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COVID-19 as a Stressor: Pandemic Expectations, Perceived Stress, and Negative Affect in Older Adults

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Abstract

Objectives: The extent to which the COVID-19 pandemic is appraised as a stressor influences perceived stress (PS) and psychological well-being during the event. Here, the association of older adults' expectations concerning the pandemic's duration and impact with PS and negative affect (NA) is investigated. Based on the stress and coping framework, PS is expected to mediate the association between COVID-19 expectations and NA.

Methods: Seven hundred fourteen residents of the United States and aged 60 and older completed an anonymous online survey in late March 2020 reporting PS, NA, and expectations regarding the pandemic.

Results: Regression analyses controlling for demographic factors revealed that more dire pandemic expectations significantly predicted PS and NA directly, and the effects on NA were significantly mediated by PS.

Discussion: Findings provide evidence that expectations about a pandemic influence the extent to which older adults experience stress and NA in the midst of a pandemic event. Implications for mental health are discussed.

Keywords: Appraisal, Mediation, Well-being

In March of 2020, the coronavirus disease of 2019 (COVID-19) became a pandemic. In the period of weeks in the United States, schools were closed, stay-at-home orders were issued, and news reports broadcasted the climbing death toll, particularly among adults over 60. For older adults, many of whom were already facing health limitations and isolation pre-pandemic (Centers for Disease Control and Prevention, 2015; National Academies of Sciences, Engineering, and Medicine, 2020), this combination of developments positioned COVID-19 as a stressor with wide-ranging mental and physical health implications, different in nature from many previously examined stressors due to its extensive impact across life domains on both the societal and individual levels, as well as its unknown long-term implications.

According to the stress and coping framework (Lazarus & Folkman, 1984), stress is a function of the interaction between an individual's characteristics (e.g., past experience, vulnerabilities, resources) and their context (e.g., historical moment, geography, cultural milieu). So even for a commonly experienced stressor like the COVID-19 pandemic, there is substantial heterogeneity in the individual stress experience. This heterogeneity extends through the stress and coping process: stress affects one's mental and physical well-being via *appraisal*, where the person considers the stressor and its stressfulness; if an event is appraised as stressful, then *coping* is engaged, where the person utilizes available resources to combat the stress. Both appraisal and coping behaviors are naturally influenced by individual characteristics and contextual realities. Considered generally, however, appraisals of stressors as more intense or threatening are consistently associated with higher overall levels of perceived stress (PS) and its mental health correlates, such as depression and anxiety

(Almeida et al., 2011; Whitehead & Bergeman, 2013, 2015). The association between PS and negative affect (NA) represents the extent to which one's level of stress influences their emotional well-being (Blaxton et al., 2020); the strong positive ties that NA has to mental health outcomes such as depression and anxiety (Trick et al., 2016; Whitehead & Bergeman, 2013), as well as physical health factors like number of chronic conditions, functional limitations, and immune function (Leger et al., 2018; Sin et al., 2015), make it a bellwether for well-being. In the event of additional COVID-19 waves, future pandemic events, or even other broad-scale stressors, understanding how event expectations are associated with older adults' stress experience will permit clinicians and gerontologists to more effectively support clients in distress and limit its downstream health effects.

Here, U.S. older adults' expectations regarding the COVID-19 event, assessed 11 days following the World Health Organization's declaration of the COVID-19 outbreak as a pandemic and 9 days following the declaration of a national emergency in the United States (Centers for Disease Control and Prevention, 2020), are used as indicators of older adults' appraisal of COVID-19 as a stressor. Based on stress and coping theory (Lazarus & Folkman, 1984), the hypothesis is that the data will support a mediation-process model. Specifically, controlling for demographic factors, the expectations are that (a) more dire expectations surrounding the pandemic (expected income decline, longer duration, greater long-term impact) will be associated with higher NA and higher PS; and (b) PS will significantly mediate the association between each pandemic expectation variable and NA.

Method

Participants and Procedure

On March 22, 2020, residents of the United States, aged 60 and older were invited to complete an anonymous online survey via snowball sampling. A survey link was distributed via e-mail list serves and social media platforms accessible to the researcher, and recipients were encouraged to share the survey widely. The survey was open for 48 hr. At this point in the United States, there were 33,840 confirmed cases, a 10-fold increase from 1 week prior; the survey therefore captured a point within the period of initial acceleration in the pandemic curve in the United States (Worldometer, 2020). In all, 874 respondents completed the survey. Eleven percent of participants had missing data for one or more of the covariates, primarily income (7.7% missing); another 7% of participants had incomplete data for one or more of the study variables. The analyses therefore used the 714 people with complete data on all covariates and study variables. Study participants hailed from 47 states (47% resided in the Midwest, 29% in the Southeast, 15% in the West/Southwest, and 9% in the Northeast). Participants

tended to be in their young–old years, with 63.2% being 60–69, 31.2% being 70–79, and 2.6% being 80 or older. The sample was 79% female, majority White (96.3%), and 70% married/partnered. Considering income, 26.4% earned <$50k annually, 42.1% earned between $50k and $100k, and 31.5% earned >$100k; 65.7% of participants were retired.

Measures

Pandemic expectations
The three items used to assess pandemic expectations were developed by the researcher based on discrepant opinions on the impact and duration of the pandemic event at the time of data collection (i.e., some perceiving it as a minor passing annoyance, others perceiving it as a long-term, high-impact event). The first item, assessing income decline, was *Do you expect your income to change as a result of COVID-19?* A code of 1 was assigned to those who expected no change or an increase in income (52%), and a code of 2 was assigned to those who expected income decline (48%). The second item, assessing expectations regarding the duration of the pandemic, was *As of TODAY, I feel that the COVID-19 pandemic will:* with 8 response options ranging from *be over within a few days* to *it will never really be over*. About 36.7% of participants expected it to be over within 3 months or less; 50% expected it to be over in 6–12 months; 7.3% expected it to be over in 3 years or more; and 6% expected that it would never be over. The third item, assessing expectations regarding the long-term impact of the pandemic were assessed with the item, *As of TODAY, I feel that the COVID-19 pandemic will:* with 5 response options ranging from *NOT have a long-term effect on "normal life"* to *"Normal life" as we once knew it will not return*. About 18.6% of participants expected a minor impact or no impact; 38.2% expected a moderate impact; 33.8% expected a major impact; and 9.4% expected "normal life" would not return.

Perceived stress
PS was assessed via the 14-item Perceived Stress Scale (Cohen et al., 1983); participants rated whether they agreed or disagreed with each statement based on experience over the *past day*. For ease of use on mobile devices, a 2-point agree/disagree response format replaced the 4-point response format (strongly agree to strongly agree) of the original scale; items were scored and summed so that higher scores indicate more PS (Cronbach's alpha = 0.82).

Negative affect
NA was assessed via the 10-item Negative Affect portion of the Positive and Negative Affect Scale (PANAS; Watson et al., 1988). Participants rated the extent to which they had experienced each negative emotion over the *past day* on a 3-point scale (not at all, a little, a lot); this deviation

from the original 5-point response format was an attempt to improve the ease of use on mobile devices. Items were summed and scored so that higher scores indicate higher NA (Cronbach's alpha = 0.87).

Covariates

Age was reported in 5-year increments from 60–90+, for a total of 7 response options coded 1–7; sex was coded 1 = male, 2 = female; pre-virus annual income was reported in $25k increments from $0–$150k+, for a total of 7 response options coded 1–7; marital status was coded 1 = single/divorced/widowed, 2 = married/partnered; and retirement status was coded 1 = fully retired, 2 = work part-time or full-time. Perceived health was rated on a 4-point scale: 1 = very healthy (39.6%), 2 = somewhat healthy (52.1%), 3 = not very healthy (7%), 4 = in poor health (1.3%).

Results

[Table 1](#) shows the means, standard deviations, and bivariate Pearson correlations (two-tailed) for the sample. All correlations are in the expected directions: the three pandemic expectations variables are positively correlated with one another and with NA and PS. Regression analyses tested the mediation hypothesis using the PROCESS macro version 3.4 (Model 4) developed by [Hayes (2018)](#); all indirect (mediation) effects were tested using the percentile bootstrap estimation approach with 5,000 samples. [Table 2](#) displays coefficients, confidence intervals (CIs), and model fit indices for the primary variables; [Figure 1](#) provides a visual display of the mediation results. In these models, X is the primary predictor (pandemic expectations variables), Y is the outcome variable (NA), and M is the mediator (PS): the total effect model tests the effect of X on Y without consideration of M (c); the indirect effect model tests for the indirect (mediating) effect of X on Y through M ($a*b$), and also provides the direct effect of X on Y given M (c'). Mediation is indicated when the bootstrapped CI for the indirect effect does not contain zero; full mediation occurs when the direct effect (c') becomes nonsignificant. Results reveal all three pandemic expectations are significantly linked with both PS and NA, and significant indirect (mediational) effects are indicated by the 95% bootstrapped CIs for all three indicators: full mediation is present for income decline expectations (X_1; CI = 0.30–1.07), as c' is nonsignificant, and partial mediation is present for duration (X_2; CI = 0.27–0.56) and impact (X_3; CI = 0.49–0.86) expectations. Model fit indices also reveal a greater portion of NA variance explained for the models including PS.

Discussion

Overall, the theoretical mediation hypothesis was supported: older adults' expectations about COVID-19 at the early point in the pandemic at which this survey was taken were significantly associated with the amount of PS they were experiencing at the time, which in turn was associated with their level of NA. This aligns with the stress and coping framework ([Lazarus & Folkman, 1984](#)) and supports previous work highlighting the role of appraisal on stress and well-being ([Almeida et al., 2011](#); [Whitehead & Bergeman, 2013](#)). One practical implication of the findings is that COVID-19 or similar broad-scale stressors may not be stressful—or at least the same degree of stressful—for everyone. A portion of this sample, at least at the time of data collection, did not anticipate the pandemic to have a significant impact on them or the future, and these expectations were associated with lower stress and NA levels for those individuals. Treating everyone as equally vulnerable, which is often done in the context of older adults, may spread limited resources thin, particularly in the context of mass-scale stressors like pandemics; by understanding the important appraisal role that perceptions and expectations of the stressor play in its psychological impact, resources and energy can be targeted to those who actually perceive a threat and are therefore experiencing more distress. If those experiencing higher levels of distress can be identified and

Table 1. Means, Standard Deviations (*SD*s), and Correlations of Analysis Variables

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	2.35	1.25	—									
2. Sex	1.79	0.41	−0.15**	—								
3. Income	3.78	1.70	−0.09*	−0.14**	—							
4. Marital status	1.70	0.46	−0.10**	−0.16**	0.36**	—						
5. Retired	1.34	0.47	−0.38**	0.02	0.11**	−0.06	—					
6. Health	1.70	0.65	−0.01	0.08*	−0.15**	−0.10**	−0.05	—				
7. Income decline	1.51	0.50	0.01	0.02	0.13**	0.06	0.11**	0.00	—			
8. COVID duration	4.18	1.42	0.02	0.04	−0.08*	−0.12**	−0.05	0.12**	0.11**	—		
9. COVID impact	3.30	0.96	0.03	0.11**	0.02	−0.06	0.01	0.11**	0.17**	0.39**	—	
10. Perceived stress	17.61	2.93	−0.09*	0.08*	−0.06	−0.06	0.09**	0.30**	0.14**	0.24**	0.28**	—
11. Negative affect	35.08	4.05	−0.11**	.13**	0.05	−0.05	0.09*	0.20**	0.17**	0.24**	0.37**	0.67**

Notes: *p < .05. **p < .01.

Table 2. Model Coefficients and Fit Indices

		Dependent variable					
		M (perceived stress)					Y (negative affect)				
Independent variable		Coeff.	SE	p	LLCI	ULCI		Coeff.	SE	p	LLCI	ULCI
X (income change)	a	0.73	0.21	<.001	0.32	1.14	c'	0.35	0.23	.14	−0.12	0.80
M (perceived stress)		—	—	—	—	—	b	0.94	0.04	<.001	0.86	1.02
Constant	i_M	15.80	1.02	<.001	13.79	17.80	i_Y	18.25	1.30	<.001	15.69	20.81
Model fit		$R^2 = 0.126$						$R^2 = 0.473$				
		$F_{(7, 706)} = 14.48, p < .001$						$F_{(8, 705)} = 79.15, p < .001$				
Total effect model (X on Y)		$R^2 = 0.092$										
		$F_{(7, 706)} = 10.20, p < .001$					c	1.03	0.30	<.001	0.44	1.63
X (expected duration)	a	0.45	0.07	<.001	0.31	0.59	c'	0.25	0.08	.003	0.08	0.41
M (perceived stress)		—	—	—	—	—	b	0.92	0.04	<.001	0.83	1.00
Constant	i_M	12.35	0.96	<.001	10.46	14.24	i_Y	16.75	1.20	<.001	14.40	19.10
Model fit		$R^2 = 0.154$						$R^2 = 0.476$				
		$F_{(7, 704)} = 18.34, p < .001$						$F_{(8, 703)} = 79.86, p < .001$				
Total effect model (X on Y)		$R^2 = 0.124$										
		$F_{(7, 704)} = 14.28, p < .001$					c	0.66	0.11	<.001	0.45	0.87
X (expected impact)	a	0.77	0.11	<.001	0.57	0.98	c'	0.79	0.12	<.001	0.56	1.03
M (perceived stress)		—	—	—	—	—	b	0.87	0.04	<.001	0.79	0.95
Constant	i_M	12.44	0.93	<.001	10.61	14.27	i_Y	16.56	1.15	<.001	14.30	18.82
Model fit		$R^2 = 0.172$						$R^2 = 0.501$				
		$F_{(7, 705)} = 20.91, p < .001$						$F_{(8, 704)} = 88.45, p < .001$				
Total effect model (X on Y)		$R^2 = 0.189$										
		$F_{(7, 705)} = 23.48, p < .001$					c	1.47	0.14	<.001	1.18	1.76

Notes: LLCI = lower limit confidence interval; ULCI = upper limit confidence interval; all confidence intervals at 95% confidence level. "Constant" refers to the intercept for each equation. R^2 indicates amount of variance explained in the consequent. Although models were run with age, sex, income, marital status, retirement status, and self-reported health as covariates, those estimates are not shown here for simplicity.
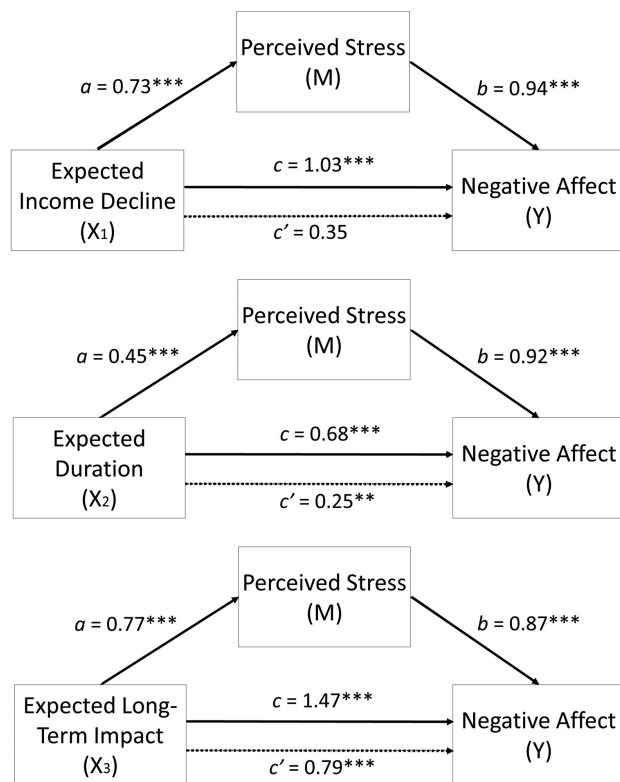
Figure 1. Depiction of theoretical mediation process and results. *X* indicates the primary predictor, *M* indicates the mediator, and *Y* indicates the dependent variable. *p < .05; **p < .01; ***p < .001.

targeted via their expectations of a given stressor, then the downstream deleterious effects of distress on mental health and physical health, which are particularly impactful on quality of life in older adulthood, can be more effectively ameliorated.

In this particular context, interventions utilizing *cognitive reappraisal* exercises (see Dryman & Heimberg, 2018 for a review) such as reflections on past resilience (e.g., how have you come through hard times before?), historical parallels (e.g., how did people handle events like this in the past?), and post-stressor visualizations (e.g., imagining a return of "normal life") could help older adults more effectively manage their stressor-related cognitions and emotional reactivity, and therefore permit more effective utilization of available coping resources in the present. Because of the broad scale of COVID-19 as a stressor, these individual-based interventions may be best applied via existing community structures and networks, which in times of physical distancing may involve webinars offered by local senior centers, newsletters distributed by religious groups, or measures designed to promote engagement in telehealth psychological services in regions hardest hit by COVID-19. The reality that those over 65 are less likely to have internet access or be comfortable with digital communication technology than are younger age demographics (Pew Research Center, 2020) means that professionals wishing to reach

that subset of older adults will have to get more creative in times of physical distancing.

One additional finding that was not anticipated is that the income decline variable is the only one to be fully mediated by PS; that is, the association between expected income decline and NA is entirely explained by PS. With the limited contextual information available, it is difficult to interpret why this may be, but it is possible that the scale of impact is at play here. Income decline is personal, affecting the individual and his/her household, whereas an extended, severe pandemic affects people and structures far beyond the individual, including the world encountered by future generations; this more macro level of impact may be behind the remaining significant associations of duration and long-term impact expectations with NA, tapping into more general COVID-related fear, frustration, and anger that is not captured by stress or as linked with income decline. Delving into this further is an important avenue for future work.

Naturally, the implications of the findings are limited by the nonrandom sampling procedure and the resulting homogeneous sample—it is difficult to know whether the patterns identified here generalize beyond the largely White, female, young–old, internet-savvy U.S. adults assessed here. Indeed, the heterogeneity inherent in the stress experience means that different groups, with different characteristics and available coping resources, may have a very different stress experience in the context of COVID-19. Exploring these experiences and processes within a variety of samples is therefore key to understanding the many ways in which the COVID-19 pandemic may affect psychological well-being. The nonrandom snowball sampling approach did, however, facilitate a faster, more nationwide spread of the survey, and the short span permitted the responses to be anchored within a particular time in the pandemic event. An additional limitation is that, although the analyses are considered in a theoretically grounded process manner, all variables were assessed at the same time point; this means that the true directionality of effects is empirically unknown. Finally, it is important to acknowledge that stressor exposure itself was not assessed; although there is some validity in assuming each participant had some exposure to the effects of the COVID-19 pandemic due to its impact across domains and geography, the degree of that exposure could vary and affect the expectations and PS levels of interest here.

Overall, the findings reported here represent an initial step toward understanding the stress experience of older adults at the outset of the COVID-19 pandemic event, a stressor unique in its far-reaching impact and unknown long-term implications. If older adults expecting a longer, more permanent impact know they are more at risk for distress, they can take steps to proactively pursue effective coping resources to reduce that distress before it exerts its impact on mental and physical health. Some level of

distress is a perfectly "normal" response to an event like the COVID-19 pandemic (Vinkers et al., 2020); but understanding factors influencing that distress is key to reducing the overall toll of the event on older adults' well-being and quality of life.

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Conflict of Interest

None declared.

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