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Psychological Distress and Physical Health Symptoms in the Latinx Population During the COVID-19 Pandemic: Exploring the Role of Anxiety Sensitivity

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Abstract

Objective The outbreak of the novel 2019 SARS2-Coronavirus disease (COVID-19) has led to substantial physical and mental health consequences. Rates of mortality and hospitalization are highest among those of racial and ethnic minority persons, including Latinx persons. Further, Latinx persons have been experiencing elevated mental health problems in response to the pandemic compared to non-Latinx Whites. The current study examined whether individual differences in anxiety sensitivity (AS) related to more severe emotional distress associated with social distancing, financial strain, fear of COVID-19, and physical health symptoms stemming from the COVID-19 pandemic among Latinx adults.

Methods Participants included 188 Latinx persons (31.4% female, $M_{age} = 34.1$ years, $SD = 8.16$) recruited via an online survey panel program.

Results Results indicated that AS significantly contributed to increased severity of the emotional stress response associated with social distancing ($\Delta R^2 = 0.15$, $p < 0.001$), financial strain ($\Delta R^2 = 0.15$, $p < 0.001$), physical health symptoms ($\Delta R^2 = 0.03$, $p = 0.006$), and fear of COVID-19 ($\Delta R^2 = 0.15$, $p < 0.001$). These effects were evident over and above the variance accounted for by gender, years living in the United States, education, and work and home life COVID-19-related stress.

Conclusions These cross-sectional findings suggest AS may be an important individual difference factor for better understanding mental health among Latinx persons in the context of the COVID-19 pandemic.

Keywords Latinx · COVID-19 · Coronavirus · Pandemic · Anxiety · Anxiety Sensitivity

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Introduction

As of the beginning of January 2021, the novel 2019 SARS2-coronavirus disease (COVID-19) has resulted in 46 million infections and over 1 million deaths worldwide [*WHO Coronavirus Disease* (*COVID-19*) *Dashboard*]. In the United States (US), racial/ethnic minorities be been disproportionally impacted by the disease and sequelae related to the COVID-19 pandemic (Control & Prevention, 2020; Karaca-Mandic et al., 2020). For example, Latinx persons experience significantly higher rates of COVID-19 [*WHO Coronavirus Disease* (*COVID-19*) *Dashboard*], such that COVID-19 cases are 2.8 times higher in Latinx persons than non-Latinx White persons (CDC, 2020; Karaca-Mandic et al., 2020). Additionally, Latinx persons are 4.7 times more likely to be hospitalized for COVID-19 relative to non-Latinx White persons (Surveillances, 2020). Deaths from COVID-19 are also 1.1 times higher among Latinx

persons compared to non-Latinx Whites (Surveillances, 2020). These data highlight the disproportionate, over-representation of Latinx persons in COVID-19 infection rates, hospitalizations, and mortality relative to non-Latinx White individuals.

Social determinants of health (i.e., minority stressors including racism, discrimination, mistrust of medical providers) commonly serve as impediments to care for Latinx persons and increase the probability that Latinx communities are more vulnerable to situations that adversely impact health outcomes (e.g., housing insecurity/discrimination, lower income, limited access to healthcareKu & Matani, 2001; Morales et al., 2002; Quinn, 2000; Ruiz, 2005; Wells et al., 1989). Structural barriers such as xenophobia and immigration enforcement influence health seeking behavior by means of increasing mistrust for governmental agencies across Latinx generations (Cardoso et al., 2020; Gulbas & Zayas, 2017). These factors can influence the willingness and readiness for Latinx persons to seek treatment for physical and mental health symptoms during and following the COVID-19 pandemic (Page et al., 2020). Among those with immigrant family members or of immigrant status themselves, higher levels of anxiety may exacerbate these concerns and delay speaking to medical professionals (Berk & Schur, 2001). These data are compounded by low rates of Spanish speaking health professionals and lack of culturally tailored resources for this population (Mutchler et al., 2007). Moreover, factors such as essential worker status (Waltenburg et al., 2020), financial strain (Garey et al., 2017), and poverty impact the rate of COVID-19 exposure many Latinx persons experience (Resnick et al., 2020), as individuals are unable to take time from work to rest when ill (Farrell & Venator, 2012), or socially distance themselves from coworkers (Gould & Shierholz, 2020). Indeed, the influence of such societal determinants of health are well documented in past work (Kouyoumdjian et al., 2003) and must be considered within the scope of COVID-19, as they intertwine with risk of exposure, infection, treatment, and overall health outcomes associated with COVID-19 among Latinx (Resnick et al., 2020).

Along with the higher exposure and infection rates documented among this population, Latinx persons also are more likely to be affected by COVID-19-related psychosocial stress relative to non-Latinx White persons (Fitzpatrick et al., 2020b, 2020c; Fortuna et al., 2020; Zvolensky et al., 2020). Approximately 40.8% of Latinx persons reported elevated symptoms of an anxiety or depressive disorder between July 16–21, 2020 compared to 29.2% for non-Latinx Whites (Czeisler, 2020; Roll et al., 2020). The emotional distress (e.g., anger, sadness) that emerges as a result of social distancing from family members and friends may be particularly difficult for those of the Latinx community due to the value placed on close relationships and familial bonds across the culture (e.g., family cohesion; Rivera et al., 2008; Zapata Roblyer et al., 2017). Other work indicates that Latinx persons are experiencing higher COVID-19 related trauma, substance use, and suicidal ideation compared to non-Latinx Whites (Czeisler, 2020). Stress related to COVID-19, in conjunction with continued and prolonged minority stress, and anxiety associated with 'regular stressors' such as racial/ethnic discrimination may disturb the Hypothalamic-Pituitary-Adrenal (HPA) axis (Smith & Vale, 2006) and result in greater strain on an individual's wellbeing. This perspective is in line with the allostatic load theory, which suggests chronic stress can be associated with negative physical and mental health outcomes (McEwen, 1998, 2004). As such, the additive effect of COVID-19-related disease and stress burden exerted on stress responses systems, that are likely already saturated by pre-COVID chronic stress, may result in worse short- and long-term mental health outcomes among the Latinx population. Yet, there is highly limited data on factors that may be associated with a more severe COVID-19 stress response or emotional distress symptoms (e.g., anger, sadness, fear;Kleinberg et al., 2020) among Latinx persons.

One clinically and theoretically relevant individual difference factor for heightened stress responsivity is anxiety sensitivity (AS). AS refers to the fear of anxiety and high arousal-related symptoms based on the expectation that such symptoms have negative somatic, social, or psychological consequences (Reiss et al., 1986). AS is a primary threat appraisal construct and serves as an 'affect amplifier' (Bernstein et al., 2009), and is a consistent and robust predictor of psychological distress in work conducted among largely non-Latinx White persons (Bernstein et al., 2009; Schmidt & Zvolensky, 2007). Individuals higher in AS are more hypervigilant of arousal symptoms and interpret these symptoms as a sign of 'imminent personal danger,' which can exacerbate the severity of mental health symptoms such as anxiety (Zinbarg et al., 2001). Some work suggests that the AS construct may hold relevance to the Latinx community because this group tends to maintain a 'somatic orientation' for health problems (Canino, 2004; Huynh, 2012; Tófoli et al., 2011), such that fears of internal symptoms among Latinx persons increase the severity of mental (Bakhshaie et al., 2019) and physical health symptoms (Manning et al., 2019). In fact, available pre-COVID-19 empirical work among Latinx persons has found that AS is related to poorer mental and physical health outcomes (Velasco et al., 2016), including greater anxiety and depression (Bakhshaie et al., 2018; Jardin et al., 2018; Zvolensky et al., 2015a, 2015b). As an amplifier of negative affect, AS may serve to (theoretically) exacerbate emerging feelings of anger, sadness, and fear in terms of COVID-19 related financial worry, social distancing guidelines, and the outbreak of infection (Kleinberg et al., 2020). Indeed, prior work has noted that the subjective internal experience of anxiety symptoms can

lead to increased risk for developing panic disorder and anxiety psychopathology severity(McNally, 2002; Wearne et al., 2019), and similar results have been found among Latinx persons (Varela et al., 2007). Based on this work, there is theoretical justification to evaluate the relevance of AS in terms of mental health among Latinx persons in the context of the COVID-19 pandemic. One recent study found AS was cross-sectionally and prospectively related to poorer COVID-19 mental health among Spanish-speaking adults from Argentina (Rogers et al., in press). No studies, however, have focused on Latinx persons from the US in the context of AS and COVID-19 outcomes, or explored the importance of AS in terms of COVID-19 specific emotional impact or severity of physical health symptoms. It is theoretically plausible that AS may be related to the greater internal distress associated with COVID-19 stress response to social distancing, financial strain, and perceived threat of COVID-19 as well as COVID-19 related physical health symptoms among Latinx persons from the US.

The current cross-sectional study examined whether AS was related to the severity of stress response associated with the COVID-19 outbreak in terms of social distancing, financial strain, perceived threat, as well as COVID-19 related physical health symptoms among Latinx adults. It was hypothesized that AS would be related to greater stress response of COVID-19 and more severe physical health symptoms after accounting for gender, years in the US, education, and work and home life COVID-19-related stressors (*Double Jeopardy: COVID-19 and Behavioral Health Disparities for Black and Latino Communities in the US*; McCormack, 2020).

Methods

Participants

The present study included 188 Latinx persons (31.4% female, $M_{age} = 34.1$ years, $SD = 8.16$). Participants were recruited via an online survey panel program, via Amazon Mechanical Turk (Mturk), due to the inability to conduct in person research during the COVID-19 pandemic. Study eligibility criteria included being 18–65 years old, self-identifying as a Latinx person, currently living in the US, and being able to provide informed consent. Exclusion criteria included being younger than 18 years or older than 65 years, being a non-English speaker (to ensure comprehension of the study questions), and inability to give informed, and voluntary consent. To ensure that self-identification of Latinx status was accurately captured, ethnicity was evaluated from a series of pre-screen questions. Each participant completed a pre-screen survey in which they were asked a range of demographic questions. Those that identified as

"non-Hispanic/Latino" were ineligible to continue the study. The Mturk ID was recorded for ineligible persons to restrict duplicate attempts.

The present sample consisted of predominately Latinx White/Caucasian (52.1%) individuals, followed by 27.1% Latinx Black/African American, 6.4% identified as other, 5.9% as more than one race, 3.7% Latinx Asian, 1.6% Latinx Native American/Alaska Native, 1.6% as Latinx Native Hawaiian or Pacific Islander, and 1.6% declined to state. Most participants (64.9%) identified as heterosexual, 3.2% identified as gay or lesbian, 29.8% identified as bisexual, and 2.1% indicted that preferred not to disclose their sexuality. Regarding education, 13.8% of the participants indicated some college, 54.8% had a bachelor's degree, 30.3% had a master's degree, and 1.1% had a doctoral degree. More than half of the sample indicated they were married or living with someone (82.4%).

In terms of preexisting illnesses, 25.5% of persons indicated having an autoimmune disease, 42.02% respiratory disease, 8.5% HIV, 19.7% gastrointestinal issues, 16.0% cardiovascular disease, 33.0% diabetes, 12.8% kidney disease, and 35.1% reported having high blood pressure. Participants reported living in the US an average of 31.02 ($SD = 10.60$) years and 96% of the sample indicated that they were born in the US Of those that were born outside of the US, 3.2% were born in Mexico, and 0.8% of the subsample indicated they were bornin Ecuador.

Measures

Demographics Questionnaire. Demographic information was gathered to characterize the sample and included age, gender, sexual orientation, primary language, ethnicity, education, employment status, marital status, years in US, COVID-19 impact, as well as preexisting medical conditions.

Short Scale Anxiety Sensitivity Index (Zvolensky et al., 2018)*. The Short Scale Anxiety Sensitivity Index (SSASI) is brief version of the 18-item Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). The SSASI measures the fear of anxiety and arousal related sensations. Respondents are asked to rate their sensitivity to anxiety on a 5-point Likert-type scale ranging from 0 (*very little*) to 4 (*very much*). The SSASI has demonstrated sound psychometric properties in past work (Zvolensky et al., 2018); the SSASI total score (range from 0 to 20) had excellent internal consistency in the current sample ($\alpha = 0.86$).

Emotional Impact of Covid-19 (Schmidt, et al., 2020). The Emotional Impact of COVID-19 (EIC) is a self-report questionnaire aimed to assess the impact of the COVID-19 pandemic in terms of an individual's loneliness, anger, fear, and sadness. The EIC has three subscales (COVID-19 outbreak, social distancing, and economic impact) with 4 items

per subscale. Each subscale inquires over the emotional impact of COVID-19 in terms of (1) COVID-19 outbreak (e.g., "Related to the COVID-19 outbreak, please rate your (loneliness, anger, fear, sadness) from 0–100"), (2) social distancing [e.g., "Related to the social distancing as a results of COVID-19, please rate your (loneliness, anger, fear, sadness) from 0 to 100"], and (3) economic impact (e.g., "Related to the economic impact as a results of COVID-19, please rate your (loneliness, anger, fear, sadness) from 0 to 100"). The EIC subscales of social distancing and economic impact were utilized as criterion variables and demonstrated excellent internal reliability ($\alpha = 0.93$, $\alpha = 0.94$).

COVID-19 Health Symptom Severity Scale (Zvolensky et al., 2020b). The COVID-19 Health Symptoms Severity Scale (HSS) is a 15-item measure that measures the severity of COVID-19 related physical health symptoms (e.g., "I have lost my sense of smell or taste"). Participants indicated whether they had experienced these symptoms over the past 2-week period by indicating "yes" or "no." A total score was calculated by summing the number of "yes" responses.

Fear of Coronavirus-19 Scale (FCV-Ahorsu et al., 2020). The FCV is a 7-item self-report scale that measures the severity of COVID-19 fears. Participants are asked to rate their level of agreement with the statements provided (e.g., "My heart races or palpitates when I think about getting coronavirus-19") from 1 (*strongly disagree*) to a 5 (*strongly agree*). This measure has demonstrated a unidimensional structure in past work (Ahorsu et al., 2020). A total score was calculated by summing each item together for a final range of 7 to 35 with a higher score indicating greater fear of COVID-19 ($\alpha = 0.88$).

The Epidemic-Pandemic Impacts Inventory (EPII; Grasso et al., 2020*).* The EPII is a 92-item inventory of pandemic-related experiences that range across 5 separate life domains, including work life (12-items), home life (19-items), social activities and isolation (18-items), emotional/physical health and infection (24-items), and positive change (19-items). The current study included work life (e.g., "hard time making the transition to working from home") and home life (e.g., "increase in physical conflict with a partner or spouse") to capture and assess personal life stressors related to the COVID-19 pandemic (work: $\alpha = 0.88$, home: $\alpha = 0.89$).

Procedure

Participants were recruited from across the US via Amazon Mechanical Turk (Mturk). Mturk is an online survey management system that has been found to yield valid and representative data (Kim & Hodgins, 2017). According to eligibility criteria, participants are directed to the study participation link and if interested, they completed the online survey. Prior to completing the survey, participants provided

informed consent. The survey took approximately 60 min to complete, and participants were compensated with credit through their Mturk account. Each participant was compensated a total of $4.00 for completing the survey. Mturk allows researchers to specify the quality criteria for their sample. In the current study, participants were shown the study information if they: (1) had never been blocked from a study, (2) performed at more than 90% accuracy on other studies, and (3) passed a Human Intelligence Test (HIT), such as identifying pictures or filling in a CAPTCHA test. To further ensure quality of the data, the following tactics were also employed: IP addresses were obtained to prohibit duplicate responses, responses were omitted based on missing information, responses were omitted if incorrectly responding to three out of four quality check questions, completion time being less than 10 min, and evidence of nonsensical responses were omitted. The study protocol was approved by the Institutional Review Board at the supporting institution.

Analytic Strategy

Analyses were conducted using SPSS version 25. Sample descriptive statistics and zero-order correlations among study variables were examined. Four separate, three-step hierarchical regressions were conducted for each of the criterion variables: (1) emotional impact of social distancing; (2) emotional impact of economic adversity; (3) fear of COVID-19; and (4) physical health symptoms associated with COVID-19. For all analyses, step 1 covariates included years living in the US, COVID-19 degree of exposure, sex, age, and education. Step 2 included home and work life distress (EPII). Step 3 included AS (SSASI). Model fit for each of the steps was evaluated with the F statistic and an increase in variance accounted for as evidenced by a change in R^2. Squared semi-partial correlations (sr^2) were used as measures of effect size. A Bonferroni correction was employed; level of statistical significance was adjusted to 0.013 (i.e., 0.05/4).

Results

Bivariate Relations

Bivariate correlations are presented in Table 1. AS was positively correlated with the emotional impact of social distancing ($r = 0.62$), emotional impact of financial strain ($r = 0.32$), physical health symptom severity ($r = 0.33$), and fear of COVID-19 ($r = 0.28$). Moreover, approximately a third of the sample (32.4%) indicated that the COVID-19 pandemic

Table 1 Bivariate correlations

	1	2	3	4	5	6	7	8	9	10	11	12	Mean/n	SD/%
1. Age	–												34.07	8.16
2. Gender (% female)	-0.06	–											59	31.4%
3. Years in US	0.67***	-0.06	–										31.10	10.60
4. Education	0.07	-0.09	0.07	–									6.06	0.98
5. COVID exposure	-0.14*	-0.06	-0.05	0.17*	–								3.76	1.20
6. EPII-work	0.07	0.03	0.05	0.38***	0.26***	–							6.85	3.50
7. EPII-home	0.10	0.07	0.07	0.38***	0.23**	0.89***	–						7.60	4.60
8. Anxiety sensitivity	0.12	0.01	0.10	0.25**	0.31***	0.51***	0.58***	–					10.72	4.90
9. EIC-social distancing	0.04	-0.09	0.06	0.38***	0.35***	0.45***	0.46***	0.62***	–				236.2	105.36
10. EIC-financial strain	0.05	-0.12	0.06	0.26***	0.38***	0.42***	0.39***	0.32***	0.10***	–			237.71	107.44
11. HSS	0.15*	0.11	0.02	0.24**	0.10	0.50***	0.44***	0.33***	0.30***	0.34***	–		4.56	4.00
12. FCV	0.08	0.01	0.07	0.30***	0.42***	0.51***	0.52***	0.38***	0.68***	0.67***	0.65***	–	25.07	6.16

Gender: 0—Male, 1—Female; Education: 1—less than high school, 2—some high school, 3—completed high school, 4—ome college, 5—associates degree, 6—bachelor's degree, 7—master's degree, 8—doctoral degree; COVID exposure: 1—not at all, 2—a little, 3—much, 4—very much, 5—extremely, 6—decline to answer

Anxiety Sensitivity *SSASI* (Zvolensky, 2018), *EIC* Emotional Impact of COVID-19 (Zvolensky et al., 2020a), *HSS* Health Symptom Severity of COVID-19 (Zvolensky et al., 2020b), *FCV* Fear of Coronavirus (Ahorsu et al., 2020)

N = 188

* *p* < 0.05

** *p* < 0.01

*** *p* < 0.001

Table 2 Hierarchical regression results

Model		ΔR^2	b	SE	β	t	p	sr^2
Emotional impact of social distancing								
1	Gender	0.25***	− 6.97	13.71	− 0.03	− 0.51	0.61	− 0.05
	Years in US		0.40	0.68	0.04	0.59	0.56	0.04
	Age		6.86	0.00	0.02	0.39	0.70	− 0.02
	Education		34.39	7.18	0.32	4.79	< 0.001	0.38
	COVID-19 impact		27.21	5.89	0.31	4.62	< 0.001	0.31
2	EPII-work	0.09**	2.73	4.35	0.09	0.63	0.53	0.04
	EPII-home		5.60	3.31	0.24	1.69	0.09	0.10
3	Anxiety sensitivity	0.15***	10.47	1.51	0.49	6.92	< 0.001	0.39
Emotional impact of financial strain								
1	Gender	0.20***	− 16.17	14.39	− 0.08	− 1.12	0.26	− 0.07
	Years in US		0.45	0.72	0.04	0.62	0.53	0.001
	Age		0.00	0.00	0.05	0.76	0.45	0.06
	Education		20.23	7.54	0.19	2.68	0.01	0.17
	COVID-19 impact		31.67	6.18	0.35	5.12	< 0.001	0.36
2	EPII-work	0.08***	6.54	4.59	0.21	1.42	0.16	0.09
	EPII-home		2.67	3.50	0.11	0.76	0.45	0.04
3	Anxiety sensitivity	0.15***	10.67	1.62	0.49	6.61	< 0.001	0.39
Health symptom severity								
1	Gender	0.08*	1.16	0.57	0.15	2.03	0.04	0.16
	Years in US		− 0.002	0.03	− 0.004	− 0.05	0.96	− 0.13
	Age		1.68	0.00	0.002	0.02	0.98	0.19
	Education		0.93	0.30	0.23	3.09	0.002	0.21
	COVID-19 impact		0.27	0.25	0.08	1.11	0.27	0.12
2	EPII-work	0.22***	0.18	0.17	0.16	1.07	0.29	0.07
	EPII-home		0.33	0.13	0.38	2.59	0.01	0.16
3	Anxiety sensitivity	0.03**	0.18	0.07	0.22	2.79	0.01	0.16
Fear of coronavirus								
1	Gender	0.26***	0.66	0.80	0.06	0.83	0.41	0.06
	Years in US		0.03	0.04	0.05	0.77	0.44	− 0.03
	Age		1.0	1.41	0.42	0.23	3.36	0.11
	Education		1.41	0.42	0.23	3.36	0.001	0.21
	COVID-19 impact		2.08	0.35	0.40	6.03	< 0.001	0.41
2	EPII-work	0.15***	0.16	0.24	0.09	0.64	0.52	0.05
	EPII-home		0.48	0.18	0.35	2.59	0.01	0.14
3	Anxiety sensitivity	0.17***	0.67	0.08	0.53	8.35	< 0.001	0.42

Gender: 0—Male, 1—Female; Education: 1—less than high school, 2—some high school, 3—completed high school, 4—some college, 5—associates degree, 6—bachelor's degree, 7 = master's degree, 8—doctoral degree; COVID exposure: 1—not at all, 2—a little, 3—much, 4—very much, 5—extremely, 6—decline to answer

Anxiety Sensitivity *SSASI* (Zvolensky, 2018), *EIC* Emotional Impact of COVID-19 (Zvolensky et al., 2020a): fear (0–100), anger (0–100), sadness (0–100), loneness (0–100), *HSS* Health Symptom Severity of COVID-19 (Zvolensky et al., 2020b), *FCV* Fear of Coronavirus (Ahorsu et al., 2020)

$N = 188$

$^{*}p < 0.05$

$^{**}p < 0.01$

$^{***}p < 0.001$

affected them "extremely," 27.7% reported "very much," 18.6% reported "much," and 18.8% indicated "a little."

Regression Analyses

Regression results are presented in Table 2. In terms of emotional impact of social distancing (EIC), the model step one

with covariates was statistically significant [$R^2 = 0.25$, $F(5, 173) = 11.25$, $p < 0.001$] with education and COVID degree of exposure emerging as statistically significantly predictors of the criterion variable. In step two, EPII-work and EPII-home were added and resulted in a statistically significant model ($\Delta R^2 = 0.09$, $p < 0.001$). In step three, AS was a statistically significant predictor ($\Delta R^2 = 0.15$, $p < 0.001$).

In terms of emotional impact of financial stress (EIC), the model step one with covariates was statistically significant [$R^2 = 0.20$, $F(5, 173) = 8.76$, $p < 0.001$] with education and COVID exposure emerging as statistically significantly predictors. In step two, EPII-work and EPII-home were added and resulted in a statistically significant model ($\Delta R^2 = 0.08$, $p < 0.001$) and COVID-19 degree of exposure emerged as a significant predictor. In step three, AS was a statistically significant predictor ($\Delta R^2 = 0.15$, $p < 0.001$).

In terms of physical health symptom severity (COVID-19 Health Symptom Severity Scale), the model step one with covariates was statistically significant [$R^2 = 0.08$, $F(5, 173) = 3.07$, $p = 0.01$] with education and gender emerging as statistically significantly predictors. In step two, EPII-work and EPII-home were added and resulted in a statistically significant model ($\Delta R^2 = 0.22$, $p < 0.001$) and EPII-home emerged as a significant univariate predictor. In step three, AS emerged as a statistically significant predictor ($\Delta R^2 = 0.03$, $p = 0.006$).

In terms of fear of COVID-19 (Fear of Coronavirus-19 Scale), the model step one with covariates was statistically significant [$R^2 = 0.25$, $F(5, 173) = 11.79$, $p < 0.001$] with education and COVID impact emerging as statistically significantly predictors. In step two, EPII -work and EPII- home were added and resulted in a statistically significant model ($\Delta R^2 = 0.15$, $p < 0.001$) and degree of exposure to COVID-19 and EPII- home emerged as significant univariate predictors. In step three, AS emerged as a statistically significant predictor ($\Delta R^2 = 0.17$, $p < 0.001$).

Discussion

Latinx persons are experiencing greater COVID-19-related stress when compared to non-Latinx White persons (Fitzpatrick et al., 2020a, 2020b; Fortuna et al., 2020; Rogers et al., in press). However, there remains little understanding of what individual difference factors among the Latinx population in the US may be related to a more severe affective response to COVID-19 stress and severity of physical symptoms. Therefore, the current cross-sectional investigation evaluated whether AS was related to an increase in the emotional distress symptoms related to COVID-19 social distancing, financial strain, fear of COVID-19, as well COVID-19 health symptoms among Latinx adults from the US.

Overall, these data provide a preliminary framework in which AS may be related to various COVID-19 related behavioral health symptoms among Latinx persons. As the pandemic continues and in view that future non-COVID-19 pandemic will occur, the current data help inform how individual differences in anxiety sensitivity may be important to understanding the psychological impact of pandemics. Indeed, the results were consistent with expectation. Specifically, AS was a statistically significant cross-sectional predictor of emotional impact of COVID-19 social distancing and economic adversity as well as physical heath symptom severity and fear of COVID-19. Across models, AS explained between 3 and 17% of unique variance, indicating small to moderate effects. Moreover, these incremental effects were evident after adjusting for other theoretically and empirically relevant factors of gender, years living in the US, education, and work and home life COVID-19-related stressors. Such effects are notable given that each of the models accounted for significant variance in each of the criterion variables (Abelson, 1985). Thus, there is likely a high degree of clinical importance to the role of AS in terms of emotional stress related to COVID-19 and the severity of physical health symptoms. These results are in line with non-COVID-19 research among the Latinx population which has found that AS is related to poorer mental and physical health among this population (Zvolensky et al., 2015a, 2015b, 2019) and a previous longitudinal study among adults from Argentina (Rogers et al., in press).

Considering the existing data on COVID-19 related psychological distress and the possibility that these symptoms may be longstanding (Esterwood & Saeed, 2020), there is a need to identify potentially targetable factors that can lessen the severity of mental health and physical symptoms among the Latinx population. The current results empirically document that AS is one such psychological mechanism. Social distancing is the first line of behaviorally-based protection against COVID-19 (Behar-Zusman et al., 2020; Marroquín et al., 2020), but for some Latinx persons, isolation from family members may be particularly stressful. Familial expectations, such as caretaking for family members above oneself, multigenerational households, and providing financially for one's family potentially place greater strain on Latinx persons amidst social distancing guidelines and high rates of job loss (Saenz & Sparks, 2020). Future work could usefully evaluate whether such cultural and familial expectations moderate AS in terms of COVID-19 emotional distress and physical health symptoms. The AS construct may function to increase the financial strain and fear of COVID-19 in a similar way. As rates of COVID-19 infection and unemployment increase among Latinx persons (McCormack, 2020), AS may serve to increase an individual's vigilance toward such threat stimuli, exacerbating the severity of emotional symptoms. AS emerged as a

significant predictor toward greater health symptom severity among Latinx adults in the current investigation. This finding is in line with research that documents the close interconnection between emotional and physical health (Yao et al., 2020). It is possible AS is associated greater vigilance to somatic perturbation, which increases the severity of physical symptoms.[1] Future research using attentional bias methodology (e.g., identifying and reducing levels of AS) would be a useful next research step in terms of better understanding the nature of AS in terms of the experience of physical health symptoms.

Several other observations warrant brief comment. First, education level emerged as a statistically significant predictor for all criterion variables, such that higher education level was associated with greater emotional impact of COVID, greater fear of COVID-19 and more physical health symptoms. These results suggest higher education levels are linked to COVID-19 related a range of psychological outcomes among Latinx persons. It is possible that higher education is related to greater awareness of COVID-19 health risks via access to COVID-19 media or scholarly work, thereby helping to explain the higher education finding. Second, COVID-19 exposure not surprisingly was related to three of the four models. These data add to growing literature that suggests greater COVID-19 exposure is associated with worse the mental and physical health outcomes (Gallagher et al., 2020). Moreover, most of the sample was comprised of non-immigrant Latinx persons. These data further support pre-COVID-19 work that highlights the vulnerability to negative mental health risk among Latinx born within US (Cervantes et al., 2013; Peña et al., 2008). Further work that focuses on a larger sample of varying Latinx subgroups is needed to establish the generalizability of the current findings more firmly.

The current results hold potential clinical value. COVID-19 has been related to an increase of psychological distress and psychiatric symptoms (Gallagher et al., 2020; Liu et al., 2017). Given the observed effect of AS in relation to increased psychological distress among Latinx persons, assessing for levels of AS may help identify which Latinx persons are at greatest risk for developing psychiatric symptoms and disorders in the longer term. Once identified, it may be possible to target AS via cognitive-behavioral methods in brief or extended treatment formats to reduce COVID-19 mental and physical health burden among the Latinx population. Indeed, existing work suggests that AS may be targeted using attention bias methodology (Hunt

et al., 2006), particularlyas it relates to understanding health anxiety levels (Lees et al., 2005). Capturing the degree of "threat" that is attributed to otherwise neutral environmental stimuli may serve beneficial in two ways: (1) by providing corrective feedback, and (2) by providing psychoeducation on the adaptive functioning of physical anxiety sensations and not as an indicator of immediate environmental, social, or physical health threat (Otto & Smits, 2018). This framework has not yet been evaluated among Latinx populations.

The current results must be considered in the context of study limitations. The present study utilized a sample of Latinx persons from an online recruitment sample due to in person data collection restrictions due to COVID-19. Moreover, the current sample endorsed a high level of preexisting health conditions, a relatively high education level (54.8% reporting attaining a bachelor's degree or higher compared to a reported average of 11% among general Latinx samples; Schak & Nichols, 2016), and no information was attained over empirically related variables such as generation and immigration status. Therefore, this sample cannot necessarily be considered a representative sample of all Latinx persons within the US Future work could seek to further generalize the present results. Specifically, these data may prove most applicable to those that are US born. As one example, research might benefit from evaluating psychological distress and stress response among low income Latinx populations, as such psychological disturbances are evident among Latinx population wherein socioeconomic resources, insurance coverage, and mental health stigma stand as common barriers to adequate care (Doty, 2003; Mutchler et al., 2007; Rastogi et al., 2012). Second, the assessment approach involved the utilization of self-report instruments. Future research could usefully replicate and extend the present findings using a multimethod approach to capture cross-system perspectives on the studied processes. Third, the cross-sectional nature of the current work limits the ability to establish causal relationships or determine how psychological distress may evolve over time. Future longitudinal research is needed to test the role of AS in terms of COVID-19 mental and physical health relations among the Latinx population.

Overall, the present work provides initial cross-sectional support for the role of AS in terms of COVID-19 emotional and physical health among Latinx adults from the United States. Higher levels of AS among Latinx persons were associated with an increased likelihood of clinically significant psychiatric symptoms as well as worse physical health symptoms related to COVID-19. As the COVID-19 progresses and new pandemic emerge, there is an urgent need to better understand intrapersonal factors that may exacerbate longer term mental and physical health problems among health disparity groups, including Latinx adults.

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[1] Secondary regression analyses were run for health symptoms while controlling for pre-existing health conditions. In step three of the regression model, AS was a statistically significant predictor for health symptoms ($\Delta R^2 = 0.01$, $p = 0.048$).

Declarations

Conflict of Interest Nubia A. Mayorga, Lorra Garey, Andres Viana, Jodi Berger Cardoso, Norman B. Schmidt and Michael J. Zvolensky declare that they have no conflict of interest.

Informed Consent All participants provided informed consent prior to participating in the current study.

Animal Research No animals took part in the current research study.

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