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Vulnerability to and Protection Against COVID-19 Fear, Threat, and Worry

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Vulnerability to and Protection Against COVID-19 Fear, Threat, and Worry

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts in Sociology

by

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Abstract

Drawing from a sample of 10,368 adults living in the U.S., the current study examines the role of social and psychological resources in lowering COVID-related fear, threat, and worry, controlling for a number of social vulnerabilities (e.g. gender, race/ethnicity, and presence of children). The impact of social location, particularly in regards to race, and how one accesses and/or utilizes social and psychological resources is also examined through disaggregated regression models. Results demonstrate that some social and psychological resources impact COVID-specific distress (fear/threat/worry), but depending on the resource, relationships vary in direction and significance. The strength of social ties and mastery of fate play a protective role in lessening perceived distress (fear/threat/worry) related to COVID. On the other hand, community connectedness significantly increases COVID-specific fear, threat, and worry while trust is not significant at all. Statistical analyses also demonstrate that social and psychological resources play a different protective role in lessening perceived distress related to COVID dependent on an individual's social position and circumstance.

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INTRODUCTION

In January 2020, the first case of the novel coronavirus was confirmed in the United States. A few months later, in March 2020, the World Health Organization classified COVID-19 as a pandemic. By the end of the month, there were over half a million confirmed cases and nearly 30,000 deaths and the number of cases, hospitalizations, and deaths continued to climb. With nearly 600,000 deaths, COVID-19 has changed the health landscape of the United States as cases continue to be reported and hotspots identified even now into the summer of 2021.

Early reports revealed elevated levels of COVID-19 fear, threat, and worry (Fitzpatrick et al., 2020c; Gallup, 2020a; Ipsos, 2020). However, almost a year after the first U.S. confirmed case of COVID, American concern about the virus continues to steadily rise. With the increases in infection and mortality rates, the amplification of felt distress by individuals is to be expected. A Gallup poll, conducted in late November of 2020, found that 73 percent of respondents believed that the coronavirus situation was worsening and a record high of 69 percent of U.S. adults named COVID-19 the most urgent health problem facing the country (Gallup, 2020b). Poll after poll confirmed what was being recorded in the early months of the pandemic—a new level of expressed fear was developing around the world and while there were plenty of other events to worry and stress about, the pandemic was front and center for most people.

Rather than objective risk, perceived or subjective risk often determines how populations respond to major public health crises (Niño et al., 2020; Smith, 2006; Sjoberg, 2000). Studies specific to the context of COVID-19 have suggested that panic buying is influenced by individuals' perception of threat, fear of the unknown, and social and psychological factors (Yuen et al., 2020). The United States witnessed new heightened levels of fear and increased maladaptive social and behavioral responses, like panic buying and hoarding of household good

and medical supplies. This ultimately led to stockouts and supply chain breakdowns that continued to exacerbate feelings of fear, threat, and worry across the country. Furthermore, studies from China, Europe, and North America suggest that heightened levels of fear and perceived COVID-19 health risks are related to negative health consequences (Fitzpatrick et al., 2020a; Holingue et al., 2020; Zhang et al., 2020).

Despite this research linking subjective fear or threat to maladaptive behaviors and negative health outcomes, few studies have examined the specific protective mechanisms that lower COVID-related felt distress. Furthermore, the relationship between fearfulness and social solidarity and cohesion has been theorized but has not yet been tested empirically, particularly as it relates to a tangible risk like a global pandemic.

Given the growing fear, heightened threat, and unchecked worry, the current study aims to add to the burgeoning COVID-19 literature while at the same time fill a gap in our general understanding of Americans' subjective fear, worry, and threat surrounding the COVID-19 pandemic. Specifically, we investigate a series of specific mechanisms underlying social cohesion (social and psychological resources) and their relationship to distress (fear/threat/worry) among adults during the coronavirus (COVID-19) pandemic. An investigation of protective measures that may help to lessen perceived fear, threat, and worry of COVID-19 may provide insight to practitioners and community-level organizations on how best to support the most vulnerable during this and future public health crises. Furthermore, while research has highlighted the ill effects and physiological dimensions of fear, little is known about the social and psychological factors that may help to lessen subjective experiences of fear (Bader et al., 2020). It is this gap in the literature that we seek to fill.

To that end, we propose two major research questions for examination:

- 1) Do social and psychological resources lower (negative association) individual's perception of distress (fear/threat/worry) as it relates to COVID-19?
- 2) Do social and psychological resources vary depending upon specific social vulnerabilities/life circumstances and their impact on COVID-19 fear, threat, and worry?

Emerging from these research questions and guided by an extensive pandemic literature and stressor-fear-resource framework, we outline a specific set of hypotheses that are part of a framework that allows us to examine the role of resources and their variation across social vulnerabilities on COVID-19 fear and worry.

THEORY AND EVIDENCE

Fear is embedded in U.S. history and deeply interconnected to the physical, psychological, and social environments in which it is located (Bader et al., 2020; Tudor, 2003). Sometimes, fear can be described as a general feeling of uneasiness that can be difficult to pinpoint or measure; nevertheless fear is also often a reaction to the presence of a direct threat like the COVID-19 pandemic (Fitzpatrick et al., 2020b).

Frank Furedi's (2002) analysis on the culture of fear provides a useful foundation for conceptualizing and contextualizing fear and its relationship to social connectedness. Furedi (2002, 2007a, 2007b) posits that fear is embedded in U.S. culture as a result of historical and societal changes that have diminished social solidarity and cohesion, which in turn has reduced individuals' sense of security (Wainwright, 2008, p.49). Moreover, Furedi (2006, 2007b) proposes that one of the consequences of this culture of fear is distrust of others which results in the further estrangement of people from one another and from the community. Thus, this culture of fear ultimately leads to the deterioration of social relations and individual well-being. Whereas this interpretation stresses the relationship between fearfulness and a diminished sense of social

solidarity and community cohesion, it has not been extended to an empirical examination of how greater social connection may also influence fearfulness. Furedi's (2002) discussion provides an appropriate pathway to examine and test his central tenet in this study of COVID-specific fear, threat, and worry. Specifically, is there a way to better understand fear as being influenced by an array of social and psychological factors that emerge as protective mechanisms against the general perception of uncertainty?

Stressor-Fear-Resource Framework

This study utilizes a stressor-fear-resource framework designed to examine a set of social and psychological factors that have specific hypotheses as to the determinants of fear. This framework places importance on the relationship between stressors that can impact fear negatively and the presence of resources that may help mitigate the negative impacts of those stressors (Fitzpatrick et al., 2020b; Thoits, 2010; Lin et al., 1986). Social connectedness increases access to the psychological and social resources that buffer against stress and is associated with more functional or adaptive coping styles (Haslam et al., 2015; Cohen and Willis, 1985). Borrowing from Furedi's (2002) interpretation of fear, we examine the protective function of social solidarity and connection through a set of social and psychological factors that have been documented or theorized as important resources to fear and distress. When people are afraid that their health is at risk, that fear is often understood to actually pose a risk to their health and well-being (Furedi, 2007b). However, rather than just the inverse of risk, we are conceptualizing social and psychological resources as qualitatively distinct in their capability to manage or help individuals adapt to risk (Fitzpatrick and LaGory, 2011). Through the stressor-fear-resource framework, our goal is to identify a set of social and psychological resources that

act as protective factors related to social solidarity that mitigate COVID-19 fear, threat, and worry among a sample of U.S. adults from varied life circumstances.

Social and Psychological Resources

Research has documented the role of various social and psychological resources in helping to mitigate the negative impact of stressors on well-being (Fitzpatrick, 2018; Thoits, 2006; Pearlin and Schooler, 1978). Additionally, during a traumatic event, social and psychological resources are documented to potentially mitigate/diminish individual's subjective distress (Norris et al., 2002; Thoits, 1995; Pearlin et al., 1981). Utilizing the stressor-fear-resources framework should allow for a systematic exploration of social and psychological resources and their role in lowering/lessening fear, threat, and worry of COVID-19.

Social Resources

Robert Putnam proclaimed, “the more integrated we are with our community, the less likely we are to experience colds, heart attacks, strokes, cancer, depression, and premature death of all sorts (2000, p. 326).” Indeed, the expanding social resource literature suggests that lower social and psychological resources may be associated with higher levels of vulnerability to the negative effects on and following stressful days (Salovey et al., 2000; DeLongis, Folkman, and Lazarus, 1988). Additionally, in the distress research literature, social support is most often cited as a critical resource positively impacting distress outcomes (Irwin et al., 2008; Thoits, 1995). As such, we examine a set of social resources related to several dimensions of social connectedness that we expect to act as protective factors against fear and worry specific to COVID-19.

The first social resource for examination in this study is the *strength of social ties*, which measures how connected respondents see themselves to other people within their social network (Fitzpatrick et al., 2020; Lin, Dean, and Ensel, 1986). Research has consistently shown that

social ties can play an important role in determining one's subjective and objective health (Fitzpatrick et al., 2020d; Irwin et al., 2008; Cattell, 2001; Lin, Dean, and Ensel, 1986).

Additionally, the perception of support rather than received support has been more consistently linked to beneficial health outcomes (Haber et al., 2007; Uchino, 2004, 2009). *Therefore, we would expect that stronger social ties would be associated with lower levels of fear, threat, and worry of COVID-19.*

The second social resource to be examined is *community connectedness*. Community provides, "a cultural context for the articulation of individual fears" (Furedi, 2002). Additionally, recent studies in Austria and China have found that greater social connectedness during the COVID-19 lockdown period was associated with lower levels of perceived stress, COVID-19-specific worries, and in general, a better quality of life (Bian et al., 2020; Nitschke et al., 2020). As community connectedness includes some perception of where individuals see their self-embedded within the general social fabric of their community (Fitzpatrick, 2017), this study utilizes the self-perception of embeddedness as proxy measure of community connectedness. As such, *we would expect that higher levels of community connectedness would be associated with lower levels of fear, threat, and worry of COVID-19.*

Psychological Resources

Often, psychological resources are traits or factors that people draw on to help them withstand specific threats (e.g. Pearlin and Schooler, 1978). There is substantial literature on the specific role of psychological resources that can act as buffers against stress and provide a degree of insulation that can help foster long-term resilience (McCarthy et al., 2011; Thoits 2010; Lin et al., 1986). A public health crisis such as the COVID-19 pandemic can be implicitly understood to present itself as a significant stressor for most Americans and certainly justifies the usefulness

of examining a set of psychological resources as possible protective factors helping to lessen COVID-19 fear, threat, and worry.

The first psychological resource for examination is *mastery of fate*. Mastery of fate reflects “the extent to which people see themselves as being in control of the forces that importantly affect their lives” (Pearlin et al., 1981). The sense of personal control has been tied to active coping efforts which enables people to guard against the negative outcomes related to stressful events (Taylor et al., 2020; Gadalla, 2009, 2010; Aspinwall and Taylor, 1997). Higher levels of mastery reduce the negative impact of stressors on overall well-being (Fitzpatrick, Harris, and Drawve, 2020b; Thoits, 2010). *As such, we expect a higher sense of control or mastery over one’s fate would be associated with lower levels of fear, threat, and worry.*

The second psychological resource we propose examining is *trust*. A consequence of elevated perception of risk is an increase in general mistrust and fear (Furedi, 2002). However, trust often increases and can improve physical and mental well-being across the life span (e.g. Jovanović, 2016; Lee and Lin, 2011; Poulin and Haase, 2015). *As such, we expect that higher levels of trust would be associated with lower levels of COVID-19 fear, threat, and worry.*

Social Vulnerability

Fear is multidimensional and not uniform in the way it is experienced by different people and across different cultures. As such, studies of fear should consider including additional considerations of how social identity and situational contexts might influence varying levels of subjective fear (Bader et al., 2020; LeDoux and Brown, 2017; Thoits, 2010). Additionally, previous work has demonstrated that the most socially vulnerable are often impacted more in the context of natural and public health disasters compared to those not as vulnerable because of their social context or circumstances (e.g. Fitzpatrick and Spialek, 2020; Chakraborty et al.,

2014; Masozera, Bailey, and Kertzner, 2007). To design the most effective support and prevention programs, it is important that we know a little bit about our targets and what specific programs of prevention and intervention match best to circumstances and experiences (Fitzpatrick et al., 2020c; Pakpour and Griffiths, 2020). As such, we aim to explore more specifically whether the ‘social location’ (vulnerability) of an individual impact which and at what level different social and psychological resources mitigate the fear, threat, and worry associated with COVID-19.

The variation in reported fear and worry of COVID-19 suggests that different people, perhaps informed by their circumstances, understand and feel differently about the virus. Individual fear, threat, and worry of COVID-19 is multidimensional in that it can be informed by many factors: the material ability to quarantine or stay financially afloat, access to quality and affordable healthcare, age and health risks, etc. Given that sociodemographic vulnerabilities have been extensively linked to higher distress and negative health outcomes (Manuel, 2018; Phelan, Link, and Tehranifar, 2010; House, 2000) and the importance of resources for socially vulnerable populations is well-documented (Salerno, Williams, and Gattamorta, 2020; Utsey et al., 2008), it is crucial to understand the best mechanisms of protection for those who may need it the most.

Racial health disparities in access and quality of healthcare have been well-documented (Assari, 2018; Nelson, Stith, & Smedley, 2002; Williams & Mohammed, 2013). Further, in a report released by the Centers for Disease Control and Prevention (C.D.C.) on Nov. 30, 2020, COVID-19 related positive case rates, hospitalization rates, and death rates were over 50% higher among Hispanic or Latino persons, non-Hispanic Black persons, and Native American persons than non-Hispanic White persons (Centers for Disease Control and Prevention, 2020). Given this elevated risk, racial and ethnic minorities are more likely to report high fear of

coronavirus (Niño et al. 2020). However, psychological resources like mastery of fate have been documented to systemically generate better health outcomes for White people than Black people, except in response to risk (Assari, 2018). The resilience literature also suggests that social groups that have experienced social adversities for prolonged periods also become more efficient in mobilizing their available resources to protect oneself from risk (Rutter, 2012; Lyons, Parker, Katz, & Schatzberg, 2009). *As such, we expect that social and psychological resources will have a different protective role in lessening COVID-specific distress (fear/threat/worry) among racially and ethnically minoritized and marginalized persons differently than with their White, less marginalized counterparts.*

DATA AND METHODS

Sample and Participants

This study is based on data collected in March 23, 2020 from a nationally representative sample of 10,368 adults (ages 18 or older) living in the United States (Fitzpatrick, Drawve, and Harris, 2020c). An online IRB-approved survey was released through Qualtrics Inc. to a national panel of U.S. residents that participated in this study. Once consent was obtained, respondents were presented with a 20-minute questionnaire. Questions ranged in topics from COVID-19 fear and anxiety, social and behavioral changes, attitudes and general perceptions of COVID-19, along with a range of physical/mental health assessments. Only complete responses (i.e., no missing data) were included. The final sample of 10,368 was post-stratification weighted across gender, age, race, income, and geography (state) to ensure representativeness of the overall population of the United States. National-level estimates for the weighted criteria were taken from the 2018 United States Census Bureau's American Community Survey (the current year available). The final sample is composed of slightly more than fifty percent males and the

average age is 54 years old. The average respondent is married but does not have children and has a high school degree.

Measurement

In this study, we examine the relationship between a range of social and psychological resource variables, such as trust and perception of support, and fear, threat, and worry of COVID-19. Additionally, we are particularly interested in exploring how these resources vary across ‘social location’ or social vulnerabilities. The key measurements for this analysis are presented in the sections below.

COVID-19 Fear and Worry

The primary dependent variables of interests are COVID-19 fear, threat, and worry, which measure subjective feelings of distress. Respondents were asked to rank, using a sliding scale of 0 to 10, “How would you currently rate your fear of COVID-19 where 0 = not at all fearful to 10 = very fearful?” Based on self-reported measures regarding COVID-19 fear, 16 percent of the sample reported feeling very fearful and only 3 percent reported not feeling fearful at all (Mean = 6.6; S.D. = 2.7). Respondents were also asked, “What level of threat do you think the COVID-19 poses to you or your family?” Responses included 0 = don’t know, 1 = very low threat, 2 = low threat, 3 = moderate threat, 4 = high threat, and 5 = very high threat.

Approximately one third of respondents reported perceiving coronavirus as a high or very high threat to themselves and their family (Mean = 3.1; S.D. = 1.1). Finally, respondents were asked how worried they were about contracting the COVID-19 virus. Responses were scored using a Likert-scale and ranged from 1 = not at all worried, 2 = not too worried, 3 = somewhat worried, 4 = very worried, to 5 = extremely worried. 24% of respondents reported feeling very worried and 19.5% reported feeling extremely worried (Mean = 3.3; S.D. = 1.2).

Social Resources

The primary independent variables of interest are a selection of social and psychological resources. We examine two social (strength of social ties and community connectedness) and two psychological (mastery of fate and trust) resources in the analysis.

Strength of Social Ties. The strength or quality of social relationships has been documented as a possible protective resource that promotes resilience (Amieva et al., 2010; Ertel et al., 2007). Thus, the first social resource, *strength of social ties*, measures how connected respondents see themselves to other people within their social network (Fitzpatrick et al., 2020; Lin, Dean, and Ensel, 1986). The variable is constructed from a recoded and reversed scale that uses three items to assess how respondents perceive these connections, including if respondents feel they have enough companions, have enough friendships, and if they see having close friends as problem. The question asked “How often you have been bothered by any of these problems over the last six months?” and listed “No close companions,” “not enough friendship,” and “not seeing enough people you feel close to.” Available responses included, “never,” “rarely,” “some or little of the time,” “occasionally or a moderate amount of time,” and “most or all of the time.” To capture the perception of strength of social ties, each of the responses was coded in reverse from 5 to 0 in the order listed above, starting with 5 = “never,” and ending with 0 = “most or all of the time.” The scale is reliable (Cronbach’s alpha = .88; Mean = 11.7; S.D. = 3.4).

Community Connectedness. Whereas connection to community has been observed as a protective factor in experiences of trauma (Schultz et al., 2016), the second social resource is *community connectedness*. Community connectedness measures a respondent’s perception of embeddedness in the larger community. The community connectedness variable is measured using a single-item picture measure comprised of six pair of overlapping circles. The circles are

equal in size and begin with two circles that do not touch one another. These circles move left to right in increasing degrees of closeness to each other. The set furthest to the left represents self and community disconnectedness (14.8%). The circles furthest to the right represent a fully integrated self and community with one circle overlapping completely with the other (7.5%). Participants were asked to look at the Venn diagrams and respond with the number that corresponded to a particular circle set that best described their relationship to the community at large.

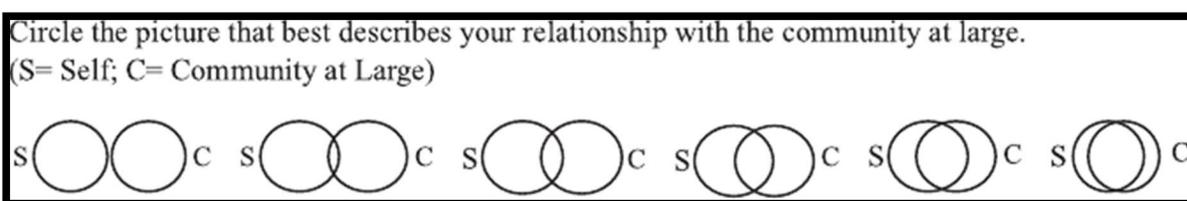


Figure 1. Inclusion of Community in the Self Scale

The score range was from 1 (disconnected) to 6 (connected). 46% of respondents reported feeling equally connected and disconnected from community (Mean = 3.2; S.D. 1.4).

Psychological Resources

Mastery of Fate. The first psychological resource variable, *mastery of fate*, assesses the subjective perception of control over one’s life. This variable reflects “the extent to which people see themselves as being in control of the forces that importantly affect their lives” (Pearlin et. al, 1981, p. 340). While mastery of fate can be an important coping mechanism as an “element of self” (Thoits, 2006), it is often diminished in the face of stressful life events (Pearlin et al., 1981). Therefore, we seek to examine mastery of fate as a possible protective resource from the fear, threat, and worry associated with COVID-19. The variable is measured by a scale developed by Pearlin and Schooler (1978) using 7-items in which higher scores indicate greater mastery of fate and lower scores indicate lower mastery of fate. Respondents were asked how much they agreed

or disagreed with the following statements: “You have little control over the things that happen to you,” “There is really no way that you can solve some of the problems you have,” “There is little you can do to change many of the important things in your life,” “You often feel helpless in dealing with the problems in life,” “You can do just about anything you set your mind to,” “Sometimes you feel you are being pushed around in your life,” and “What happens to you in the future depends mainly on you.” The scale uses a Likert-scale in which possible responses were coded as 0 = strongly disagree, 1 = disagree, 2 = agree, and 4= strongly agree and range in total score from 0 to 28. For the current sample, the scale is reliable (Cronbach’s alpha = .85; Mean = 20.2; S.D. = 3.9).

Trust. The literature of fear suggests that trust is a critical component of positive and cooperative interactions that increase the likelihood that we would help others or accept help from others (Bader et al. 2020; Furedi 2002). As such, the third psychological resource is a scale variable that measures *trust*. The scale consists of 5 items that ask respondents about: 1) trust of people generally, 2) trust of neighbors, 3) trust of people they went to church with, 4) trust of police and people in authority, and 5) trust of persons who are running our governments. Responses were coded using a Likert-scale with 0 = “don’t know”, 1 = “you can’t be too careful”, and 2 = “people can be trusted.” The final scale ranges from 0 = no trust to 10 = most trust. No respondents reported zero trust, while 14 percent of the respondents reported total trust. The scale is reliable (Cronbach’s alpha = .80; Mean = 7.6; S.D. = 1.6).

Analytical Strategy

Because the current study is theoretically driven, our analysis began with an examination of descriptive statistics and bivariate correlations. This preliminary analysis provides us with basic information about the variables in the model and the correlations between them. Following

this, linear regression is used to examine the relationships between resources, social vulnerability and COVID-19 fear, threat, and worry. This analysis helps to determine whether or not each of the four social and psychological resources have an independent influence on COVID-19 fear, threat, and worry after controlling for social vulnerabilities. Finally, a set of disaggregated regressions tests is performed to examine the variations in the relationship between social and psychological resources and COVID-specific distress based on life circumstance, specifically race. These regression models should allow us to examine the influence of social and psychological resources on COVID-related fear, threat, and worry across different racial groups.

RESULTS

Table 1 shows us the descriptives (percentages, means, and standard deviations) for all the variables used in this analysis. Respondents reported elevated levels of distress (7 out of 10), an average worry level of 3.4 out of 5, and an average threat level of 3.1 out of 5.

As a nationally representative sample, we mirror the demographics of adults living in the U.S. Respondents are split almost evenly by gender and the sample is comprised of 8 percent Hispanics, 12 percent Blacks, and 6 percent Asian respondents. Results indicate that the 47 percent of the respondents were married and approximately 19 percent of the respondents had children.

Focusing on resources, respondents scored an average of 11.7 on the strength of social ties scale with a standard deviation of 3.4. When asked how close respondents felt to their community, the average respondent reported feeling almost equally connected and disconnected with a mean of 3.2 and a standard deviation of 1.4 on a scale of 1 to 6. The mastery of fate scale ranging from 0 to 28, respondents averaged a mastery of fate score of 20.2 with a standard

deviation of 3.9. On a 10-point scale measuring trust, respondents reported an average of 7.6 with a standard deviation of 1.6.

Table 1. Descriptive Statistics for Model Variables (n = 10,368)

	%	Mean	S.D.
<i>Dependent Variables</i>			
Subjective fear (0 – 10)	--	6.6	2.8
Threat to individual and family	--	3.1	1.1
Worry (1-5)	--	3.4	1.2
<i>Social Vulnerabilities</i>			
Age	--	54.2	17.0
Gender (Female)	49.8%	--	--
Hispanic (Yes)	8.0%	--	--
Black	12.4%	--	--
Asian	5.5%	--	--
Marital Status (Married)	46.6%	--	--
Work Status (Unemployed)	--	--	--
Families with Children (Yes)	19.0%	--	--
Education level (HS or less)	20.5%	--	--
<i>Resources</i>			
Social			
Strength of social ties (0 – 15)	--	11.7	3.4
Community connectedness (1 – 6)	--	3.2	1.4
Psychological			
Mastery of fate (0 – 28)	--	20.2	3.9
Trust (0 – 10)	--	7.6	1.6

Table 2 presents the results of correlations between measures of COVID-19 distress (fear/threat/worry), social vulnerabilities, and social and psychological resources. All of our social vulnerability variables, with the exception of the education variable, were significantly correlated with at least one of our dependent variables. Age and gender are significantly correlated with fear and worry ($p < 0.01$) although not for threat. Those that are older tend to be more afraid while those that are younger reported being more worried. Women are more likely to be afraid and worried. The correlations between race and COVID distress (fear/threat/worry) are mixed. Hispanic status is positively correlated with fear, worry, and threat, such that Hispanic

respondents tend to report higher levels of distress ($p < 0.01$). Similarly, Asian racial status is also positively correlated with fear and worry, but not threat with Asian respondents reporting higher levels of fear and worry. However, Black racial status is only correlated significantly but negatively with worry.

Marital status and the presence of children were positively correlated with all COVID distress outcomes (fear/threat/worry), showing that those that are married and that have children reported higher levels of fear, worry, and threat ($p < 0.01$). Employment status was only significantly correlated to worry with unemployed individuals reporting more worry.

Moving beyond social vulnerabilities, we examine the correlations between COVID-related fear, threat and worry variables with the selected set of social and psychological resources. Strength of social ties and mastery of fate are negatively correlated ($p < 0.01$) with all distress outcomes (fear/threat/worry) indicating that in this sample, those with less strong social ties and individuals that feel less in control of their own fate are more likely to feel afraid, threatened, and worried about COVID. Community connectedness was positively correlated ($p < 0.001$) with COVID distress, showing that those that are more connected to their communities reported feeling higher COVID-specific fear, threat, and worry. Trust was only negatively ($p < 0.01$) correlated with threat showing that those more trusting reported feeling less threatened by COVID than those who were less trusting.

Table 2. Bivariate Correlations among Model Variables (n=10,368)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Dependent Variables															
1. Fear															
2. Threat	.588**														
3. Worry	.656**	.687**													
Social Vulnerabilities															
4. Age	.041**	0.009	-.024*												
5. Female	.077**	0.010	.052**	-.032**											
6. Hispanic	.037**	.049**	.075**	-.280**	0.012										
7. Black	-0.011	0.011	-.031**	-.153**	0.018	-.177**									
8. Asian	.062**	-0.001	.033**	-.094**	0.015	-.114**	-.091**								
9. Married	.067**	.057**	.060**	.295**	-.059**	-.067**	-.176**	0.010							
10. Unemployed	0.012	0.006	.024*	-.244**	.037**	.096**	.096**	-.022*	-.187**						
11. Children	.058**	.038**	.075**	-.283**	.066**	.129**	0.003	.031**	.184**	0.012					
12. HS degree or less	0.000	0.006	0.008	-.136**	.063**	.065**	.063**	-.086**	-.165**	.142**	-0.006				
Resources															
13. Strength of social ties	-.099**	-.136**	-.144**	.244**	-.026**	-.079**	-.031**	0.003	.211**	-.107**	-.071**	-.027**			
14. Community connectedness	.099**	.046**	.052**	.075**	-.055**	0.014	.022*	.024*	.126**	-.078**	.041**	-.067**	.173**		
15. Mastery of fate	-.127**	-.166**	-.169**	.238**	-0.012	-.066**	-0.003	-.039**	.106**	-.107**	-.082**	-.048**	.464**	.204**	
16. Trust	0.019	-.032**	-0.016	.259**	-.047**	-.087**	-.155**	-0.012	.191**	-.144**	-.068**	-.119**	.157**	.323**	.206**

p < .05 *; p < .01 **

Table 3 extends the bivariate analysis to examine whether the set of social and psychological resources might partially explain COVID-19 related fear, worry, and threat after controlling for social vulnerabilities. The linear regression is presented in two models for each of the COVID-19 distress (fear/threat/worry) outcomes. The first model includes only the social vulnerabilities, assessing the role of age, gender, race/ethnicity, marital status, work status, presence of children, and education in predicting COVID-19 fear, worry, and threat. The second model controls for social vulnerabilities while introducing the social and psychological resources.

Women still consistently reported higher levels of COVID-specific fear and worry than men ($p < 0.01$); Hispanic respondents ($p < 0.01$) and married respondents ($p < 0.01$) reported significantly higher levels of COVID-specific fear and worry than their counterparts. Respondents with children reported being more afraid and worried of COVID than those without children ($p < 0.01$), but not really more threatened. There are some racial/ethnic differences but they are inconsistent. Asian respondents reported significantly higher COVID-related fear and worry than non-Asian respondents ($p < 0.01$), but not more threat. Black respondents, however, reported feeling more threatened and only slightly more or worried of COVID than non-Black respondents ($p < 0.01$). The R^2 for this model with just social vulnerabilities was .023 for fear, .008 for threat, and .018 for worry.

Table 3. COVID-19 Fear, Threat, and Worry Regressions (n=10,368)

Variables	Subjective fear		Threat to you/family		Worry of coronavirus	
	Model 1 b (β)	Model 2 b (β)	Model 1 b (β)	Model 2 b (β)	Model 1 b (β)	Model 2 b (β)
<i>Social Vulnerabilities</i>						
Age	.013 (.082) **	.018 (.117) **	.002 (.028) *	.005 (.078) **	.000 (.005)	.003 (.051) **
Gender (1=female)	.418 (.075) **	.449 (.080) **	.023 (.010)	.029 (.013)	.116 (.050) **	.124 (.053) **
Hispanic (1= Hispanic)	.475 (.065) **	.430 (.059) **	.187 (.064) **	.172 (.058) **	.223 (.074) **	.210 (.069) **
Black (1=Black)	.211 (.025)	.203 (.024) *	.126 (.036) **	.124 (.036) **	-.025 (-.007)	-.019 (-.005)
Asian (1=Asian)	.962 (.078) **	.903 (.073) **	.060 (.012)	.042 (.008)	.202 (.039) **	.186 (.036) **
Marital status (1=married)	.296 (.053) **	.347 (.062) **	.136 (.060) **	.181 (.079) **	.146 (.062) **	.188 (.080) **
Work status (1=not working)	.210 (.030) **	.183 (.026)	.034 (.012)	.008 (.003)	.080 (.027) **	.058 (.020) *
Children (1=children)	.361 (.056) **	.273 (.042) **	.067 (.026) *	.029 (.011)	.139 (.051) **	.101 (.037) **
Education level (1= HS degree or less)	.072 (.013)	.107 (.019) *	.028 (.012)	.035 (.015)	.027 (.011)	.039 (.016)
<i>Social & Psychological Resources</i>						
Strength of social ties		-.069 (-.088) **		-.033 (-.104) **		-.036 (-.110) **
Community connectedness		.236 (.128) **		0.066 (.089) **		.071 (.092) **
Mastery of fate		-.093 (-.131) **		-.043 (-.150) **		-.042 (-.143) **
Trust		-.002 (-.001)		-.022 (-.034) **		-.008 (-.012)
Constant	5.281	6.896	2.839	3.855	3.125	4.044
Degrees of Freedom	9	13	9	13	9	13
R-Squared	.023***	.062***	.008***	.052***	.018***	.061***

p < .05 *; p < .01 **; p < .001 *** (R² Change)

In regards to social and psychological resources, the model suggests that only some resources are significantly related to lower levels of COVID-distress. The strength of social ties and mastery of fate were both significantly and negatively associated with COVID-related fear, worry, and threat ($p < 0.01$). Community connectedness was significantly but positively associated with COVID-specific distress (fear/threat/worry) ($p < 0.01$). Surprisingly, trust was only significantly and negatively associated with threat ($p < 0.01$). No vulnerability variables changed direction between Model 1 and Model 2 but a few variables changed in significance. Between Model 1 and Model 2, the Black and education level variables become significant ($p < 0.05$) while work status is no longer significant. The R^2 for this model increased significantly to .062 for fear, .052 for threat, and .061 for worry.

Table 4 includes the results from a set of disaggregated models that were used to more closely examine the intersection between COVID-19 related distress (fear/threat/worry), social vulnerability, and social and psychological resources. Each disaggregated model did see a significant increase in R^2 value between Model 1 and Model 2. While all social and psychological resource are significantly related to at least one dimension of COVID-related for all racial/ethnic groups, there are definitive differences in which social and psychological resources are related to which COVID outcomes given their racial/ethnic background.

With the exception of trust among Hispanic respondents and fear and worry ($p < 0.01$), there are no social and psychological resources that are significant and change in direction when compared to the earlier models. The strength of social ties is not significant for fear among Asian and Hispanic respondents while it is significant in the case of all distress outcomes (fear/threat/worry) for White and Black respondents alike ($p < 0.05$). Community connectedness,

while positively associated with distress, is not significant for perceived threat related to COVID-19 among Black and Hispanic respondents.

In regards to social vulnerability, the disaggregated models provide additional information on the intersections of social vulnerabilities as they relate to COVID-related fear, worry, and threat. When examining gender among Hispanic respondents, women were significantly less threatened by COVID than men ($p < 0.01$). This contrasts starkly with White respondents where women were significantly more distressed than men ($p < 0.01$). Asians had the least significant intersections with other socially vulnerabilities, next only to Black respondents. Additionally, somewhat surprising, Asians reported those with a HS degree or less felt significantly less threatened than those with more education. The R^2 for the models increased significantly for fear, threat, and worry across all groups.

Table 4. Disaggregated COVID-19 Fear, Threat, and Worry Regressions

	<i>White</i>			<i>Black</i>		
	Fear b (β)	Threat b (β)	Worry b (β)	Fear b (β)	Threat b (β)	Worry b (β)
<i>Social Vulnerabilities</i>						
Age	.018 (.108) **	.003 (.045) *	.002 (.026) **	.021 (.120) **	.008 (.107) **	.006 (.075)
Gender (1=female)	.577 (.105) **	.120 (.056) **	.188 (.085) **	.200 (.034)	-.053 (-.021)	-.050 (-.020)
Marital status (1=married)	.340 (.062) **	.124 (.058) **	.161 (.072) **	.503 (.070)	.081 (.026)	.088 (.029)
Work status (1=unemployed)	.266 (.035) **	-.006 (-.002)	.002 (.001)	.056 (.009)	.080 (.028)	.060 (.022)
Children (1=children)	.231 (.034)	.031 (.012)	.070 (.026) *	.237 (.035)	.137 (.047)	.126 (.043)
Education level (1= HS degree or less)	.050 (.009)	.010 (.004)	.024 (.011)	.188 (.032)	.142 (.055) *	.075 (.029)
<i>Social & Psychological Resources</i>						
Strength of social ties	-.093 (-.120) **	-.033 (-.107) **	-.038 (-.122) **	-.071 (-.090) **	-.029 (-.083) **	-.036 (-.107) **
Community connectedness	.250 (.135) **	.076 (.105) **	.084 (.112) **	.218 (.117) **	.060 (.074)	.062 (.077) **
Mastery of fate	-.086 (-.125) **	-.036 (-.134) **	-.042 (-.151) **	-.086 (-.118) **	-.041 (-.128) **	-.031 (-.098) **
Trust	-.048 (-.030) *	-.027 (-.042) **	-.025 (-.038) **	-.071 (-.038)	-.061 (-.075) **	-.048 (-.061) *
Constant	7.370	3.832	4.266	7.500	4.000	4.096
R-Squared	.043**	.041***	.050***	.038***	.036***	.033***
<hr/>						
	<i>Asian</i>			<i>Hispanic</i>		
	Fear b (β)	Threat b (β)	Worry b (β)	Fear b (β)	Threat b (β)	Worry b (β)
<i>Social Vulnerabilities</i>						
Age	.007 (.047)	.005 (.075)	.000 (-.004)	.024 (.130) **	.008 (.096) **	.005 (.059) *
Gender (1=female)	.183 (.037)	-.111 (-.050)	.058 (.026)	.115 (.020)	-.193 (-.080) **	-.018 (-.007)
Marital status (1=married)	.333 (.068)	.177 (.080)	.055 (.024)	.367 (.063) *	.372 (.150) **	.364 (.144) **
Work status (1=unemployed)	-.440 (-.066)	.132 (.044)	-.094 (-.031)	.288 (.045) *	-.019 (-.007)	.203 (.074) **
Children (1=children)	.615 (.116)	.016 (.007)	.144 (.059)	.185 (.031)	-.127 (-.051) *	.049 (.019)
Education level (1= HS degree or less)	.388 (.066)	-.394 (-.148) **	.117 (.043)	.047 (.008)	.084 (.035)	-.001 (-.001)
<i>Social & Psychological Resources</i>						
Strength of social ties	-.046 (-.064)	-.041 (-.127) **	-.032 (-.097) *	-.014 (-.018)	-.041 (-.125) **	-.028 (-.083) **
Community connectedness	.223 (.134) **	.125 (.166) **	.118 (.152) **	.212 (.121) **	.028 (.037)	.019 (.025)
Mastery of fate	-.051 (-.080) *	-.044 (-.151) **	-.065 (-.216) **	-.094 (-.125) **	-.056 (-.175) **	-.040 (-.124) **
Trust	-.005 (-.004)	-.081 (-.130) **	-.047 (-.074) *	.125 (.076) *	.016 (.023)	.061 (.085) **
Constant	7.329	4.371	4.983	5.914	4.209	3.776
R-Squared	.025	.075***	.081***	.039***	.059***	.034***

p < .05 *, p < .01 **, p < .001 *** (R² Change)

DISCUSSION

Our findings clearly show that social vulnerability/circumstance and social/psychological resources impact COVID-related fear, worry, and threat. However, not all social and psychological resources play the same role in lessening COVID-related distress, particularly among different social groups/categories.

As hypothesized, a higher perception of support from social ties and greater mastery of fate are associated with lower COVID-specific distress. However, somewhat surprising, community connectedness did not lessen but actually increased COVID fear, worry, and threat. As a virus that is social insofar as being spread from person-to-person, it is possible that feelings of social proximity and not just physical proximity might increase an individual's perceived fear, worry, and threat. Perhaps, feeling connected to the community increases the scope of whose well-being informs how afraid, worried, and threatened of COVID people feel. Further, the elevated COVID distress related to higher community connectedness may be related to concerns of being cut off from community if an individual or their family contracts COVID. As Furedi's (2007) framework suggests, we also find that trust is significantly related to the perception of threat. However, trust did not have that same significant relationship to COVID-related fear or worry. With the dissemination of conflicting and convoluted information surrounding COVID and the lack of cohesive public health messaging across the country, it is certainly understandable why even the most trusting individuals could be equally as afraid as those who are not as trusting.

The primary regressions and subsequent disaggregated regression models also confirm what we anticipated: social and psychological resources play a different protective role in lessening COVID-specific fear, worry, and threat among socially vulnerable persons compared

to those who do not experience the same vulnerabilities. Generally speaking, it seems that different people access and utilize social and psychological resources in different ways, partly as a function of their broader social environmental circumstances. For example, the strength of social ties was not a significant resource lessening COVID-related fear for Asian and Hispanic respondents, which suggests that fear among Asian and Hispanic individuals may be in part driven by factors outside of their social networks. Given the social, political, and economic climate surrounding the pandemic in the U.S., it is not surprising that these individuals/groups may feel more concerned about COVID and their general health and safety. The felt distress during the pandemic is likely compounded by the anti-Asian rhetoric surrounding the presumed origin of the virus and larger concerns related to well-documented racial and ethnic inequalities in access to quality healthcare (Niño et. al, 2021; Williams, Lawrence, and Davis, 2019; Phelan and Link, 2015). Similarly, our findings suggest that trust is not significantly related to lower coronavirus fear for Asian and Black Americans which we might expect is related to the racialized social structures that impact healthcare and American emergency response. Existing literature also finds that social inequalities have emerged in the spread of COVID and in prevention implementation (Clouston, Natale, and Link, 2021; Sandhu et. al, 2021).

Overall, our findings indicate that social and psychological resources can play a role in lowering an individual's perception of COVID-specific fear, threat, and worry. This finding adds an important dimension to the broader sociological understanding of perceived fear and in testing often-theorized relationships between social solidarity, emotions, and well-being. Much like the emerging studies on COVID that highlight the unique impacts and risks among those that are socially vulnerable (e.g. Fitzpatrick, Harris, and Drawve, 2020c; Kim and Bostwick, 2020), our study finds that social vulnerabilities impact even how or to what extent the same social and

psychological resources are accessed and utilized. However, the increase in R^2 values from Model 1 and Model 2 across all sub-groups examined suggests that the set of social and psychological resources still hold an important predictive value for COVID fear, threat, and worry despite ‘social positioning.’

Study Limitations and Future Research

While the findings of this study make an important contribution to measuring and testing the theorized relationship between social solidarity and fear, we note several limitations of the study. The data utilized was one of the first to examine subjective fear, worry, and threat of COVID so we were only able to capture the perceptions of the virus in early March of 2020. Although our study marks an important baseline in examining the impact of social and psychological resources, there is still much to learn about the evolving role of these resources in lessening COVID-specific distress over time. With the mortality and infection rates specific to COVID steadily increasing into February 2021, and other social and political tensions erupting during this time, future studies should examine the relationship between social and psychological resources and fear longitudinally. Moreover, from April 2020 onward, mutual aid and collective care efforts increased across the country that may have reshaped the perception of respondents on the strength of their social ties, their connection to the community, the control over their fate, and their perceived trust.

In addition, while we examine a few measures of perceived distress related to COVID, there are many other potential measures and methods that can be used to conceptualize fear, worry, and threat. Due to the timing of the data collected, our measures generally lack the complexity that could paint a more robust portrait of subjective American uncertainty in the face

of COVID; however, as a theoretically driven study, future studies could build on the same measures to conceptualize distress and social cohesion and solidarity.

Finally, we also recognize the bias of online surveys in the exclusive selection of respondents with access to the Internet and/or a device with Internet capabilities. Further, due to sampling limitations, the impact of some social vulnerabilities or circumstances, particularly related to race, were overlooked. For example, we did not account for respondents that self-identified as Native American and/or indigenous. A more nuanced examination of the impact of social vulnerability on how or what social and psychological resources an individual may access to mitigate COVID-related fear, worry, and threat would provide insight on how to best support overlooked or marginalized communities and community members.

Conclusions

Despite these and other limitations, our study provides important insight on COVID-related distress and the role of social connection and social circumstance. This study speaks to the importance of social connectedness in reducing the stress and uncertainty that influence panicked behaviors, like hoarding, which only compound the impact of COVID-19 and subjective expressions of anxiety and fear. While the tendency is to examine the impact and response to COVID broadly, our findings also stress the need for more nuanced examinations that consider the social identity and environmental circumstance of individuals and how that impacts access to or use of the same set of resources. Additionally, these findings have important implications for policymakers and those invested in community efforts alike. It is crucial in developing effective strategies that reduce the impact of COVID to identify the social and psychological resources that significantly lower COVID-specific fear, threat, and worry and help mitigate some of the negative behaviors associated with feeling stressed and insecure. Our hope

is that by better understanding the relationship between subjective distress (fear/threat/worry) and social solidarity, the response to future tangible risks like global pandemics will include considerations on strengthening the social fabric of the country.

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