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Boredom Proneness Is Predicted by Difficulties in Emotion Regulation that Are Mediated by Corresponding Problems with Attention and Cognitive Flexibility

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Abstract: The association between boredom proneness and elevated rates of problematic substance abuse, gambling, and smartphone use has been taken as evidence that difficulties with emotion regulation can lead to maladaptive attempts to cope with negative affect. There is minimal research on how individual differences in emotion regulation may be linked to boredom proneness. We therefore sought to identify specific aspects of emotion regulation that may be helpful for predicting boredom proneness. We hypothesized that boredom proneness may be associated with aspects of emotion regulation that are often unproductive (e.g., suppression and rumination) or that rely on effective executive functions (e.g., attention, working memory, cognitive flexibility). Undergraduate students ($N = 219$) completed a battery of self-report scales regarding their boredom proneness, emotion-regulation abilities, and cognitive abilities, including attention, memory and cognitive flexibility. Results indicated that difficulties in emotion regulation predicted boredom proneness and was mediated by attentional difficulties and lower levels of cognitive flexibility, but not memory failures. Individual differences in emotion-suppression and rumination were predictive of boredom proneness, but the use of distraction was not. Our results underscore the importance of specific cognitive-affective mechanisms of emotion regulation to better understand boredom proneness and its long-term consequences.

Keywords: boredom proneness, emotion regulation, attention, memory, cognitive flexibility.

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1. Introduction

Emotion regulation is the ability to effectively manage and respond to emotional experiences and generally occurs through up-regulating or down-regulating emotions by implementing some form of regulatory strategy (i.e., cognitive reappraisal, distraction, expressive engagement, physiological relaxation, rumination, and suppression; Gross and Thompson, 2007). Much of the extant literature on emotion regulation predominantly concentrates on managing high-intensity negative emotional states, such as fear or anxiety, while less is known about regulating less-intense emotional states, such as boredom—an aversive experience that arises when one is unable to engage in a satisfying activity despite the desire to do so (Eastwood et al., 2012). Understanding how boredom is regulated is important as it is a very common and distressing emotional experience, with the majority of adults reporting feeling bored at least once a week (Chin et al., 2017) and it being particularly prevalent among students (Larson and Richards, 1991; Nett et al., 2011). While boredom itself is not inherently negative and can motivate individuals to engage in meaningful activities (Bench and Lench, 2018; Elpidorou, 2018), the tendency to experience boredom frequently and intensely is associated with several problematic behaviours. Research has shown that boredom proneness is linked to excessive smartphone use (Kil et al., 2021), drug and alcohol abuse (LePera, 2011), problematic gambling (Mercer and Eastwood, 2010), and patterns of unhealthy eating (Crockett et al., 2015), all of which can be seen as the manifestations of maladaptive coping strategies. When emotions are not managed effectively, this may reinforce patterns of negative behaviours and foster a reliance on ineffective emotion regulation and coping strategies, limiting one's capacity to engage in more adaptive responses. Rigid and inflexible patterns of responses to environmental stressors as well as the overreliance on strategies that are ineffective or counterproductive are often seen to be linked to affective dysfunction (e.g., anxiety, depression; Aldao, 2013; Aldao et al., 2010). Thus, it is possible that rigidity in strategy use and engaging in strategies often associated with maladaptive responding (i.e., rumination and suppression) may also be associated with boredom proneness.

Considering the frequency of experienced boredom in the general population and the negative outcomes associated with boredom proneness and emotion-regulation difficulties, it is vital to further investigate how difficulties in emotion regulation may be linked to boredom proneness—a connection that has so far been underexplored. Studies that have examined this connection have raised questions about whether the increased frequency and intensity of boredom experienced by individuals high in boredom proneness occurs as result of specific difficulties in their ability to manage and alleviate such affective states (Perone et al., 2019; Weybright et al., 2022). Additionally, Bambrah et al. (2023) found that during the COVID-19 pandemic, individuals who experienced pandemic-related trauma struggled to engage in goal-orientated behaviours and, as a result, experienced heightened levels of boredom. This may suggest that emotion-regulation difficulties can impair one's ability to manage boredom, potentially contributing to higher levels of boredom proneness. Similarly, studies by Crockett et al. (2015) and Ferrell et al. (2020) found emotion regulation-difficulties to be a significant moderator in the relation between boredom proneness and emotional eating, highlighting the role of ineffective emotion regulation in maladaptive responses to boredom. While these findings provide indirect evidence that emotion-regulation difficulties are likely linked to boredom

proneness, they do not specify the aspects of emotion regulation that are predictive of boredom proneness. However, some studies have begun to uncover specific coping strategies that are associated with boredom. For instance, Nett et al. (2011) found that students typically manage classroom boredom using cognitive-approach strategies (i.e., changing their perspective on the situation) and behavioural-avoidance coping strategies (i.e., distracting themselves from the source of boredom). However, Zhao et al. (2022) found that when students attempted to suppress their feelings of boredom, it only increased their boredom and negatively impacted their learning. This suggests that certain emotion regulation strategies, such as suppression, may not only fail to alleviate boredom but may also intensify it, further contributing to the negative consequences associated with boredom proneness.

Building on prior research, the present study aimed to further identify specific aspects of emotion regulation that may be predictive of individual differences in boredom proneness. Also, given the well-established link between attentional difficulties and boredom (Eastwood et al., 2012), we investigated how attention and other cognitive capacities known to be related to attentional control (such as working memory and cognitive flexibility) may impact the relation between emotion-regulation difficulties and boredom proneness. Our focus in this regard is consistent with the Process Model of Emotion Regulation, which highlights the critical role of attentional control, working memory capacity and cognitive flexibility in regulating emotions effectively (Gross and Thompson, 2007). Poor attentional control makes it challenging to focus on the relevant stimuli necessary to modulate emotional responses. Individuals with attentional difficulties are also more likely to become distracted, making it harder to maintain engagement in tasks. Similarly, deficits in working memory capacity—often observed in individuals with emotion-regulation difficulties (Ochsner and Gross, 2005)—hinders the ability to maintain emotional goals while implementing regulatory strategies. Likewise, individuals with emotion-regulation difficulties often struggle with cognitive flexibility, which impairs their ability to adaptively shift perspectives and adjust the strategies they employ in response to changing demands. This makes it harder for individuals to disengage from negative thought patterns and, as a result, they may become 'stuck' in repetitive and ineffective attempts to regulate their emotions. Together, these deficits create a cycle of disengagement and rigid regulatory responses, heightening susceptibility to boredom proneness. By examining how these cognitive abilities interact with emotion-regulation difficulties, the present study aims to provide a more comprehensive understanding of the mechanisms that contribute to the tendency to experience boredom.

In pursuit of these objectives, Canadian undergraduate students were surveyed on their tendencies to experience boredom, degree of emotion-regulation difficulties, frequency of use of different emotion-regulation strategies, as well as individual differences in attentional difficulties, including attentional control, the tendency to experience attentional lapses and ADHD symptomology, as well as other cognitive phenomena that reflect attentional difficulties, including lower levels of cognitive flexibility and the tendency to experience memory failures. We hypothesized that the tendency to experience boredom would be predicted by the overall level of emotion-regulation difficulties experienced by participants, the reliance on typically more ineffective forms of emotion regulation, such as suppression or rumination, or by the extent

to which individuals failed to effectively use attention-related forms of emotion regulation, such as distraction. Finally, given the well-established links between boredom and attentional difficulties, we expected that the relation between emotion-regulation difficulties and boredom proneness would be mediated by attention-related difficulties or cognitive phenomena that reflect attentional difficulties, such as memory failures or lower levels of cognitive flexibility.

2. Method

2.1. Participants

A total of 227 first-year undergraduate students at a mid-sized Canadian university participated in the present research in exchange for course credit. Eight students were removed from analyses for completing less than half of the survey. The remaining sample consisted of 219 participants (78.4% female, 21.6% male) with an average age of 19.42 years (range = 18 - 50, *SD* = 2.38). A post-hoc power analysis using the Monte Carlo confidence interval method showed that the sample size in this study was sufficient to detect medium effect sizes in the mediation analyses (Qin, 2024). Similarly, the sample size was adequate for detecting medium effects in the correlation analyses (Faul et al., 2007). The majority of participants identified as White (72.3%), followed by South Asian (7.2%), East Asian (6.4%), Middle Eastern (3.7%), Black (1.8%) and Hispanic (1.4%), with 7.2% selecting 'other'. All participants were fluent in reading and speaking the English language. All participants were treated in accordance with the university's ethical guidelines, and the present study was reviewed and approved by the University of Guelph's Research Ethics Board (protocol #22-10-00).

2.2. Procedure and Materials

Participants completed a battery of self-report scales during one online survey which took participants approximately 20 minutes to complete. The survey assessed participants' degree of boredom proneness, emotion-regulation abilities, how often participants employ different emotion-regulation strategies, participants' level of attentional control and attentional capacity, ADHD symptomology, the frequency of experienced memory failures in day-to-day life and cognitive flexibility. Sum scores were used for all scale measures. Sum scores were only computed for participants who had complete data for all items within each scale. Only 2.48% of data was lost due to missing values.

2.2.1. Boredom Proneness

Boredom proneness was measured using the Short Boredom Proneness Scale (SBPS; Struk et al., 2017; $\alpha = .894$). This measure consists of 8 items rated on a 7-point scale (*strongly disagree* to *strongly agree*) which captures participants' general tendency to experience boredom on a day-to-day basis. Example questions include 'It takes more stimulation to get me going than most people' and 'I find it hard to entertain myself'. Total scores on this measure range from 0 to 56, with higher scores reflecting greater tendencies to experience boredom.

2.2.2. Individual Differences in Emotion Regulation

Emotion-regulation difficulties and the frequency of using different emotion-regulation strategies were assessed using the Difficulties in Emotion Regulation Scale (DERS-16; Bjureberg et al., 2016) and the Regulation of Emotion Systems Survey (RESS; De France and Hollestein, 2017). The DERS-16 (α = .931) evaluates difficulties with emotion regulation by assessing an individual's emotional awareness, understanding and acceptance of emotions, difficulties controlling behavioural responses to negative emotions and flexibility in selecting appropriate regulation strategies. This scale comprises of 36 items asking participants to indicate how often each statement applies to them on a 5-point scale ranging from *almost never* to *almost always*. Responses to items were summed to form a total score, with higher total scores indicating more difficulties in regulating emotions.

The RESS is composed of 38 items asking participants to report the frequency that they use a range of emotion strategies to regulate negative emotions on a 5-point scale (*never* to *always*). This scale is composed of six subscales including: rumination, expressive engagement, suppression, arousal control, distraction, and cognitive reappraisal. This scale has been validated as a reliable measure, achieving internal consistency within each subscale, with the lowest Cronbach's value being α = .873.

2.2.3. Attentional Difficulties

Attentional difficulties were measured using three scales including the lapses-only items of the Mindful Attention and Awareness Scale (MAAS-LO; Carriere et al., 2008), the Attentional Control scale (ATTC-SF; Derryberry and Rothbart, 1988), and the adult ADHD Self-Report Scale (ASRS-VI-I) symptoms checklist (Adler et al., 2006). The MAAS-LO (α = .863) is a 12-item measure adapted from the Mindful Attention Awareness Scale (MAAS; Brown and Ryan, 2003) evaluating experienced attentional lapses on a 6-point scale (*almost never* to *almost always*). An example item from this measure includes 'It seems I am 'running on automatic,' without much awareness of what I'm doing'. Total scores for the MAAS-LO range from 12 referring to infrequent attentional lapses to 72 indicating very frequent attentional lapses.

The ATTC-SF (α = .676) is a 10-item scale which measures attention focusing and attention shifting by asking how often each statement applies to participants on a 4-point scale (*almost never* to *always*). Example questions include 'I have a hard time concentrating when I am excited about something' and 'I can quickly switch from one task to another'.

The ASRS-VI-I (α = .898) is an 18-item measure which assesses the presence of predictive symptoms consistent with ADHD in adults (18+). Each item is measured on a 5-point scale ranging from *never* to *very often*.

2.2.4. Memory Failures and Cognitive Flexibility

Memory failures experienced in everyday life was measured through the Memory Failures Scale (MFS; Carriere et al., 2008; α = .883). This measure consists of 12 questions asking how often participants experience scenarios of memory lapses (e.g., 'I find I cannot quite remember something though it is on the tip of my tongue'). This measure uses a 5-point scale ranging from *never* to *very often*.

Cognitive flexibility was measured via the 12-item Cognitive Flexibility Scale (CFS; Martin and Rubin, 1995; α = .761) asking participants to rate the extent to which they agree that each statement applies to them on a 6-point scale (*strongly disagree* to *agree strongly*). Example items of this measure include 'I can communicate an idea in many ways' and 'I am willing to listen and consider alternatives for handling a problem'.

3. Results

To test the hypothesis that the tendency to experience boredom is predicted by the level of participants' emotion-regulation difficulties, we first assessed the correlation between difficulties in emotion regulation (DERS-16) and boredom proneness (SBPS). This revealed a positive association ($r = .552$, $p < .001$; see Table 1 for a correlation matrix of all study variables), whereby those who report greater challenges regulating their emotions also show greater levels of boredom proneness. The greater use of typically more ineffective or often counterproductive emotion-regulation strategies (i.e., rumination and suppression) were also associated with higher levels of boredom proneness, as indicated by positive correlations between SBPS scores and those from the RESS subscales for suppression ($r = .245$, $p < .001$) and rumination ($r = .304$, $p < .001$). Although we also expected that boredom proneness would be higher for those who have difficulty using attention-dependent forms of emotion regulation, such as distraction, the correlation between SBPS and the RESS subscale for distraction was not significant ($r = .059$, $p = .390$).

Nevertheless, the relative importance of individual differences in attentional difficulties for understanding the interconnections between emotion regulation and boredom proneness was evident in several other respects. Most importantly, we conducted regression analyses with emotion-regulation difficulties (DERS-16 scores) as the predictor, and boredom proneness (SBPS scores) as the outcome, and attention measures such as MAAS-LO, ASRS-VI-I, or ATTC-SF scores as mediators. Following Hayes' Macro Process, Model-4 (Hayes, 2022), the tests suggested that the total predictive effect of emotion-regulation difficulties on the trait tendency to experience boredom was $B = 0.837$ ($p < .001$), a significant percent of which could be accounted for by each attention-related measure (37% for MAAS-LO, B = 0.310; 19% for ASRS-VI-I, B = 0.157; 8% for ATTC-SF, B = 0.068), see Table 2. In light of this, it is not surprising that the tendency to experience attentional lapses as reflected by MAAS-LO scores, was positively correlated with both boredom proneness (SBPS, $r = .633$, $p < .001$) and difficulties with emotion regulation (DERS-16, $r = .555$, $p < .001$). Likewise, levels of ADHD symptoms as reflected by ASRS-VI-I scores were also positively correlated with both boredom proneness (SBPS, $r = .633$, $p < .001$) and difficulties with emotion regulation (DERS-16, $r = .468$, $p < .001$), whereas less attentional control (ATTC-SF) was associated with higher boredom proneness (SBPS, $r = -.505$, $p < .001$) and more difficulties with emotion regulation (DERS-16, $r = -.312$, $p < .001$).

As a further test of the hypothesis that attention-related difficulties are important for understanding the relation between emotion-regulation difficulties and boredom proneness, we examined how individual differences in cognitive phenomena that reflect attentional difficulties,

such as memory failures and poorer cognitive flexibility, are associated with emotion regulation and boredom proneness. Mediation analyses, with emotion-regulation difficulties (DERS-16 scores) as the predictor, boredom proneness (SBPS scores) as the outcome, and cognitive flexibility through CFS scores and memory failures through the MFS as mediators, indicated that a significant percent of the total predictive effect of emotion-regulation difficulties on the trait tendency to experience boredom could be accounted for by lower levels of cognitive flexibility (15%, B = 0.124), but not by memory failures (B = -0.045, 95% *CI* = -0.142, 0.046). Despite this, the tendency to experience memory failures as reflected by MFS scores was positively correlated with both boredom proneness (SBPS, $r = .486$, $p < .001$) and difficulties with emotion regulation (DERS-16, $r = .431$, $p < .001$). Moreover, lower levels of cognitive flexibility as reflected by lower CFS scores were significantly correlated with higher levels of boredom proneness (SBPS, $r = -.381$, $p < .001$) and difficulties with emotion regulation (DERS-16, $r = -.372$, $p < .001$).

4. Discussion

The present study was conducted to better understand the relation between emotion-regulation difficulties and boredom proneness, while also investigating the role of cognitive processes (i.e., attentional control, working memory capacity and cognitive flexibility) that are involved in both emotion regulation and boredom. Extensive research has shown that boredom proneness is related to a host of negative outcomes (e.g., substance abuse, problematic gambling, unhealthy eating behaviours), which may stem from difficulties effectively regulating emotions, such as the use of ineffective or counterproductive emotion-regulation strategies. Research has alluded to an association between boredom proneness and emotion-regulation difficulties (Crockett et al., 2015; Ferrell et al., 2020; Perone et al., 2019; Weybright et al., 2022), but no study to date has directly examined this. Thus, the present study sought to directly evaluate the relation between boredom proneness and aspects of emotion regulation, including emotion-regulation difficulties and the use of various emotion-regulation strategies (i.e., rumination, expressive engagement, suppression, arousal control, distraction, and cognitive reappraisal; De France and Hollestein, 2017). Further, the present study also explored whether attentional difficulties and other cognitive phenomena influenced by attentional difficulties (i.e., memory failures and cognitive inflexibility) mediate the relation between emotion regulation and boredom proneness, given the links between attentional difficulties and boredom (Eastwood, 2012), as well as the links between these cognitive abilities and effective emotion regulation (Gross and Thompson, 2007).

Results identified a strong positive relation between boredom proneness and emotion-regulation difficulties such that individuals high in boredom proneness also exhibit greater difficulties regulating emotions. This result substantiates the existing literature suggesting an association between boredom proneness and emotion-regulation challenges, that up until now have only been indirectly tested (Crockett et al., 2015; Ferrell et al., 2020; Perone et al., 2019; Weybright et al., 2022). It is possible that individuals with poor emotion-regulation abilities may experience a failure to appropriately respond and attend to boredom as it arises, leading to greater tendencies to experience boredom at more frequent and intense levels. Interestingly, individuals high in boredom proneness also reported a greater reliance on rumination and suppression as a

means of regulation. Though participants were not directly asked what emotion-regulation strategies they use to manage boredom specifically, these results suggest that individuals high in boredom proneness frequently engage in what are often considered to be ineffective or counterproductive emotion-regulation strategies (Aldao and Nolen-Hoeksema, 2010; Gross and Thompson, 2007). These strategies rarely reduce negative affect, instead often amplifying negative affect. Likewise, these strategies are often found to be associated with anxiety and depression (Richmond et al., 2016). Thus, attempts to regulate boredom with these strategies may ultimately exacerbate ones' experience of boredom and multiple failed attempts to regulate boredom may make individuals more prone to experiencing boredom and put them at a greater risk of its negative outcomes. This idea is further supported by Zhao et al. (2022) who found that individuals who attempted to suppress their boredom actually experienced increased levels of boredom. Likewise, cognitive flexibility was found to be negatively related to boredom proneness which may suggest that individuals who are rigid in their regulation strategy use and consistently use the same emotion-regulation strategies (e.g., rumination, suppression), despite situational demands, may fail to effectively regulate their boredom as it arises. In contrast, distraction as a regulatory strategy was not found to be related to boredom proneness, despite Nett et al.'s (2011) finding that their participants engaged in distraction to cope with boredom and previous connections that have been noted between boredom and mind-wandering / distraction (Eastwood et al., 2012). This could be because those who successfully use distraction to regulate their boredom are less likely to become prone to experiencing boredom. Similarly, cognitive reappraisal, which was also identified as a boredom-coping strategy by Nett et al. (2011), may also help prevent boredom proneness through effective emotion regulation, making individuals less likely to experience chronic and intense boredom.

Our results also found that aspects of cognition including attentional lapses, attentional control, ADHD symptomology, and cognitive flexibility were significant mediators of the relation between emotion-regulation difficulties and boredom proneness. The attention measures (MAAS-LO, ASRS-VI-I, and ATTC-SF) all accounted for a significant percentage of the total predictive effect of emotion-regulation difficulties and the tendency to experience boredom, indicating that aspects of attention play an intervening role in this relation. It is of worth noting that the ATTC only accounted for a very small percentage of the total effect. This scale measures the deliberate control and flexibility of attention, whereas the MAAS-LO examines attentional lapses or awareness of attention. It is possible that this could mean that attentional awareness plays a more critical role compared to attention flexibility in the relation between emotion-regulation difficulties and boredom proneness. Future research should further investigate the distinct impacts of attentional awareness and attention flexibility on emotion regulation and boredom proneness.

Table 1. Correlation Matrix of Study Variables

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. DERS	213	2.82	0.84	—										
2. SBPS	216	3.95	1.29	.55**	—									
3. RESS Rumination	218	3.53	0.90	.57**	.30**	—								
4. RESS Engagement	216	2.55	0.80	.17*	.06	.25**	—							
5. RESS Suppression	216	2.89	0.89	.23**	.25**	.10	-.52**	—						
6. RESS Distraction	218	3.02	0.89	.09	.06	.01	-.13	.40**	—					
7. RESS Reappraisal	219	2.71	0.81	-.09	-.002	.09	.23**	-.13	.12	—				
8. MAAS-LO	213	3.62	0.81	.56**	.63**	.38**	-.001	.35**	.17*	-.03	—			
9. ASRS-VI-I	211	3.10	0.66	.47**	.63**	.28**	.20**	.12	.07	.08	.64**	—		
10. ATTC	210	2.41	0.43	-.31**	-.50**	-.21**	.01	-1.0	.11	.08	-.46**	-54**	—	
11. CFS	209	4.32	0.58	-.37**	-.38**	.01	-.03	-.13	.06	.31**	-.13	-.19**	.23**	—
12. MFS	209	2.80	0.73	.43**	.49**	.24**	.113	.15*	.02	.06	.55**	.68**	-.45**	-.22**

Note. DERS = Difficulties in Emotion Regulation Scale, SBPS = Short Boredom Proneness Scale, RESS = Regulation of Emotion Systems Survey, MAAS-LO = Mindful Attention and Awareness Scale, ASRS-VI-I = Adult ADHD Self-Report Scale, ATTC = Attentional Control Scale, CFS = Cognitive Flexibility Scale, MFS = Memory Failures Scale.

*$p < .05$. ** $p < .01$

Table 2. Results of Mediation Analysis: Total, Indirect and Direct Effects

					95% *CI*	
Effect	Path	*β*	B	SE	Lower	Upper
Total	DERS → SBPS	.545	0.837	0.097	0.645	1.029
Indirect	DERS → MAAS-LO → SBPS	.202	0.310	0.075	0.176	0.465
	DERS → ASRS → SBPS	.102	0.157	0.067	0.026	0.289
	DERS → ATTC → SBPS	.044	0.068	0.036	0.006	0.149
	DERS → MFS → SBPS	-.029	-0.045	0.048	-0.142	0.046
	DERS → CFS → SBPS	.081	0.124	0.044	0.052	0.223
Direct	DERS → SBPS	.146	0.224	0.098	0.030	0.418

Note. DERS = Difficulties in Emotion Regulation Scale, SBPS = Short Boredom Proneness Scale, RESS = Regulation of Emotion Systems Survey, MAAS-LO = Mindful Attention and Awareness Scale, ASRS-VI-I = Adult ADHD Self-Report Scale, ATTC = Attentional Control Scale, CFS = Cognitive Flexibility Scale, MFS = Memory Failures Scale.

4.1. Limitations

It is important to address several of the limitations that exist within the present research. Firstly, the reliance on correlational self-report data in a cross-sectional study prevents us from drawing definitive claims of the directionality of the observed relationships and limits the implications that can be drawn from this work. Future research should incorporate experimental methods to better understand how boredom proneness and different aspects of emotion regulation are related. Another limitation is that the present study did not investigate self-control as a potential mediator in the relationship between emotion-regulation difficulties and boredom proneness, despite evidence suggesting that self-control plays a crucial role in both (Bieleke et al., 2021; Gross and Thompson, 2007; Wolff et al., 2022). Self-control is a key component of emotion regulation as it involves the capacity to inhibit impulsive responses and sustain goal-directed behavior, which may help prevent maladaptive reactions to boredom. Future research should consider the role of self-control in this context to gain a deeper understanding of how it influences the link between emotion regulation and boredom proneness. It is also important to note that our sample consisted of a unique population of mostly white female university students and thus may not accurately portray the general population. Despite these limitations, this study represents an important step in drawing direct connections between boredom proneness and emotion-regulation difficulties. Furthermore, this study provides a greater understanding of the cognitive-affective mechanisms of emotion regulation that contribute to the development of boredom proneness and its long-term consequences.

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