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Perfectionism, Mind-wandering, and a Global Pandemic

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Abstract

The current study explored how individual differences in perfectionism cognitions relate to people's perceived changes in their mind-wandering experiences (spontaneous and deliberate) since the start of the COVID-19 pandemic. Individuals ($N_{\text{analyzed}} = 382$) completed the Perfectionism Cognitions Inventory and reported relative judgments of change between their current mind-wandering experiences (measured Summer 2021) and their remembered experiences from before the COVID-19 disruption. Results revealed that as perfectionism cognitions increased, there were greater perceived increases in both spontaneous and deliberate mind-wandering. Moreover, perfectionism cognitions independently predicted spontaneous and deliberate mind-wandering even after accounting for the established shared variance between these two types of mind-wandering. These findings highlight the significance of considering individual differences when assessing the impact of global crises on attention.

Introduction

The COVID-19 pandemic caused a fair degree of disruption in everyday life, some of which involved measurable changes in peoples' mental health and cognitive performance.¹⁻⁴ One important consequence of this global health crisis consisted of changes in people's ability to control their stream of consciousness and pay attention to their primary tasks.⁴⁻⁸ In general, after pandemic-related disruptions began, relative to before, people reported poorer control over the contents of their consciousness^{3,4} and perceived a decline in their attentional experiences.⁶⁻⁹ This is concerning given that poor cognitive control and inattention have been linked to myriad negative outcomes, including performance failures¹⁰⁻¹² and affective dysfunction.^{8,13-14} It, therefore, seems necessary to further explore attentional experiences as a consequence of pandemic disruption to better understand the impact of COVID-19 on our society.

Pandemic-related Changes in Conscious Thought and Attention

There is growing evidence that, following the introduction of pandemic-related interventions, people – especially young adults – reported reductions in their abilities to control their streams of consciousness.³⁻⁴ For example, just before and following the introduction of pandemic-related interventions, Lopez and colleagues measured students' self-reported propensities for experiencing ruminative and intrusive thoughts, as well as overall cognitive failures.³ They analyzed each of these measures as a function of participants' self-reported mindfulness at these two timepoints. While the magnitude of the effect on cognitive failures

depended on participants' levels of mindfulness, results showed that participants generally reported more intrusive thoughts and cognitive failures after, relative to before, the introduction of pandemic-related interventions. These findings suggest that pandemic-related disruptions generally reduced people's ability to control their streams of consciousness.

Supporting these findings, Hicks and colleagues assessed the extent to which pandemic disruptions impacted students' perceptions of their abilities to pay attention while learning.⁶⁻⁸ Within weeks after in-person lectures were canceled and students shifted exclusively to online learning, Hicks and colleagues had participants reflect on, and compare, their *current* experiences of attention to the memory of their attentional states *before* the pandemic interventions were introduced.⁸ Students rated their perceived change in their (1) ability to focus, (2) tendency to experience flow (i.e., deep, effortless concentration), (3) exposure to external distractions, and (4) tendency to mind wander (i.e., engage in off-task thought) while studying. Strikingly, students reported substantial decreases in their abilities to focus and in their tendencies to experience flow, as well as drastic increases in their exposures to external distractions and their tendencies to mind-wander. Clearly, pandemic-related disruptions, including shifting from in-person to online learning, seem to have introduced challenges when it comes to maintaining attentional focus.

Using a similar retrospective methodology, Caron and colleagues analyzed (amongst other things) participants' perceptions of their pandemic-related changes in both spontaneous and deliberate mind-wandering, which primarily refer to unintentional and intentional off-task thoughts, respectively.^{6-7,16} The results showed that students perceived both their spontaneous and deliberate mind-wandering experiences to have increased since the pandemic-related disruptions occurred.⁶⁻⁷ These findings suggest that pandemic-related attentional deficits are not only due to decreases in cognitive control (typically expressed through increases in intrusive thoughts, cognitive failures and/or spontaneous mind-wandering) but also due to increases in deliberate decisions about attentional resource allocation. In light of these findings, it would be useful to consider factors that could influence pandemic-related changes (or perceptions of these changes) in either or both forms of attentional processes (spontaneous and/or deliberate).

Perfectionism and Inattention during COVID-19

A worthwhile factor to consider is perfectionism, a multi-dimensional personality construct existing on a spectrum with tendencies that include setting high standards, personal achievement strivings, concerns over mistakes, as well as fear of failure and evaluation concerns.¹⁷⁻¹⁸

Perfectionism is also commonly known to manifest as a heightened sense of awareness and self-monitoring.^{19,20} In support of this claim, Körner and Schütz report positive associations between perfectionistic achievement strivings and self-tracking,²⁰ presumably reflecting striving for self-improvement. Prior work has also linked heightened perfectionism to self-focused negatively valenced thoughts reflecting perfectionistic themes, such as the need to perform exceptionally and the fear of being evaluated by others.^{19,21-24} These varied streams of consciousness associated with heightened perfectionistic tendencies align with attentional processes like rumination and mind-wandering.²¹⁻²⁵

Most recently, perfectionism has been directly linked to spontaneous and deliberate mind-wandering.²⁵ Caron and colleagues employed the Perfectionism Cognitions Inventory (PCI)¹⁵; a measure that captures how frequently, if at all, individuals experienced automatic thoughts related to perfectionism over the last week.²⁵ The authors correlated the PCI to the Spontaneous and Deliberate Mind-wandering Scales, which contain items assessing unintentional and intentional off-task thoughts. They found that individuals scoring higher on the PCI reported greater tendencies to spontaneously and deliberately mind-wander. These findings contribute to extant cognitive models of perfectionism, including the theoretical foundation of the PCI, which holds that individuals high in perfectionism experience heightened perfectionism cognitions particularly due to the differences they perceive between "their actual self and the ideal self".^{15,19} Even so, more work is needed to properly understand how cognitive models of perfectionism integrate with the broader literature on attentional processes.

The present study seeks to provide a contextual extension of Caron and colleagues.²⁵ The primary aim was to understand how perfectionism cognitions relate to spontaneous and deliberate mind-wandering under circumstances involving widespread disruptions. That is, the COVID-19 pandemic introduced pervasive biopsychosocial and goal-related challenges that might have shifted individuals' streams of consciousness. Given that current cognitive models of perfectionism underscore perceived inconsistencies between one's actual and ideal self, it is possible that covid-related challenges amplified such evaluative and self-focused thought patterns, manifesting as increased bouts of mind-wandering (spontaneous and/or deliberate). To the best of our knowledge, research has yet to explore whether perfectionism cognitions are linked to pandemic-related perceptions of change in spontaneous and deliberate mind-wandering. The present study seeks to address this gap.

Furthermore, there is a need to determine whether the effects of perfectionism cognitions independently explain

each form of mind-wandering or are driven by variance shared between the two. From a theoretical perspective, the relation between perfectionism cognitions and spontaneous mind-wandering, characterized by unintentional intrusive thoughts,²⁶ is relatively straightforward. There is, however, some ambiguity surrounding the link between perfectionism cognitions and deliberate mind-wandering, which reflects intentional decisions to redirect focus elsewhere.²⁶ An explanation for the latter was proposed by Caron and colleagues.²⁵ Herein, perfectionism cognitions produce greater bouts of deliberate mind-wandering because individuals intentionally choose to contemplate perceived differences between their actual and ideal self or goals, and other performance-related off-task thoughts. Establishing independent associations between perfectionism cognitions and each form of mind-wandering would offer greater theoretical clarity and help inform targeted interventions.

Based on the foregoing considerations, it is anticipated that individuals with heightened perfectionism cognitions will report greater perceived changes in both spontaneous and deliberate mind-wandering tendencies when reflecting on, and comparing, their experiences at the time of testing to their experiences before the COVID-19 disruption. Specifically, we hypothesize that, when comparing their mind-wandering experiences at time of testing to their remembered experiences before the COVID-19 disruption, individuals with heightened perfectionism cognitions will report greater perceived increases in both spontaneous and deliberate mind-wandering. In addition, it is anticipated that perfectionism cognitions will uniquely positively predict both spontaneous and deliberate mind-wandering even after accounting for the commonly reported shared variance between these two streams of consciousness.^{16,26-28} In other words, we hypothesize that perfectionism cognitions will uniquely and positively predict spontaneous mind-wandering when controlling for its shared variance with deliberate mind-wandering. We also hypothesize that perfectionism cognitions will uniquely and positively predict deliberate mind-wandering when controlling for its shared variance with spontaneous mind-wandering.

Materials and Methods

Ethical Statement

This study received ethical approval from a University of Waterloo Research Ethics Committee (#43058) and adhered to the Declaration of Helsinki and the Canadian Tri-Council Policy Statement. Prior to participation, participants provided informed consent.

Participants

Four hundred and forty-eight American and Canadian

participants were recruited to participate in this study via Amazon Mechanical Turk. Participants needed to have a 95% approval rating and a minimum of 500 HITs to participate in this study. Participants received \$7.50 USD for partaking in this study. Of the 417 participants who provided demographic information, 272 were men, 144 were women and one individual preferred to self-identify. The age of participants ranged from 20 to 78 years old ($M_{age} = 39.16$, $SD_{age} = 11.05$).

Survey Measures

The present analysis includes measures taken from a larger survey study, relevant to addressing the current research questions (all measures from the survey study are accessible at Open Science Framework: <https://osf.io/nv6m7/>). These measures captured participants' trait-level characteristics of perfectionism, in addition to participants' judgements of how their spontaneous and deliberate mind-wandering experiences have changed relative to the memory of these experiences pre-pandemic. All measures of perceived change employed in this study were adapted from Caron and colleagues.⁶⁻⁷ A detailed description of each measure of interest for this study is provided below.

Bot Check Questions

Three open-ended text entry questions were included within this study to detect the presence of bots and non-serious responders. These questions were originally administered by Boylan and colleagues²⁹ and asked participants to: (1) determine which number is 20 percent of 400, (2) type "bot a not am I" backwards and (3) offer their opinion on whether government-issued identification should be required to vote in local as well as federal elections.

The Perfectionism Cognitions Inventory

The PCI¹⁵ consists of 25 items that assess how frequently participants experience thoughts related to perfectionism. This inventory asks participants to "Please read each thought and indicate how frequently, if at all, the thoughts occurred to you over the last week" and consists of a series of items such as "I can always do better, even if things are almost perfect". Responses range from 0 (not at all) to 4 (all of the time), with higher (summed) responses indicating greater frequency of perfectionism cognitions. Flett and colleagues report good internal consistency ($\alpha = .88$).

Perceived Changes in Deliberate and Spontaneous Mind-wandering

A modified version of Carriere and colleagues' Spontaneous and Deliberate Mind-wandering scales²⁶ were used in this study to capture how participants perceived their experiences of spontaneous and deliberate mind-wandering to have changed relative to their remembered

experiences before the pandemic began. Items on both of these scales began with the preamble, “Relative to your experiences before COVID-19 prevention measures were implemented”.⁶⁻⁷ The statements that followed included “How often do you now feel like you don’t have control over when your mind wanders?” (spontaneous mind-wandering), as well as “How often do you now allow yourself to get absorbed in pleasant fantasy?” (deliberate mind-wandering). Participants were asked to respond to a Likert-type scale ranging from 1 (much less often) to 7 (much more often), with the midpoint (4 – about the same as before), indicating no perceived change in mind-wandering. Prior to data analysis, item responses were recoded so that they ranged between -3 (much less often) and 3 (much more often) with the midpoint set to 0 (about the same as before). These responses were then averaged to obtain a unique score for deliberate and spontaneous mind-wandering. Positive scores correspond to higher rates of perceived change in mind-wandering on each scale, with negative scores representing a reduced rate of mind-wandering.

Results

Data Preprocessing

Data was analyzed using the psych (v 2.2.5), dplyr (v 1.0.9), Hmisc (v 4.7.0) and stats (v 4.2.1) packages in RStudio (Base R v 4.2.1). Review of the three bot check questions did not reveal any suspicious or nonsensical responding behaviours, but 27 participants were excluded for failing to respond to all bot check questions. Twenty-nine participants tried to complete the study a second time using separate participant IDs. Additional identifying information (e.g., IP Addresses) confirmed the likelihood that these participants attempted to complete the study twice. To err on the side of caution, data from the second attempt of each were removed from the analyses. Another 10 participants were removed because they did not respond to most of the measures within the survey. The remaining sample consisted of 382 participants with 249 participants identifying as male, 132 identifying as female and one participant who self-identified. The age of our sample ranged from 20 to 78 years old ($M_{age} = 38.97, SD_{age}$

= 10.89). Finally, to detect multivariate outliers in each analysis of interest, we conducted separate Cook’s distance analyses. This method did not result in the removal of any participants from any of the analyses involving spontaneous or deliberate mind-wandering.

Perceived Pandemic-Related Changes in Spontaneous and Deliberate Mind-Wandering

Two separate Wilcoxon signed-rank tests were conducted comparing participants’ scores on the measures assessing their perceived pandemic-related changes in spontaneous and deliberate mind-wandering against zero (i.e., no perceived changes in experiences). Results revealed that, when asked to reflect on, and compare, their mind-wandering experiences at time of testing to their experiences before COVID-19 disruptions occurred, participants perceived significant increases in both spontaneous ($W = 24746, p = .002, r = -.16$) and deliberate ($W = 31328, p < .001, r = -.37$) mind-wandering.

Correlations

Descriptive statistics and correlations involving participants’ scores on the PCI and their perceived change scores in their tendencies to mind-wander (both spontaneous and deliberate) are presented in Table 1. Results from these correlations indicate that, relative to their mind-wandering experiences before the pandemic restrictions were implemented, participants reporting greater perfectionism cognitions were more likely to report perceiving increases in their experiences of both spontaneous and deliberate mind-wandering.

Hierarchical Regressions

Having established relations between perfectionism cognitions and pandemic-related changes in spontaneous mind-wandering, we sought to determine whether participants’ perfectionism cognitions significantly influenced their relative judgements of change in spontaneous mind-wandering, even after accounting for their relative judgements of change in deliberate mind-wandering. A hierarchical multiple regression model was conducted with participants’ relative judgements of change

Table 1: Descriptive statistics and Zero-order Pearson correlations involving perfectionism cognitions inventory, relative perceived changes in spontaneous and deliberate mind-wandering

Variable	Mean (SD)	Median	Skew	Kurtosis	Perfectionism Cognitions Inventory	Relative Perceived Change in Spontaneous Mind-Wandering	Relative Perceived Change in Deliberate Mind-Wandering
Perfectionism Cognitions Inventory	41.85 (25.58)	45.00	0.07	-1.16	—		
Relative Perceived Change in Spontaneous Mind-Wandering	0.19 (1.25)	0.00	-0.22	0.21	.47***	—	
Relative Perceived Change in Deliberate Mind-Wandering	0.44 (1.17)	0.25	-0.35	0.52	.45***	.71***	—

Note: Descriptive statistics are calculated based on the data from the participants who responded to all measures. $N = 382$. * $p < .05$, ** $p < .01$, *** $p < .001$

in their tendency to deliberately mind-wander in Step 1 and participants' perfectionism cognitions in Step 2. In Step 1 participant's relative judgements of change in deliberate mind-wandering explained a significant amount of variance in their relative judgements of change in spontaneous mind-wandering, $F(1, 380) = 383.10, p < .001, R^2 = .50$. In Step 2 of the model, participants' perfectionism cognitions significantly predicted their relative judgements of change in spontaneous mind-wandering over and above the variance explained by their relative judgements of change in deliberate mind-wandering, $F(2, 379) = 213.80, p < .001, R^2 = .53$. Overall, perfectionism cognitions contributed an additional 2.82% of explained variance to the model. Table 2 presents results from this model. Furthermore, these analyses were rerun with age and gender as covariates, and the results remained relatively unchanged (see Supplementary Materials).

Similar to above, relations between perfectionism cognitions and pandemic-related changes in deliberate mind-wandering were observed prompting a second separate hierarchical multiple regression model to be conducted. This model examined whether perfectionism cognitions predicted perceived changes in deliberate mind-wandering after accounting for relative judgements of change in spontaneous mind-wandering. Participants' relative judgements of change in spontaneous mind-wandering were included in Step 1 and explained a significant amount of variance in their relative judgements

of change in deliberate mind-wandering, $F(1, 380) = 383.10, p < .001, R^2 = .50$. Their scores on the PCI were included in Step 2 of the model and explained an additional 1.70% variance, $F(2, 379) = 204.50, p < .001, R^2 = .52$. In all, the current model's findings suggest that perfectionism cognitions significantly predicted participants' relative judgements of change in deliberate mind-wandering over and above the variance explained by their relative judgements of change in spontaneous mind-wandering. Table 3 presents results from this model. As mentioned above, these analyses were rerun with age and gender as covariates, and the results obtained were essentially unchanged (see Supplementary Materials).

Discussion

Using data from a large survey study, we investigated the link between perfectionism cognitions and perceived pandemic-related changes in two forms of mind-wandering: spontaneous and deliberate. Participants' perfectionism cognitions were captured using the PCI.¹⁹ Their perceived pandemic-related changes in spontaneous and deliberate mind-wandering were measured by asking them to reflect on and compare their current mind-wandering experiences to the memory of these experiences before the implementation of the COVID-19 restrictions. The results revealed three notable outcomes. The first prominent finding was that participants reported perceiving increases in both spontaneous and deliberate mind-wandering, when asked to reflect on and compare

Table 2: Standardized coefficients with p-values for regression analyses involving relative judgements of change in spontaneous mind-wandering tendencies as the dependent variable.

	Predictors	β	95% CI [LLCI, ULCI]	p-value	ΔF	ΔR^2	Δp
Step 1					383.10	.50	.000
	Perceived Pandemic-related Changes in Deliberate Mind-wandering Tendencies	0.71	[0.64, 0.78]	.000			
Step 2					22.70	.03	.000
	Perceived Pandemic-related Changes in Deliberate Mind-wandering Tendencies	0.63	[0.55, 0.70]	.000			
	Perfectionism Cognitions Inventory	0.19	[0.11, 0.26]	.000			

N = 382

Table 3: Standardized coefficients with p-values for regression analyses involving relative judgements of change in Deliberate mind-wandering tendencies as the dependent variable

	Predictors	β	95% CI [LLCI, ULCI]	p-value	ΔF	ΔR^2	Δp
Step 1					383.10	.50	.000
	Perceived Pandemic-related Changes in Spontaneous Mind-wandering Tendencies	0.71	[0.64, 0.78]	.000			
Step 2					13.35	.02	.000
	Perceived Pandemic-related Changes in Spontaneous Mind-wandering Tendencies	0.64	[0.56, 0.72]	.000			
	Perfectionism Cognitions Inventory	0.15	[0.07, 0.23]	.000			

N = 382

their mind-wandering experiences at time of testing to their remembered experiences before the pandemic. These results obtained from a broader North American sample are consistent with prior findings,⁶⁻⁷ and extends the COVID-19 literature,^{6-9,30-34} which has primarily collected retrospective reports from student samples.^{3,6-7,35} The findings highlight the importance of individual differences in pandemic-related experiences.

The second notable finding was that those with heightened perfectionism cognitions reported perceiving greater pandemic-related increases in their spontaneous mind-wandering. This effect held even after controlling for relative judgements of change in deliberate mind-wandering. The third key finding was comparable, those with higher perfectionism cognitions reported perceiving greater pandemic-related increases in their deliberate mind-wandering, which similarly held when relative judgements of change in spontaneous mind-wandering were accounted for. Taken together, these findings reflect a personality profile that may be disproportionately affected by COVID-19 disruptions. This extends prior pandemic literature, which has largely focused on general shifts in attention and well-being.³⁻⁸

The present study further expands the list of documented outcomes of perfectionism, which has included greater academic burnout,³⁶ emotion dysregulation,³⁷ goal orientation and academic achievement,³⁸ to name a few. Building on these prior findings, our study revealed that when faced with a challenge, individuals with heightened perfectionistic characteristics perceive increases in their levels of mind-wandering. Why might this be the case? One possibility mentioned earlier is that those with heightened perfectionism cognitions may be more likely to mind-wander about discrepancies between their actual and ideal selves/goals,^{15,19} with these discrepancies being exacerbated by pandemic-related disruptions. An alternative explanation, however, is that individuals higher in perfectionism might report skewed perceptions of their pandemic-related changes in mind-wandering. In this case, those higher in perfectionism might have experienced more irrational thinking³⁹ and thus inadvertently exaggerated the extent to which they perceived their mind-wandering to have changed since the introduction of the pandemic-related restrictions. While the present study cannot adjudicate between these two explanations, it is noteworthy to mention that, regardless of their veracity, people's perceptions are considered true by the individuals reporting them. Moreover, research suggests that people's perceptions can impact their appraisals of future situations, their self-concepts and, in some cases, objective outcomes including academic success.⁴⁰⁻⁴¹

Beyond its theoretical contributions, this study is relevant to the psycho-social management of large-scale

crises. Heightened perfectionism is closely linked to exhaustion,⁴² burnout,^{36,43} worsened health outcomes,⁴⁴ and greater emotional distress.⁴⁵ Yet, perfectionism is not simply a dispositional tendency. It is also a socially reinforced characteristic shaped by environmental factors including cultural and institutional norms, economic insecurity, as well as social comparison.⁴⁶ Circumstances of prolonged crises, uncertainty, and isolation can trigger attempts to regain control over one's situation. This response can, in turn, exacerbate self-evaluative narratives that reinforce bouts of off-task thoughts, amplify emotional distress (e.g., anxiety, depression, suicidal ideation and self-harm), and deplete cognitive resources required for maintaining daily function and well-being.⁴⁵ In this manner, perfectionism poses a concern not only for individuals prone to these tendencies, but also for those in direct contact with these individuals, and the general society within which these individuals function.⁴⁶ Considering the foregoing, response to future crises might benefit from multi-level interventions.

At a cultural level, public health messaging could redirect focus away from a performance-based identity culture and instead focus on supporting community, resilience and unconditional self-worth. This approach might also help lessen critical narratives and evaluative thoughts about oneself and others,⁴⁷ while potentially nurturing greater communal connection, open communication and self-compassion.^{47,48} Interventions at the institutional and individual levels could support these efforts through both scalable and personalized psychoeducational programs. These programs could incorporate therapeutic approaches found to mitigate perfectionistic tendencies and support well-being.⁴⁹ One pertinent approach is acceptance and commitment therapy (ACT),⁵⁰ which uses acceptance and mindfulness techniques to promote non-judgemental awareness of internal experiences (e.g., thoughts, emotions and beliefs). ACT might be particularly beneficial during periods of uncertainty, such as global crises, as it encourages individuals to accept internal experiences beyond their control, distance themselves from negative thoughts, develop kindness towards themselves, identify values consistent with their true selves and develop patterns of action that align with those values.⁵¹ Importantly, ACT has been proven to be effective in both traditional in-person and digital therapeutic formats.⁵² Hence, ACT-based resources could be delivered digitally through audio, visual and interactive platforms. Digital interventions could be modelled after Zarling and colleagues' web-assisted ACT-based program, which aimed to reduce loneliness in older individuals.⁵¹ While the current program targets loneliness and isolation, its eight modules could be adapted or extended to include psychoeducation on perfectionism, attention and emotion dysregulation.

Although not a direct substitute for face-to-face support, digital interventions might be particularly valuable during crises, when circumstances necessitate scalable alternatives to traditional therapeutic approaches. Outside of such contexts, digital interventions could help promote long-term psychological development, and reduce barriers to treatment, including accessibility, socioeconomic constraints, geographic isolation, and stigma.⁵¹ Finally, digital distribution could also help inform the development of user-friendly interfaces and educational tools that support individuals with limited experience using digital technology.

While these findings offer promising implications, certain methodological considerations must also be acknowledged. To that end, a noteworthy limitation of the present study involves the temporal reference point used to capture participants' relative judgements of change in their mind-wandering. Participants were asked to compare their mind-wandering experiences at time of testing to their experiences before COVID-19 prevention measures were implemented. While these reference points were intended to be widely recognizable benchmarks, the timing and nature of these COVID-19 measures varied across regions; some locations implemented few to no measures, while others implemented a wide-range of measures. Since participants were sampled from a geographically diverse pool, their perceived changes in mind-wandering might be anchored to a personally defined pandemic timepoint rather than a distinct universal reference point. Nevertheless, the observed pattern of results aligns with prior work from three geographically constrained samples sharing common restriction timelines.⁶⁻⁸ The consistency across these studies suggests that the current participants relied on a meaningful "before/after" pandemic schema when judging their mind-wandering experiences. Hence, regardless of the exact (or absolute) timepoint of each participant's reference marker, participants distinctly report a perceived change in their experiences.

Another important consideration is that this study focused on perfectionism cognitions, capturing the frequency of automatic perfectionistic thoughts via the PCI. While this more state-like measure might limit generalizability to the broader trait,^{17,53} state-level cognitions are to some extent expressions of the stable disposition of perfectionism.¹⁵ Consequently, people who report experiencing more frequent perfectionistic cognitions generally display higher trait-level perfectionism.^{15,19} Within the current study, the PCI served a key purpose by capturing perfectionistic cognitions likely to influence situational experiences. Since perfectionism cognitions are linked to psychological distress and deficits in cognitive self-management, the PCI is well-suited for investigating individual differences in cognition under

stressful circumstances, including mind-wandering during COVID-19.¹⁹ Along these lines, future studies might seek to incorporate both state- and trait-specific measures of perfectionism to comprehensively explore how perfectionism influences cognitive and emotional responses to real-world crises. Altogether, these findings provide a meaningful contribution to understanding the complex nature of personality and cognition during times of crises, advancing research and interventions that promote well-being in the face of challenge.

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Declarations of Interest

None

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Supplementary Materials

Hierarchical Regressions

A hierarchical multiple regression model (model S1) was conducted with participants' socio-demographic information in Step 1, their relative judgements of change in their tendency to deliberately mind-wander in Step 2 and their perfectionism cognitions in Step 3. In Step 1, participant's age and gender explained a significant amount of variance in their relative judgements of change in spontaneous mind-wandering, $F(2, 378) = 7.10, p < .001, R^2 = .04$. In Step 2, participants' relative judgements of change in deliberate mind-wandering explained 46.74% additional variance in their relative judgements of change in spontaneous mind-wandering, $F(3, 377) = 127.50, p < .001, R^2 = .50$. In Step 3 of the model, participants' perfectionism cognitions significantly predicted their relative judgements of change in spontaneous mind-wandering over and above the variance explained by their relative judgements of change in deliberate mind-wandering, $F(4, 376) = 105.70, p < .001, R^2 = .53$. Overall, perfectionism cognitions contributed an additional 2.57% of explained variance to the model. Table S1 presents results from this model.

Table S1: Standardized coefficients with p-values for regression analyses involving relative judgements of change in spontaneous mind-wandering tendencies as the dependent variable.

	Predictors	β	95% CI [LLCI, ULCI]	p-value	ΔF	ΔR^2	Δp
Step 1					7.10	.04	.000
	Age	-0.19	[-0.29, -0.09]	.000			
	Gender (Female - Male)	0.10	[-0.12, 0.31]	.375			
Step 2					373.37	.47	.000
	Age	-0.08	[-0.15, -0.00]	.040			
	Gender (Female - Male)	0.04	[-0.11, 0.20]	.576			
	Perceived Pandemic-related Changes in Deliberate Mind-wandering Tendencies	0.69	[0.62, 0.76]	.000			
Step 3					20.51	.03	.000
	Age	-0.05	[-0.12, 0.02]	.179			
	Gender (Female - Male)	0.05	[-0.10, 0.19]	.547			
	Perceived Pandemic-related Changes in Deliberate Mind-wandering Tendencies	0.62	[0.54, 0.69]	.000			
	Perfectionism Cognitions Inventory	0.18	[0.10, 0.26]	.000			

$N = 381$. Regression coefficients reflect comparisons between Female and Male participants, with Male serving as the reference group. Since only one participant selected "self-identify", there was not a large enough sample to constitute a separate group and therefore this participant was excluded from the current regression analysis.

A second hierarchical regression model (model S2) examined whether perfectionism cognitions predicted perceived changes in deliberate mind-wandering after accounting for socio-demographic variables, as well as relative judgements of change in spontaneous mind-wandering. Participants' socio-demographics were included in Step 1. Socio-demographics explained a significant amount of variance in their relative judgements of change in deliberate mind-wandering, $F(2, 378) = 5.29, p = .005, R^2 = .03$. Their relative judgements of change in spontaneous mind-wandering were included in Step 2 and explained 47.18% additional variance in their relative judgements of change in deliberate mind-wandering, $F(3, 377) = 125.20, p < .001, R^2 = .50$. Finally, participants' scores on the Perfectionism Cognitions Inventory were included in Step 3 and explained an additional 1.63% variance, $F(4, 376) = 99.95, p < .001, R^2 = .52$. In all, the current model's findings suggest that perfectionism cognitions significantly predicted participants' relative judgements of change in deliberate mind-wandering over and above the variance explained by participants' age and gender, as well as their relative judgements of change in spontaneous mind-wandering. Table S2 presents results from model S2.

Table S2: Standardized coefficients with p-values for regression analyses involving relative judgements of change in deliberate mind-wandering tendencies as the dependent variable

	Predictors	β	95% CI [LLCI, ULCI]	p-value	ΔF	ΔR^2	Δp
Step 1					5.29	.03	.005
	Age	-0.17	[-0.27, -0.07]	.001			
	Gender (Female - Male)	0.08	[-0.14, 0.29]	.486			
Step 2					366.01	.47	.000
	Age	-0.03	[-0.11, 0.04]	.391			
	Gender (Female - Male)	0.01	[-0.14, 0.16]	.913			
	Perceived Pandemic-related Changes in Spontaneous Mind-wandering Tendencies	0.70	[0.63, 0.77]	.000			
Step 3					12.69	.02	.000
	Age	-0.01	[-0.09, 0.06]	.737			
	Gender (Female - Male)	0.01	[-0.14, 0.16]	.879			
	Perceived Pandemic-related Changes in Spontaneous Mind-wandering Tendencies	0.64	[0.56, 0.72]	.000			
	Perfectionism Cognitions Inventory	0.15	[0.07, 0.23]	.000			

N = 381. Regression coefficients reflect comparisons between Female and Male participants, with Male serving as the reference group. Since only one participant selected "self-identify", there was not a large enough sample to constitute a separate group and therefore this participant was excluded from the current regression analysis.