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FULL-LENGTH REPORT



Perfectionism predicts disordered eating and gambling via focused self-concept among those high in erroneous beliefs about their disordered behavior

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ABSTRACT

Background and aims: Perfectionism, a focused self-concept, and erroneous beliefs have been implicated in the development and maintenance of various disordered behaviors. However, researchers have yet to examine how these factors combine to explain different disordered behaviors. Herein, we addressed this gap and hypothesized a moderated-mediation model whereby perfectionism fosters the development of disordered behaviors through a focused self-concept. Critically, the effect of a focused self-concept on disordered behaviors is specific to people with erroneous beliefs about their disordered behaviors. The model was tested in the contexts of disordered gambling and disordered eating, particularly dietary restraint. *Method:* In Study 1, participants were community members who gamble ($N = 259$). In Study 2, participants were university women ($N = 219$). In both studies, participants completed self-report measures of all constructs that are both reliable and valid. *Results:* In Study 1, as expected, there was a positive association between perfectionism and disordered gambling, which was mediated by financially focused self-concept. This mediation was only observed among participants who scored high on illusion of control and belief in luck. Likewise, in Study 2, there was a positive association between perfectionism and dietary restraint, which was mediated by appearance focused self-concept. The mediation effect was only observed among participants who believed that maladaptive dietary restraint behaviors were safe and efficacious. *Discussion and Conclusions:* The findings support the transdiagnostic utility of our model, which may help explain an array of disordered behaviors, including other addictive behaviors as well as behaviors that involve rigid adherence to rules and control.

KEYWORDS

cognitive distortions, disordered eating, disordered gambling, perfectionism, self-concept

INTRODUCTION

There is growing empirical support for a transdiagnostic approach for examining the etiology and maintenance factors of various disordered behaviors (e.g., Dalglish, Black, Johnston, & Bevan, 2020). A goal of the transdiagnostic approach is to develop and test process models that describe how transdiagnostic factors lead to various disorders and why some people with the same transdiagnostic factors develop different disorders (Nolen-Hoeksema & Watkins, 2011). A nascent body of research has focused on overlapping psychological correlates in the co-occurrence of disordered gambling and eating (Jiménez-Murcia et al., 2013; Kim, von Ranson, Hodgins, McGrath, & Tavares, 2018; von Ranson, Wallace, Holub, & Hodgins, 2013). Yet, theory and prior research have not considered how transdiagnostic factors may

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work together to proliferate and maintain these behaviors and why people with the same set of transdiagnostic factors may go on to develop disordered gambling or disordered eating. In the current research, we addressed this gap in knowledge by assessing whether three factors—perfectionism, focused self-concept (i.e., placing overriding importance on a single area of life for self-definition and self-worth; see [Veale, 2002](#)), and erroneous beliefs about one's disordered behavior—have transdiagnostic utility for explaining disordered gambling and eating. In two studies, we examined whether perfectionism and having a focused self-concept—two known antecedents of disordered eating (e.g., [Fairburn, 2003](#); [Tabri et al., 2015](#))—and erroneous beliefs—a well-studied and known predictor of disordered gambling (e.g., [Blaszczynski & Nower, 2002](#); [Goodie & Fortune, 2013](#))—combine to create a pathway to engagement in disordered gambling (Study 1) and disordered eating (Study 2).

Perfectionism, disordered behaviors, and focused self-concept

Although perfectionism has been variably defined and measured (for a review, see [Dunkley, Blankstein, Masheb, & Grilo, 2006](#)), we, like others ([Howell, Anderson, Egan, & McEvoy, 2020](#); [Smith & Saklofske, 2017](#); [Tabri, Wohl, Wood, & Philander, 2018](#)), have argued and found that perfectionism is best understood as a single factor that reflects a striving for flawlessness coupled with critical self-evaluation and concern for how others evaluate the self. Critically, people with such perfectionism are more vulnerable to various forms of psychopathology and disordered behaviors, including eating, anxiety, mood, and personality disorders as well as suicidal ideation ([Egan, Wade, & Shafran, 2011](#); [Flett, Hewitt, & Heisel, 2014](#); [Limburg, Watson, Hagger, & Egan, 2017](#)).

Of particular relevance to the current research, in the transdiagnostic cognitive-behavioral theory of eating disorders, perfectionism is an antecedent of disordered eating ([Fairburn, Cooper, & Shafran, 2003](#)). Supporting this contention, research has shown that people with more (relative to less) perfectionism are at greater risk for developing disordered eating (e.g., [Holland, Bodell, & Keel, 2013](#); [Wade, Wilksch, Paxton, Byrne, & Austin, 2015](#); [Smith et al., 2017](#)). Moreover, in a meta-analytic review of 23 studies, [Dahlenburg, Gleaves and Hutchinson \(2019\)](#) found that people diagnosed with anorexia nervosa or bulimia nervosa have more severe perfectionism compared to people without an eating disorder. This is likely because the tendency to strive for a flawless appearance can focus one's self-concept on their shape and weight, which is the core psychopathology underlying disordered eating (i.e., placing overriding importance on appearance for self-definition and self-worth; [Fairburn et al., 2003](#)). Stated differently, an appearance-focused self-concept has been positioned as a mechanism by which perfectionism leads to disordered eating ([Fairburn et al., 2003](#); [Joyce, Watson, Egan, & Kane, 2012](#); [Watson, Raykos, Street, Fursland, & Nathan, 2010](#)).

Addictive behaviors have also been framed as a coping response to escape stress and negative affect stemming from perfectionism (e.g., [Rice & Van Arsdale, 2010](#); [Donnelly, Ksendzova, Howell, Vohs, & Baumeister, 2016](#)). Additionally, engagement in some addictive behaviors can be a function of the desire to address current concerns rooted in a focused self-concept. In particular, levels of perfectionism among community gamblers are moderate and having greater perfectionism is associated with greater disordered gambling severity ([Carlotta et al., 2015](#); [Chiu & Storm, 2010](#)). Furthermore, [Tabri, Werner, et al. \(2018\)](#) showed that the relation between perfectionism and disordered gambling flows through a financially focused self-concept (i.e., placing overriding importance on financial success for self-definition and self-worth; see [Tabri, Wohl, Eddy, & Thomas, 2017](#)). Although the study of perfectionism in disordered gambling is an emerging area, the available research suggests parallels with theory and research on eating disorders.

Taken together, people with higher (relative to lower) perfectionism scores tend to become focused on a specific domain (e.g., appearance, financial success). A consequence may be engagement in maladaptive and risky behaviors (e.g., weight-control, gambling) to attain a high standard of success in that domain.

The moderating role of erroneous beliefs

Erroneous beliefs refer to errors in thinking. In the context of gambling, they often include the belief that the outcome of a game of chance can be maximized by way of personal skill or ability (e.g., illusion of control; [Goodie & Fortune, 2013](#); [Langer, 1975](#); [Wohl & Enzle, 2002](#)), which is theorized to maintain gambling involvement and the development of disordered gambling ([Blaszczynski & Nower, 2002](#)). In the current research, we tested the idea that the effect of a focused self-concept (stemming from perfectionism) on disordered behavior may be contingent on the extent to which people have erroneous beliefs about the behavior. Among people with gambling-related erroneous beliefs, we hypothesized that financially focused self-concept (stemming from perfectionism) would predict disordered gambling. Supporting this contention, a meta-analytic review found that people with gambling problems have more severe erroneous beliefs compared to people who gamble without problems ([Goodie & Fortune, 2013](#)). In contrast, among people with little or no erroneous beliefs, we suspected that financially focused self-concept (stemming from perfectionism) may predict disordered gambling, but to a much weaker extent. This is because prior research has found a moderate positive association between erroneous beliefs and financial focused self-concept among gamblers with gambling problems ([Tabri, Salmon, & Wohl, 2021](#)) and a small positive association among gamblers without gambling problems ([Tabri, Wohl, et al., 2018](#)). As well, erroneous beliefs and financial focus both have a moderately positive association with disordered gambling (for a reviews, see [Goodie & Fortune, 2013](#); [Tabri & Wohl, 2021](#)). As such, fewer erroneous beliefs should coincide with less financial



focus, which would result in lower disordered gambling symptomatology.

In the context of eating disorders, erroneous beliefs related to the self play an important role in the etiology and maintenance of disordered eating (Fairburn et al., 2003; Tabri et al., 2015). However, in the eating disorder literature, little attention has been focused on the role of erroneous beliefs about disordered eating behaviors, particularly perceptions about the efficacy and safety of maladaptive weight-control strategies (e.g., eating less than 1,200 calories per day, extreme dieting, vomiting). Available evidence indicates that people with more (relative to less) severe eating disorder symptoms tend to believe that maladaptive weight-control strategies are safe and effective (Tylka & Subich, 2002a, 2002b). As such, akin to disordered gambling, we hypothesized that perfectionism promotes an appearance focused self-concept, which in turn affects disordered eating in different ways. Among people who have erroneous beliefs, appearance focused self-concept (stemming from perfectionism) would predict disordered eating. In contrast, among people with little or no erroneous beliefs, appearance focused self-concept may predict disordered eating, but to a much weaker extent. This is because prior research has found a moderately positive association between erroneous beliefs about maladaptive weight-control strategies and a composite measure that included both appearance focused self-concept and frequency of disordered eating behaviors (Tylka & Subich, 2002a, 2002b). As such, fewer erroneous beliefs should coincide with less appearance focus, which would result in lower disordered eating.

Overview of the current research

We hypothesized that people with perfectionism engage in disordered behaviors because their perfectionistic tendencies cultivate a self-concept focused on a specific life domain (e.g., financial success in the context of disordered gambling and appearance in the context of disordered eating). Because people whose self-concept is focused on a single life domain are highly motivated to succeed in that domain (Crocker & Park, 2004), we expected a link between the focused self-concept (stemming from perfectionism) and disordered behaviors (e.g., disordered gambling), especially among

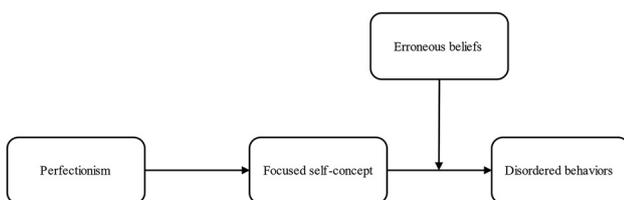


Fig. 1. Moderated mediation model with Perfectionism as the independent variable, focused self-concept as the mediator variable, erroneous beliefs as the moderator variable, and disordered behaviors as the dependent variable

people who have erroneous beliefs about the disordered behaviors (e.g., illusion of control over the outcomes of gambling). We tested this heretofore unexamined moderated-mediation model (see Fig. 1) within the contexts of disordered gambling, with a community sample of frequent gamblers (Study 1), and disordered eating, with a sample of women who are university students (Study 2). We chose women university students to examine disordered eating because it is especially prevalent in this population relative to the general population (Fitzsimmons-Craft, Karam, Monterubio, Taylor, & Wilfley, 2019). Lastly, based on the power table developed by Preacher, Rucker, and Hayes (2007), a minimum of 200 participants would be needed to detect a small-to-moderate conditional indirect effect with 100% power. Because sample sizes in Studies 1 and 2 exceeded 200, the findings of the current research were adequately powered.

Statement of transparency

All materials and data from the present research are publicly available via the Open Science Framework (OSF; <https://osf.io/yts3q/>). For the purpose of transparency, in Study 1, participants also completed several additional measures for exploratory purposes (e.g., a measure assessing personal relative deprivation). The full questionnaire is available on OSF.

STUDY 1

Methods

Participants and procedure. A total of 353 gamblers residing in the United States were recruited to participate via Amazon's Mechanical Turk (MTurk). MTurk is a reliable and valid means of data collection for conducting clinical research (Chandler & Shapiro, 2016), including research with people living with disordered gambling (Kim & Hodgins, 2017) or eating (Tabri & Palmer, 2020). Data from 94 participants were excluded because they failed at least one attention check that requested the participant provide a specific response option ($n = 45$), had missing data on one or more key measures ($n = 39$), or withdrew from the study ($n = 10$). The final sample consisted of 259 participants (men = 136, women = 122) who ranged in age from 22 to 73 years ($M = 37.92$, $SD = 11.35$; one participant did not report their age). Most participants were Caucasian or of European origin ($n = 213$; 83.4%) and the remaining participants were African-American ($n = 17$; 6.6%), East Asian ($n = 13$; 5.0%), Hispanic or South American ($n = 9$; 3.5%), South Asian ($n = 2$; 0.8%), and Other or Multi-Ethnic origin ($n = 1$; 0.4%). One participant did not report ethnicity (0.4%).

To be eligible for the study, participants were required to have engaged in at least one form of gambling in the last 12 months and spent at least \$100 on their gambling activities during that time period. They were informed they would be

compensated \$0.50 USD for their time. After granting consent to participate and passing the eligibility screening questions, participants completed a questionnaire battery that contained the variables of interest.

Measures

Perfectionism. A total of 24 items ($\alpha = 0.92$) were used to measure perfectionism. These items were taken from the Depressive Experience Questionnaire (Blatt, D’Afflitti, & Quinlan, 1976), the Frost Multidimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990) and the Revised Almost Perfect Scale (Slaney, Rice, Mobley, Trippi, & Ashby, 2001). An example item is: “It is important to me that I be thoroughly competent in everything I do.” Responses were anchored at 1 (*strongly disagree*) and 7 (*strongly agree*). This combination of scales has been used in prior research to measure perfectionism (for a review, see Dunkley et al., 2006; also see Levine, Milyavskaya, & Zuroff, 2020). An index was created by calculating an average score of all items, such that higher scores represented greater perfectionism.

Financially focused self-concept. The 20-item ($\alpha = 0.95$) financially focused self-concept scale (FFS; Tabri et al., 2017) was used to measure the extent to which participants’ self-concept is focused on financial success. FFS items measure the perceived importance of money for self-views, feelings, interpersonal relationships, and achievements. An example item was: “Money is a large part of who I am.” Responses were anchored at 0 (*not at all*) and 4 (*extremely*). An average score was calculated such that higher scores represent greater financial focus.

Disordered gambling severity. Disordered gambling severity was measured using the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001), which contains nine items ($\alpha = 0.93$) that are anchored on a scale from 0 (*Never*) to 3 (*Almost always*). An example item is: “Have you gone back on another day to try to win back the money you lost?” A total score was calculated that ranged from 0 to 27 with higher scores representing greater disordered gambling severity.

Erroneous gambling beliefs. The Gambling Beliefs Questionnaire (Steenbergh, Meyers, May, & Whelan, 2002) was

used to measure erroneous gambling beliefs. This 21-item scale ($\alpha = 0.94$) measures control beliefs about gambling and belief in luck. An example item is: “I have a ‘lucky’ technique that I use when I gamble.” Responses were anchored at 1 (*strongly disagree*) and 7 (*strongly agree*). An average score was created such that higher scores represent more erroneous beliefs about gambling.

Ethics

Both Study 1 and Study 2 received ethical clearance from Carleton University’s Research Ethics Board - B. All participants were informed about the study and provided consent.

Results

Descriptive statistics and correlations between all variables are reported above the diagonal in Table 1. Based on the PGSI scoring criteria, 62 participants were categorized as a problem gambler (23.93%; i.e. a PGSI total score between 8 and 27), 65 as a moderate-risk gambler (25.1%; i.e. a PGSI total score between 3 and 7), 81 as a low-risk gambler (31.3%; i.e. a PGSI total score of 2), and 51 as a non-problem gambler (19.7% i.e. a PGSI total score of zero).

To test the proposed moderated mediation model, we used SPSS version 26 and the PROCESS macro version 3.5 (model 14; Hayes, 2018) to estimate all parameters. Conditional indirect effects were examined at $\pm 1SD$ around the mean of erroneous gambling beliefs using 95% bias-corrected bootstrapped confidence intervals (with 5,000 resamples). All variables were mean-centered except for perfectionism and PGSI. Notably, the Breusch-Pagan (Lagrange multiplier [LM] = 38.91, $p < 0.001$) and Koenker (LM = 24.13, $p < 0.001$) tests indicated the presence of heteroskedasticity. Thus, Huber-White robust SEs were used to assess the statistical significance of the direct effects in the moderated mediation analysis.

Unstandardized regression coefficients for the direct effects are reported in Fig. 2. As expected, perfectionism predicted greater financially focused self-concept, but not disordered gambling severity. Disordered gambling severity was predicted by financially focused self-concept and erroneous gambling beliefs. Importantly, the two-way interaction between financially focused self-concept and erroneous

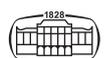
Table 1. Descriptive statistics and inter-correlations between all variables in Studies 1 and 2

Variable	M(SD)	1	2	3	4	M(SD)
1. Perfectionism	4.20 (0.99)	—	0.47**	0.14*	0.29**	4.54 (0.91)
2. Focused self-concept	1.71 (0.95)	0.63**	—	0.24**	0.37**	1.88 (0.88)
3. Erroneous beliefs	3.73 (1.17)	0.31**	0.36**	—	0.21**	3.35 (0.92)
4. Disordered behavior	4.69 (5.39)	0.27**	0.39**	0.45**	—	1.60 (1.47)

Note. Descriptive statistics and correlations below the diagonal are for Study 1, and descriptive statistics and correlations above the diagonal are for Study 2.

* $p < 0.05$; ** $p < 0.01$.

Study 1 $N = 259$ and Study 2 $N = 219$.



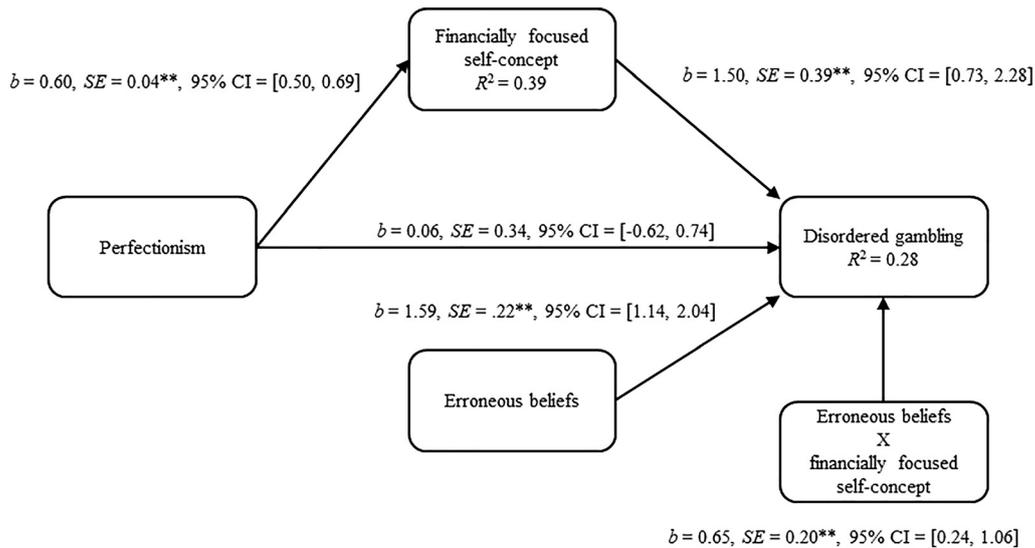


Fig. 2. Moderated mediation model results for direct (unstandardized) path coefficients in Study 1. * $P < 0.05$; ** $P < 0.01$

gambling beliefs qualified the main effects. As predicted, there was a statistically significant indirect effect of perfectionism on disordered gambling severity via greater financially focused self-concept at 1SD above the mean of the erroneous gambling beliefs, $b = 1.37$, 95% CI = [0.76, 2.06]. At 1SD below the mean of the erroneous gambling beliefs, the conditional indirect effect was not observed, $b = 0.44$, 95% CI = [-0.05, 0.95]. Moreover, the Index of Moderated Mediation was statistically significant, $b = 0.39$, 95% CI = [0.14, 0.68], confirming that this indirect effect varied as a function of erroneous beliefs. This model explained 39% of the variance in financially focused self-concept and 28% of the variance in disordered gambling severity, which are large effects.

Discussion

Consistent with our proposed moderated-mediation model, and in line with the results of Tabri, Werner, et al. (2018), perfectionism predicted disorder gambling severity by way of financial focus. Extending previous literature, the results of Study 1 demonstrated that the indirect effect of perfectionism on disordered gambling severity via financial focus was moderated by erroneous beliefs about gambling. Specifically, the aforementioned mediation was only observed among people who scored higher (relative to lower) in erroneous beliefs about their ability to win whilst gambling. These results also contribute to the transdiagnostic approach to addictive behaviors by illustrating, for the first time, that a factor well-known to contribute to risky gambling behavior (i.e., erroneous beliefs) combines with two factors well-known to contribute to psychiatric disorders (i.e., perfectionism and focused self-concept) to explain disordered gambling symptomatology. In Study 2, we sought to replicate and extend the proposed transdiagnostic moderated mediation model to another disordered behavior: Dietary restraint.

STUDY 2

Methods

Participants and procedure. Participants were 272 female undergraduate university students at a Canadian university. They responded to a recruitment notice for a study about appearance and weight-control activities posted in the psychology recruitment pool, for which they received course credit. Data from 53 participants were excluded because they had missing data on one or more of the measures. The final sample consisted of 219 participants, aged 17–52 years ($M = 20.16$, $SD = 4.97$). Most participants were Caucasian or of European origin ($n = 168$; 76.7%) and the remaining participants were of Middle Eastern ($n = 15$; 6.8%), East Asian ($n = 11$; 5%), South Asian ($n = 8$; 3.7%), African Canadian ($n = 7$; 3.2%), Other or Multi-Ethnic ($n = 7$; 3.2%), Hispanic or South American ($n = 2$; 0.9%), or Indigenous Canadian ($n = 1$; 0.5%).

With the exception of perfectionism (which was exactly the same; $\alpha = 0.92$), participants completed similar measures as those in Study 1 that were adapted to eating disorders. To assess the presence of an appearance focused self-concept, we used the 20-item Beliefs About Appearance Scale (BAAS; Spangler & Stice, 2001), which measures the perceived importance of appearance for self-views, feelings, interpersonal relationships, and achievements (e.g., “How I look is a large part of who I am”). Responses were anchored at 0 (*not at all*) and 4 (*extremely*), and were combined into an average score ($\alpha = 0.95$).

Participants also completed the Eating Disorders Examination-Questionnaire 6.0 (EDE-Q; Fairburn, 2008)—a 41-item self-report measure that assesses attitudes, feelings, and behaviors related to eating and body image over the past 28-days. The EDE-Q includes four subscales: eating

concerns ($\alpha = 0.78$), shape concerns ($\alpha = 0.91$), weight concerns ($\alpha = 0.85$), and restraint ($\alpha = 0.84$) as well as a global score. We used the 5-item restraint subscale to assess engagement in maladaptive dietary restraint behaviors in the past 28-days. An example item is “Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?” Participants responded to each item using a 7-point response scale: 0 (*no*), 1 (*1-5 days*), 2 (*6-12 days*), 3 (*13-15 days*), 4 (*16-22 days*), 5 (*23-27 days*), and 7 (*every day*), that were combined into an average score. The remaining subscale scores and the global EDE-Q score were used to characterize the sample in terms of eating disorder symptom severity.

Lastly, we measured erroneous beliefs with two measures. The first assessed erroneous beliefs about the short term and long term perceived efficacy of 13 different maladaptive weight-control strategies (Tylka & Subich, 2002a): dietary restraint (“Skipping meals,” “Fasting,” “Eating 1,200 calories or less a day,” “Eliminating fats from diet,” and “Eliminating simple carbohydrates”), exercise (“Heavy exercise; exercising 6 to 7 times a week for several hours at a time”), purging (“vomiting after eating,” “laxatives,” “diuretics,” “enemas,” and “liposuction”) or other (“appetite suppressants” and “food supplements”) behaviors. Responses were made on a 1 (*not at all effective*) to 7 (*very effective*) scale. The second measure assessed erroneous beliefs about the short term and long-term perceived safety of the 13 different maladaptive weight-control strategies using a response scale with anchors (1) *not at all safe* and (7) *very safe*. The measures for efficacy and safety were moderately and positively correlated, $r = 0.46$, $p < 0.01$. Participants’ responses to the erroneous beliefs about the efficacy and safety of *dietary restraint* behaviors were averaged into a single erroneous beliefs score ($\alpha = 0.87$).

RESULTS

Descriptive statistics and correlations between all variables are reported below the diagonal in Table 1. The eating concerns ($M = 1.18$, $SD = 1.16$), shape concerns ($M = 3.08$, $SD = 1.60$), weight concerns ($M = 2.75$, $SD = 1.61$), and restraint ($M = 1.60$, $SD = 1.47$) subscale scores as well as the EDE-Q global score ($M = 2.15$, $SD = 1.27$) were all higher than the normative scores for female undergraduate students in the US (see Luce, Crowther, & Pole, 2008). In terms of clinical significance, many participants had a score of 4 or more on the shape concerns (31.5%, $n = 76$) and weight concerns (20.5%, $n = 55$) subscales whereas few had a score of 4 or more on the eating concerns (2.7%, $n = 8$) and restraint (5%, $n = 16$) subscales. In terms of the global EDE-Q score, 8.7% ($n = 20$) had a score of 4 or more.

Like Study 1, a moderated-mediation model was used to test the hypothesis that perfectionism promotes dietary restraint indirectly via an appearance focused self-concept among people who have erroneous beliefs about the efficacy and safety of dietary restraint strategies. That is, appearance focused self-concept stemming from perfectionism fosters dietary restraint among people who have more (relative to less) erroneous beliefs about the efficacy and safety of dietary restraint strategies. The same moderated mediation model from Study 1 was used in Study 2 wherein all variables were mean-centered except for perfectionism and dietary restraint. Notably, the Breusch-Pagan ($LM = 19.49$, $p < 0.001$) and Koenker ($LM = 24.54$, $p < 0.001$) tests indicated the presence of heteroskedasticity. Thus, Huber-White robust SEs were used to assess the statistical significance of the direct effects in the moderated-mediation analysis.

Unstandardized regression coefficients for the direct effects are reported in Fig. 3. Perfectionism predicted greater appearance focused self-concept and dietary restraint. Dietary restraint was predicted by appearance focused

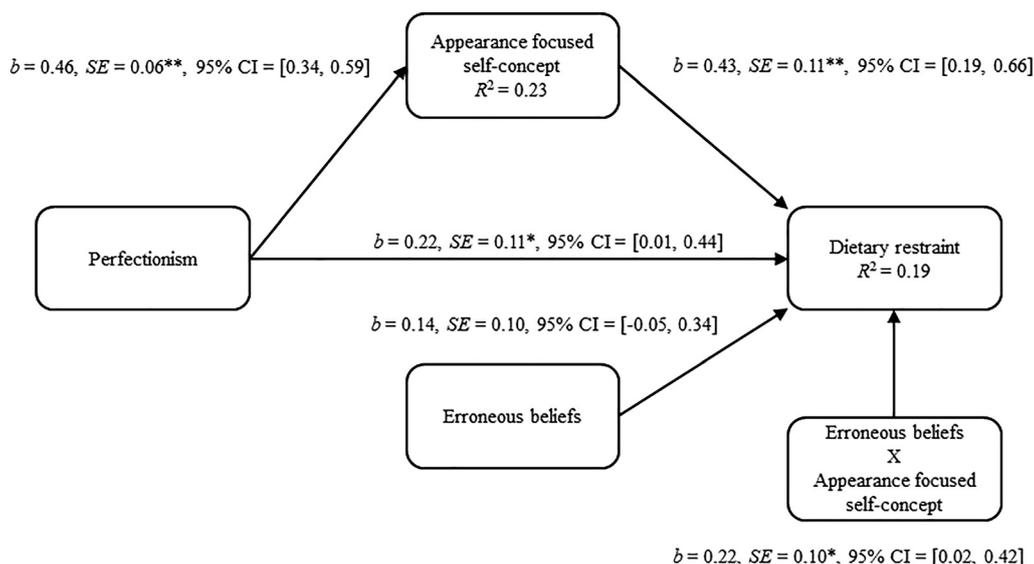
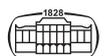


Fig. 3. Moderated mediation model results for direct (unstandardized) path coefficients in Study 2. * $P < 0.05$; ** $P < 0.01$



self-concept but not erroneous beliefs about the efficacy and safety of dietary restraint strategies. Importantly, the two-way interaction between appearance focused self-concept and erroneous beliefs was statistically significant. There was a statistically significant indirect effect of perfectionism on dietary restraint via greater appearance focused self-concept at 1SD above the mean of the erroneous beliefs, $b=0.30$, 95% CI = [0.16, 0.45]. At 1SD below the mean of the erroneous beliefs, the conditional indirect effect was not observed, $b = 0.10$, 95% CI = [-0.05, 0.27]. Notably, the Index of Moderated Mediation was statistically significant, $b = 0.10$, 95% CI = [0.01, 0.21], which confirmed that the indirect effect of perfectionism on dietary restraint via appearance focused self-concept varies as a function of erroneous beliefs. The model explained 23% of the variance in appearance focused self-concept and 19% of the variance in disordered eating severity, which are moderate-to-large effects.

Discussion

The results of Study 2 provide additional support for our transdiagnostic moderated-mediation model. Akin to Study 1, participants with higher (relative to lower) perfectionism were likely to focus on a life domain—in this case appearance—as a source of self-definition and self-worth. Because people are generally motivated to bolster their self-worth in domains on which their self-worth is staked (Crocker & Park, 2004), it is not surprising that women with higher (relative to lower) perfectionism focused more on their appearance and engaged in maladaptive and risky behaviors (i.e., dietary restraint). However, as expected, this mediation was moderated by erroneous beliefs. Women who scored higher (relative to lower) in erroneous beliefs about the short term and long-term perceived efficacy of the maladaptive weight-control strategies demonstrated the negative effects of perfectionism on dietary restraint (via appearance focused self-concept). Consistent with Study 1, these results suggest that perfectionism, focused self-concept, and erroneous beliefs have transdiagnostic utility for (at least two) distinct disordered behaviors.

GENERAL DISCUSSION

According to the transdiagnostic approach, there are key psychological factors and processes responsible for maintaining disordered behaviors that are shared across psychiatric disorders. This approach has important utility for understanding the etiology of an array of psychiatric and addictive disorders. In the current research, we found evidence for the heretofore untested idea that factors known to predict disordered eating (i.e., perfectionism and appearance focused self-concept; Fairburn et al., 2003) and a factor known to predict disordered gambling (erroneous beliefs and financially focused self-concept; Goodie & Fortune, 2013; Tabri & Wohl, 2021) combine in a moderated mediation model to explain the presence of both disordered behaviors. In doing so, we extend the utility of the transdiagnostic approach to psychopathology.

In Study 1, we found evidence for our transdiagnostic moderated mediation model among gamblers. Specifically, we found that gamblers who have a tendency toward perfectionism were more likely to develop a financially focused self-concept than gamblers who were low in such tendencies. This is likely because perfectionistic gamblers will want to continue gambling until they achieve financial success at the game. Unfortunately, the odds are not in the gambler's favor. As such, continued gambling—particularly in the face of continued loss—is likely to produce gambling problems, which is what we observed. Importantly, we only observed this mediation model among gamblers who held erroneous beliefs about their chance of winning. That is, perfectionistic gamblers reported greater financial focus, which had downstream negative effects on reported disordered gambling symptomatology. However, this was only observed among those who held (objectively false) beliefs that they had a skill or ability that maximized the outcome of games of chance.

It is possible that perfectionism plays a stronger role in the development of disordered gambling among gamblers who play games that involve an objective element of skill (e.g., blackjack, poker) compared to gamblers who play games of pure chance (e.g., slots lottery). Yet, theory and prior research suggest that erroneous gambling beliefs about one's ability to control objectively uncontrollable elements of a gambling game is the core psychopathology that maintains gambling involvement despite accumulating losses across all forms of gambling (Blaszczynski & Nower, 2002; Goodie & Fortune, 2013; Wohl, Young, & Hart, 2007). As such, it should behoove researchers to examine whether perfectionism's influence on disordered gambling varies by game type (strategic vs non-strategic).

Of note, Study 2 replicated and extended the findings of Study 1 among women in the context of dietary restraint. Perfectionistic women reported greater appearance focus, which had downstream effects on reported dietary restraint behaviors. However, this was only observed among women who held erroneous beliefs about the efficacy and safety of dietary restraint strategies. As is well known in the eating disorder literature (Fairburn et al., 2003; Tabri et al., 2015), women with an appearance focused self-concept are at considerable risk for developing disordered eating—an effect observed in Study 2.

Critically, erroneous beliefs about maladaptive weight-control strategies have received little or no theoretical and empirical attention in the eating disorders literature. In particular, there is no mention of such erroneous beliefs in the leading cognitive-behavioral theory and treatment of eating disorders (Fairburn et al., 2003; Fairburn, 2008). Accordingly, the findings of Study 2 extend knowledge of the cognitive risk and maintenance factors for disordered eating. The findings suggest that erroneous beliefs about maladaptive weight-control strategies may work with appearance focused self-concept—the core psychopathology of eating disorders (Fairburn et al., 2003)—to proliferate and maintain disordered eating.



Implications

The results of the current research suggest that perfectionism, focused self-concept, and erroneous beliefs play a role in the etiology and maintenance of various disordered behaviors. Akin to disordered gambling, it is possible that the same model may help explain other addictive behaviors, such as workaholism (Griffiths, 2005). A recent meta-analysis found a moderate association between perfectionism and workaholism and a small-to-moderate association between a work-focused self-concept and workaholism (Kun, Takacs, Richman, Griffiths, & Demetrovics, 2020). Future research can examine whether having a work-focused self-concept (stemming from perfectionism) is associated with workaholism severity among people who have erroneous beliefs about maladaptive work strategies. Likewise, akin to dietary restraint, our model may help explain disordered behaviors that involve rigid adherence to demanding rules and control, such as those seen in obsessive-compulsive and related disorders. Indeed, perfectionism is associated with obsessive-compulsive symptoms (for a meta-analysis, see Limburg et al., 2017) and so people with a self-concept focused on, for instance, contamination fears may rigidly adhere to demanding cleaning rules and rituals to ward off a perceived threat of illness, especially when they hold erroneous beliefs about the efficacy and safety of their cleaning strategies. According to Oyserman et al.'s (2012) sociocultural model of the self-concept, environmental factors (i.e., interpersonal relationships, sociocultural norms) influence the composition of a person's self-concept. Thus, it is possible that people become focused on a particular domain due to perceived pressure to attain the ideal standard in a domain (e.g., from family, friends, dating partners, the media) and internalization of the domain ideal as a standard of happiness and life success. Why some people focus on one domain (e.g., appearance) whereas others focus on a different domain (e.g., financial success) or a combination of domains is ripe for empirical investigation.

Limitations and future directions

Some limitations of the current research should be noted. First, a cross-sectional design was used, which limits causal inferences, and so future longitudinal research is needed to identify the directionality of the effects. Another limitation is the exclusive use of self-report measures of gambling and dietary restraint and so future research should attempt to replicate the results with behavioral measures. A third limitation is that we used a crowdsourcing marketplace to recruit participants. We asked them to self-report possible gambling and eating problems using valid scales to assess those behaviors. It is possible that the observed results may not generalize to those who have been professionally diagnosed with a gambling or eating disorder. Thus, future research should replicate the current research with samples that meet diagnostic criteria for gambling or eating disorders. However, it should be noted that research (e.g., Kim & Hodgins, 2017) has found that MTurk (the crowdsourcing marketplace used in the current research) provides valid

data for an array of addictive behaviors, including disordered gambling.

CONCLUSIONS

Perfectionism, focused self-concept, and erroneous beliefs have been implicated in the development and maintenance of various disordered behaviors. The current research advances knowledge of how these factors may work together and offers support for a transdiagnostic moderated mediation model. In the model, perfectionism fosters the development of disordered behaviors through a focused self-concept. Critically, the effect of having a focused self-concept on disordered behaviors is specific to people holding erroneous beliefs about the disordered behaviors. The findings suggest a transdiagnostic process that motivates and maintains disordered behaviors.

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