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Fear of Negative and Positive Evaluation Predicts Abnormal Eating Behavior: Ego Depletion as a Longitudinal Mediator

Qishuo Wu
Guangzhou University
Haijiao Huang
Guangzhou University
Siqi Liu
Guangzhou University
Yusui Chen
Guangzhou University
Hong Zeng
soezenghyj@gzhu.edu.cn
Guangzhou University

Research Article

Keywords: Abnormal eating behavior, fear of negative evaluation, fear of positive evaluation, ego depletion

Posted Date: April 19th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9157492/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Evaluative fear and ego depletion have been identified as psychological correlates of abnormal eating behaviors (AEB), yet their longitudinal relationships remain unclear.

Methods

was conducted among 351 Chinese college students. Participants completed the Dutch Eating Behavior Questionnaire, the Brief Fear of Negative Evaluation Scale, the Fear of Positive Evaluation Scale, and the Ego Depletion Scale across three time points. Cross-lagged panel modeling was used to examine the relationships between fear of negative evaluation (FNE), fear of positive evaluation (FPE), ego depletion, and AEB.

Results

Both FNE and FPE significantly predicted later AEB through ego depletion. Specifically, T1 FNE predicted T2 ego depletion ($\beta = 0.27$, $p < .001$), which in turn predicted T3 AEB ($\beta = 0.08$, $p < .05$). Similarly, T1 FPE predicted T2 ego depletion ($\beta = 0.29$, $p < .001$), and T2 ego depletion predicted T3 AEB ($\beta = 0.09$, $p < .05$).

Conclusions

These findings highlight ego depletion as a key psychological mechanism linking evaluative fear to abnormal eating behavior in college students. Reducing evaluative fear and strengthening self-regulatory resources may help mitigate the risk of AEB among Chinese college populations.

Introduction

The widespread use of social media platforms (e.g., Instagram, TikTok, WeChat) has intensified the dissemination of the idea of an “ideal body type,” leading many to experience excessive concern about their weight and body shape, particularly among adolescents and young women. According to a World Health Organization report (WHO, 2022), approximately 30% of adolescents worldwide engage in unhealthy eating behaviors due to appearance-related anxiety.

Abnormal Eating Behaviors (AEB)—such as binge eating accompanied by a sense of loss of control, restrictive eating, or compensatory behaviors (King, et al., 2009)—are highly prevalent even in subclinical forms and can be reliably assessed through standardized measures (Stice, et al., 2009). Elevated rates of AEB have been documented among specific demographic groups, particularly women (Xue, 2021) and college students (Staples & Rancourt, 2022), which have been attributed to factors such as stress, social comparison, and shifts in food accessibility and lifestyle cultures. AEB pose substantial risks to physical and psychological well-being, including heightened vulnerability to severe mental health disorders (Zhao & Jiang, 2021) and various physiological complications (Asana, et al., 2022).

Although a wide array of social, cultural, psychological, and biological factors contribute to the development and persistence of AEB, the affect regulation model offers a coherent and empirically supported framework for understanding these maladaptive behaviors (Deaver, et al., 2003). This model posits that individuals may engage in dysregulated eating as a strategy to alleviate negative affective states and momentary distress (Walenda, et al., 2021). Recent evidence further supports this view, for instance, rates of emotional eating have risen by approximately 18% since the onset of the COVID-19 pandemic (Caldas et al., 2021; Li et al., 2022). Additionally, Yang et al. (2023) identified among university students that emotion regulation difficulties predict increased emotional eating through a serial mediation of impulsivity and depressive symptoms.

Despite the detrimental effects, the underlying mechanisms and predictive factors of AEB remain poorly understood, hindering the development of effective interventions. As such, an understanding the psychological factors that contribute to AEB is critical for the designing of targeted prevention and intervention strategies.

Evaluative fear refers to anxiety or apprehension about how one’s performance is perceived and judged by others. It consists of two core components: fear of negative evaluation (FNE) and fear of positive evaluation (FPE) (Weeks & Howell, 2012). Concerns about physical

appearance often contribute to the development of evaluative fear, which can lead to body image disturbances and eating-related issues, particularly among adolescent girls (Menzel, et al., 2010). Research has demonstrated that FNE is a significant risk factor for eating disorders symptoms (Hopkins et al., 2013). The state fear of negative evaluation (FNE) elevates restrictive eating in student samples (Mancuso et al., 2022); and broader evidence links anxiety and evaluative stress to maladaptive eating behaviors (Hussenoeder et al., 2021; Alexatou et al., 2025).

FPE can also contribute to AEB. FPE is defined as the fear of receiving positive social evaluations and the associated discomfort (Wallace & Alden 1995). Individuals with high FPE would feel distress when given positive feedback and interpret it less favorably. (Daneshvar, et al., 2025). Moreover, those who perceive themselves as socially inferior may regard positive evaluations directd at others as threats (Weeks et al., 2008).

The relationship between FPE and AEB has been widely examined in both psychological and eating disorder research (Li, 2021). FPE has been positively associated with body dissatisfaction, binge eating symptoms, concerns about body shape and weight, and dietary preoccupation (Levinson & Rodebaugh, 2012). Further, both FNE and FPE have been shown to mediate the relationship between anxiety and eating disorders (Cunha & Paiva, 2012).

From the perspective of social comparison theory, positive evaluations may heighten tendencies toward upward social comparisons, prompting individuals to pursue perceived beauty and fitness standards observed in others who receive similar feedback. This process can intensify body dissatisfaction and increase vulnerability to disordered eating as individuals attempt to align with these idealized standards (Levinson & Rodebaugh, 2012).

Overall, these findings suggest that both FNE and FPE place continuous demands on emotion regulation. Consistent with emotion regulation theory, such demands deplete self-regulatory resources, making individuals more susceptible to impulsive eating as a maladaptive means of affective relief.

Ego depletion as a mediator

In social contexts, FNE and FPE heighten anxiety and self-awareness, consuming emotion-regulatory resources and contributing to ego depletion—a state in which self-control capacity is impaired. Ego depletion arises from the exhaustion of limited psychological resources following tasks that require self-regulation (Hagger et al., 2010). When depleted, individuals lack the resilience to resist impulsive, affect-driven behaviors and become more likely to engage in maladaptive eating as a source of temporary emotional relief.

Ego depletion, defined as a reduction in self-control capacity, has been observed across diverse domains, including emotional dysregulation, addictive behaviors, and maladaptive eating such as AEB (Baumeister et al., 2019).

Individuals experiencing ego depletion exhibit cognitive biases, such as underestimating their capabilities (Fischer et al., 2007), and report reduced perceived control over future outcomes (Ding et al., 2020). Neurocognitive evidence further indicates that ego depletion alters functional connectivity in brain networks related to executive control, as shown in young adult males (Ding et al., 2020).

Empirical research suggests that evaluative fear—particularly in academic settings—intensifies ego depletion, thereby heightening students' vulnerability to AEB (Utschig et al., 2010). For example, resisting initial food temptations has been shown to deplete self-regulatory resources, increasing the likelihood of subsequent overeating when re-exposed to food cues (Wang & Chen, 2019). These findings align with clinical observations that depleted individuals struggle to maintain dietary restraint despite their conscious intentions (Heatherton & Baumeister, 1991).

However, recent preregistered replications and bias-corrected meta-analyses cast doubt on the robustness of traditional ego-depletion effects (Hagger et al., 2016; Carter et al., 2015), highlighting the need for robust measurement strategies—such as using experimental tasks alongside state self-control measures or ecological momentary assessment (EMA).

In the present study, we address this issue using a multi-wave longitudinal design spanning several months, analyzed with a random-intercept cross-lagged panel model (RI-CLPM). This method distinguishes stable between-person differences from within-person temporal dynamics, enabling us to test whether fluctuations in fear of negative/positive evaluation predict subsequent changes in ego depletion and, in turn, adaptive eating behaviors over time. Such a design enhances causal inference while avoiding some replicability limitations of single-session laboratory paradigms.

In summary, although evaluative fear (encompassing FNE and FPE) and ego depletion have been identified as psychological correlates of AEB (Yu, 2021), critical gaps in our understanding of these relationships persist. First, the triadic relationships among these constructs remain underexplored, particularly regarding their combined effects and longitudinal dynamics (Wang & Yang, 2021). Second, the potential mediating role of ego depletion in linking evaluative fear to AEB lacks empirical verification, limiting causal inference (Wang et al., 2020).

Drawing on this refined theoretical foundation, the current longitudinal study focused on university student samples—test the following hypotheses:

Whether fear of evaluation (both FNE and FPE) predicts AEB; Whether fear of evaluation (both FNE and FPE) predicts ego depletion; Whether ego depletion predicts AEB; Whether ego depletion mediates the fear of evaluation–AEB relationship.

By tracking these variables across multiple time points, we aimed to disentangle their temporal associations while controlling for confounding factors such as body mass index (BMI). Existing evidence indicates that overweight/obese adolescents face higher risks of bullying victimization (Morales et al., 2019). Bullying may heighten fear of evaluation (both FPE and FNE) and impair emotion regulation, thereby increasing vulnerability to AEB. Thus, it is critical to assess whether BMI moderate these psychological factors. Should such moderation effects exist, controlling for BMI will be essential to isolate the unique effects of FPE, FNE, and ego depletion on AEB. (Koyanagi et al., 2020).

Methods

This study employed a three-wave prospective longitudinal design. The use of multiple time points enabled the establishment of temporal precedence, thereby enhancing the validity of causal inferences regarding the effects of fear of evaluation on abnormal eating behaviors. This design also permitted a more rigorous test of ego depletion as a potential mediator in this relationship. Furthermore, it allowed for the control of stable individual differences, including gender and body mass index (BMI), that could confound findings in cross-sectional analyses.

Data collection was done in Chinese, and study eligibility criteria included that each participant was currently studying at the university where the study took place. Data from all three questionnaires were collected through a professional Chinese online survey platform, WJX. The participants' place of origin spanned six provinces and cities in China, with all being part of the same age range (M = 20.20, SD = 1.87).

Muthen and Muthen (2002) have noted that a model building study based on structural equation modeling should use a sample size of at least 250 participants. With this in mind, the Time 1 (T1) baseline assessment was conducted during August and September 2022, with 469 participants who fulfilled the inclusion criteria completing the study questionnaires. After excluding incomplete surveys (n = 21) as well as those which had been completed in under one minute (n = 12), the final T1 sample consisted of 436 participants (89.2% follow-up rate). Time 2 (T2) took place in January 2023, at which point 23 respondents had dropped out of the study. Time 3 (T3) took place in April 2023, at which point 37 respondents had dropped out of the study. The individuals removed from the study at T2, T3 were excluded for the same reasons as in the first test: they either did not complete the questionnaire or finished it within one minute, resulting in a total of 351 participants (90.2% follow-up rate) who submitted valid questionnaire results at all three time points. The time interval between the start of each wave was three months, with the final assessment taking place six months after the baseline assessment.

Full-information maximum likelihood (FIML) estimation was used to handle any missing data (Enders & Bandalos, 2001). Independent sample t-tests were conducted to assess the differences in the FNE, FPE, ego depletion, and AEB results between the retained and lost participants at T1. No significant differences were found in FPE ($t(442) = 1.20$, $p = .23$), FNE ($t(442) = -0.23$, $p = .82$), ego depletion ($t(442) = 1.17$, $p = .24$), or AEB ($t(442) = 0.51$, $p = .61$). This suggested that participant attrition occurred randomly, based on a significant Little's MCAR test ($p > .001$), indicating that the FIML approach was appropriate for handling the missing data.

All procedures performed in the study were in accordance with the Helsinki Declaration on ethical standards. The study was approved by the Scientific Research and Ethics Review Committee of × × University (Reference 20240037), and all participants provided their informed consent prior to taking part in the study.

Measures

Demographic measures were collected from the participants regarding their gender, age, residential setting (i.e., urban or rural), parental marital status, and whether they were an only-child or not. Participant BMI was calculated using self-reported height and weight to

examine whether participants with varying BMI levels showed any significant differences in FPE, FNE, or ego depletion.

AEB were assessed using “the Dutch Eating Behavior Questionnaire” Chinese version (DEBQ; van Strien et al., 1986; Li, et al., 2018.), DEBQ is a widely applied instrument for measuring eating patterns. The DEBQ comprises 33 items across three subscales: restrained eating (10 items), reflecting deliberate attempts to restrict food intake for weight control; emotional eating (13 items), referring to eating in response to negative affect (e.g., anxiety, sadness); and external eating (10 items), capturing eating triggered by external food-related cues such as sight or smell.

Items are rated on a 5-point Likert scale (1 = “not at all applicable” to 5 = “very applicable”), with higher scores indicating greater tendencies toward AEB. Sample items include “Do you pay special attention to what you eat?” and “Do you intentionally eat less to avoid gaining weight?”. The Chinese version of DEBQ is a valid and reliable instrument to assess the eating behavior in Chinese university samples (Li, et al., 2018.). Internal consistency in the current sample was high, with Cronbach’s α = .91 overall. Across the three waves, reliability coefficients were α = .91 at T1, .92 at T2, and .92 at T3, indicating excellent stability over time.

Fear of negative evaluation was assessed with the “Brief Fear of Negative Evaluation Scale” (BFNE; Leary, 1983; Lin, 2016), which measures apprehension and distress related to others’ unfavorable judgments. The scale consists of 12 items rated on a 5-point scale (1 = “not at all characteristic” to 5 = “extremely characteristic”). Sample items include “I often fear that others will notice my flaws” and “I worry about not gaining others’ approval.” Internal consistency in the present sample was high (Cronbach’s α = .88), with reliabilities of .90, .91, and .91 at T1, T2, and T3, respectively.

Fear of positive evaluation was measured using “the Fear of Positive Evaluation Scale” (FPE; Weeks et al., 2008), which assesses anxiety and discomfort elicited by favorable judgments from others. The FPES includes 10 items rated on a 10-point scale (0 = “not at all characteristic” to 9 = “extremely characteristic”), with higher scores indicating stronger fear of positive evaluation. Example items are “When I receive praise from someone I admire, I usually feel anxious and uneasy” and “I often feel uncomfortable when others compliment me.” Internal consistency was acceptable (Cronbach’s α = .78), with reliabilities of .78, .80, and .80 at T1, T2, and T3, respectively.

Ego depletion was assessed using the “Ego Depletion Scale” (Lin & Johnson, 2015; revised by Wang et al., 2015), a 5-item measure of temporary reductions in self-control resources. Items are rated on a 5-point Likert scale (1 = “strongly disagree” to 5 = “strongly agree”), with higher scores reflecting greater ego depletion. Sample items include “I often feel exhausted” and “I currently feel unable to concentrate.” Reliability in the present sample was high (Cronbach’s α = .90), with alphas of .91, .89, and .90 at T1, T2, and T3, respectively.

The study was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its following updates. Informed consent was obtained from all the individual participants that were included in the study.

Data processing

All the data collected in this study was self-reported by the participants, which might have caused common method deviations. Therefore, the Harman single factor method was used to carry out a common method deviation test. There was a total of 11 factors whose characteristic roots were greater than 1, and the explanatory rate of the first factor was 18.38%. Both values are below the critical threshold of 40%, indicating no serious common method bias present in this study. In the longitudinal portion of the study, the explanatory percentages of the first factor of the three measurements was 18.80% for FNE, 21.88% for FPE, and 21.20% for AEB, all of which are below 40%, indicating the absence of severe common method bias in the longitudinal aspect of the study as well (Podsakoff et al., 2012).

Descriptive statistics were used to describe the socio-demographic characteristics of the study sample. FNE and FPE were used as the predictor, ego depletion as the mediator, and AEB as the outcome at each of the three time points. Both indirect and direct associations of FNE and FPE on AEB through ego depletion were tested.

A cross-lagged panel model was adopted to test the research hypotheses and detect any changes to the variables at the various time points (Selig et al., 2012) to examine the longitudinal relationships between the variables. The data were analyzed using SPSS 26.0 with descriptive statistics, and Mplus 8.3 for the cross-lagged panel models.

Results

Demographic variance analysis of AEB, FNE, and FPE

The descriptive statistics for the main variables are presented in Table 1. The results showed significant differences in AEB, FNE, and FPE across genders, but not for residential setting, only-child status, or BMI. Therefore, gender was controlled in the subsequent analyses.

Table 1
Demographic information of the participants and differences of AEB, FNE, and FPE (*N* = 351)

Variables		**%**	**AEB**	***p***	**FNE**	***p***	**FPE**	***p***
Gender	Male	35.04	89.92(18.46)		40.17(8.04)		42.59(13.68)	
	Female	64.96	96.60(19.14)	< .01	42.18(8.19)	.01	37.36(14.41)	< .01
Study level	Freshman	19.09	98.21(20.45)		41.69(7.59)		40.53(15.21)	
	Sophomore	32.48	93.19(19.69)		41.12(8.25)		40.46(14.42)	
	Junior	24.79	94.18(18.43)		42.73(7.90)		38.68(13.46)	
	Senior	10.26	92.58(18.53)		41.90(9.31)		39.81(12.23)	
	Postgraduate	13.38	92.35(17.37)	.20	39.26(8.28)	.06	35.18(12.23)	.08
Residential setting	Urban	71.79	41.47(8.34)		41.47(8.34)		39.14(14.56)	
	Country	28.21	41.41(7.75)	.95	41.41(7.75)	.95	39.59(13.80)	.75
Only-child status	Only child	29.63	93.94(19.37)		40.63(8.59)		39.05(14.12)	
	Non-only child	70.37	94.31(19.06)	.83	41.87(7.96)	.09	39.35(14.50)	.82
BMI classification	Low weight	24.50	93.14(20.40)		42.30(7.36)		40.28(14.49)	
	Normal weight	64.67	94.02(18.74)		41.17(8.45)		38.71(14.10)	
	Overweight	10.83	98.09(17.90)	.25	40.88(8.68)	.31	39.77(14.36)	.51

Notes: FPE = Fear of positive evaluation, FNE = Fear of negative evaluation, AEB = Abnormal eating behavior.

The cross-lagged relationships between FNE, FPE, and AEB

The final study sample from T3 (*n* = 351) was matched with those from T1 and T2, and study variables were analyzed using ANOVA. FNE, FPE, ego depletion, and AEB all demonstrated cross-temporal stability. FNE and FPE at T1 were significantly positively correlated with ego depletion and AEB at T2, as well as with ego depletion and AEB at T3 (see Table 2).

To investigate whether FNE and/or FPE were associated with AEB, and whether this association could be explained through ego depletion, cross-lagged models were constructed with FNE and FPE as independent variables, ego depletion as the mediating variable, and AEB as the dependent variable at each of the three time points, with demographic information (e.g., gender) incorporated as control variables in the model. After stepwise removal of non-significant paths, the model fit indices were good. Standardized path estimates are reported in Fig. 1 and Fig. 2.

For FNE, the various fit indices were satisfactory: $\chi^2(1170) = 2106.00$, $p < .001$, CFI = 0.99, TLI = 0.98, RMSEA = 0.05, and SRMR = 0.08. T1 FNE significantly predicted T2 ego depletion ($\beta = 0.27$, $p < .001$), and T2 ego depletion significantly predicted T3 AEB ($\beta = 0.08$, $p < .05$).

For FPE, Model fit was satisfactory: $\chi^2(1075) = 2128.50$, $p < .001$; CFI = 0.99, TLI = 0.98, RMSEA = 0.05, and SRMR = 0.07. T1 FPE significantly predicted T2 ego depletion ($\beta = 0.29$, $p < .001$), and T2 ego depletion significantly predicted T3 AEB ($\beta = 0.09$, $p < .05$).

Bootstrap analysis results showed that T2 ego depletion ($\beta = 0.02$, $p = .05$, 95% CI = 0.002 ~ 0.044) significantly mediated the effect of T1 FNE on T3 AEB, while T2 ego depletion ($\beta = 0.03$, $p = .03$, 95% CI = 0.006 ~ 0.055) significantly mediated the effect of T1 FPE on T3 AEB.

The final results are presented in Figs. 1 and 2.

Table 2
Means, standard deviations, and correlation analysis of FPE, FNE, ego depletion, and AEB

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
T1 FPE	38.56	13.65	1											
T2 FPE	39.91	14.07	0.71**	1										
T3 FPE	40.43	13.73	0.69**	0.76**	1									
T1 FNE	41.38	8.37	0.27**	0.35**	0.25**	1								
T2 FNE	40.22	8.48	0.26**	0.39**	0.27**	0.78**	1							
T3 FNE	40.04	8.36	0.24**	0.33**	0.31**	0.78**	0.80**	1						
T1 ED	14.20	4.82	0.33**	0.37**	0.27**	0.36**	0.36**	0.32**	1					
T2 ED	13.82	4.56	0.23**	0.35**	0.22**	0.36**	0.42**	0.36**	0.67**	1				
T3 ED	14.13	4.73	0.25**	0.35**	0.32**	0.37**	0.41**	0.38**	0.66**	0.71**	1			
T1 AEB	92.53	18.07	0.22**	0.23**	0.20**	0.24**	0.23**	0.24**	0.24**	0.20**	0.15**	1		
T2 AEB	93.89	18.08	0.29**	0.34**	0.28**	0.29**	0.32**	0.31**	0.24**	0.31**	0.24**	0.69**	1	
T3 AEB	94.28	17.83	0.25**	0.28**	0.30**	0.24**	0.27**	0.30**	0.23**	0.30**	0.26**	0.69**	0.74**	1

Notes: FPE = Fear of positive evaluation, FNE = Fear of negative evaluation, ED = Ego depletion, AEB = Abnormal eating behavior; T1 = Time 1, T2 = Time 2, T3 = Time 3; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Discussion

This study used cross-lagged panel modeling to reveal the longitudinal dynamics between AEB, fear of evaluation (by both FNE and FPE), and their underlying mechanisms through ego depletion mediation to provide a richer understanding of the mechanism of AEB. Unlike previous studies which have used the cross-sectional method, this study focused on longitudinal effects, analyzing the causal inference of fear of evaluation on AEB. The results reveal the triadic relationships between AEB, fear of evaluation, and ego depletion, in particular their combined effects and longitudinal dynamic influences, providing new perspectives for AEB research.

Fear of evaluation and AEB

The results show that fear of evaluation (encompassing both FNE and FPE) can predict AEB. Evaluative fear and ego depletion have both been identified as psychological correlates of AEB (Yu, 2021), however there has been a lack of proof of causality. The current study supports previous similar findings, while also extending the existing literature. Previous studies have suggested that, after controlling for depression, negative fear evaluations can predict an increase in binge eating behaviors (Gilbert & Meyer, 2005), implying that one's level of FNE can predict the severity of eating disorders as compared to other social anxiety traits. Similarly. Another one highlighted the role of FNE – through social anxiety – in contributing to disordered eating patterns, finding that individuals with high levels of social anxiety are more prone to developing eating disorders as they are driven by the fear of negative judgment from others (Levinson & Rodezhhzbaugh, 2012; Trompeter et al., 2019).

Higher FNE status is also associated with more stringent food selection in different environments (Mancuso, et al., 2022). The results of the current study corroborates these findings, further emphasizing that FNE, as a specific component of social anxiety, is a significant predictor of AEB. It provides further support for the social comparison theory which suggests that FNE, as an adaptive response to social and environmental challenges, can lead to individuals resorting to restrictive eating to improve their status among peers and avoid anticipated criticism or rejection.

The current study results also found that FPE can predict AEB, verifying our hypothesis. The higher the FPE score, the higher the probability of AEB occurrence. This is also in alignment with the findings of previous studies, which have shown a positive correlation

between FPE and body dissatisfaction, binge eating symptoms, and concerns about body shape, weight, and diet in undergraduate samples; FPE has also been found to significantly predict body dissatisfaction (Menatti, et al., 2015).

Social comparison theory provides a framework for understanding how a desire for positive evaluation and the resulting self-comparisons can drive individuals towards or exacerbate abnormal eating patterns. Positive evaluation influences AEB by reinforcing societal standards, and increasing social comparison pressure (Tiggemann & Polivy, 2010). These comparisons can lead to increased body dissatisfaction and anxiety, then a heightened focus on achieving an ideal body image. Consequently, individuals may restrict their diet in an effort to meet these expectations and reduce the anxiety. Conversely, they may engage in binge eating due to dissatisfaction with their current physique (Reichenberger & Blechert, 2018). The findings of the present study further support affect regulation model too, showing that individuals engage in AEB to cope with the anxiety and distress associated with FNE and FPE. Both FNE and FPE emerged as significant predictors of AEB. Although they may influence AEB for different underlying reasons, they appear to operate through the same pathway.

An important consideration in interpreting the findings is the potential cultural moderation of the relationships examined. Although the present study draws on the affect regulation model and social comparison theory, and previous Western-based research on fear of evaluation, emerging evidence suggests that the manifestation of FNE and FPE may differ in collectivist cultures. For example, Ye et al. (2021) observed that in Chinese cultural contexts characterized by modesty norms, FPE may reflect apprehension about disrupting group harmony rather than self-focused evaluative concerns. Likewise, Vaswani et al., (2022) demonstrated that in collectivist societies, the emotional impact of evaluative situations is often tied to the implications for one's close social network. These distinctions highlight the need for caution when generalizing Western-derived models of fear of evaluation to non-Western populations, and future research should explicitly test cultural moderation effects.

The mediating effect of ego depletion

Ego depletion was found to serve as a longitudinal mediator between FNE/FPE and AEB, consistent with previous research. Prior cross-sectional studies have demonstrated that FNE positively predicts ego depletion, which in turn contributes to AEB (Wang, 2020). Accordingly, AEB can be considered one of the downstream consequences of ego depletion.

These findings highlight the temporal stability of ego depletion as a mediator in the relationship between fear of evaluation and AEB among Chinese college students. Furthermore, they provide additional support for ego depletion theory, which posits that self-control and willpower are finite resources (Baumeister et al., 1998), and that engaging in executive functions can exhaust these resources, requiring time for recovery (Baumeister, 2019). Empirical evidence shows that when individuals experience ego depletion, their capacity for behavioral regulation—including eating—is impaired (Vohs & Heatherton, 2000).

The present study extends this theory by specifically linking ego depletion to the pathway from evaluative fear to AEB. This finding suggests that fear of evaluation can deplete cognitive resources, undermining self-regulation and thereby increasing vulnerability to disordered eating. The ;longitudinal design further strengthens this conclusion by demonstrating that these processes persist over time.

As we mentioned before, although the robustness of ego depletion has been questioned in previous research (Carter, & McCullough, 2014; Carter, et al., 2015), the multi-wave longitudinal design employed in the present study enhances the clarity of its effects and strengthens causal inference. This approach also mitigates some of the limitations associated with single-session laboratory paradigms.

The study further revealed significant gender differences in FNE, FPE, and AEB, suggesting that gender influences these constructs. Female participants reported higher FNE and AEB scores than males, consistent with prior research (Yue & Jia, 2023). In contrast, males scored higher on FPE, a finding that aligns with some previous studies (Li, 2021) but contrasts with others reporting no gender differences in FPE among college students (Jia &Yue, 2023). These discrepancies may reflect cultural gender role expectations in China, where males are often expected to meet higher performance standards. As a result, they may experience greater anxiety and apprehension when receiving positive evaluations, leading to heightened fear of positive evaluation.

Overall, these findings underscore the importance of considering both methodological rigor and gender-related cultural factors when examining the psychological mechanisms linking evaluative fear, ego depletion, and abnormal eating behaviors.

Limitations and future research

Despite the strengths of the present study, including its longitudinal design, several limitations should be acknowledged. First, the reliance on self-report measures may introduce biases related to social desirability or inaccurate self-assessment. Future research could benefit from incorporating objective measures of eating behaviors and physiological indicators of ego depletion. Second, although the study

provides evidence for the mediating role of ego depletion in AEB, it remains unclear whether other types of fear (e.g., fear of failure, fear of intimacy) similarly influence eating behaviors via ego depletion. Finally, at T3, the associations among FNE/FPE, ego depletion, and AEB differed in magnitude from those observed at T1 and T2. This discrepancy may reflect reduced data accuracy due to participant fatigue during the third-wave assessment. Nevertheless, the longitudinal relationships among FNE, FPE, ego depletion, and AEB remained discernible across all three time points.

Conclusion

This study demonstrates that evaluative fear (FNE and FPE) significantly predicts AEB, with ego depletion serving as a consistent longitudinal mediator. Triadic interactions among evaluative fear, ego depletion, and AEB highlight their synergistic effects over time, providing insight into the causal mechanisms underlying disordered eating. These findings suggest that interventions targeting evaluative fear reduction and self-regulation enhancement may effectively mitigate AEB risk among college students.

Declarations

Funding: The study was supported by General Project of Philosophy and Social science planning of Guangdong province.

Conflicts of interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethics approval and consent to participate: The study was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its following updates. Informed consent was obtained from all the individual participants that were included in the study. The study protocol has been approved by the Research Ethics Committee of Guangzhou University.

Data availability: Data will be made available on request.

Consent for publication (include appropriate statements): Not applicable

Authors' Contributions:

W. H. wrote the main manuscript text. W. H. L. C. did investigation and data collection, analysis. Z. applied funding and administrated the project, designed the study, reviewed and edited the manuscript. All authors reviewed the manuscript.

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Figures

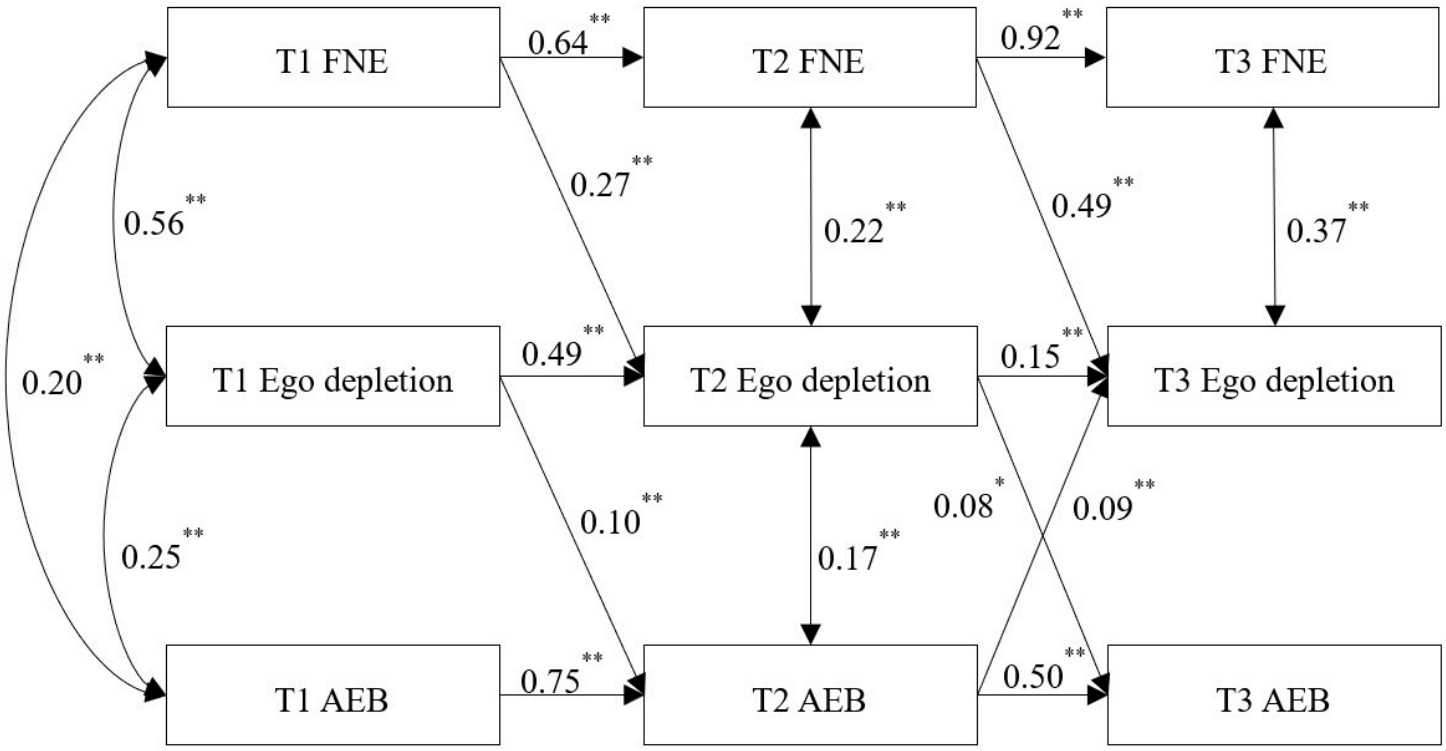


Figure 1

Cross-lagged model of the relationships between FNE, ego depletion, and AEB (control variable: gender).

Note: FPE = Fear of positive evaluation, FNE = Fear of negative evaluation, ED = Ego depletion, AEB = Abnormal eating behavior; T1 = Time 1, T2 = Time 2, T3 = Time 3

For the sake of simplicity in the figures, only significant standardized path coefficients are presented.

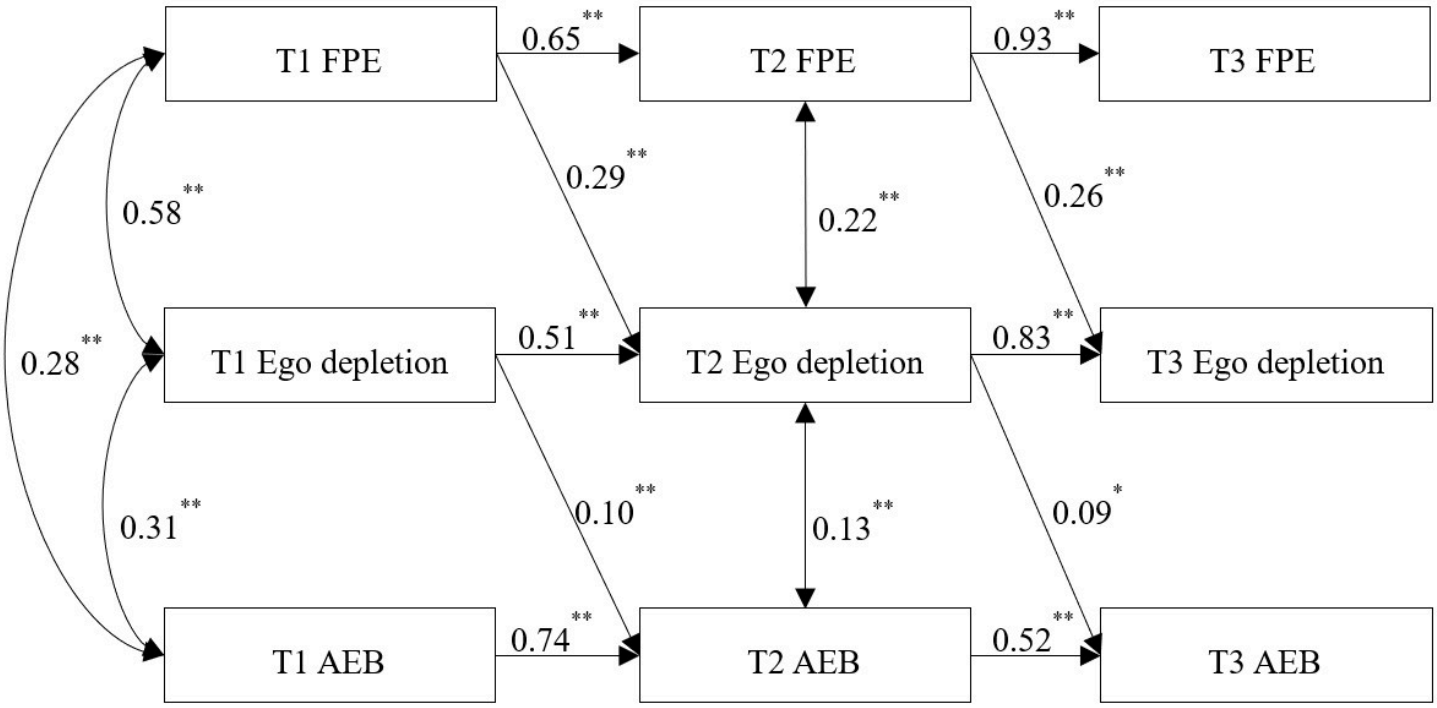


Figure 2

Cross-lagged model of the relationships between FPE, ego depletion, and AEB (control variable: gender).

Note: FPE = Fear of positive evaluation, FNE = Fear of negative evaluation, ED = Ego depletion, AEB = Abnormal eating behavior; T1 = Time 1, T2 = Time 2, T3 = Time 3

For the sake of simplicity in the figures, only significant standardized path coefficients are presented.

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