

Making Sense of a Pandemic: Mindsets Influence Emotions, Behaviors, Health, and Wellbeing During the COVID-19 Pandemic

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**Making Sense of a Pandemic: Mindsets Influence Emotions, Behaviors, Health, and
Wellbeing During the COVID-19 Pandemic**

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Abstract

1
2 As the SARS-COV-2 virus spread across the world in the early months of 2020, people
3 sought to make sense of the complex and rapidly evolving situation. This longitudinal study of
4 N=5,365 Americans assessed three mindsets people formed about the COVID-19 pandemic and
5 what it meant for their lives: ‘the pandemic is a catastrophe’, ‘the pandemic is manageable’ and
6 ‘the pandemic can be an opportunity’. In line with our pre-registered hypotheses, these mindsets
7 were associated with a unique and largely self-fulfilling pattern of emotions (positive, negative),
8 behaviors (healthy, unhealthy, and compliance with CDC guidelines), experiences
9 (connection/growth, isolation/meaninglessness) and wellbeing (physical health, mental health,
10 quality of life). Moreover, mindsets formed in the first week of the pandemic predicted quality of
11 life 6 months later, an effect that was mediated by emotions and behaviors.

12 *Keywords:* COVID-19, Mindsets, Quality of Life, Health

13

MAKING SENSE OF A PANDEMIC

14 On March 11th, 2020, in response to the outbreak of the novel coronavirus (COVID-19),
15 the World Health Organization declared a global pandemic (World Health Organization, 2020).
16 Beset by uncertainty, people sought to make sense of this strange and unpredictable new
17 situation. Many wondered what the pandemic would mean for their own lives and for the future
18 of the world. Is this pandemic a catastrophe or is it manageable? Could it even be an opportunity
19 for societal change?

20 Even under normal circumstances, the world is complex and uncertain. To manage the
21 complexity and uncertainty of an ever-changing environment, we adopt mindsets—simplified
22 assumptions about the nature and workings of things in the world ^{1,2}. The assumptions we make
23 are not necessarily true or false, right or wrong. Rather, they organize and simplify complex
24 information in ways that create meaning (e.g., why is this happening?), make predictions (e.g.,
25 what will happen next?), and motivate action (e.g., what should I do?).

26 As a result, the mindsets we adopt can have a meaningful impact on our lives because
27 they shape what we feel, experience, and do ². For instance, adopting the mindset that “stress is
28 enhancing” (as opposed to “stress is debilitating”) can increase positive affect, cognitive
29 flexibility, and the release of growth promoting anabolic hormones in response to a stressor ³.
30 Similarly, people with more positive mindsets about the nature of aging (e.g., “aging is typified
31 by wisdom”) engage in more preventative health behaviors, have fewer coronary events, and
32 even have longer lifespans than those with less adaptive mindsets (e.g., “aging is an inevitable
33 decline”) ⁴.

34 Here we describe the extent to which people adopted the mindsets that the COVID-19
35 pandemic was ‘a catastrophe,’ ‘manageable’ or ‘an opportunity’. Moreover, we explored how
36 these mindsets influenced how they felt (positive and negative affect), how they behaved

MAKING SENSE OF A PANDEMIC

37 (healthy behaviors, unhealthy behaviors, and compliance with CDC guidelines), the types of
 38 experiences they had (isolation/meaningless, growth/connection), and how well they reported
 39 themselves to be (physical health, mental health, and quality of life) across the first 6 months of
 40 the pandemic. See Figure 1 and the measures section for additional information on the individual
 41 items and the timepoints of assessment.

42 We predicted that endorsement of the mindset that ‘the pandemic can be an opportunity’
 43 would be associated with more adaptive outcomes. People who adopted this mindset would feel
 44 more positive emotions, engage in more health promoting behaviors, seek out more experiences
 45 of growth/connection, and report fewer experiences of isolation/meaninglessness. Conversely,

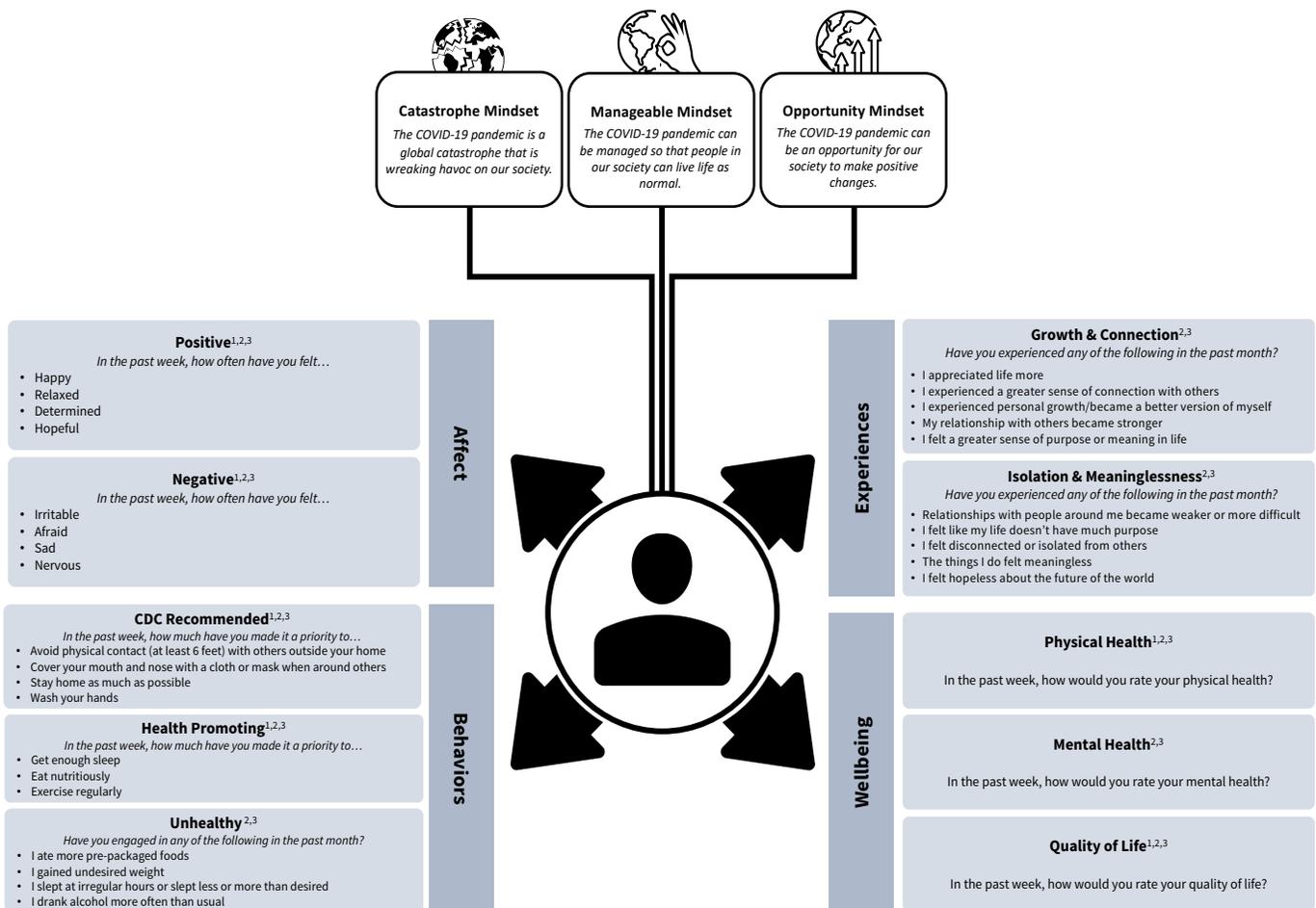


Figure 1. Outcome measures included in analyses. Superscripts indicate timepoints of assessment. T1 survey was conducted March 11th – 21st, 2020; T2 survey was conducted April 26th – May 5th, 2020; T3 survey was conducted September 16th – 27th, 2020.

MAKING SENSE OF A PANDEMIC

46 we predicted that endorsement of the mindset that ‘the pandemic is a catastrophe’ would be
47 associated with maladaptive outcomes as the pandemic progressed. These individuals would feel
48 less positive and more negative emotions, engage in fewer health promoting and more unhealthy
49 behaviors, seek out fewer experiences of growth/connection, and report a greater number of
50 experiences of isolation/meaninglessness.

51 Our hypotheses regarding the opportunity and catastrophe mindset were largely based on
52 existing research on illness mindsets ⁵ and stress mindsets ⁶, however, we had relatively little
53 previous literature to go on when making predictions about the manageable mindset. On the one
54 hand, the mindset that a chronic illness is manageable is generally associated with better mental
55 and physical health ⁵. However, in the context of a pandemic, viewing it through this lens may
56 lead people to downplay the risks of the virus and eschew the recommended safety guidelines.
57 Therefore, we hypothesized that there would be an association between this mindset and the
58 outcomes described above but did not make predictions about the direction of the associations or
59 whether the manageable mindset would be broadly adaptive or maladaptive.

60 For all three mindsets, we predicted relationships at the between-subjects level (e.g., on
61 average, mindsets would relate to the four categories of outcomes described above) as well as at
62 the within-subjects level (e.g., changes in an individual’s endorsement of a particular mindset
63 would relate to changes in outcomes overtime). We also predicted a specific pattern of how these
64 responses would unfold overtime: mindsets formed early in the pandemic would influence
65 peoples’ emotions and health related behaviors 6 weeks later, which would, in turn, influence
66 wellbeing 6 months into the pandemic.

67 Detailed hypotheses (including the directionality of the effects), our broader theoretical
68 model, a description of our measures, and our analytic approach were pre-registered on OSF

69 (see: <https://osf.io/wufr9/>).

70

71

Results

72 Sample Demographics

73 Our final sample included N=5,365 participants who completed all three surveys.
74 Participants came from all fifty states and ranged in age from 18-89 years (mean = 45.58, SD =
75 14.34). The sample was 81% female, 89% white, and 80% indicated educational attainment of at
76 least a high school degree. See Methods for complete details on participants and recruitment.

77

78 What Mindsets Do People Endorse?

79 Mean agreement with the opportunity, manageable and catastrophe mindsets at baseline
80 (T1), 6-weeks into the pandemic (T2) and 6 months into the pandemic (T3) are illustrated in
81 Figure 2a. In the first week of the pandemic, 65.75% of people endorsed a catastrophe mindset
82 (as indicated by responding 'agree' or 'strongly agree') while only 13.77% endorsed the
83 manageable mindset. More than three quarters of participants (76.57%) endorsed the mindset
84 that the pandemic can be an opportunity. As the pandemic progressed, the manageable mindset
85 increased whereas the catastrophe and opportunity mindsets remained relatively consistent, with
86 only slight variations occurring between timepoints. Figure 2 details the changes in mindsets as
87 well as the longitudinal changes in emotions (Figure 2b), experiences (Figure 2c), behaviors
88 (Figure 2d), and wellbeing (Figure 2e) across the three time periods collected in this study. On
89 average and in line with other research ⁷, wellbeing declined during the first 6 months of the
90 pandemic.

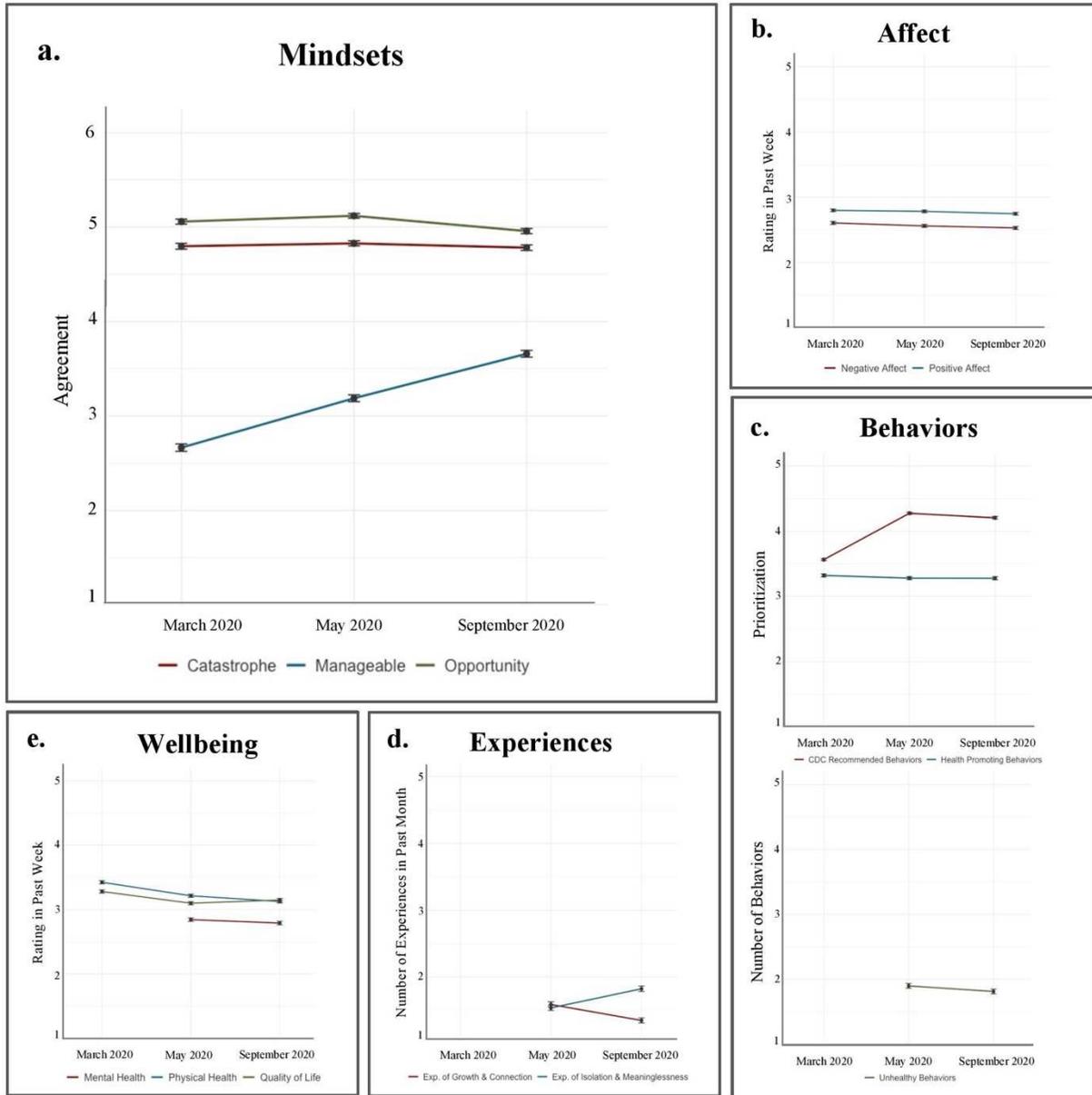


Figure 2. Changes in (a) mindsets, (b) affect, (c) behaviors, (d) experiences, and (e) wellbeing over the first six months of the COVID-19 pandemic. Error bars represent 95% confidence intervals.

91

92

Correlational analyses at T1 revealed that peoples’ endorsement of the manageable

93

mindset and catastrophe mindset were negatively correlated ($r = -0.25$; $p < 0.001$). The

94

opportunity mindset was not significantly correlated with the manageable mindset ($r = -0.03$;

MAKING SENSE OF A PANDEMIC

95 $p=0.054$) but was positively correlated with the catastrophe mindset ($r = 0.11$; $p<0.001$).
96 Correlations remained relatively stable over time (see Supplemental Table S1). None of the
97 correlations were large, which is in line with previous research suggesting these mindsets are
98 independent and not overlapping constructs ⁵.

99 Cross sectional correlations between mindsets, emotions, experiences, behaviors, and
100 wellbeing are included in the supplemental materials (Tables S2-S4).

101

102 **Associations Between Mindsets and Emotions, Experiences, Behaviors, & Wellbeing**

103 To test our pre-registered hypotheses that mindsets cause self-fulfilling changes in
104 emotions, experiences, behaviors, and wellbeing, we ran a series of mixed effects models to
105 examine between- and within- subject effects of each mindset on the outcomes listed above.
106 Between-subjects analyses explore how differences in mindsets between people relate to
107 differences in outcomes on average, collapsed over time. Within-subjects analyses provide
108 greater depth to these findings by indicating how change in an individual's mindset corresponds
109 with change in outcomes at any given time. All models controlled for age, race, gender,
110 education, and political affiliation. Due to skewness in the distribution of agreement with the
111 mindset items, these three items were log transformed prior to analysis. Complete results for both
112 between- and within- subjects effects of mindsets on outcomes are reported in Table 1.

113 As predicted, both between- and within- subjects analyses suggested that the 'pandemic
114 is a catastrophe' mindset was generally associated with a maladaptive pattern of emotions,
115 experiences, behaviors, and wellbeing. More specifically, between-subjects analyses revealed
116 that greater agreement with the catastrophe mindset related to less positive affect, greater
117 negative affect, more frequent unhealthy behaviors, more experiences of

MAKING SENSE OF A PANDEMIC

Table 1. Results of Mixed Effects Models

	Catastrophe Mindset				Manageable Mindset				Opportunity Mindset			
	Between Effects		Within Effects		Between Effects		Within Effects		Between Effects		Within Effects	
	<i>Std. β</i>	<i>95% CI</i>										
Emotions												
Positive	-0.15***	-0.17 – -0.13	-0.05***	-0.06 – -0.04	0.15***	0.13 – 0.17	0.03***	0.02 – 0.04	0.16***	0.14 – 0.18	0.04***	0.03 – 0.05
Negative	0.23***	0.21 – 0.25	0.07***	0.06 – 0.08	-0.14***	-0.17 – -0.12	-0.03***	-0.04 – -0.02	-0.01	-0.04 – 0.01	-0.01	-0.02 – 0.00
Experiences												
Growth & Connection	-0.01	-0.03 – 0.02	-0.02	-0.04 – 0.01	-0.03	-0.06 – 0.00	-0.03*	-0.06 – 0.00	0.27***	0.24 – 0.29	0.07***	0.04 – 0.09
Isolation & Meaninglessness	0.15***	0.13 – 0.18	0.02	-0.00 – 0.05	-0.08***	-0.12 – -0.06	0.02	-0.00 – 0.05	-0.09***	-0.12 – -0.06	-0.04**	-0.07 – 0.02
Behaviors												
Unhealthy Behaviors	0.12***	0.10 – 0.15	0.05***	0.02 – 0.07	-0.07***	-0.09 – -0.04	0.03	0.00 – 0.05	-0.02	-0.05 – 0.00	0.00	-0.02 – 0.03
Healthy Behaviors	-0.02	-0.04 – 0.00	-0.01	-0.02 – 0.00	0.04**	0.02 – 0.06	0.01	-0.00 – 0.02	0.11***	0.09 – 0.13	0.02***	0.01 – 0.03
CDC Behaviors	0.21***	0.10 – 0.23	0.05***	0.04 – 0.06	-0.23***	-0.25 – -0.21	-0.05***	-0.06 – -0.04	0.19***	0.17 – 0.21	0.04***	0.03 – 0.05
Health & Wellbeing												
Physical Health	-0.08***	-0.10 – -0.06	-0.02***	-0.03 – -0.01	0.13***	0.10 – 0.15	0.01	-0.00 – 0.02	0.03*	0.01 – 0.05	0.01	0.00 – 0.03
Mental Health	-0.14***	-0.17 – -0.12	-0.01	-0.04 – 0.01	0.10***	0.08 – 0.13	-0.02	-0.04 – 0.01	0.07***	0.04 – 0.10	0.04**	0.01 – 0.06
Quality of Life	-0.14***	-0.16 – -0.12	-0.05***	-0.06 – -0.04	0.11***	0.09 – 0.14	0.01	-0.01 – 0.02	0.12***	0.10 – 0.14	0.03***	0.02 – 0.04

Table 1. Results of mixed effects models. Standardized betas and 95% CI are reported for between-subjects effects and within-subjects effects for each of the three mindsets. Mindsets were log transformed prior to analyses. All mixed effects models controlled for age, race, gender, education attainment, and political affiliation. Asterisks indicate level of significance such that * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$. Significant findings at the $p \leq 0.01$ level are bolded.

118 isolation/meaninglessness, worse physical/mental health, and lower quality of life. Within-
 119 subjects analyses mirrored these patterns, suggesting that an increase in agreement with the
 120 catastrophe mindset was associated with a corresponding decrease in positive affect, physical
 121 health, and quality of life, and an increase in negative affect, and unhealthy behaviors. Counter to
 122 our predictions, we did not observe a significant association between the catastrophe mindset and
 123 experiences of growth/connection, nor were changes in the catastrophe mindset associated with
 124 corresponding changes in experiences of isolation/meaninglessness or mental health.

125 Also as predicted, the mindset that ‘the pandemic is an opportunity’ was associated with
 126 an adaptive pattern of emotions, experiences, behaviors, and wellbeing. Between-subjects
 127 analyses indicated that greater agreement with the opportunity mindset was associated with
 128 greater positive affect, fewer experiences of isolation/meaninglessness, more experiences of

MAKING SENSE OF A PANDEMIC

129 growth/connection, better mental health, and better quality of life. Within-subjects analyses
130 mirrored these results in all cases, although the associations were weaker in magnitude. Counter
131 to our predictions, the opportunity mindset was not significantly associated with a reduction in
132 unhealthy behaviors, and the effect on physical health was negligible (and not significant at the
133 $p < .01$ level). As predicted, the opportunity mindset was not associated with negative affect.

134 Exploratory analyses of the mindset that ‘the pandemic is manageable’ suggested that,
135 between subjects, higher endorsement of this mindset was associated with greater positive affect,
136 less negative affect, fewer experiences of isolation/meaninglessness, more healthy behaviors,
137 fewer unhealthy behaviors, and better wellbeing (physical health, mental health, and quality of
138 life). Only the association with affect was significant ($p < 0.001$) at the within-subjects level.

139 Exploratory analyses of the association between mindsets and compliance with CDC
140 guidelines suggested that both the catastrophe and the opportunity mindset were significantly
141 associated with greater compliance with CDC recommended behaviors. Conversely, we observed
142 significant negative between- and within- subjects effects of the manageable mindset on
143 compliance with CDC recommended behaviors.

144

145 **How do Mindsets at the Start of the Pandemic Impact Quality of Life 6 Months Later?**

146 To test our theoretical model that mindsets lead to differences in affect and behavior,
147 which, in turn, influence more global assessments of health and wellbeing, we explored three
148 multiple mediation models. Each model included the mindset measured at T1 as the independent
149 variable and quality of life measured at T3 as the outcome variable. Four mediators, each
150 measured at T2, were included: negative affect, positive affect, healthy behaviors, and unhealthy
151 behaviors. Engagement in CDC recommended behaviors were not included in mediation models

172 their self-fulfilling impact on peoples' emotions, behaviors, health, and wellbeing.

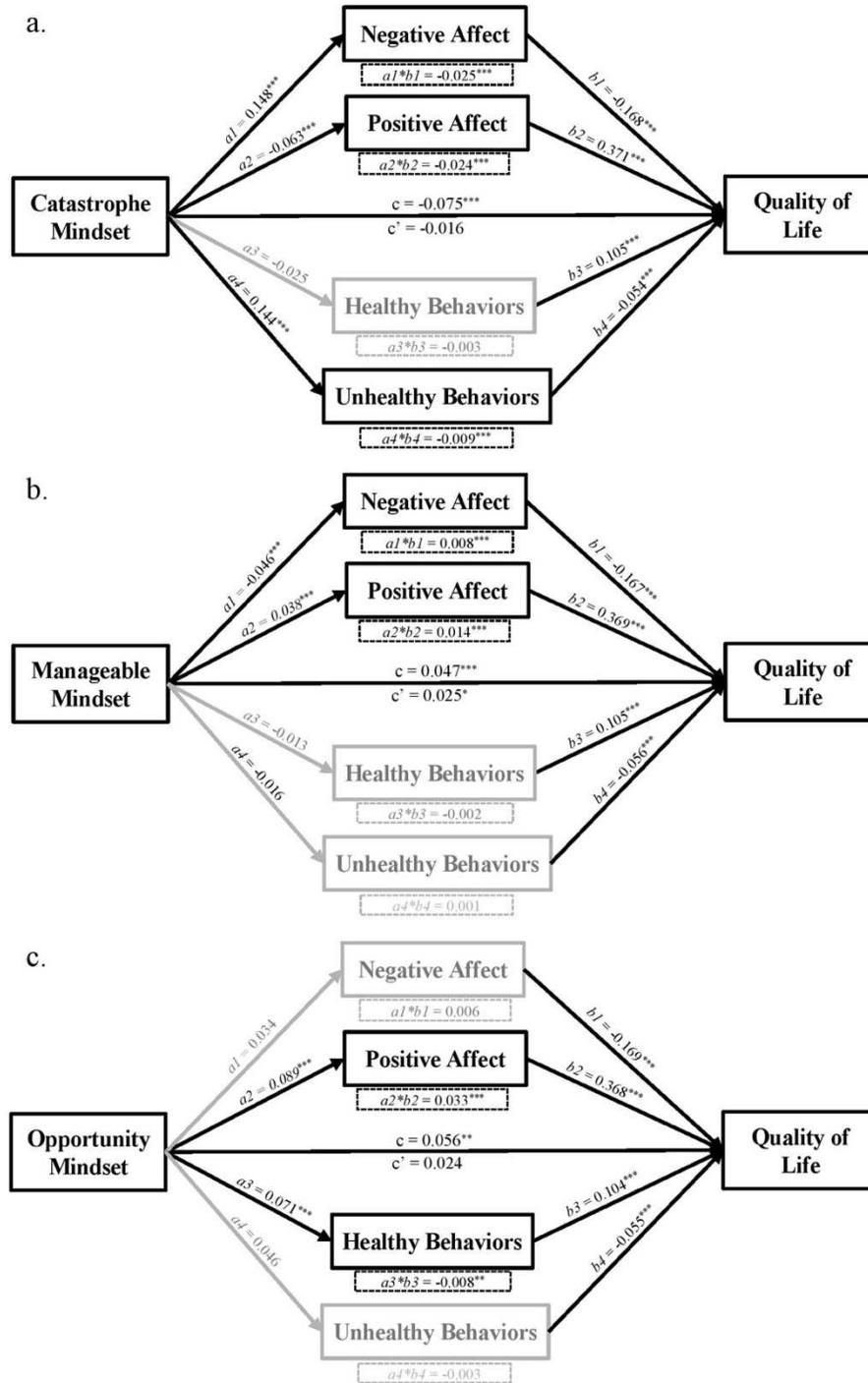


Figure 3. Mediation models outlining the mechanisms through which the (a) catastrophe mindset, (b) manageable mindset, and (c) opportunity mindset influence quality of life. Mindsets were measured at T1, affective and behavioral mediators were measured at T2, and quality of life was measured at T3. Standardized estimates of direct and indirect effects are listed. Non-significant effects are indicated by faded text and gray arrows. Asterisks indicate level of significant such that * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$.

MAKING SENSE OF A PANDEMIC

173 We assessed mindsets about the COVID-19 pandemic at three timepoints: March, May,
174 and September of 2020. At the start of the pandemic, the catastrophe and opportunity mindsets
175 were both widely adopted, however they oriented people to two very different realities. Those
176 who held the mindset that the pandemic was a catastrophe were more likely to experience higher
177 levels of negative affect, lower levels of positive affect, greater engagement in unhealthy
178 behaviors, more frequent experiences of isolation/meaninglessness, and report worse wellbeing.
179 Conversely, agreement with the opportunity mindset related to greater positive affect, more
180 experiences of growth/connection, fewer experiences of isolation/meaninglessness, and better
181 wellbeing. Relatively few people initially adopted the mindset that the COVID-19 pandemic was
182 manageable; however, agreement with this mindset increased steadily over time. The
183 manageable mindset related to several individually adaptive outcomes, including engagement in
184 fewer unhealthy behaviors, greater positive affect, less negative affect, and greater wellbeing;
185 however, it also strongly predicted lower prioritization of CDC recommended behaviors.

186 The between- and within-subjects effects of mindsets on affect, behavior, experiences,
187 and wellbeing suggest that mindsets about the pandemic influenced people in self-fulfilling
188 ways. The longitudinal multiple mediation analyses add to this finding by demonstrating a
189 potential mechanism through which some of these effects operate. We found that mindsets at the
190 start of the pandemic predicted quality of life 6 months later through their impact on affective
191 and behavioral processes. This supports our theoretical model that mindsets influence wellbeing
192 outcomes through affective and behavioral pathways; in particular, different mindsets shape
193 these mediators in slightly different ways, which is in line with existing research on stress
194 mindsets³.

MAKING SENSE OF A PANDEMIC

195 While the mindsets people adopted in response to the COVID-19 pandemic were
196 impactful, they were not necessarily a full or accurate reflection of reality. The data collected
197 during the first week of the pandemic make this clear. People were likely reporting their
198 mindsets about the pandemic before they fully understood the threat posed by the virus or
199 experienced the true impact of the pandemic on their daily lives. In other words, people were not
200 necessarily reporting that the pandemic was a catastrophe, manageable, or an opportunity
201 because that was a reflection of their actual experience with the pandemic. But the way we
202 organize and simplify complex information can critically shape our lives by operating in self-
203 fulfilling ways. This was demonstrated by the fact that these early mindsets predicted important
204 outcomes 6 months later.

205 That said, just because mindsets are not a direct reflection of reality does not mean they
206 are a rejection of reality. A novel virus *was* rapidly spreading around the globe and people had to
207 make sense of the evolving situation and plan a course of action. The data from this study clearly
208 indicate that mindsets shaped COVID-19 relevant behaviors people engaged in. Those who
209 viewed the pandemic through the lens of the catastrophe mindset took the situation more
210 seriously; they stayed home, washed their hands, and (when it was recommended) started
211 wearing a mask. Interestingly, this appeared to be at the expense of other aspects of their
212 wellbeing. This contrasts with those who adopted the manageable mindset. Despite maintaining
213 high levels of wellbeing during the pandemic, people who adopted this mindset were much less
214 likely to prioritize these CDC recommendations. As such, endorsement of this mindset may
215 reflect an attempt to deny the reality of the global pandemic and a refusal to engage with it in a
216 socially responsible way. Over time, as people adjusted to the changes necessitated by the
217 pandemic and it may have become more adaptive.

MAKING SENSE OF A PANDEMIC

218 The opportunity mindset seemed to provide the best of both worldviews; those who
219 adopted this mindset staved off major declines in wellbeing without subverting the behaviors
220 necessary to engage with the pandemic in a socially responsible way. Interestingly, however, this
221 mindset did not appear to boost self-reported physical health or reduce negative affect. The latter
222 effect is consistent with research on stress mindsets, which suggests a stress-can-be-enhancing
223 mindset—similar to the mindset that the pandemic can be an opportunity – relates to increased
224 positive affect but does not necessarily drive people to avoid negative experiences ³.

225 Contrary to previous research on the role of these mindsets in chronic illness ⁵, we
226 observed a positive correlation between the catastrophe and opportunity mindsets in this context.
227 What do we make of this? Perhaps some acknowledgement of a situation as a catastrophe is
228 necessary to recognize it as an opportunity. Perhaps a more useful mindset to explore in future
229 research is something to the accord of ‘catastrophes can present opportunities for positive
230 change’. Indeed, people can likely hold multiple, even opposing, mindsets simultaneously.
231 Broadly, it suggests that seeing this pandemic as an opportunity does not necessarily require an
232 individual to overlook or deny the negative aspects of this unique and challenging situation. This
233 is one of the benefits of mindsets: they help us simplify and organize information about a
234 complex concept while allowing room for more nuance than a good vs. bad or right vs. wrong
235 judgement.

236 There are several limitations of this study that should be considered when interpreting the
237 results. First, this sample is not representative of the United States as a whole. Therefore, we do
238 not intend to make claims about mindsets at a population level, but rather to explore the
239 relationships between mindsets and important outcomes within this sample. Relatedly, our
240 sample is disproportionately female, white, and educated. This is likely due to our social media-

MAKING SENSE OF A PANDEMIC

241 based recruitment strategy. Advertisements on social media platforms are selectively displayed
242 to individuals deemed likely to engage with the content. While this allowed us to quickly survey
243 a large sample of participants, it came at the cost of a truly representative sample in terms of
244 gender, race, and socioeconomic status. Additional research is needed to explore whether these
245 patterns hold in more diverse/representative samples.

246 Second, we lost to many participants to retention over the course of this 6-month long
247 study. This is likely due to our recruitment strategy, the method of follow-up (e.g., via email),
248 and the unique individual experiences of participants during the pandemic that took priority over
249 completing our follow-up survey. Analyses of baseline variables across retention rate suggest
250 that differences in demographic variables, individual differences, mindsets, and outcomes, were
251 significant at the $p < 0.05$ level, but not large in magnitude. We have included additional details
252 on these differences in the supplemental materials.

253 Third, we acknowledge that mindsets are just one piece of the puzzle. We do not wish to
254 discount the many structural or situational variables (e.g., access and affordability of healthcare)
255 that can impact health and wellbeing during a pandemic. We also do not wish to suggest that
256 mindsets are a substitute for proper mental health care for those who need it during this
257 challenging time.

258 Fourth, we aim to describe these mindsets, not prescribe them. While some mindsets may
259 be more useful than others for specific goals, there isn't necessarily a right or wrong mindset for
260 people to adopt as they navigate this pandemic. For example, the mindset that the pandemic is a
261 catastrophe may certainly be maladaptive in many ways, but it appears to predict higher levels of
262 engagement with CDC recommended behaviors. That said, this study hints at mindsets that could

MAKING SENSE OF A PANDEMIC

285 consent to be contacted for follow-up survey.

286 Participants were invited over email to complete two follow-up surveys approximately 6-
287 weeks (T2; May 2020) and 6-months (T3; October 2020) after the initial survey. N=9,643
288 participants completed the second survey and N=7,287 participants completed the third survey.
289 Participants who indicated contracting COVID-19 (N=72) were removed prior to analyses. A
290 total of N=5,365 COVID-negative participants completed all three surveys and were included in
291 the subsequent longitudinal analyses. Within this sample of N=5,365 participants, items that
292 were missing at random were imputed using multiple imputation methods (e.g., predictive mean
293 matching) in R using the MICE package, which can be valid and unbiased methods for data that
294 is missing at random ⁸. Responses were imputed for 84 participants who had one or more
295 missing responses determined to be missing at random. Baseline differences in demographics,
296 mindsets, and outcome variables across retention rate are included in supplemental tables S5-S7.

297

298 **Measures**

299 **Mindsets.** Mindsets about the COVID-19 Pandemic were measured using an adapted
300 version of the Illness Mindset Inventory (IMI), which measures 3 mindsets about the nature and
301 meaning of illness: that it is a catastrophe, manageable, or an opportunity ⁵. Mindsets were
302 assessed with a single item rated on a 6-point Likert scale ranging from (1) strongly disagree to
303 (6) strongly agree.

304 **Emotions.** Emotions were measured using an adapted version of the Positive and
305 Negative Affect Scale (PANAS) that asked participants to indicate the extent to which they have
306 felt four positive emotions (happy, relaxed, determined, hopeful) and four negative emotions
307 (irritable, afraid, sad, nervous) over the last week ⁹. Separate summary scores were calculated for

MAKING SENSE OF A PANDEMIC

308 positive affect (alpha = 0.75-0.79 across timepoints) and negative affect (alpha = 0.73-0.82
309 across timepoints) by averaging the respective items at each timepoint.

310 **Health Behaviors.** Engagement of CDC recommended behaviors was measured by
311 asking how much participants prioritized physical distancing, staying home, wearing a face
312 mask, and hand washing. Summary scores were calculated by averaging the items at each
313 timepoint (alpha = 0.53 – 0.74 across timepoints).

314 Health promoting behaviors were measured by asking how much participants prioritized
315 getting enough sleep, eating nutritiously, and exercising regularly. Summary scores were
316 calculated by averaging the items at each timepoint (alpha = 0.68 – 0.71 across timepoints).

317 Unhealthy behaviors were measured using a binary (i.e., yes or no) checklist of items
318 related to eating more pre-packaged food, gaining undesired weight, and sleeping irregularly. A
319 total score for unhealthy behaviors was calculated at each timepoint by taking the sum of the
320 three items.

321 **Experiences.** We measured two categories of experiences: experiences characterized by
322 isolation or meaninglessness (e.g., the things I do felt meaningless; I felt hopeless about the
323 future of the world), and experiences characterized by personal growth or connection (e.g. I
324 appreciated life more; I felt a greater sense of purpose or meaning in life). Each category
325 consisted of five items assessed over the previous month using a binary (i.e., yes or no) checklist.
326 Total scores for both categories of experiences were calculated by taking the sum of the
327 respective items at each timepoint.

328 **Wellbeing.** Mental health, physical health, and quality of life were each measured using a
329 single item from the PROMIS Global Health Scale version 1.2 ¹⁰.

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MAKING SENSE OF A PANDEMIC

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354

Supplementary Materials

Table S1. Correlations between mindsets at T1, T2, and T3

	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
Mindsets at T1										
1. Catastrophe Mindset	4.80	1.17								
2. Manageable Mindset	2.67	1.46	-.25**							
3. Opportunity Mindset	5.06	0.99	.11**	-.03						
Mindsets at T2										
4. Catastrophe Mindset	4.83	1.02	.36**	-.16**	.05**					
5. Manageable Mindset	3.19	1.34	-.15**	.44**	-.08**	-.20**				
6. Opportunity Mindset	5.12	0.92	.07**	-.10**	.45**	.10**	-.14**			
Mindsets at T3										
7. Catastrophe Mindset	4.78	1.08	.31**	-.15**	.10**	.41**	-.21**	.14**		
8. Manageable Mindset	3.66	1.34	-.12**	.34**	-.05**	-.14**	.48**	-.09**	-.17**	
9. Opportunity Mindset	4.96	1.02	.08**	-.09**	.41**	.09**	-.16**	.53**	.20**	-.07**

Table S1. Correlations between mindsets measured at T1 (March 2020), T2 (May 2020), and T3 (September 2020). *M* and *SD* indicate mean and standard deviation, respectively. Asterisks indicate significance of Pearson's correlations such that * $p \leq 0.01$; ** $p \leq 0.001$.

MAKING SENSE OF A PANDEMIC

Table S2. Correlations between measures at T1

Variables at T1	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
Affect											
1. Positive Affect	2.80	0.77	(0.74)								
2. Negative Affect	2.61	0.92	-.51**	(0.72)							
Behaviors											
3. CDC Recommendations	3.56	0.55	-.02	.17**	-						
4. Healthy	3.32	0.86	.28**	-.14**	.20**	(0.71)					
Wellbeing											
5. Quality of Life	3.28	0.99	.52**	-.47**	-.04**	.22**	-				
6. Phys. Health	3.42	0.97	.32**	-.24**	-.07**	.28**	.47**	-			
Mindsets											
7. Catastrophe	4.80	1.17	-.17**	.27**	.25**	.00	-.15**	-.07**	-		
8. Manageable	2.67	1.46	.14**	-.13**	-.23**	-.03	.07**	.08**	-.25**	-	
9. Opportunity	5.06	0.99	.11**	.02	.15**	.09**	.08**	.00	.11**	-.03	-

Table S2. Correlations between measures of affect, behaviors, wellbeing, and mindsets measured at T1 (March 11th – 21st, 2020). *M* and *SD* indicate mean and standard deviation, respectively. Asterisks indicate significance of Pearson's correlations such that * $p \leq 0.01$ and ** $p \leq 0.001$. Cronbach's alphas are included in parentheses on the diagonal for summary scores (but not total scores or individual items).

MAKING SENSE OF A PANDEMIC

Table S3. Correlations between measures at T2

Variables at T2	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
Affect															
1. Positive	2.78	0.76	(0.80)												
2. Negative	2.56	0.89	-.53**	(0.77)											
Behaviors															
3. CDC Recommendations	4.27	0.64	.04	.12**	-										
4. Healthy	3.28	0.87	.36**	-.23**	.15**	(0.68)									
5. Unhealthy	1.90	1.33	-.34**	.40**	.05**	-.43**	-								
Experiences															
6. Growth/Connection	1.59	1.48	.39**	-.12**	.16**	.22**	-.06**	-							
7. Isolation/Meaninglessness	1.54	1.42	-.47**	.57**	-.02	-.23**	.39**	-.18**	-						
Wellbeing															
8. Quality of Life	3.10	0.93	.56**	-.48**	.00	.31**	-.34**	.30**	-.45**	-					
9. Physical Health	3.22	0.93	.34**	-.29**	-.07**	.39**	-.34**	.15**	-.23**	.50**	-				
10. Mental Health	2.84	1.04	.63**	-.67**	-.04*	.33**	-.41**	.23**	-.55**	.66**	.45**	-			
Mindsets															
11. Catastrophe	4.83	1.02	-.15**	.21**	.21**	-.02	.13**	-.01	.15**	-.12**	-.06**	-.13**	-		
12. Manageable	3.19	1.34	.12**	-.13**	-.29**	-.01	-.05**	-.06**	-.08**	.04*	.09**	.09**	-.20**	-	
13. Opportunity	5.12	0.92	.13**	.01	.21**	.09**	.03	.25**	-.04*	.13**	.00	.03	.10**	-.14**	-

Table S3. Correlations between measures of affect, behaviors, wellbeing, and mindsets measured at T2 (April 26th – May 5th, 2020). *M* and *SD* indicate mean and standard deviation, respectively. Asterisks indicate significance of Pearson’s correlations such that * $p \leq 0.01$ and ** $p \leq 0.001$. Cronbach's alphas are included in parentheses on the diagonal for summary scores (but not total scores or individual items).

MAKING SENSE OF A PANDEMIC

Table S4. Correlations between measures at T3

Variables at T3	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
Affect															
1. Positive	2.75	0.79	(0.79)												
2. Negative	2.53	0.87	-.53***	(0.82)											
Behaviors															
3. CDC Recommendations	4.20	0.73	-.08**	.19**	(0.74)										
4. Healthy	3.28	0.91	.38**	-.26**	.10**	(0.71)									
5. Unhealthy	1.81	1.36	-.35**	.42**	.13**	-.41**	-								
Experiences															
6. Growth/Connection	1.35	1.44	.41**	-.13**	.10**	.22**	-.06**	-							
7. Isolation/Meaninglessness	1.82	1.55	-.52**	.59**	.11**	-.24**	.42**	-.20**	-						
Wellbeing															
8. Quality of Life	3.15	0.96	.61**	-.47**	-.09**	.35**	-.36**	.27**	-.47**	-					
9. Physical Health	3.13	0.94	.44**	-.34**	-.11**	.42**	-.39**	.18**	-.29**	.60**	-				
10. Mental Health	2.79	1.06	.67**	-.64**	-.11**	.38**	-.44**	.25**	-.58**	.70**	.53**	-			
Mindsets															
11. Catastrophe	4.78	1.08	-.17**	.24**	.29**	-.02	.15**	-.01	.21**	-.16**	-.10**	-.17**	-		
12. Manageable	3.66	1.34	.17**	-.16**	-.31**	.04**	-.11**	.00	-.14**	.16**	.12**	.15**	-.17**	-	
13. Opportunity	4.96	1.02	.06**	.08**	.33**	.09**	.07**	.21**	.02	.04**	.00	-.02	.20**	-.07**	-

Table S4. Correlations between measures of affect, behaviors, wellbeing, and mindsets measured at T3 (September 16th – 27th, 2020). *M* and *SD* indicate mean and standard deviation, respectively. Asterisks indicate significance of Pearson’s correlations such that * $p \leq 0.01$ and ** $p \leq 0.001$. Cronbach’s alphas are included in parentheses on the diagonal for summary scores (but not total scores or individual items).



Figure S1. Social media advertisement posted on Facebook and Twitter for 10 days beginning March 11th, 2020. Clicking on the advertisement directed interested participants to a Qualtrics survey.

MAKING SENSE OF A PANDEMIC

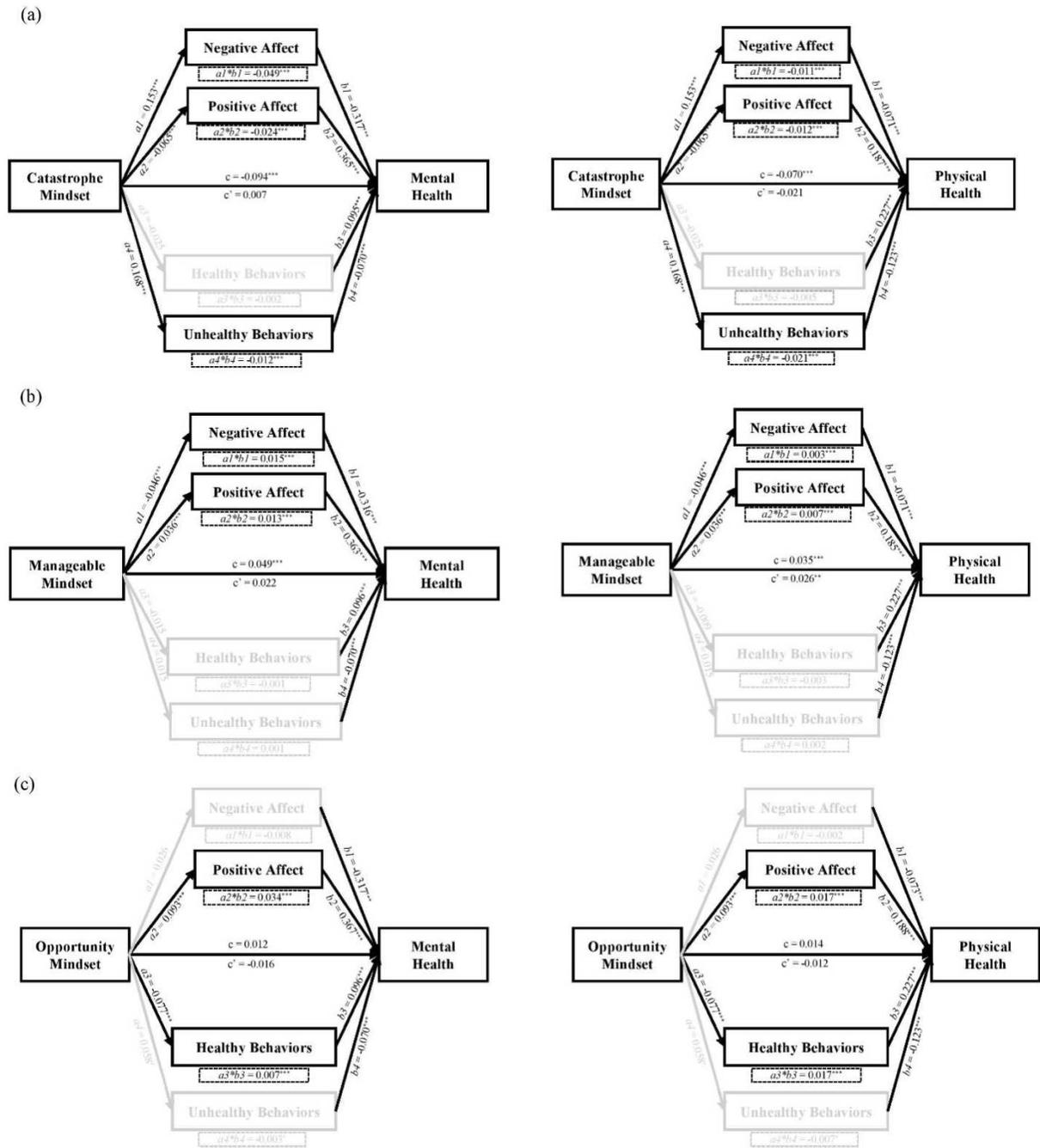


Figure S2. Mediation models outlining the mechanisms through which the (a) catastrophe mindset, (b) manageable mindset, and (c) opportunity mindset influence mental and physical health. Mindsets were measured at T1 (March 2020), affective and behavioral mediators were measured at T2 (May 2020), and health outcomes were measured at T3 (September 2020).

MAKING SENSE OF A PANDEMIC

Table S5. Baseline demographics across retention.

	Included (N=5365)	Not Included (N=14417)	Total (N=19782)	p value
Age				< 0.001
18-24	261 (4.9%)	879 (6.1%)	1140 (5.8%)	
25-44	2529 (47.1%)	7227 (50.3%)	9756 (49.5%)	
45-64	1915 (35.7%)	5032 (35.1%)	6947 (35.2%)	
65+	660 (12.3%)	1217 (8.5%)	1877 (9.5%)	
Gender				< 0.001
Man	1008 (18.8%)	3459 (24.4%)	4467 (22.9%)	
Woman	4357 (81.2%)	10707 (75.6%)	15064 (77.1%)	
Education				< 0.001
Bachelor's	4310 (80.3%)	9706 (67.7%)	14016 (71.2%)	
No Bachelor's	1055 (19.7%)	4627 (32.3%)	5682 (28.8%)	
Race				< 0.001
Non-White	575 (10.7%)	1793 (12.5%)	2368 (12.0%)	
White	4790 (89.3%)	12546 (87.5%)	17336 (88.0%)	
Political Affiliation				< 0.001
Democrat	3019 (56.3%)	6143 (43.1%)	9162 (46.7%)	
Indep/Other	1663 (31.0%)	5115 (35.9%)	6778 (34.6%)	
Republican	683 (12.7%)	2981 (20.9%)	3664 (18.7%)	

MAKING SENSE OF A PANDEMIC

Table S6. Baseline mindsets across retention.

	Included (N=5365)	Not Included (N=14417)	Total (N=19782)	p value
Catastrophe Mindset				< 0.001
Mean (SD)	4.80 (1.17)	4.71 (1.24)	4.74 (1.22)	
Manageable Mindset				< 0.001
Mean (SD)	2.67 (1.46)	2.97 (1.54)	2.89 (1.52)	
Opportunity Mindset				< 0.001
Mean (SD)	5.06 (0.99)	4.95 (1.08)	4.98 (1.06)	

Table S7. Baseline outcome variables across retention.

	Included (N=5365)	Not Included (N=14417)	Total (N=19782)	p value
CDC Behaviors				< 0.001
Mean (SD)	3.56 (0.55)	3.52 (0.63)	3.53 (0.61)	
Healthy Behaviors				< 0.001
Mean (SD)	3.32 (0.86)	3.20 (0.87)	3.23 (0.87)	
Positive Affect				0.049
Mean (SD)	2.80 (0.77)	2.82 (0.82)	2.82 (0.80)	
Negative Affect				0.788
Mean (SD)	2.61 (0.92)	2.60 (0.97)	2.60 (0.96)	
Quality of Life				0.001
Mean (SD)	3.28 (0.99)	3.23 (1.02)	3.24 (1.01)	
Physical Health				< 0.001
Mean (SD)	3.42 (0.97)	3.33 (0.97)	3.36 (0.97)	