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The effects of age, resilience, and fraud victimization on mental health during the second year of the COVID-19 pandemic



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Introduction

During the height of the pandemic, COVID-19 threatened the physical, financial, and social wellbeing of people worldwide through work-from-home, quarantine, and isolation policies. Subsequently, the pandemic years have been linked to increases in reported loneliness, negative emotionality, depression, anxiety, and suicidal ideation (e.g., Finch et al., 2022; O'Sullivan et al., 2021; WHO, 2022). Although trait resilience and other resources such as social support helped to ease the negative emotional impact of the pandemic, they may have been insufficient to fully negate pandemic-related mental health challenges (Coloumbe et al., 2020; García-Rivera et al., 2021). In fact, those who experienced more pandemic-related fear and uncertainty have described lower levels of psychological resilience to draw on when coping with their poor mental health (García-Rivera et al., 2021). Resilience is defined as the ability to adapt to and recover from challenges such as living through the COVID-19 pandemic.

Another protective factor that has repeatedly been shown to buffer the toll of the pandemic is older age: Compared to society at large, older adults – defined in the present paper as those above the age of 60 – were at heightened risk of serious COVID-19 illness and death (CDC, 2020; Statista, 2023), expressing greater concerns about dying due to the virus (e.g., Bruine de Bruin, 2020). Despite their increased physical vulnerability, older adults experienced fewer mental health issues since the onset of the pandemic than their younger peers did. In early 2020, older adults voiced fewer concerns about contracting the virus, having to quarantine, or experiencing financial difficulties (Bruine de Bruin, 2020). In the same study, older adults indicated lower levels of depression and anxiety, a trend that held throughout the first year of the pandemic (e.g., Finch et al., 2022; Zhu and Upenieks, 2022).

This "paradox of aging" – relatively stable mental health despite decrements in physical health – may, in part, reflect age differences in resilience: Since 2020, older adults have reported more resilience in the face of COVID-19 related stressors than their younger peers (e.g., Perez-Rojo et al., 2022; Weitzel et al., 2021). In fact, older adults' level of resilience was shown to be less affected by stressful events occurring during the pandemic than was the case for younger adults (Rossi et al., 2021).

This tallies with pre-pandemic research demonstrating that older adults tend to command higher levels of resilience (Gooding et al., 2012; Netuveli et al., 2008), with as many as 19% exhibiting particularly high levels of resilience (Weitzel et al., 2021). Age-related

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increments in resilience might reflect older adults' more extensive life experience and success at navigating other crises earlier in their lives (Netuveli et al., 2008).

Financial fraud

In the context of pandemic-related age differences in wellbeing, one crucial threat to people's mental health often went overlooked: Falling victim to financial fraud.³

During the pandemic, scammers targeted consumers of all ages with COVID-19 related solicitations in order to extract money. In detail, the Federal Trade Commission has logged 417,224 such fraud attempts since 2020, with 40.6 % of cases resulting in financial losses cumulatively exceeding \$1.10 billion (FTC, 2023b). Those between the ages of 30 and 59 were the most likely to encounter COVID-19 scam attempts, and both younger adults (there defined as those aged 18-40 years) and middle-aged adults (there defined as those aged 41-64 years) were less wary of the alleged benefits of COVID-19 scam attempts than older age groups were (there defined as those aged 65 or older; Nolte, Hanoch et al., 2021). Nevertheless, when older adults did succumb to COVID-19 fraud, this age group was more likely to suffer significant financial consequences (FTC, 2023a). Specifically, adults between the ages of 60 and 69 have cumulatively lost the highest amount of money to COVID-19 scams (\$243.7 million), parting with almost \$65 million more than the age group with the next-highest losses (\$179 million, lost by those ages 50-59). When examining median loss per person, octogenarians disclose the highest individual losses (\$1100), followed by septuagenarians (\$780) and sexagenarians (\$750). In contrast, those 19 and under "only" report a median personal loss of \$293.

Given that older adults have experienced more consequential financial fraud victimization due to the pandemic, the relationship between age and pandemic-related wellbeing may be less straightforward than previously thought: In contexts outside of COVID-19, falling for financial fraud has been linked to a decreased quality of life and increased levels of distress, depression, and suicidality (e.g., International Mass-Marketing Fraud Working Group, 2010; Sarriá et al., 2019; Shichor et al., 1996). As such, older fraud victims may have experienced more challenges to their mental health during the COVID-19 pandemic than their non-victim peers did.

Present study

The goal of the present project is to examine the combined effects of resilience, age, and fraud susceptibility on individuals' mental health during the year of 2021. In doing so, this project improves upon past research in multiple ways. Unlike many previous studies (e.g., Bruine de Bruin, 2020; Finch et al., 2022; Zhu and Upenieks, 2022), and in direct response to the Bruine de Bruin paper that appeared online in May 2020 and in print in February 2021, we examine age differences in

mental health during the second rather than the first year of the pandemic (i.e., beginning with March 2021). This allows us to ascertain whether age-related differences in pandemic-related wellbeing extended beyond early 2021 and how they may have differed across multiple facets of mental health. In addition, the inclusion of resilience, fraud victimization, and an adult lifespan sample enables us to improve upon past research that has previously studied these predictors of wellbeing separately, or only in distinct age groups. Finally, this study endeavors to highlight the often overlooked emotional harm caused by financial loss (Ipsos, 2020; Low and Lally, 2024), which is often examined through the lens of tragic individual cases (e.g., Rebane and Watson, 2024; Saxby & Anil, 2012) rather than through surveying common or seemingly "healthy" samples.

In a first step, the present project will assess how age was linked to both resilience (Question 1a) and fraud victimization (Question 1b) in 2021. In a second step, we examine how fraud victimization, resilience, and measures of mental health (i.e., distress, PTSD-like symptoms, loneliness) varied over the course of year two of the pandemic (Question 2). To this end, we surveyed participants one year after the WHO first identified COVID-19 as a pandemic (March 2021) as well as toward the end of 2021 (October-December 2021). Extrapolating from existing research, we hypothesized that for both T1 and T2, lower levels of mental health would be associated with younger age (Hypothesis 1), lower levels of resilience (Hypothesis 2), and prior fraud victimization (Hypothesis 3).

Methods

IRB approval was obtained from Scripps College's IRB prior to data collection.

Sample

US participants were recruited through Prolific. Surveys were administered between March 2021 and October-December 2021. From our initial sample $N_{t1} = 509$, n = 41 were excluded (see Supplement A): The final sample consisted of $N_{t1} = 468$ (18 – 79 years, $M_{age} = 43.98$, $SD_{age} = 16.35$), of which $N_{t2} = 319$ returned for T2 (19 – 79 years, $M_{age} = 48.49$, $SD_{age} = 15.49$). Descriptive statistics are reported in Supplement B.

Returnees were significantly older (t(298.72) = -8.26, p < .001) and more likely to identify as Non-Hispanic White ($X^2(1, N = 468) =$ 13.03, p < .001). In addition, returnees indicated lower levels of distress (t(284.14) = 2.81, p = .005) and PTSD-like symptoms (t(257.75) =2.81, p = .005) at T1. Return status no longer significantly predicted race/ethnicity ($\beta = .17, p < .001, R^2 = .03$) when the latter was regressed on both return status ($\beta = .07, p = .139$) and age ($\beta = .29, p$ $< .001, R^2 = .10$). Return status no longer marginally predicted emotional distress ($\beta = -.33, p = .061, R^2 = .01$) when the latter was regressed on both return status ($\beta = -.02, p = .635$) and age ($\beta = -.18, p$ $< .001, R^2 = .04$). Return status no longer significantly predicted PTSD symptoms at T1 ($\beta = -.14, p = .003, R^2 = .02$) when the latter was regressed on both return status ($\beta = -.03, p = .538$) and age ($\beta =$ $-.31, p < .001, R^2 = .10$). As such, returnees and non-returnees predominantly differed in age.

Materials⁴

Demographics

Participants reported their age, gender (0 = ``man'', 1 = ``woman''), race/ethnicity (0 = ``not Non-Hispanic White'', 1 = ``Non-Hispanic

³ When referring to "financial fraud," we adopt the definition of the National Crime Victimization Survey's Supplemental Fraud Survey: This type of fraud concerns actions that "intentionally and knowingly deceive the victim by misrepresenting, concealing, or omitting facts about promised goods, services, or other benefits and consequences that are nonexistent, unnecessary, never intended to be provided, or deliberately distorted for the purpose of monetary gain"(Bureau of Justice Statistics, n.d.). This definition also corresponds to the top fraud types the FTC observed with respect to COVID-19 fraud solicitations, including those occurring with respect to online shopping, vacation and travel (e.g., concerning cancelations and refunds), diet-related services and products, government or business imposters (FTC, 2023b). However, note that it is possible that in light of COVID-19, some consumers may have also lost money to scams not included among the above definition or fraud types, such as romance fraud preying on consumers who felt socially isolated (see Fletcher, 2019, on the link between romance fraud and older age). Romance fraud proliferated in wake of the COVID-19 pandemic as well (e.g., Buil-Gil and Zeng, 2022).

⁴ At T2 but not T1, participants also responded to the 10-item CFPB Financial Well-Being Scale. This scale was not included in data analyses.

White"), education 7-point scale), income (6-point scale), employment status, and political worldview (7-point scale, higher scores indicate liberal views).

Distress

In response to the 10-item Kessler Distress scale (K10; Kessler et al., 2003), participants reported how often they had experienced symptoms of distress in the previous four weeks (e.g., feeling depressed, restless, nervous, or tired). Responses were recorded on a 5-point scale Likert scale anchored at (1) "None of the time" and (5) "All of the time", and summed up so that higher scores indicate higher levels of distress (α_{T1} = .94, α_{T2} = .93).

PTSD-like symptoms

Symptoms reflective of PTSD-like experiences were assessed using the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). Using a 5point Likert scale ((0) "Not at all", (4) "Extremely"), participants reported how much they had been bothered by a range of PTSD-like symptoms in the previous month, including disturbing dreams, negative emotions, and memory issues. Scores were summed up so that higher scores indicate more severe symptoms (α_{T1} = .94, α_{T2} = .93). Thirteen percent of participants reported clinically relevant levels of symptoms (> 30 points, n_{t1} = 62, n_{t2} = 41).

Loneliness

We assessed feelings of isolation and exclusion via the 3-item UCLA Loneliness Scale (Hughes et al., 2004). Participants responded using a 3-point scale ranging from (1) "Hardly ever" to (3) "Often", with higher sum scores indicating greater perceived loneliness (α_{T1} = .85, α_{T2} = .86).

Resilience

How participants cope with difficult challenges was captured using the 4-item Response to Stressful Experiences Scale (RSES-4; De La Rose et al., 2016). Participants rated to their ability to find meaning in and overcome stress on a 5-point scale that varied from (0) "Not at all like me" to (4) "Exactly like me". Scores were summed up with higher sum scores reflecting a higher self-reported ability of coping with stress (a_{T1} = .88, a_{T2} = .88).

Fraud victimization

Participants reported whether they had ever fallen victim to financial fraud (0 = "no", 1 = "yes"; see Supplement C for additional fraud-related measures and Supplement D for relevant results). T2 victimization was recoded to "yes" for n = 18 participants who reported victimization prior to T1 but not T2. (See Supplement E for analysis involving non-corrected victim status.)

Procedure

At both time points, participants responded to a 5–10 minute online survey paying \$1.60 each. After providing informed consent, participants completed measures of emotional distress, PTSD-like symptoms, loneliness, resilience, fraud experiences, and demographic background.

Analyses

Analyses were conducted in RStudio version 2023.06.1. Correlation analyses reflect Pearson correlation coefficients or point-biserial correlations. T1 and T2 comparisons relied on *t*-tests and X^2 proportion tests. Multivariate and univariate (multiple) regression analyses were conducted using linear models.

Results

Correlations between all variables at T1 and T2 are provided in full in Supplement F.

How is age linked to resilience (Question 1a) and fraud victimization (Question 1b)?

At T1 and T2, older age was correlated with reporting higher levels of resilience (rs = .17 to.19, ps < .05; Question 1a). At T1 but not T2, older adults were more likely than younger adults to have fallen victim to fraud (rs = .11, ps < .05; Question 1b).

How did resilience, fraud victimization, and mental health vary over the course of 2021 (Question 2)?

To assess Question 2, we compared T1 and T2 data. Relative to T1, participants only reported lower levels of loneliness (t(318) = -2.06, p = .020) at T2, suggesting that mental health challenges prevailed throughout 2021 for indices of emotional distress and PTSD-like symptoms. We observed no significant changes in resilience or fraud victimization, although the percentage of participants identifying as a fraud victim increased from 26.6 % to 36 %.

Regression analyses

Multivariate multiple regression analyses were conducted to examine Hypotheses 1, 2, and 3. Emotional distress, PTSD-like symptoms, and loneliness were entered as dependent variables. Gender, race/ethnicity, education, income, employment status, worldview, resilience, and victim status were entered as predictor variables. Because preliminary analyses suggested that the relationship between age and some of the dependent variables was not linear, age was entered as a predictor alongside both age² (i.e., effect peaks or plunges at a certain age) and age³ (i.e., effect rises or falls until a certain age, plateaus, and then continues to rise or fall thereafter), which were added for the sake of exploratory analyses. Fig. 1 showcases relationships between age and all three dependent variables across T1 (N = 469, top row; n = 319, middle row) and T2 (N = 319, bottom row).

Lower levels of mental health are associated with younger age (hypothesis 1), lower levels of resilience (hypothesis 2), and prior fraud victimization (hypothesis 3)

T1 data

For $N_{t1} = 468$ and $n_{t1} = 319$, we observed non-linear links between age and levels of PTSD-like symptoms (see Table 1, Fig. 1). Partially in line with Hypothesis 1, PTSD-like symptoms appeared to peak around age 30 and then fell until age 60, where they plateaued until at least age 70. (Because the number of participants above this age was low, we refrain from identifying patterns among the oldest of our participants). In deviation from H1, we find no links between age and either emotional distress or loneliness at T1 for the full sample of $N_{t1} = 468$. Among returnees alone ($n_{t1} = 319$), however, we observed a positive relationship between age³ and emotional distress. Fig. 1 suggests that at T1, levels of emotional distress were lower among middle-aged and older adults as compared to younger adults (peaking around age 30) but did not differ between middle-aged and older adults.

Across the full and the partial sample, resilience was negatively associated with all outcome measures at T1. In line with Hypothesis 2, this suggested that more resilient participants experienced fewer mental health challenges. Participants with a more liberal worldview disclosed higher levels of emotional distress across both samples, as well as stronger PTSD-like symptoms for the full sample. Higher levels of loneliness at T1 were linked to lower income for the full sample. Notably, counter to Hypothesis 3, fraud victimization was not



Fig. 1. Age-related Differences in Emotional Distress, PTSD-like Symptoms, and Loneliness, for T1 (N = 468, n = 319) and T2 (N = 319).

Table 1 Regression of Mental Health Indices on Predictor Variables at T1 for N = 468 and n = 319.

	Emotional Distress		PTSD-like Symptoms		Loneliness	Loneliness	
Predictor	β	р	β	р	β	р	
Age	0.89	.299	1.98	.106	-0.14	.430	
Age ²	-16.43	.162	- 33.38	.046*	1.68	.501	
Age ³	1.96	.118	3.78	.035*	-0.17	.514	
% Women	0.05	.119	0.08	.086	0.01	.143	
% Non-Hispanic White	0.16	.456	0.43	.166	-0.03	.459	
Education	-0.05	.284	-0.01	.829	0.02	.071	
Income	-0.01	.727	0.00	.922	-0.02	.026*	
% No Full-Time Employment	-0.19	.441	0.04	.898	0.05	.305	
Liberal Worldview	0.17	< .001***	0.15	.014*	0.01	.150	
Resilience	-0.19	< .001***	-0.22	< .001***	-0.04	< .001*	
% Fraud Victim	0.32	.131	0.33	.268	0.04	.401	
Intercept	.00	.057	.00	.868	.00	< .001	
R^2	.20		.18		.14		
T1 $(n = 319)$							
	Emotional Distress		PTSD-like Symptoms		Loneliness		
Predictor	β	р	β	р	β	р	
Age	1.55	.158	3.35	.027*	0.18	.452	
Age ²	-25.71	.074	- 48.55	.014*	-2.42	.440	
Age ³	3.15	.045*	5.42	.012*	0.24	.480	
% Women	0.04	.305	0.03	.628	0.01	.225	
% Non-Hispanic White	-0.05	.854	0.28	.435	-0.10	.076	
Education	-0.07	.221	0.07	.385	0.02	.052	
Income	0.02	.569	-0.03	.583	-0.01	.159	
% No Full-Time Employment	-0.05	.851	0.20	.591	0.07	.223	
Liberal Worldview	0.18	< .001***	0.09	.201	0.01	.337	
Resilience	-0.22	< .001***	-0.32	< .001***	-0.05	< .001*	
% Fraud Victim	0.16	.503	-0.13	.704	-0.03	.514	
Intercept	.00	.338	.00	.506	.00	.100	
R^2	.24		.22	.18			

Table 2

Regression of Mental Health Indices on Predictor Variables at T2 for N=319.

T2 (N = 319)

	Emotional Distress		PTSD-like Symptoms		Loneliness	
Predictor	β	р	β	р	β	р
Age	3.17	.003**	2.20	.136	-0.09	.574
Age ²	41.69	.002**	-30.70	.103	1.33	.536
Age ³	4.57	.003**	3.43	.103	-0.17	.471
% Women	-0.03	.429	0.01	.806	0.00	.748
% Non-Hispanic White	0.11	.640	0.55	.097	0.03	.409
Education	-0.03	.579	0.00	.974	-0.01	.254
Income	-0.04	.342	0.00	.951	-0.01	.226
% No Full-Time Employment	0.24	.341	0.25	.480	-0.03	.493
Liberal Worldview	0.01	.855	0.11	.116	0.00	.763
Resilience	-0.08	.044*	-0.2	.749	-0.01	.277
% Fraud Victim	0.19	.386	0.72	.019*	0.03	.334
Emotional Distress T1	0.30	< .001***	0.28	< .001***	0.01	.211
PTSD-like Symptoms T1	0.09	.041*	0.15	.011*	0.01	.329
Loneliness T1	0.58	.024*	1.33	< .001***	0.73	< .001***
Intercept	.00	.101	.00	.110	.00	.186
R^2	.37		.33		.65	
T2 ($N = 319$)						
	Emotional Distress		PTSD-like Symptoms		Loneliness	
Predictor	Emotional Distress β	р	PTSD-like Symptoms β	р	Loneliness β	р
Predictor Age	Emotional Distress β 3.13	p .003**	PTSD-like Symptoms β 13.53	p .147	Loneliness β -0.13	p .5656
Predictor Age Age ²	Emotional Distress β 3.13 -41.09	p .003** .003**	PTSD-like Symptoms β 13.53 -6.37	p .147 .114	Loneliness β - 0.13 0.22	p .5656 .526
Predictor Age Age ² Age ³	Emotional Distress β 3.13 - 41.09 .450	p .003** .003** .003**	PTSD-like Symptoms β 13.53 -6.37 2.45	p .147 .114 .116	Loneliness β - 0.13 0.22 - 0.83	p .5656 .526 .461
Predictor Age Age ² Age ³ % Women	Emotional Distress β 3.13 - 41.09 .450 - 0.03	p .003** .003** .003** .408	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06	p .147 .114 .116 .837	Loneliness β - 0.13 0.22 - 0.83 0.00	p .5656 .526 .461 .758
Predictor Age Age ² Age ³ % Women % Non-Hispanic White	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13	p .003** .003** .003** .408 .590	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12	p .147 .114 .116 .837 .082	Loneliness β - 0.13 0.22 - 0.83 0.00 0.01	p .5656 .526 .461 .758 .396
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education	Emotional Distress β 3.13 - 41.09 .450 - 0.03 0.13 - 0.03	p .003** .003** .003** .408 .590 .584	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00	<i>p</i> .147 .114 .116 .837 .082 .967	Loneliness β - 0.13 0.22 - 0.83 0.00 0.01 - 0.04	p .5656 .526 .461 .758 .396 .255
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income	Emotional Distress β 3.13 - 41.09 .450 - 0.03 0.13 - 0.03 - 0.04	p .003** .003** .408 .590 .584 .335	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02	<i>p</i> .147 .114 .116 .837 .082 .967 .962	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01	p .5656 .526 .461 .758 .396 .255 .225
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment	Emotional Distress β 3.13 - 41.09 .450 - 0.03 0.13 - 0.03 - 0.04 0.25	<pre>p .003** .003** .003** .408 .590 .584 .335 .319</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.06	p .147 .114 .116 .837 .082 .967 .962 .450	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00	p .5656 .526 .461 .758 .396 .255 .225 .504
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.03 0.25 0.01	P .003** .003** .003** .408 .590 .584 .335 .319 .854	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.02 0.06 0.08	p .147 .114 .116 .837 .082 .967 .962 .450 .116	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00 0.00 0.01	 <i>p</i> .5656 .526 .461 .758 .396 .255 .225 .504 .763
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.04 0.25 0.01 -0.08	P .003** .003** .003** .408 .590 .584 .335 .319 .854 .048*	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.02 0.06 0.08 -0.09	p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779	Loneliness β - 0.13 0.22 - 0.83 0.00 0.01 - 0.04 - 0.01 0.00 0.01 - 0.09	 <i>p</i> .5656 .526 .461 .758 .396 .255 .225 .504 .763 .284
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience % Fraud Victim T1 ^a	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.04 0.25 0.01 -0.08 0.05	<pre>p .003** .003** .003** .408 .590 .584 .335 .319 .854 .048* .816</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.06 0.02 0.06 0.08 -0.09 0.10	p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00 0.01 -0.09 0.10	 <i>p</i> .56556 .5266 .4611 .758 .396 .255 .2255 .504 .763 .284 .501
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Ressilience % Fraud Victim T1 ^a % Fraud Victim since T1 ^a	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.04 0.25 0.01 -0.08 0.05 0.07	p .003** .003** .408 .590 .584 .335 .319 .854 .048* .816 .123	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.00 0.02 0.06 0.02 0.00 0.02 0.00 0.03 -0.09 0.10 0.13	p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134 .010*	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00 0.01 -0.03 0.00 0.01 -0.09 0.10 0.13	 <i>p</i> .56556 .526 .461 .758 .396 .255 .225 .504 .763 .284 .501 .340
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience % Fraud Victim T1 ^a % Fraud Victim since T1 ^a Emotional Distress T1	Emotional Distress β 3.13 - 41.09 .450 - 0.03 0.13 - 0.03 - 0.04 0.25 0.01 - 0.08 0.05 0.07 0.22	<pre>p .003** .003** .003** .408 .590 .584 .335 .319 .854 .048* .816 .123 < .001***</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.00 0.02 0.08 -0.09 0.10 0.13 1.31	<pre>p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134 .010* < .001***</pre>	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00 0.01 -0.09 0.10 0.13 1.31	 <i>p</i> .56556 .526 .461 .758 .396 .255 .225 .504 .763 .284 .501 .340 .212
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience % Fraud Victim T1 ^a % Fraud Victim since T1 ^a Emotional Distress T1 PTSD-like Symptoms T1	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.04 0.25 0.01 -0.08 0.05 0.07 0.22 0.56	<pre>p .003** .003** .003** .003** .408 .590 .584 .335 .319 .854 .048* .816 .123 < .001*** .042*</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.06 0.08 -0.09 0.10 0.13 1.31 0.21	<pre>p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134 .010* < .001*** .012*</pre>	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.04 -0.01 0.00 0.01 -0.09 0.13 1.31 0.21	 <i>p</i> .56556 .526 .461 .758 .396 .255 .225 .504 .763 .284 .501 .340 .212 .332
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience % Fraud Victim T1 ^a % Fraud Victim T1 ^a % Fraud Victim since T1 ^a Emotional Distress T1 PTSD-like Symptoms T1 Loneliness T1	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.04 0.25 0.01 -0.08 0.05 0.07 0.22 0.56 0.12	<pre>p .003** .003** .003** .408 .590 .584 .335 .319 .854 .048* .816 .123 < .001*** .042* .024*</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.02 0.06 0.08 -0.09 0.10 0.13 1.31 0.21 0.21	<pre>p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134 .010* < .001*** .012* < .001***</pre>	Loneliness β -0.13 0.22 -0.83 0.00 0.01 -0.01 0.00 0.01 -0.04 -0.01 0.00 0.01 -0.09 0.10 0.13 1.31 0.21	<pre>p .56556 .526 .461 .758 .396 .255 .225 .504 .763 .284 .501 .340 .212 .332 < .001***</pre>
Predictor Age Age ² Age ³ % Women % Non-Hispanic White Education Income % No Full-Time Employment Liberal Worldview Resilience % Fraud Victim T1 ^a % Fraud Victim since T1 ^a Emotional Distress T1 PTSD-like Symptoms T1 Loneliness T1 Intercept	Emotional Distress β 3.13 -41.09 .450 -0.03 0.13 -0.03 -0.04 0.25 0.01 -0.08 0.05 0.07 0.22 0.56 0.12 .00	<pre>p .003** .003** .003** .408 .590 .584 .335 .319 .854 .048* .816 .123 < .001*** .042* .004* .104</pre>	PTSD-like Symptoms β 13.53 -6.37 2.45 0.06 0.12 0.00 0.02 0.06 0.02 0.06 0.08 -0.09 0.10 0.13 1.31 0.21 0.21 .00	<pre>p .147 .114 .116 .837 .082 .967 .962 .450 .116 .779 .134 .010* < .001*** .012* < .001*** .114</pre>	Loneliness β - 0.13 0.22 - 0.83 0.00 0.01 - 0.04 - 0.01 0.00 0.01 - 0.09 0.10 0.13 1.31 0.21 0.21 0.00	<pre>p .56556 .526 .461 .758 .396 .255 .225 .504 .763 .284 .501 .340 .212 .332 < .001*** .185</pre>

Note. $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$. ^a dummy-coded (0 = "no", 1 = "yes").

associated with mental health challenges for either the full or partial T1 sample.

T2 data

To account for baseline mental health status, we conducted a multivariate lagged regression and included emotional distress, PTSD-like symptoms, and loneliness at T1 as predictors of the same respective outcome measures at T2 (Table 2).

In partial support of Hypothesis 1, age was linked to emotional distress at T2 (see Table 2, Fig. 1). Distress levels were highest around the age of 30, fell until the age of 60, and plateaued until at least the age of 70. (We again abstain from identifying pattern among 70 + year-olds). We observed no links between age and either PTSD-like symptoms or loneliness.

More resilient participants disclosed lower levels of emotional distress at T2, but no longer benefitted from lower levels of PTSD-like symptoms or loneliness. Thus, Hypothesis 2 was only partially supported at T2. Participants who experienced higher levels of emotional distress at T1 also did so at T2, and the same pattern held true for PTSDlike symptoms. Participants who reported higher levels of loneliness at T1 also did so at T2, but T1 emotional distress and T1 PTSD-like symptoms were not linked to T2 loneliness. In partial agreement with Hypothesis 3, participants who had ever fallen victim to fraud prior to T2 now expressed higher levels of PTSD-like symptoms but not higher levels of emotional distress or loneliness.

To explore why fraud victimization predicted participants' mental health at T2 but not T1, we dummy-coded fraud victim status into first fraud victimization prior to T1 and first fraud victimization occurring between T1 and T2 (Table 2). Fraud victimization prior to T1 was not associated with mental health. However, new fraud victimization since T1 was linked to higher levels of PTSD-like symptoms.

Exploratory analyses

We repeated full-sample analyses for T1 and T2 with the addition of interaction terms indexing the relationships between age and resilience and between age and victim status. These interaction terms were not associated with any of the mental health outcome measures.

Discussion

The present studies endeavored to examine the roles that age, resilience, and fraud victimization played in the context of mental health challenges during the second year of the COVID-19 pandemic.

Research questions and hypotheses

Older age was associated with higher levels of resilience in both early and late 2021 (Question 1a) and with higher levels of fraud victimization in early 2021 (but not late 2021; Question 1b). With the exception of loneliness, we did not observe meaningful improvements in participants' mental health throughout 2021 (Question 2).

We had hypothesized that younger adults would report poorer mental health (Hypothesis 1), which was partially supported: In early 2021, adults around the age of 30 experienced the highest and adults around the age of 60 experienced the lowest levels of PTSD-like symptoms and emotional distress. These patterns held for emotional distress until late 2021. Loneliness was not linked to age.

In support of Hypothesis 2 – that less resilient participants would report poorer mental health –, lower levels of resilience were linked to greater emotional distress at both T1 and T2. More resilient participants enjoyed lower levels of PTSD-like symptoms and loneliness in early 2021 but not late 2021.

Finally, we had hypothesized that fraud victims would also report poorer mental health (Hypothesis 3), but this was only the case when fraud victimization first occurred between time points T1 and T2. It is possible that fraud victimization may have occurred longer ago and been less salient (or already more accepted) at T1 than if it had occurred in the six to eight months that passed between T1 and T2. New victimization might have also co-occurred with COVID-19 events and stressors that could have aggravated the effect financial fraud has on a person's wellbeing (e.g., job loss, COVID-19-related medical bills and issues, loss of loved one).

Exploratory analyses revealed that the effects of resilience and fraud victimization on mental health did not vary with age. This suggests that (at least during stressful times such as the COVID-19 pandemic), all age groups may benefit from interventions aimed at increasing resilience or at decreasing susceptibility to fraud (for reviews of such, see Ferreira et al., 2021, and the Scam Prevention Research Committee, 2024, respectively). However, to reiterate, mental health was poorer among younger adults and first-time fraud victims. Therefore, it is possible that preventative steps may be most beneficial when taken in or before young adulthood (e.g., see Reavley et al., 2015, for a review), before the onset of crises or fraud victimization. Since many current fraud-related risk messages and interventions are specifically targeted at older adults, though (e.g., Scam Prevention Research Committee, 2024), it is important that these efforts start reaching younger demographics as well.

Limitations

The present project is subject to multiple limitations, including participant attrition: Around one-third of T1 participants did not return to provide data at T2, with non-returnees differing significantly from returnees in terms of age and certain age-related variables (e.g., lower levels of distress and PTSD-like symptoms). As such, any differences detected between T1 and T2 could be the result of younger, less emotionally well participants failing to provide data at T2.

Age-related differences in mental health themselves could be accounted for by factors not considered in the present surveys. For instance, older adults may have been more efficient or fast at downregulating negative affective responses to pandemic- or fraud-related stressors: Aside from being more likely to avoid COVID-19 information and news media in the first place (Nolte et al., 2021), older adults also tended to use emotional acceptance in response to threatening COVID-19 headlines more, resulting in lower levels of emotional arousal (Wolfe & Isaacowitz, 2022). Since we did not examine variations in avoidance or acceptance tendencies, we cannot pinpoint exactly why or at what point following exposure to stressors age differences in stress responses arose in 2021.

Finally, between T1 and T2, only a small number of participants indicated first- time fraud victimization in the preceding six months (n = 30 (9.4 %) of T2 participants). Because analyses involving first-time victims were driven by a small proportion of the sample, our results may overestimate the impact fraud had on wellbeing in late 2021. To verify the link between financial fraud and markers of mental health challenges such as PTSD-like symptoms, future studies should draw on bigger, more representative samples of victims. In addition, future research should account for the extent of victimization, for instance, via the amount of money lost in response to fraud.

Conclusion

Although some indicators of mental health improved throughout year two of the COVID-19 pandemic, individuals who identified as firsttime fraud victims in 2021 reported higher levels of PTSD-like symptoms than those who had never been a victim or experienced victimhood prior to March 2021. Even though older age was associated with a higher lifetime risk of financial fraud susceptibility, it was also linked to higher levels of resilience and lower levels of PTSD-like symptoms and emotional distress. In sum, the present paper contributes to the literature by extending our knowledge of the mental health impact of COVID-19 to the year 2021 and by exposing how financial fraud served as a stressor over and above concurrent pandemic-related challenges.

Statement of ethics

This study protocol was reviewed and approved by the Scripps College Internal Review Board under the project title "The impact of Covid 19 pandemic on decision-making and well being"

Written informed consent was required prior to completing the study.

Author contributions

JN analyzed the data and prepared the manuscript; DH conducted preliminary analyses. YH, SW, PL, and DH designed the study. SW, YH, and DH collected the data. All authors edited the manuscript

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Julia Nolte: Writing – review & editing, Writing – original draft, Visualization, Formal analysis, Data curation. Stacey Wood: Writing – review & editing, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. David Hengerer: Writing – review & editing, Conceptualization. Pi-Ju Liu: Writing – review & editing, Methodology, Investigation, Conceptualization. Yaniv Hanoch: Writing – review & editing, Supervision, Resources, Project administration, Methodology, Investigation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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The present studies were not pre-registered prior to data collection.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.jeconc.2024.100100.

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