using recommended proration procedures. Following this, total missing data for the EDE-QS, PHQ-4, APS-R, EDQOL, and SF-36 was less than 0.5%, with 277 cases (96.85%) providing complete data for analysis. Little's Missing Completely at Random test was not statistically significant ($p = 0.219$), suggesting that data was missing at random. Therefore, no missing data imputation was performed.

The following statistical assumptions were tested: linearity, normality, independent errors and homoscedasticity (Hayes, 2013; Kane and Ashbaugh, 2017). Only the assumption of homoscedasticity was violated, therefore the heteroscedasticity-consistent standard error estimator, HC3, was applied to all mediation analyses (Hayes and Cai, 2007).

All statistical analyses were conducted using the SPSS macro PROCESS (Model 4; Hayes, 2013) which uses ordinary least squares regression-based path analysis to generate indirect effects in mediation models. In line with recommendations from Hayes and Rockwood (2017), 95% percentile bootstrap confidence intervals (CIs) based on 10,000 samples were used to test the significance of the indirect effects in all analyses. Upper and lower CIs must be entirely above or below zero for the indirect effect to demonstrate statistical significance (Kane and Ashbaugh, 2017). The significance threshold for all tests was set at $p < .05$.

3. Results

Mean scores, standard deviations, and correlations between variables are presented in Table 1. These confirmed the expected associations: higher EDE-QS scores were correlated with higher APS-R Discrepancy scores, and higher APS-R Discrepancy scores were correlated with higher EDQOL and lower SF-36 scores.

[Insert Table 1 here]

3.1. ED symptomology, maladaptive perfectionism and EDQoL

Results from the first mediation analysis indicated that EDE-QS scores were indirectly associated with EDQOL scores, through their effect on APS-R Discrepancy scores. As shown in Figure 1, participants with higher EDE-QS scores demonstrated higher APS-R Discrepancy scores (a = 3.298, p < .001) and, in turn, participants with higher APS-R Discrepancy scores demonstrated higher EDQOL scores (b = 0.010, p < .001). Confidence intervals for the indirect effect (ab = 0.031) were above zero (0.015 to 0.051), suggesting that APS-R Discrepancy scores were a mediator in the relationship between EDE-QS and EDQOL.

[Insert Figure 1 here]

The second mediation analysis included BMI and PHQ-4 scores as covariates in the hypothesised model. Results did not demonstrate a significant indirect effect of EDE-QS scores on EDQOL scores through APS-R Discrepancy scores. As shown in Figure 2, higher EDE-QS scores were no longer shown to be significantly associated with higher APS-R Discrepancy scores (a = 1.167; p = .096). Participants with higher APS-R Discrepancy scores reported higher EDQOL scores (b = 0.174, p = .031). As confidence intervals crossed zero (-0.001 to 0.016) for the indirect effect (ab = 0.005), this suggests that APS-R Discrepancy scores did not act as a mediator in the relationship between EDE-QS and EDQOL when controlling for BMI and PHQ-4 scores.

[Insert Figure 2 here]

3.2. ED symptomology, maladaptive perfectionism and generic QoL

Results from the third mediation analysis indicated that EDE-QS scores were indirectly associated with SF-36 scores, through their effect on APS-R Discrepancy scores. As can be seen in Figure 3, participants with higher EDE-QS scores demonstrated higher APS-R Discrepancy scores (a = 3.416, p < .001) and, in turn, participants with higher APS-R Discrepancy scores demonstrated lower SF-36 scores (b = -0.353, p < .001). Confidence intervals for the indirect effect (ab = -1.204) were below zero (-1.795 to -0.690), suggesting that APS-R Discrepancy scores act as a mediator in the relationship between EDE-QS and SF-36 scores.

[Insert Figure 3 here]

The final mediation analysis included BMI and PHQ-4 scores as covariates. Results did not demonstrate a significant indirect effect of EDE-QS scores on SF-36 scores through APS-R Discrepancy scores. As shown in Figure 4, EDE-QS scores were no longer significantly associated with APS-R scores (a = 1.290; p = .069). Participants with higher APS-R

Discrepancy scores reported lower SF-36 scores (b = -0.094, p = .010), although confidence intervals for the indirect effect (ab = -0.121) crossed zero (-0.324 to 0.008). This finding indicated that APS-R Discrepancy scores did not act as a mediator in the relationship between EDE-QS and SF-36 scores when controlling for BMI and PHQ-4 scores.

[Insert Figure 4 here]

4. Discussion

The current study aimed to investigate whether maladaptive perfectionism acts as a mediator in the relationship between ED symptomology and QoL in a student sample at high risk of EDs. As hypothesised, maladaptive perfectionism was found to mediate the relationship between ED symptomology and QoL, both ED-specific and generic. Specifically, participants with greater ED symptomology expressed higher levels of maladaptive perfectionism, which was associated with greater impairment in QoL. However, when BMI and symptoms of depression and anxiety were controlled for, both indirect effects were reduced to non-significance. These findings cast doubt upon the robustness of maladaptive perfectionism as a mediator in the relationship between ED symptomology and QoL.

The significant indirect effect observed prior to the addition of covariates may have been due to anxiety and depression symptomology producing false or epiphenomenal associations between the variables of interest (Hayes, 2013; Hayes and Rockwood, 2017). This interpretation would suggest that maladaptive perfectionism does not play a causal role in the relationship between ED symptomology and QoL.

Alternatively, these results may suggest that the mediatory effect of maladaptive perfectionism was attenuated when the covariates were added to the model. It is possible that anxiety and depression symptomology masked the presence of the indirect effect of ED symptomology on QoL through maladaptive perfectionism. This interpretation reflects previous research demonstrating that depression and anxiety account for a significant proportion of the association between ED symptoms and QoL (Mitchison et al., 2013). In fact, Singleton et al. (2019) found that depression partially mediated the relationship between binge-eating disorder (BED) and QoL, suggesting that impaired QoL may be explained, in part, by comorbid symptoms of depression in BED. Future research comparing the mediatory effects of depression and anxiety symptomology and maladaptive perfectionism may help to determine their relative importance in the causal pathways between ED symptomology and QoL, guiding the development of mechanism-targeted ED interventions.

Alternatively, the reduction of the indirect effects to non-significance might be attributed to a psychometric issue of the APS-R Discrepancy subscale. Despite this subscale being one of the most widely used measures of maladaptive perfectionism, its construct validity has been recently disputed. A psychometric analysis conducted by Flett et al. (2016) revealed that three of the 12 items of the APS-R Discrepancy subscale demonstrated item content overlap with negative emotional reactions, such as chronic worry and disappointment, also applicable to depression and anxiety symptomology. This may have inflated the magnitude of the association between maladaptive perfectionism and depression and anxiety symptomology (Uliaszek et al., 2009). As a result, when the association was statistically accounted for, this may have caused, or contributed to, the mediatory effect of maladaptive perfectionism being reduced to non-significance. Therefore, future research should develop a measure specifically designed to assess the maladaptive dimension of perfectionism, which overcomes the issue of conceptual overlap with psychiatric disorders (Flett et al., 2016).

The current study had several strengths and limitations. The study advances existing literature, which has primarily focused upon establishing simple bivariate associations between ED symptomology, maladaptive perfectionism and QoL, by examining a mediatory mechanism linking these three constructs. Using an appropriately sized sample, it was possible to control for BMI, anxiety and depression as potential covariates, overcoming a methodological weakness often overlooked within previous research.

However, inferences drawn are specific to the current sample of predominantly female students at one UK university. Although student populations are useful for studying ED symptoms in the community, results may have limited generalisability to clinical or other community samples (Doll et al., 2005). Additionally, results may also have limited generalisability to males, which is particularly relevant to consider as men with EDs are reportedly less perfectionistic than women with EDs (Woodside et al., 2004) and are an under-researched population (Jenkins et al., 2011; Räisänen and Hunt, 2014). Therefore, future research should aim to recruit a demographically diverse community sample to determine whether the effects observed in the current study are replicable in other populations.

Given the cross-sectional, observational design of the current study, it is not possible to draw temporal conclusions from the results. Alternative sequences of causal ordering between the variables cannot be ruled out; for example, maladaptive perfectionism may precede ED symptomology which, in turn, may cause impaired QoL. This sequence of causal ordering is plausible given that perfectionism is proposed to be a risk factor for EDs (Culbert et al.,

2015; Rikani et al., 2013). It is also possible a reciprocal causal relationship exists between ED symptomology and maladaptive perfectionism, supporting the notion that maladaptive perfectionism serves as both a risk factor and consequence of ED symptomology (Forsberg and Lock, 2006). In order to clarify the direction of relationships between the three variables of interest, future studies should employ a multi-wave, longitudinal design and measure disordered eating, maladaptive perfectionism and QoL at a minimum of three time points (Cole and Maxwell, 2003). This design would enable researchers to generate stronger causal inferences.

In recent years, there has been an increasing focus on perfectionism as a psychotherapy target in ED treatment (Levinson et al., 2017), with some pilot studies demonstrating positive outcomes (e.g., Goldstein et al., 2014; Steele and Wade, 2008; Tchanturia et al., 2016). However, given that the mediatory effect of maladaptive perfectionism became non-significant when controlling for anxiety and depression, this might suggest that targeting anxiety and depression symptoms should take precedence over maladaptive perfectionism.

5. Conclusions

The current study extends existing research by examining a mechanism linking ED symptomology to QoL. Results demonstrated that maladaptive perfectionism mediated the relationship between ED symptomology and both ED-specific and generic QoL. However, this effect was no longer significant when controlling for BMI, depression and anxiety. This study also highlights the importance of considering depression and anxiety symptomology when investigating the mechanism underlying the relationship between ED symptomology and QoL.

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