Check for updates

Received: 18 November 2021 | Accepted: 13 June 2022

DOI: 10.1111/bjhp.12611

the british psychological society
promoting excellence in psychology

ARTICLE

Greater negative affect reduction expectancies moderate the interactive relationship between emotion regulation difficulties and distress tolerance in predicting loss-of-control eating

Emily K. Burr | **Robert D. Dvorak** | **Roselyn Peterson** | **Ardhys N. De Leon**

Department of Psychology, University of Central Florida, Orlando, Florida, USA

Correspondence
Emily K. Burr, Department of Psychology, University of Central Florida, 4111 Pictor Lane, Orlando, FL, 32816, USA.
Emails: emily.burr@ucf.edu; emily.burr@knights.ucf.edu

Corrections added on 9 July 2022 after the first online publication: Article title has been corrected in this version.

Abstract

Objectives: Loss-of-control eating (LOCE) is often conceptualized as a negative reinforcement mechanism. However, LOCE does not consistently reduce negative affect (NA). One explanation for continued LOCE, despite a lack of NA reduction, may be expectations of NA reduction. Emotion regulation difficulties and low distress tolerance often predict LOCE, but have not been examined in the context of NA reduction expectancies.

Design: This study examined the main and interactive relationships between emotion regulation difficulties, distress tolerance and NA reduction expectancies on LOCE in US adults (n = 3331).

Method: This study consisted of a battery of surveys administered to a national sample of US adults.

Results: Results indicate NA reduction expectancies are robust, eclipsing the predictive effects of other emotion regulation variables. Distress tolerance was only able to attenuate the relationship between emotion regulation difficulties and LOCE when NA reduction expectancies were low.

Conclusions: These findings identify NA reduction expectancies as having a strong relationship with LOCE, such that the protective factor of distress tolerance is only relevant when such expectancies are low. Clinical implications suggest that targeting NA reduction expectancies in

 © 2022 The British Psychological Society.

eating interventions that bolster emotion regulation difficulties and distress tolerance may improve the effectiveness of said interventions. Additionally, stand-alone expectancy interventions should be assessed for the purpose of LOCE reduction. Directions for future research are discussed.

KEYWORDS

distress tolerance, eating expectancies, emotion regulation difficulties, loss-of-control eating

Statements of contributions

This manuscript is an investigation of how the interaction between emotion regulation difficulties, distress tolerance and expectancies eating will reduce negative affect is associated with loss-of-control eating. To date, emotion regulation difficulties and distress tolerance have been significantly under-assessed in loss-of-control eating regardless of quantity of food consumed, despite the fact that the maladaptive behaviour is commonplace and associated with severe deleterious health outcomes, even outside of a binge eating context. In addition, eating expectancies have yet to be assessed regarding loss-of-control eating outside of a binge eating episode at all, nor has an interactive effect been investigated between these variables. It is imperative that the psychological vulnerabilities that may drive loss-of-control eating in the community be examined. This study is therefore a novel investigation into the psychological factors that may relate to losing control over one's eating and potentially inform future clinical intervention targets in health care and psychological care settings.

INTRODUCTION

Loss-of-control eating (LOCE) is a perceived inability to either refrain from or stop consuming food while eating (Latner et al., 2007). LOCE may co-occur with objective overeating, which constitutes a binge eating episode (American Psychiatric Association, 2013), or objective binge episode (Latner et al., 2007). However, LOCE may occur even if the amount eaten does not meet binge eating criteria, as in a subjective binge episode (Latner et al., 2007). Although most research addresses LOCE in the context of objective binges, there is an increasing awareness of the importance of assessing LOCE regardless of the quantity of food consumed. Individuals endorsing both objective and subjective binge episodes report comparable rates of other eating pathology, anxiety, depression (Latner et al., 2007), lower self-rated quality of life (Jenkins et al., 2012) and obesity (Palavras et al., 2013). Additionally, LOCE may be driven by the same emotional determinants regardless of the amount of food eaten. Ecological momentary assessment (EMA) designs, repeated real-time assessments administered remotely within the context of one's environment, have shown that negative affect precedes LOCE, particularly in the context of binge eating (Haedt-Matt & Keel, 2011), although not for overeating without a sense of loss-of-control (Kukk & Akkermann, 2017). Negative affect trajectory has been found to be the same for objective and subjective binges around a LOCE episode (Goldschmidt et al., 2014; Stevenson et al., 2018). Therefore, LOCE in both objective and subjective binges is one of the most psychologically salient elements, as it occurs in response to the same affective determinants, and is associated with the same deleterious outcomes, regardless of quantity of food consumed.

One prominent model of LOCE is the affect regulation theory, which was developed to explain the affective mechanisms behind binge eating behaviour (Haedt-Matt & Keel, 2011). The affect regulation theory posits a two-stage process. First, binge eating is triggered by heightened momentary negative affect as an emotion regulation tool. Second, negative affect is then reduced via binge eating, which reinforces the behaviour. As aforementioned, negative affect has been found to be a robust precedent of binge eating episodes (Haedt-Matt & Keel, 2011) and LOCE, regardless of amount of food consumed (Brownstone, 2017; Pearson et al., 2018; Stevenson et al., 2018). Consequently, individuals may be motivated to engage in LOCE by a stable belief that it will regulate affect, supporting the first tenet of affect regulation theory. Emotion regulation difficulties have been implicated in LOCE across multiple populations in both objective binge and subjective binge research (Goldschmidt et al., 2017; Kukk & Akkermann, 2017; Racine & Horvath, 2018) and improvement in emotion regulation ability may result in reductions in binge eating frequency and pathology (Klein et al., 2013; Safer et al., 2001). Therefore, in the presence of heightened negative affect, difficulty self-regulating one's emotions may be a primary vulnerability to maladaptive externalizing regulation tools, such as LOCE.

However, there is a major challenge to the affect regulation theory. The assertion that negative affect is reduced after engaging in an LOCE episode is inconsistently supported at best (Haedt-Matt & Keel, 2011; Stevenson et al., 2018). In their meta-analysis of binge eating disorder (BED) and bulimia nervosa (BN) literature, Haedt-Matt and Keel (2011) noted that across 17 EMA studies, negative affect actually appeared to increase with an average effect size of.50 after binge eating. In addition, a recent EMA study evaluating LOCE, in particular, found that most forms of negative affect (e.g. sadness and anger) remain unchanged after an LOCE episode, or increase often due to feelings of guilt (Stevenson et al., 2018). Therefore, negative affect is not consistently alleviated via LOCE. This begs the question as to why some individuals (particularly those with emotion regulation difficulties) consistently lose control over their eating in the presence of negative affect. The answer may not always come from historically backed outcomes, but rather beliefs related to the effects of LOCE.

Perhaps, simply believing that eating will reduce negative affect may drive LOCE, despite the lack of consistently reduced negative affect after eating. Although the role of expectancies has not been assessed in LOCE as an independent construct, prior literature implicates expectancies that eating will alleviate negative affect (NA reduction expectancies) in related eating pathology. NA reduction expectancies are higher in individuals who binge eat (Boerner et al., 2004; Hohlstein et al., 1998; Schaumberg et al., 2016) and are associated with greater binge eating frequency (De Young et al., 2014; Fischer & Smith, 2008) as well as endorsement of symptoms (Hayaki, 2009). In addition, NA reduction expectancies longitudinally predict future binge eating symptom onset (Smith et al., 2007) and have been found to be correlated with greater emotion regulation difficulties (Hayaki & Free, 2016; Kauffman et al., 2018). It may be that not only do individuals engage in LOCE in the presence of heightened negative affect due to poor emotion regulation ability, but also in response to the expectation that affect is reduced by eating. Thus, it is not only the vulnerability of emotion regulation difficulties, but also the expectancy that eating does regulate negative emotions that may predispose one to LOCE. However, LOCE has not been assessed in expectancy research outside of an objective binge eating context.

A final consideration is the role of distress tolerance. Low distress tolerance, or one's perceived ability to withstand psychological distress (Simons & Gaher, 2005), often co-occurs with poor emotion regulation ability (Jeffries et al., 2016; Van Eck et al., 2017) and is strongly associated with pathology characterized by objective and subjective binging, including eating disinhibition (Kozak & Fought, 2011; Madeley, 2009) and bulimic symptoms (Anestis et al., 2007; Corstorphine et al., 2007). Literature to date has primarily assessed the role of distress tolerance in objective binges; however, preliminary evidence suggests that LOCE is correlated with low distress tolerance in both subjective and objective binge contexts (Bayer, 2014). In addition, NA reduction expectancies have been found to predict BN symptoms, both directly and potentiating BN in individuals with low distress tolerance (Lavender et al., 2015). In a recent study, distress tolerance was found to moderate the link between emotion regulation and LOCE through reduced emotional instability (Burr et al., 2021). Therefore, distress tolerance is implicated in

emotion regulation difficulties, eating expectancies and LOCE in preliminary findings. The role of distress tolerance should be accounted for in predicting LOCE with emotion regulation difficulties and NA reduction expectancies.

Study overview

Although NA reduction expectancies, distress tolerance and emotion regulation difficulties have all been related to LOCE, the potential interactive effect between the three has not been assessed prior, and NA reduction expectancies outside of objective binge episodes has not been assessed at all. Therefore, the current study aims to identify factors that may co-occur and potentiate LOCE regardless of quantity of food consumed, as well as inform development of future studies for identifying intervention targets. Thus, the purpose of this study was to assess the associations between emotion regulation difficulties, distress tolerance and NA reduction expectancies on LOCE. As these vulnerabilities may be inter-related, this study also tested the interactive effect among these variables. It was hypothesized that there would be significant direct positive associations between LOCE and both emotion regulation difficulties and NA reduction expectancies, as well as a negative association between LOCE and distress tolerance (H1). Next, we hypothesized that there would be a statistically significant three-way interaction among these predictors (H2). It was expected that for individuals with low distress tolerance and high NA reduction expectancies, emotion regulation difficulties would be more strongly associated with LOCE (H2a). This effect was anticipated due to findings that emotion regulation difficulties are associated with greater NA reduction expectancies (Hayaki & Free, 2016) and poor distress tolerance (Jeffries et al., 2016). It was expected that the association between emotion regulation difficulties and LOCE would no longer be statistically significant among those with low NA reduction expectancies and low distress tolerance (H2b). This effect was hypothesized due to prior findings regarding a moderating effect of distress tolerance on the link between emotion regulation difficulties and LOCE (Burr et al., 2021). The model also controlled for other variables commonly associated with LOCE: other common eating pathology (Vander Wal et al., 2011), general psychological distress (Escandón-Nagel et al., 2018), body mass index (Berg et al., 2014), age (Smith et al., 2019) and sex (Weltzin et al., 2005), to better identify the hypothesized associations without incorporating confounding variance.

MATERIALS AND METHODS

Participants

A national sample of US adults (n = 3331) was recruited via social media. The sample had a mean age of 35.17 years old (SD = 13.43) and was 78.48% (n = 2614) female. Participants ranged in age from 18 to 86 years old. In terms of racial composition, 70.1% of the sample was White/Caucasian, 13.6% was Black/African American, 11.1% was Asian, 5.9% was American Indian or Alaskan Native, 0.5% was Native Hawaiian or Pacific Islander, and 3.0% was identified as Other. Regarding ethnicity, 9.8% of the sample identified as Hispanic/Latine.

Procedure

Participants were recruited from Facebook and Instagram using Facebook advertising tools. This study ran from August through October of 2020. Participants met the following eligibility criteria: 1) age of 18 years or older, 2) English-speaking and 3) residency in the United States. These criteria were controlled via advertisement settings, and participants were additionally asked to self-report their age following the consent process. The advertisement was shown to individuals from every state throughout

the US Participants were asked to complete a survey on mood and eating behaviours. If they agreed, they completed informed consent and subsequently took a secure online survey, which was approximately 15 minutes to complete. The study was approved by the University IRB, reference number 00002016. Study materials, data and analyses are available at: https://osf.io/av8jr/

Measures

Demographics

Age and biological sex were self-reported. Body mass index (BMI) was calculated using the English System formula (Centers for Disease Control and Prevention, 2014) from self-reported height (feet and inches) and weight (pounds).

Psychological distress

Past 7-day psychological distress was assessed using the Depression, Anxiety, and Stress Scale 21-item version (DASS-21; Henry & Crawford, 2005). The DASS-21 has three subscales: depressive symptoms, anxious symptoms and stress, and a combined total score. Items are rated on a 0–3 Likert scale (*'did not apply to me at all'* to *'applied to me very much'*) based on the degree to which statements applied to their past-week experience (e.g. 'I found it difficult to relax'). Mean total scores were used in analyses and the alpha reliability coefficient for this sample was $\alpha = .94$.

General eating pathology

The Eating Disorder Examination Questionnaire (EDEQ; Fairburn & Beglin, 2008) is a 28-item self-report measure rating items that load onto four subscales (dietary restriction, eating concerns, shape concerns and weight concerns). General eating pathology is assessed via EDEQ total score (a mean of the subscales). EDEQ total was used for these analyses. Items are rated 1–7 (e.g. 'no days' to 'every day') based on past 28-day frequency of eating pathology (e.g. 'Have you had a definite fear that you might gain weight?'). The sample EDEQ alpha reliability coefficient was $\alpha = .88$.

Emotion regulation difficulties

Difficulty regulating emotions was assessed via the Difficulties in Emotion Regulation Scale (DERS), a 36-item self-report measure with six subscales and a global score representing overall problems regarding emotion regulation ability (Gratz & Roemer, 2004). Mean global scores were used for analyses. DERS items are rated 1–5 ('almost never, 0 – 10%' to 'almost always, 91 – 100%') based on frequency one experiences statements related to difficulty with emotion regulation (e.g. 'I experience my emotions as overwhelming and out of control'). The DERS alpha reliability coefficient for this sample was $\alpha = .85$.

Distress tolerance

The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) was used to measure subjective ability to tolerate psychological distress. The DTS consists of 14 items (e.g. 'I can't handle feeling distressed or upset') rated on 1–5 Likert scales ('strongly agree' to 'strongly disagree') with higher mean scores indicating greater distress tolerance. The alpha reliability coefficient for the present sample was $\alpha = .91$.

Negative affect reduction eating expectancies

The Eating Helps Manage Negative Affect subscale of the Eating Expectancy Inventory (EEI-NA; Hohlstein et al., 1998) was used in this study to measure NA reduction expectancies. The Eating Expectancy Inventory (EEI) in full is a 34-item assessment with 5 factors that represent different eating expectancies. The EEI-NA is a negative reinforcement domain of eating expectancies and is represented by 18 statements (e.g. 'When I am feeling depressed or upset, eating can help me take my mind off my problems') rated on a 1–7 Likert scale ('completely disagree' to 'completely agree'). The alpha reliability coefficient for the EEI-NA in this sample was $\alpha = .93$.

Loss-of-control eating

LOCE was assessed with the 24-item Loss of Control over Eating Scale (LOCES; Latner et al., 2014). The LOCES is a self-report measure of control overeating behaviour over the past 28 days with Likert ratings (1–5; 'never' to 'always') of statements that assess for degree of LOCE phenomena (e.g. 'I felt like the craving to eat overpowered me'). The LOCES has three factor scores (behavioural aspects, cognitive/dissociative aspects and positive/euphoric aspects) and a mean total score that assesses global LOCE pathology. Only the mean total score was used for this study and the sample alpha reliability coefficient was $\alpha = .96$.

Data preparation

A total of $n = 3542$ individuals initiated the study, but 205 participants were removed for not providing any survey responses. Six additional participants were also removed because they indicated an age of 17 or less. The final sample was $n = 3331$. Missing data for values within the measures were imputed via multiple imputation. There were no multivariate outliers, no observations exerting extreme influence or leverage, and model residuals approximated a normal distribution. Full information maximum likelihood with robust standard errors (MLR) was utilized in M*plus* v. 8.4 (Muthén & Muthén, 2020). MLR allows for retention of data missing entire measures by generation of parameter estimates via maximum likelihood estimates and standard errors using observed data for both complete and incomplete responses. The use of MLR allows for retention of all participants who completed at least some level of responding.

Analysis overview

After assessing zero-order correlations, a multiple linear regression model with four levels was conducted in M*plus* v. 8.6 to predict LOCES scores. The predictors included DERS, DTS and EEI-NA, as well as two-way and three-way interactions between the predictor variables. The model included age, sex, BMI, EDEQ scores and DASS-21 scores as covariates. The first hypothesis, that there would be significant positive associations between LOCE and emotion regulation difficulties (DERS) and NA reduction expectancies (EEI-NA), as well as a negative association with distress tolerance (DTS), was tested by observing the direct associations between these variables. The second hypothesis, that the three predictor variables would have a significant three-way interaction on LOCE, was tested with inclusion of the interaction variable of DERSxDTSxEEI-NA and all two interactions that comprise this interaction. Because this interaction was statistically significant, it was probed at low (−1 *SD*), mean and high (+1 *SD*) levels of EEI-NA scores at low, mean and high levels of DTS to assess conditional associations between DERS and LOCES. This was also done to assess whether emotion regulation difficulties were more associated with LOCE at high

TABLE 1 Descriptive statistics and bivariate correlations

	Descriptive statistics									
	%	*Mean*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.
Demographic variables											
1. Age	--	35.191	13.429	--							
2. Sex (female = 0)	78.47	--	--	−.016	--						
3. BMI	--	26.950	8.374	248***	−.146***	--					
General eating pathology											
4. EDEQ	--	2.514	1.270	−.026	.002	.096***	--				
General psychological distress											
5. DASS-21	--	24.382	12.637	−.169***	.029	−.069**	.437***	--			
Model predictors											
6. DERS	--	91.551	26.130	−.243***	−.132***	−.132***	.390***	.711***	--		
7. DTS	--	3.011	0.840	.152***	−.018	.099***	−.266***	−.452***	−.515***	--	
8. EEI-NA	--	70.025	23.517	−.093***	.088***	.014	.439***	.322***	.342***	−.286***	--
Outcome variable											
9. LOCES	--	2.426	0.907	−.048	.134***	−.017	.685***	.490***	.505***	−.323***	.676***

Abbreviations: BMI = body mass index; EDEQ = Eating Disorder Examination Questionnaire; DASS-21 = Depression, Anxiety, and Stress Inventory-21 item version; DERS = Difficulties in Emotion Regulation Scale; DTS = Distress Tolerance Scale; EEI-NA = Eating Expectancy Inventory-Expectancy Eating Reduces Negative Affect; LOCES = Loss-of-Control Over Eating Scale.

*$p < .05$;**$p < .01$; ***$p < .001$.

TABLE 2 Loss-of-control eating regressed onto a three-way interaction between emotion regulation difficulties, distress tolerance and the negative affect reduction expectancy

Step	Predictor	*b*	*SE*	95% CI	R^2	ΔR^2	*p*	$r_{partial}$	Tol	VIF
1					.490		<.001			
	Age***	0.003	0.001	0.002 to 0.005				.09	0.88	1.13
	Sex***	0.165	0.024	0.119 to 0.212				.13	0.95	1.06
	BMI**	−0.005	0.001	−0.007 to −0.002				−.08	0.86	1.17
	EDEQ***	0.303	0.012	0.280 to 0.326						
2					.684	.194	<.001			
	DASS-21**	0.099	0.029	0.043 to 0.155				.08	0.43	2.32
	DERS***	0.204	0.024	0.158 to 0.250				.16	0.28	3.56
	DTS	0.002	0.010	−0.018 to 0.023				−.02	0.34	2.95
	EEI-NA***	0.314	0.011	0.293 to 0.336				.49	0.50	2.01
3					.688	.004	<.001			
	DERSxDTS	−0.021	0.014	−0.049 to 0.006				−.03	0.74	1.35
	DTSxEEI-NA*	0.019	0.009	0.002 to 0.037				−.02	0.33	3.02
	DERSxEEI-NA***	0.065	0.012	0.041 to 0.090				.04	0.33	3.03
4					.689	.001	<.001			
	DERSxDTSxEEI-NA*	0.019	0.009	0.002 to 0.036				.04	0.47	2.14

Note: Each model step retains predictors from previous model step and parameter estimates are represent Step 5.

Abbreviations: BMI, body mass index; EDEQ, Eating Disorder Examination Questionnaire; DASS-21, Depression, Anxiety, and Stress Inventory-21 item version; DERS, Difficulties in Emotion Regulation Scale; DTS, Distress Tolerance Scale; EEI-NA, Eating Expectancy Inventory-Expectancy Eating Reduces Negative Affect; Tol, tolerance; VIF, variance Inflation Factor.

*$p < .05$;**$p < .01$; ***$p < .001$.

EEI-NA expectancies, when ability to tolerate distress was low, and if this effect would dissipate when EEI-NA was low (H2a and H2b).

RESULTS

Descriptive statistics and bivariate correlations are in Table 1. Table 2 includes all statistics for the four-step multiple linear regression model. The model accounted for 68.9% of the variance in LOCES scores. In step one, age, sex, BMI and EDEQ scores were all associated with LOCES, accounting for 49.0% of the variance. The second step included DASS-21 scores and the main effects of the three predictor variables, and increased the variance accounted for in the model by 19.4%. DASS-21 was significantly positively associated with LOCES, as was DERS and EEI-NA, with EEI-NA serving as a notably strong predictor. The association between DTS and LOCES did not reach statistical significance, contrary to the hypothesis. Step three included the three two-way interactions between the predictor variables. All the interactions were statistically significant; however, they only accounted for an increase 0.4% of variance. The final step was the three-way interaction of DERS x DTS x EEI-NA. Supporting hypothesis two, this interaction was both positive and statistically significant, although it only accounted for an additional 0.1% of variance.

This three-way interaction was probed by assessing DERS at high (+1 *SD)*, mean and low levels (−1 *SD*) of DTS and high (+1 *SD)*, mean and low levels (−1 *SD*) of EEI-NA (see Figure 1). At high EEI-NA, the direct association between DERS and LOCES was statistically significant ($b = 0.290$, $SE = 0.030$, $\beta = .226$, $p < .001$) and this relationship did not vary by DTS (DERS x DTS at high EEI-NA: $b = 0.003$, $SE = 0.020$, $\beta = .003$, $p = .881$, see Figure 1, Panel A). Similarly, at mean levels of EEI-NA, there was a significant positive relationship between DERS and LOCES ($b = 0.204$, $SE = 0.024$, $\beta = .060$, $p < .001$); however, this relationship also did not vary by DTS (DERS x DTS at mean EEI-NA: $b = -0.021$, $SE = 0.014$, $\beta = -.022$, $p = .131$, see Figure 1, Panel B). Therefore, at both high and mean NA reduction expectancies, there was no significant effect of the interaction between distress tolerance and emotion regulation difficulties. At low EEI-NA, there remained a positive relationship between DERS and LOCES, albeit weaker than at high or mean EEI-NA ($b = .118$, $SE = 0.027$, $\beta = .092$, $p < .001$). However, in contrast to DERS at mean or high EEI-NA, the association between DERS and LOCES did vary based on DTS at low EEI-NA ($b = -0.046$, $SE = 0.016$ $\beta = -.048$, $p = .004$, see Figure 1, Panel C), suggesting that when there are low expectancies that eating reduces negative affect, the interactive effect of distress tolerance on emotion regulation difficulties becomes relevant. This interaction was probed at high and low levels of DTS. At low DTS, the direct association between DERS and LOCES remains statistically significant ($b = 0.176$, $SE = 0.035$, $\beta = .137$, $p < .001$). However, when DTS was set at 1 *SD* above the mean, there was no longer a significant relationship between DERS and LOCES ($b = 0.60$, $SE = 0.032$, $\beta = .047$, $p = .061$).

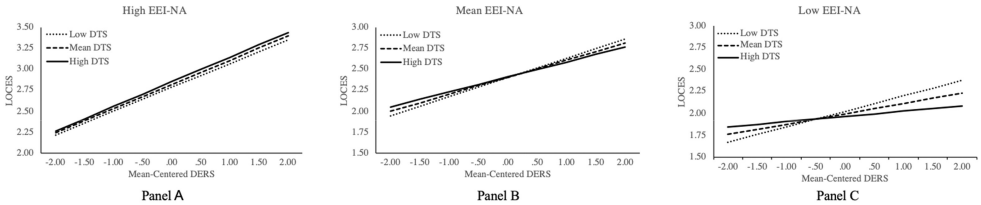

FIGURE 1 Distress tolerance moderating the relationship between emotion regulation difficulties and loss-of-control eating at three level of NA reduction expectancies

DISCUSSION

To date, the role of NA reduction expectancies, or indeed, any eating expectancy, has not been assessed in LOCE regardless of food quantity consumed. Similarly, the psychological mechanisms of emotion regulation and distress tolerance are under-represented in LOCE outside of an objective binge eating context. The first hypothesis was that there would be significant main effects of emotion regulation difficulties, NA reduction expectancies and distress tolerance on LOCE, such that LOCE would be positively associated with emotion regulation difficulties and NA reduction expectancies and negatively associated with distress tolerance. This hypothesis was partially supported. Although LOCE had a significant positive association with emotion regulation difficulties and NA reduction expectancies, the direct association between distress tolerance and LOCE was not significant. NA reduction expectancies had a particularly large influence within the model. The model step accounting for the main effects of the predictors, as well as general psychological distress, accounted for nearly 20% increase in model variance, which is a large effect. The strong relationship with NA reduction expectancies is logically interpretable given that negative affect has been consistently found to increase prior to LOCE (Brownstone, 2017; Goldschmidt et al., 2012; Kukk & Akkermann, 2017). Therefore, it makes theoretical sense that expecting negative affect to be reduced by eating is strongly associated with LOCE. Additionally, prior literature has linked emotion regulation difficulties to LOCE pathology (Goldschmidt et al., 2017; Racine & Horvath, 2018). However, the relationship between distress tolerance and LOCE was not found to be significant, which contradicts prior literature implicating low distress tolerance in binge eating pathology (Anestis et al., 2007; Corstorphine et al., 2007) and LOCE, in particular, via both direct association (Bayer, 2014) and indirect association that is strengthened when mediated by affective lability (Burr et al., 2021). However, these prior findings did not account for the role of expectancies, nor is there sufficient research to draw robust conclusions regarding the relationship between distress tolerance and LOCE. It may be the case that distress tolerance attenuates factors with stronger direct associations with LOCE, such as emotion regulation difficulties and NA reduction expectancies. Follow-up research is necessary to empirically back theorizing based on these findings in the context of the limited available literature.

Additionally, it was hypothesized that there would be a significant three-way interaction between emotion regulation difficulties, distress tolerance and NA reduction expectancies associated with LOCE. This prediction was supported: The three-way interaction was statistically significant and represented a 0.1% increase in model variance, accounting for all the direct and two-way interaction effects. It should be noted that although the three-way interaction only accounted for a relatively small proportion of model variance, interactive effects generally account for smaller proportions of variance after accounting for the variance in direct effects and two-way interactions. All these variables, combined with general psychological distress, accounted for approximately 20% of model variance. This is important, given that these variables are psychological constructs that are malleable and therefore have intervention implications. Hypothesis 2a posited that emotion regulation difficulties would be strongly associated with LOCE among individuals with low distress tolerance and high NA reduction expectancies. However, results showed that at both mean and high levels of NA reduction expectancies, the interaction between emotion regulation difficulties and distress tolerance was not significantly associated with LOCE. Hypothesis 2b stated that the relationship between emotion regulation difficulties and LOCE at low levels of distress tolerance would no longer be statistically significant among individuals with low NA reduction expectancies. This hypothesis was partially supported. At low NA reduction expectancies, the interaction between emotion regulation difficulties and distress tolerance was significantly associated with LOCE, as was the direct relationship between emotion regulation difficulties and LOCE. Although the main effect of emotion regulation difficulties on LOCE was attenuated, it remained statistically significant at low distress tolerance, contrary to the hypothesis. However, as distress tolerance increased, the relationship between emotion regulation difficulties and LOCE weakened at low NA reduction expectancies, until that relationship was no longer significant when distress tolerance was high. Therefore, findings

suggest that not only did LOCE decrease with decreasing NA reduction expectancies, but also distress tolerance level is only salient when NA reduction expectancies are low, thereby attenuating the link between emotion regulation difficulties and LOCE (see Figure 1).

There is very little literature to date providing context regarding the interpretation of these findings, although they do build upon the limited research available. Recent intervention research found bolstering distress tolerance leads to increased ability to regulate one's emotions and decreased emotional eating (Juarascio et al., 2020). Additionally, a novel cross-sectional findings evinced an attenuating effect of distress tolerance on an indirect relationship between emotion regulation difficulties and LOCE (Burr et al., 2021). Although the present study provides additional support for these findings, evincing a moderating influence of distress tolerance on a relationship between emotion regulation difficulties and LOCE pathology, this effect was only noted under the specific condition of low NA reduction expectancies. Therefore, NA reduction expectancies may strongly influence LOCE, and at high levels, in particular, may be strong enough to eclipse the influence of other vulnerabilities. It is also noteworthy that nearly 50% of model variance was accounted for by variables of age, sex, BMI and general eating pathology. Prior literature has strongly associated these variables with LOCE, so they are important confounds to control for. Although these considerations matter from the perspective of effectively isolating the impact of model predictors of interest, age and sex obviously cannot be intervention targets. It is also noteworthy that the average BMI in the sample was in the 'overweight' range, and the sample included a larger proportion of individuals in the 'normal' to 'obese' range than the 'underweight' range ($M = 26.95$, $SD = 8.37$). Given the established association between LOCE and obesity (Palavras et al., 2013), the sample skew may have shown greater effects of this association; however, this is also a representative breakdown of the US population, where a significant proportion is in the overweight range or above (Ogden et al., 2020).

Limitations

Despite the contributions these findings make, this study is not without its limitations. The data for this study are cross-sectional, precluding causal inferences regarding the associations between predictors and LOCE. Also, the sample in this study was primarily white (70.1%) females (78.48%) and is not sufficiently balanced to make racial comparisons. Additionally, although males appear to also exhibit similar associations as females regarding LOCE pathology associations with negative affect (Kukk & Akkermann, 2017; Stevenson et al., 2018), psychological vulnerabilities (Brownstone, 2017; Palavras et al., 2013) and NA reduction expectancies (Boerner et al., 2004), caution should be taken when generalizing findings from the current study to males. Future research should investigate whether these findings are consistent across race and sex. Finally, data were collected in fall of 2020, during COVID-19. Although many psychologically attenuated to the stressors of the pandemic within a few months after March 2020 (Daly & Robinson, 2021), individuals with LOCE pathology, such as a history of binge eating, general eating disorder pathology and depressive symptoms, have reported maintained increased pathology since pandemic onset (Giel et al., 2021). Therefore, unique COVID-19 stressors may exacerbate LOCE and limit generalizability of findings outside of the pandemic.

Implications for future research and practice

These findings have important implications for future research and clinical practice. NA reduction expectancies had a significant association with LOCE, both independently and in conjunction with other affective vulnerabilities (e.g. distress tolerance and emotion regulation difficulties). Therefore, interventions to target NA reduction expectancies should be developed and tested to target this vulnerability. Existing interventions targeting conditions characterized by LOCE pathology often target emotion regulation difficulties and low distress tolerance; however, these interventions tend to have lengthy

protocols (Safer et al., 2001). In contrast, expectancies may be more immediately malleable, as has been the case for alcohol use (Lau-Barraco & Dunn, 2008).

There exists some preliminary evidence that expectancies are targetable to help control eating behaviour. Food cue exposures have been found to correct expectancies relevant to one's ability to control food consumption, albeit in a very limited manner, wherein only the cued food was limited in consumption (Schyns et al., 2016). Of more promising efficacy, when individuals are led to believe that food will be unable to change their mood (via a 'mood freezing' intervention), they consume less food after a distress induction, than those who undergo distress induction without the placebo intervention (Tice et al., 2001). These findings suggest that when the expectancy that food may alter negative affect is reduced, individuals may no longer be motivated to engage in hedonic food consumption. Tellingly, findings from Tice et al. (2001) did not show a resultant improvement in mood for any condition, even though there were differences in amount of food consumed. These findings, as well as prior literature implicating NA reduction expectancy in binge eating (Fischer et al., 2013; Hayaki, 2009), provide preliminary rationale for assessing expectancy interventions on LOCE, both as stand-alone protocols and in conjunction with empirically validated eating interventions targeting emotion regulation difficulties and distress tolerance. Such interventions may be particularly salient for those with elevated NA reduction expectancies, as treatments designed to bolster distress tolerance may theoretically be more effective when the expectancy is lowered. It is also possible that NA reduction expectancies are due to misconceptions regarding the effect of eating on affect, given that the affective experience of pleasantness may increase during LOCE, yet decreases after (Deaver et al., 2003). As aforementioned, EMA findings suggest that negative affect robustly increases immediately after eating, suggesting that the behaviour does not effectively regulate negative affect. Psychoeducation challenging this expectancy could be an intervention target for individuals who find NA reduction expectancies reinforcing. EMA studies that assess trajectories of multiple domains of positive and negative affect throughout the day, including assessment during eating periods, could further clarify intervention design targets. Additionally, mental health professionals should pay particular attention to individuals who endorse difficulties with emotion regulation, low distress tolerance and greater NA reduction expectancies, as these vulnerabilities could be indicative of LOCE, and vice versa.

CONCLUSION

This study is the first to assess a relationship between NA reduction expectancies and LOCE regardless of quantity of food consumed, as well as the interactions between NA reduction expectancies and known contributors to LOCE pathology. Findings identify NA reduction expectancies as a vulnerability factor for LOCE both independently and in interaction with other vulnerabilities. In addition, findings provide additional nuance for the specific circumstances under which distress tolerance ability may be protective against LOCE, in particular, to those with greater difficulty with emotion regulation. However, additional research is necessary to confirm the nature of this relationship as well as its directionality. EMA designs should be utilized to confirm that NA reduction expectancies are present prior to LOCE, especially when affect is not improved following an LOCE episode. EMA research may also confirm directionality of associations of predictor variables and LOCE as well as provide insight into the mechanisms that maintain such associations. Additionally, future intervention research may assess whether targeting NA reduction expectancies alleviates LOCE as well as whether changes in NA reduction expectancies remain over time. As aforementioned, expectancy interventions could supplement existing interventions that target emotion regulation difficulties and low distress tolerance, as these targets may be theoretically easier to improve when NA reduction expectancies low. These findings implicate NA reduction expectancies in LOCE and provide a springboard for a potential explanation of inconsistencies in findings around affect regulation theory, suggesting an alternate reinforcer for consistent LOCE.

AUTHOR CONTRIBUTIONS

Emily K Burr: Study Design, Oversight of data collection, Primary drafting and editing, Analyses. **Robert D Dvorak:** Analyses, Writing, Study Design. **Roselyn Peterson:** Writing for final draft, review and editing. **Ardhys N. De Leon:** Writing – review and editing.

ACKNOWLEDGEMENT

This project was partially funded via a National Institute on Alcohol Abuse and Alcoholism (NIAAA) grant 1R15AA026420-01A1 to RDD.

CONFLICT OF INTEREST

All authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Open Science Framework at the link below: https://osf.io/av8jr/?view_only=0a5ab409248548a9b364938fca9c22cd

ORCID

Emily K. Burr https://orcid.org/0000-0001-5853-3924

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.

Anestis, M. D., Selby, E. A., Fink, E. L., & Joiner, T. E. (2007). The multifaceted role of distress tolerance in dysregulated eating behaviors. *International Journal of Eating Disorders*, *40*(8), 718–726. https://doi.org/10.1002/eat.20471

Bayer, V. (2014). Eating disorders in lesbian and bisexual women: Relationship of binge eating to depressive symptoms, shame, distress tolerance, and internalized homophobia. Doctoral dissertation, Texas Tech University.

Berg, K. C., Peterson, C. B., Crosby, R. D., Cao, L., Crow, S. J., Engel, S. G., & Wonderlich, S. A. (2014). Relationship between daily affect and overeating-only, loss of control eating-only, and binge eating episodes in obese adults. *Psychiatry Research*, *215*(1), 185–191. https://doi.org/10.1016/j.psychres.2013.08.023

Boerner, L. M., Spillane, N. S., Anderson, K. G., & Smith, G. T. (2004). Similarities and differences between women and men on eating disorder risk factors and symptom measures. *Eating Behaviors*, *5*(3), 209–222. https://doi.org/10.1016/j.eatbeh.2004.01.011

Brownstone, L. (2017). Subjective binge eating: Phenomenology, momentary emotions, and associated features. In *Dissertation*. https://doi.org/10.1017/CBO9781107415324.004

Burr, E. K., Dvorak, R. D., Stevenson, B. L., Schaefer, L. M., & Wonderlich, S. A. (2021). Ability to tolerate distress moderates the indirect relationship between emotion regulation difficulties and loss-of-control over eating via affective lability. *Eating Behaviors*, *43*, 101561. https://doi.org/10.1016/j.eatbeh.2021.101561

Centers for Disease Control and Prevention. (2014). Calculating BMI using the English system. https://www.cdc.gov/nccdphp/dnpao/growthcharts/training/bmiage/page5_2.html#:~:text=Then%2C calculate BMI by dividing,round to one decimal place.

Corstorphine, E., Mountford, V., Tomlinson, S., Waller, G., & Meyer, C. (2007). Distress tolerance in the eating disorders. *Eating Behaviors*, *8*(1), 91–97. https://doi.org/10.1016/j.eatbeh.2006.02.003

Daly, M., & Robinson, E. (2021). Psychological distress and adaptation to the COVID-19 crisis in the United States. *Journal of Psychiatric Research*, *136(August*, 2020), 603–609. https://doi.org/10.1016/j.jpsychires.2020.10.035

De Young, K. P., Zander, M., & Anderson, D. A. (2014). Beliefs about the emotional consequences of eating and binge eating frequency. *Eating Behaviors*, *15*(1), 31–36. https://doi.org/10.1016/j.eatbeh.2013.10.012

Deaver, C. M., Miltenberger, R. G., Smyth, J., Meidinger, A., & Crosby, R. (2003). An evaluation of affect and binge eating. *Behavior Modification*, *27*(4), 578–599. https://doi.org/10.1177/0145445503255571

Escandón-Nagel, N., Peró, M., Grau, A., Soriano, J., & Feixas, G. (2018). Alimentación emocional y conflictos cognitivos como predictores del trastorno por atracón en pacientes con obesidad. *International Journal of Clinical and Health Psychology*, *18*(1), 52–59. https://doi.org/10.1016/j.ijchp.2017.09.003

Fairburn, C. G., & Beglin, S. (2008). *Cognitive behavior therapy and eating disorders*. Guilford Press.

Fischer, S., Peterson, C. M., & McCarthy, D. (2013). A prospective test of the influence of negative urgency and expectancies on binge eating and purging. *Psychology of Addictive Behaviors*, *27*(1), 294–300. https://doi.org/10.1037/a0029323

Fischer, S., & Smith, G. T. (2008). Binge eating, problem drinking, and pathological gambling: Linking behavior to shared traits and social learning. *Personality and Individual Differences*, *44*(4), 789–800. https://doi.org/10.1016/j.paid.2007.10.008

Giel, K. E., Schurr, M., Zipfel, S., Junne, F., & Schag, K. (2021). Eating behaviour and symptom trajectories in patients with a history of binge eating disorder during COVID-19 pandemic. *European Eating Disorders Review : The Journal of the Eating Disorders Association*, *29*(4), 1–6. https://doi.org/10.1002/erv.2837

Goldschmidt, A. B., Crosby, R. D., Cao, L., Engel, S. G., Durkin, N., Beach, H. M., Berg, K. C., Wonderlich, S. A., Crow, S. J., & Peterson, C. B. (2014). Ecological momentary assessment of eating episodes in obese adults. *Psychosomatic Medicine*, *76*(9), 747–752. https://doi.org/10.1097/PSY.0000000000000108

Goldschmidt, A. B., Engel, S. G., Wonderlich, S. A., Crosby, R. D., Peterson, C. B., Le Grange, D., Tanofsky-Kraff, M., Cao, L., & Mitchell, J. E. (2012). Momentary affect surrounding loss of control and overeating in obese adults with and without binge eating disorder. *Obesity*, *20*(6), 1206–1211. https://doi.org/10.1038/oby.2011.286

Goldschmidt, A. B., Lavender, J. M., Hipwell, A. E., Stepp, S. D., & Keenan, K. (2017). Emotion regulation and loss of control eating in community-based adolescents. *Journal of Abnormal Child Psychology*, *45*(1), 183–191. https://doi.org/10.1007/s10802-016-0152-x

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Haedt-Matt, A. A., & Keel, P. K. (2011). Revisiting the affect regulation model of binge eating: A meta-analysis of studies using ecological momentary assessment. *Psychological Bulletin*, *137*(4), 660–681. https://doi.org/10.1037/a0023660

Hayaki, J. (2009). Negative reinforcement eating expectancies, emotion dysregulation, and symptoms of bulimia nervosa. *International Journal of Eating Disorders*, *42*(6), 552–556. https://doi.org/10.1002/eat.20646

Hayaki, J., & Free, S. (2016). Positive and negative eating expectancies in disordered eating among women and men. *Eating Behaviors*, *22*, 22–26. https://doi.org/10.1016/j.eatbeh.2016.03.025

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the depression anxiety stress scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*(2), 227–239. https://doi.org/10.1348/014466505X29657

Hohlstein, L. A., Smith, G. T., & Atlas, J. G. (1998). An application of expectancy theory to eating disorders: Development and validation of measures of eating and dieting expectancies. *Psychological Assessment*, *10*(1), 49–58. https://doi.org/10.1037/1040-3590.10.1.49

Jeffries, E. R., McLeish, A. C., Kraemer, K. M., Avallone, K. M., & Fleming, J. B. (2016). The role of distress tolerance in the use of specific emotion regulation strategies. *Behavior Modification*, *40*(3), 439–451. https://doi.org/10.1177/0145445515619596

Jenkins, P. E., Conley, C. S., Hoste, R. R., Meyer, C., & Blissett, J. M. (2012). Perception of control during episodes of eating: Relationships with quality of life and eating psychopathology. *International Journal of Eating Disorders*, *45*(1), 115–119. https://doi.org/10.1002/eat.20913

Juarascio, A. S., Parker, M. N., Manasse, S. M., Barney, J. L., Wyckoff, E. P., & Dochat, C. (2020). An exploratory component analysis of emotion regulation strategies for improving emotion regulation and emotional eating. *Appetite*, *150*(February), 104634. https://doi.org/10.1016/j.appet.2020.104634

Kauffman, B. Y., Bakhshaie, J., Lam, H., Alfano, C., & Zvolensky, M. J. (2018). Insomnia and eating expectancies among college students: The role of emotion dysregulation. *Cognitive Behaviour Therapy*, *47*(6), 470–481. https://doi.org/10.1080/16506073.2018.1466910

Klein, A. S., Skinner, J. B., & Hawley, K. M. (2013). Targeting binge eating through components of dialectical behavior therapy: Preliminary outcomes for individually supported diary card self-monitoring versus group-based DBT. *Psychotherapy*, *50*(4), 543–552. https://doi.org/10.1037/a0033130

Kozak, A. T., & Fought, A. (2011). Beyond alcohol and drug addiction. Does the negative trait of low distress tolerance have an association with overeating? *Appetite*, *57*(3), 578–581. https://doi.org/10.1016/j.appet.2011.07.008

Kukk, K., & Akkermann, K. (2017). Fluctuations in negative emotions predict binge eating both in women and men: An experience sampling study. *Eating Disorders*, *25*(1), 65–79. https://doi.org/10.1080/10640266.2016.1241058

Latner, J. D., Hildebrandt, T., Rosewall, J. K., Chisholm, A. M., & Hayashi, K. (2007). Loss of control over eating reflects eating disturbances and general psychopathology. *Behaviour Research and Therapy*, *45*(9), 2203–2211. https://doi.org/10.1016/j.brat.2006.12.002

Latner, J. D., Mond, J. M., Kelly, M. C., Haynes, S. N., & Hay, P. J. (2014). The loss of control over eating scale: development and psychometric evaluation. *International Journal of Eating Disorders*, *47*(6), 647–659.

Lau-Barraco, C., & Dunn, M. E. (2008). Evaluation of a single-session expectancy challenge intervention to reduce alcohol use among college students. *Psychology of Addictive Behaviors*, *22*(2), 168–175. https://doi.org/10.1037/0893-164X.22.2.168

Lavender, J. M., Wonderlich, S. A., Engel, S. G., Gordon, K. H., Kaye, W. H., & Mitchell, J. E. (2015). Dimensions of emotion dysregulation in anorexia nervosa and bulimia nervosa: A conceptual review of the empirical literature. *Clinical Psychology Review*, *40*, 111–122. https://doi.org/10.1016/j.cpr.2015.05.010

Madeley, M. C. (2009). *Distress tolerance and eating expectancies as moderators of the relationship between interpersonal stress and disinhibited eating*. University of Texas at Austin.

Muthén, L. K., & Muthén, B. O. (2020). *Mplus statistical modeling software: Release 8.4*. Muthén & Muthén.

Ogden, C. L., Fryar, C. D., Martin, C. B., Freedman, D. S., Carroll, M. D., Gu, Q., & Hales, C. M. (2020). Trends in obesity prevalence by race and hispanic origin - 1999-2000 to 2017-2018. *JAMA - Journal of the American Medical Association*, *324*(12), 1208–1210. https://doi.org/10.1001/jama.2020.14590

Palavras, M. A., Morgan, C. M., Borges, F. M. B., Claudino, A. M., & Hay, P. J. (2013). An investigation of objective and subjective types of binge eating episodes in a clinical sample of people with co-morbid obesity. *Journal of Eating Disorders*, *1*(1), 1–7. https://doi.org/10.1186/2050-2974-1-26

Pearson, C. M., Mason, T. B., Cao, L., Goldschmidt, A. B., Lavender, J. M., Crosby, R. D., Crow, S. J., Engel, S. G., Wonderlich, S. A., & Peterson, C. B. (2018). A test of a state-based, self-control theory of binge eating in adults with obesity. *Eating Disorders*, *26*(1), 26–38. https://doi.org/10.1080/10640266.2018.1418358

Racine, S. E., & Horvath, S. A. (2018). Emotion dysregulation across the spectrum of pathological eating: Comparisons among women with binge eating, overeating, and loss of control eating. *Eating Disorders*, *26*(1), 13–25. https://doi.org/10.1080/10640266.2018.1418381

Safer, D. L., Telch, C. F., & Agras, W. S. (2001). Dialectical behavior therapy for bulimia nervosa. *American Journal of Psychiatry*, *158*(4), 632–634. https://doi.org/10.1176/appi.ajp.158.4.632

Schaumberg, K., Schumacher, L. M., Rosenbaum, D. L., Kase, C. A., Piers, A. D., Lowe, M. R., Forman, E. M., & Butryn, M. L. (2016). The role of negative reinforcement eating expectancies in the relation between experiential avoidance and disinhibition. *Eating Behaviors*, *21*, 129–134. https://doi.org/10.1016/j.eatbeh.2016.01.003

Schyns, G., Roefs, A., Mulkens, S., & Jansen, A. (2016). Expectancy violation, reduction of food cue reactivity and less eating in the absence of hunger after one food cue exposure session for overweight and obese women. *Behaviour Research and Therapy*, *76*, 57–64. https://doi.org/10.1016/j.brat.2015.11.007

Simons, J. S., & Gaher, R. M. (2005). The distress tolerance scale: Development and validation of a self-report measure. *Motivation and Emotion*, *29*(2), 83–102. https://doi.org/10.1007/s11031-005-7955-3

Smith, G. T., Simmons, J. R., Flory, K., Annus, A. M., & Hill, K. K. (2007). Thinness and eating expectancies predict subsequent binge-eating and purging behavior among adolescent girls. *Journal of Abnormal Psychology*, *116*(1), 188–197. https://doi.org/10.1037/0021-843X.116.1.188

Smith, K. E., Orcutt, M., Steffen, K. J., Crosby, R. D., Cao, L., Garcia, L., & Mitchell, J. E. (2019). Loss of control eating and binge eating in the 7 years following bariatric surgery. *Obesity Surgery*, *29*(6), 1773–1780. https://doi.org/10.1007/s11695-019-03791-x

Stevenson, B. L., Dvorak, R. D., Wonderlich, S. A., Crosby, R. D., & Gordon, K. H. (2018). Emotions before and after loss of control eating. *Eating Disorders*, *26*(6), 505–522. https://doi.org/10.1080/10640266.2018.1453634

Tice, D. M., Bratslavsky, E., & Baumeister, R. F. (2001). Emotional distress regulation takes precedence over impulse control: If you feel bad, do it! *Journal of Personality and Social Psychology*, *80*(1), 53–67. https://doi.org/10.1037/0022-3514.80.1.53

Van Eck, K., Warren, P., & Flory, K. (2017). A variable-centered and person-centered evaluation of emotion regulation and distress tolerance: Links to emotional and behavioral concerns. *Journal of Youth and Adolescence*, *46*(1), 136–150. https://doi.org/10.1007/s10964-016-0542-y

Vander Wal, J. S., Stein, R. I., & Blashill, A. J. (2011). The EDE-Q, BULIT-R, and BEDT as self-report measures of binge eating disorder. *Eating Behaviors*, *12*(4), 267–271. https://doi.org/10.1016/j.eatbeh.2011.07.006

Weltzin, T. E., Weisensel, N., Franczyk, D., Burnett, K., Klitz, C., & Bean, P. (2005). Eating disorders in men: update. *The Journal of Men's Health & Gender*, *2*(2), 186–193. https://doi.org/10.1016/j.jmhg.2005.04.008

How to cite this article: Burr, E. K., Dvorak, R. D., Peterson, R., & De Leon, A. N. (2022). Greater negative affect reduction expectancies moderate the interactive relationship between emotion regulation difficulties and distress tolerance in predicting loss-of-control eating. *British Journal of Health Psychology*, *00*, 1–15. https://doi.org/10.1111/bjhp.12611