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Revisiting Proactive and Reactive Pathways to Resilience among CISM-Trained Responders and General Population Participants: Mechanisms that Contribute to Building Overall Psychological Body ArmorTM

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REVISITING PROACTIVE AND REACTIVE PATHWAYS TO RESILIENCE AMONG CISM-TRAINED RESPONDERS AND GENERAL POPULATION PARTICIPANTS: MECHANISMS THAT CONTRIBUTE TO BUILDING OVERALL PSYCHOLOGICAL BODY ARMOR™

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Abstract: *Two previous studies by Burnett and colleagues found preliminary support for several innate well-being and behavioral variables that contribute to one's Psychological Body Armor's^TM (PBA), which is comprised of two unique interacting pathways (proactive and reactive resilience) among trained disaster mental health responders and the general population. This study sought to improve, expand, and replicate the findings of these two studies. Data was collected from 509 Amazon Mechanical Turk workers and 343 trained novice and experienced disaster mental health crisis intervention responders, who were general members of the International Critical Incident Stress Foundation or the Michigan Crisis Response Association, eight months into the COVID-19 global pandemic. Participants completed eight of the original measures used in the original studies, three revised measures, five new measures and an open-ended question about one's spiritual wellness routines. Controlling for the level of social disruption due to COVID-19, several significant correlations for both pathways were found similar to the two previous studies. Among both samples, hierarchical regression analyses revealed that mindfulness and self-efficacy were significant predictors of resilience capacity for the proactive pathway, while personal relationships with others was a significant predictor for the reactive pathway. Similar to the two previous studies, qualitative comparative analysis (QCA) revealed having professional crisis intervention training contributed more to strong resilience for both pathways. Transcendental phenomenological qualitative data analysis identified 14 spiritual wellness routines among crisis responders with prayer, reading religious literature, meditation and attending religious services being the most frequent.*

Keywords: *resilience, proactive resilience, reactive resilience, psychological body armor^TM, critical incident stress management, spiritual wellness*

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Introduction

Research has indicated that a majority of people have been exposed to at least one adverse incident in their lifetime but respond to these events in various ways (Kilpatrick et al., 2013; Ozer et al., 2003). Therefore, one's resilience capacity, or more specifically their ability to maintain healthy and stable levels of psychological and physiological equilibrium after exposure to such incidents, is critical to their ability to function adaptively over time (Bonanno, 2004; Bonanno et al., 2001; Everly, 2012; Kaminsky et al., 2007). Furthermore, the resilience literature has advocated that people can exhibit resilience through multiple paths such as hardiness, positive emotions, fostering optimism, social support networks, and engaging in positive thinking after experiencing adversity (Bonanno, 2004; Everly 2012).

Everly (2017) posited the phenomenon of Psychological Body Armor™ (PBA) which is defined as a "unique form of human resilience" that consists of two critical pathways: proactive resilience (one's immunity to crisis reactions) and reactive resilience (one's ability to bounce back from adverse life experiences). Within Everly's PBA theoretical framework, setting realistic expectations about significant challenges or threats, fostering active optimism and self-efficacy, and enhancing neurophysiological immunity are primary mechanisms in building proactive resilience. Establishing supportive interpersonal relationships, fostering a positive self-fulfilling prophecy, having access to formal crisis intervention services, and fostering physical health are mechanisms for reactive resilience.

In 2019, Burnett and colleagues conducted an exploratory analysis of PBA that consisted of 202 Amazon Mechanical Turk (MTurk) workers. The study found that subjective happiness and self-acceptance were significant predictors of resilience capacity through the proactive pathway, while positive relationships with others, psychological distress and physical fitness activities were significant predictors through the reactive pathway (Burnett et al., 2019). Burnett and colleagues expanded their study in 2020 to include 63 disaster mental health responders trained in Critical Incident Stress Management (CISM) crisis intervention strategies. Their study replicated similar predictors for the proactive pathway, while perceived stress and psychological distress were significant predictors through the reactive pathway (Burnett et al., 2020). Of greater importance was the results of their qualitative comparative analysis (QCA) which combined datasets from both studies and found that having professional CISM training contributed more to strong resilience capacity making the proactive pathway irrelevant (Burnett et al., 2020).

Proactive Resilience

The proactive resilience (immunity) pathway of PBA is associated with the neurological function of the limbic system and can be strengthen through the mechanisms of creating realistic expectations, fostering active optimism and self-efficacy, and enhancing neuro-physiological immunity (Everly, 2017). Previous studies by Burnett et al. (2019 & 2020) examined purpose in life, self-acceptance, subjective happiness, and spirituality as more specific variables of the three primary proactive mechanisms (see Burnett et al. (2019) and Burnett et al. (2020) for further literature review of these variables).

One important factor in creating realistic expectations within this pathway is a person's ability to foster self-efficacy (Everly, 2017). Generally, self-efficacy is deemed as confidence in one's coping

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capabilities to meet given situational demands (Bandura, 1997; Schwarzer & Warner, 2013; Wood & Bandura, 1989). Schwarzer and Warner (2013) suggests that having a general sense of self-efficacy also helps people to be resilient in reducing depressive symptoms, increasing the use of active coping strategies, and protect against stress at work. Benight and Cieslak (2011) cited a meta-analysis that indicated self-efficacy has medium to large effects in post-traumatic adaptation manifestations. Furthermore, Gallagher et al.'s (2020) meta-analysis found that specific self-efficacy helps one to focus on the context of coping after exposure to a traumatic or stressful event, which in turn, provides them the ability to adjust to such adverse experiences. More importantly, people can engage in behaviors that will increase their self-efficacy such as, being successful at something, vicarious learning, receiving constructive feedback from others, and learning to manage one's reactions to stressful and adverse experiences (Bandura, 1977; Everly 2017).

Building resilience capacity by enhancing neurophysiological immunity through the proactive pathway can include the concept of mindfulness. Mindfulness is conceptualized as a person's ability to attend to and be aware of their internal and external experiences in the present moment (Brown & Ryan, 2003; Kabat-Zinn, 1990). Everly (2017) suggests that controlled techniques which evoke a relaxation response (i.e., mindfulness) contributes to a down-regulation of the human nervous system, thereby mediating the impact of the stress response to adverse events. Research has shown that mindfulness interventions are effective strategies in improving psycho-logical resilience (Joyce et al., 2018; Kachadourian et al., 2021; Kaplan et al., 2017).

Finally, posttraumatic growth (PTG) is a potential component through the proactive pathway that may relate to one's resilience capacity through cultivating active optimism (Everly, 2017). PTG refers to one's ability to develop an optimistic outlook after exposure to a traumatic event (Tedeschi & Calhoun, 1996). Specifically, PTG seems related to optimism and serves as an indicator of positive adaptation (Hobfoll et al., 2007; Tedeschi & Calhoun, 1996; Westphal & Bonanno, 2007). Although the literature is mixed on whether PTG is equated with resilience or is superior to resilience outcomes (Westphal & Bonanno, 2007), a study by Levine et al. (2009) on 2,908 Israeli adolescents exposed to terror and 588 Israeli citizens and army personnel that experienced the second Lebanon War showed high levels of resilience were associated with low PTG scores.

Reactive Resilience

PBA's second critical pathway, reactive resilience, is also based on understanding neuroscience and is comprised of several mechanisms associated with effectively building one's ability to rebound when faced with adverse experiences. Everly (2017) suggested these mechanisms include establishing authentic supportive inter-personal relationships, cultivating a positive self-fulfilling prophecy, having access to formal crisis intervention services, and fostering physical health through physical fitness, nutrition, and quality rest and sleep. These primary mechanisms were more narrowly examined by Burnett et al. (2019 & 2020) as perceived stress, psychological distress, positive relationships with others, sleep quality, nutrition, and physical fitness activities (see Burnett et al., 2019 & 2020 for further literature review of these variables).

An important mechanism to strengthening resilience through the reactive

pathway is having access to formal crisis intervention services. Generally, the goals of crisis intervention include stabilization of an individual's acute distress, restoration of adaptive psychological functioning, reduction of functional impairment and facilitating access to continued care if needed (Everly & Lating 2019). This is accomplished through providing formal "real-time" access to community- or employer-based crisis intervention services in the form of telephone crisis hotlines, mobile crisis response units, CISM and psychological first aid interventions, walk-in clinics and more recently, police officers specifically trained in crisis intervention techniques (Everly, 2017; Guo et al., 2001; Hoffberg et al., 2019; Rogers et al., 2019; Sabinis & Glick, 2012). Studies have shown that access to community-based intervention and occupation-specific crisis intervention programs have been effective in reducing suicidal bereavement (Visser et al., 2014), reducing mild psychiatric symptoms (Sharifi et al., 2013) and mitigating post-traumatic stress injury among public safety and healthcare providers (Anderson et al., 2020).

Lastly, trained CISM and other disaster mental health responders are often exposed to the painful narratives of those impacted by traumatic events. For such responders, the empathetic desire to help those suffering from trauma increases their risk of developing compassion fatigue (CF) which is also synonymous with vicarious traumatization and secondary traumatic stress (STS) (Cieslak et al., 2014; Figley, 1995; Pearlman & Saakvitne, 1995). Compassion fatigue can eventually develop into a chronic state of physical, emotional, and mental exhaustion known as burnout (BO) (Cieslak et al., 2014; Craig & Sprang, 2010; Figley, 1995). However, research has shown that resilience mediates ("buffers") the relationship between compassion fatigue

and burnout (Burnett, 2017; Burnett & Wahl, 2015). Hence, responders who can cultivate a sense of self-identifying their own signs and symptoms of compassion fatigue and burnout may help improve their chances of rebounding from adverse experiences (Everly, 2017).

Purpose of the Present Study

Our study sought to replicate and increase reliability on the Burnett et al. (2019) and Burnett et al. (2020) studies, using larger MTurk and CISM-trained responder samples. As in the original studies, PBA remained as the theoretical framework; however, several previous measures were replaced with more reliable instruments (spiritual well-being, sleep quality, nutrition and physical fitness activities). Our study also added several new variables associated with the PBA pathways which included self-efficacy, mindfulness, and access to formal crisis intervention services. For the CISM-trained responder sample, posttraumatic growth (PTG), ability to recognize CF, STS and BO and an open-ended question regarding their routines to maintain spiritual wellness were added. Hierarchical linear regressions were utilized among the well-being and behavioral action variables while controlling for the influence of social disruption due to COVID-19 for each pathway to best uniquely predict strong resilience capacity. QCA examined which combinations of variables form consistent pathways to resilience based on two separate set-theoretic analyses allowing for the inclusion of multiple paths to an outcome in the solution (equifinality). Finally, transcendental phenomenological qualitative data analysis was utilized to identify spiritual practices commonly incorporated among crisis responders to help maintain their spiritual wellness.

Method

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Participants

The data for this study was collected from a convenience sample of subjects from MTurk and from disaster behavioral health responders trained in Critical Incident Stress Management (CISM) crisis intervention strategies who held general membership with the International Critical Incident Stress Foundation (ICISF) and the Michigan Crisis Response Association (MCRA) approximately eight months into the global COVID-19 pandemic in 2020. Participation in the study was voluntary.

Regarding the 509 MTurk participants, 61.5% were male; 80.6% were married while 14.3% were single. The age of participants ranged between 20 and 70 years ($M_{age} = 35.6$ years, $SD = 10$). Approximately 72% were White (non-Hispanic), 16.1% were African American, 5.9% were Latino or Hispanic, 3.7% Asian/Pacific Islander, 1.8% were American Indian/Alaskan Native and .20% were West Indian. Educationally, 58.3% were college graduates, 19.1% had a post graduate degree, while 9.8% had some college. The top four religious affiliations reported by participants were Catholic (73.9%), Protestant (11%), None (8.2%) and Jewish (4.8%). Economically, 67.2% had an income between $37,501 to $112,600, 28.7% had an income less than $37,500 while 4.1% had an income above $112,600. Finally, the four most commonly reported occupations were: Computer and Mathematical Occupations (20.4%), Management Occupations (18.6%), Sales and Related Occupations (10%) and Business and Financial Operations Occupations (10%).

For the 343 CISM-trained responders, 52.2% were female; 72% were married while 9% were single. Approximately 81% were White (non-Hispanic), 5.5% were Latino or Hispanic, 2.9% were African American, and 2.6% were American Indian/Alaskan Native. The age of participants ranged between 24 and 82 years ($M_{age} = 54.4$ years, $SD = 11.6$). Educationally, 44.6 had a post graduate degree, 23.3% were college graduates, 14.3% had some college and 11.4% had some post graduate work. The top four religious affiliations reported were Protestant (41.1%), Catholic (16.9%), None (18.4%) and Jewish (2%). Economically, 60.1% had a total annual household income between $37,501 to $112,600, 33.8% were above $112,600 while 6.1% were less than $37,500. The four most prevalent professions among CISM-trained responders were Law Enforcement Services (14.3%), Mental Health Services (14.3%), Chaplaincy Services (12%), and Education and Training Services (5.5%). Approximately 78% were members of a crisis/disaster mental health response team, 86% have been trained in large and small group crisis interventions, 90.1% have been trained in individual and peer crisis interventions, 75.5% have been trained in suicide awareness, intervention and postvention, and 59.2% have been trained in Psychological First Aid. The years of experience in the participants' primary profession ranged less than one year to 60 years ($M = 19.7, SD = 12.4$), while their years of CISM experience ranged from less than one year to 48 years ($M = 11.2, SD = 10$).

Measures

For our study, the 10-item Connor-Davidson Resilience Scale was used to measure overall resilience. The proactive resilience pathway utilized the following measures: the Purpose of Life and Self-Acceptance scales of the Scales of Psychological Well-Being, the Subjective Happiness Scale, the Spiritual Well-Being Scale, the New General Self-Efficacy Scale, the Mindful Attention Awareness Scale, the Posttraumatic Growth Scale, and a 1-item frequency of engagement of spiritual activities scale. The reactive resilience

pathway utilized the following measures: the Perceived Stress Scale, the Brief Symptom Inventory 18, the Positive Relationships with Others scale of the Scales of Psychological Well-Being, the PROMIS Sleep Disturbance Short Form, the International Physical Activity Questionnaire, the Rapid Eating Assessment for Participants Shortened Version, a three-item self-recognition of signs of compassion fatigue, burnout and secondary traumatic stress and an Access to Formal Crisis Intervention Services Questionnaire. Based on the public health response to manage the threat of the emerging global pandemic due to the SARS-CoV-2 coronavirus in the U.S., the COVID-19 Social Disruption Questionnaire was utilized to statistically control for its impact on participant responses for all measures in the study. Internal reliabilities for our study for each measure are reported in Tables 1 and 2.

Conner-Davidson Resilience 10-Item Scale (CD-RISC 10).

The CD-RISC 10 (Campbell-Sills & Stein, 2007) is a 10-item self-report measure of overall resilience that utilizes a 5-point Likert scale that ranges from *0* ("*not true at all*") to *4* ("*true nearly all the time*"). Participants rate their agreement with 10 statements that apply to them over the last month (e.g., "I am able to adapt when changes occur" and "I can deal with whatever comes my way"). Scores range from 0 to 40, with higher scores indicative of greater resilience. The CD-RISC 10 has demonstrated good validity and reliability (Davidson & Connor, 2018).

Scales of Psychological Well-Being (SPWB).

Our study utilized the 9-item self-report Purpose in Life (PL), Self-Acceptance (SA) and Positive Relationships with Others (PRWO) subscales of the Scale of Psychological Well-Being (Ryff, 1989).

Participants were asked to respond to each of the nine statements for each subscale on a 6-point Likert scale ranging from *1* ("*strongly disagree*") to *6* ("*strongly agree*"). Several items on each scale are reverse coded prior to summing responses. Scores on each scale range from 9 to 54, with higher scores indicative of the scale construct. Examples of items on each scale include, "My daily activities often seem trivial and unimportant to me" (PL), "I like most aspects of my personality" (SA) and "Maintaining close relationships has been difficult and frustrating for me" (PRWO). The SPWB has demonstrated decent reliability and validity (Ryff, 1989; Ryff, 2014).

Subjective Happiness Scale (SHS).

The 4-item self-report SHS (Lyubomirsky & Lepper, 1999) was utilized to measure happiness. Participants were asked to respond to four statements on a 7-point Likert scale (e.g., "In general, I consider myself …" either *1* "*not a very happy person*" to *7* "*a very happy person*"). A single composite score is computed by averaging the response to all four items following reverse coding the fourth item. Scores range from 1 to 7, with higher composite scores indicative of greater happiness. The SHS has demonstrated good reliability and construct validity (Lyubomirsky & Lepper, 1999).

Spiritual Well-Being Scale (SWBS).

The shortened version (Malinakova et al., 2017) of the 20-item SWBS (Paloutzian & Ellison, 1982) was utilized to measure overall spiritual wellness. Participants responded to seven items (e.g., "I have a personally meaningful relationship with God") utilizing a 6-point Likert scale ranging from *1* ("*strongly agree*") to *6* ("*strongly disagree*"). Scores range from 7 to 42, with

higher scores indicative of greater spiritual well-being after summing all seven responses. Internal consistency is .814 with a Mean Inter-Item Correlation of .379 (Malinakova et al., 2017).

Spirituality.

Participants were asked to respond to a single-item (e.g., "How often do you practice spiritual related activities, such as prayer, meditation, yoga, etc.?") that assessed their frequency of engagement in spiritual activities utilizing a 6-point Likert scale. Responses ranged from *1* ("*never*"), *2* ("*several times a month*"), *3* ("*once a week*"), *4* ("*two or more times a week*"), *5* ("*once a day*") to *6* ("*more than once a day*"). Higher scores reflect a greater frequency in practicing spiritual related activities.

New General Self-Efficacy Scale (NGSES).

The self-report NGSES (Chen et al., 2001) was utilized to measure general self-efficacy along the proactive resilience pathway. This measure was not used in the Burnett et al. (2019) and Burnett et al. (2020) studies. Participants were asked to respond to eight statements (e.g., "I will be able to achieve most of the goals that I set for myself") on a 5-point Likert scale ranging from *1* ("*strongly disa*gree") to *5* ("*strongly agree*"). The total score is an average of all eight items, ranging from 1 to 5. Higher scores are indicative of greater self-efficacy. The NGSES has demonstrated good internal consistency, test-retest reliability, predictive validity, discriminant validity and content validity (Chen et al., 2001).

Mindful Attention Awareness Scale (MAAS).

The 15-item self-report MAAS (Brown & Ryan, 2003; Carlson & Brown, 2005) was used to measure core characteristics of mindfulness, specifically a receptive state of mind where one's attention is informed by sensitive awareness of what is occurring in the present along the proactive resilience pathway. This measure was not used in the Burnett et al. (2019) and Burnett et al. (2020) studies. Participants were asked to respond to 15 statements (e.g., "I find it difficult to stay focused on what's happening in the present") using a 6-point Likert scale, ranging from *1* ("*almost always*") to *6* ("*almost never*"). The mean of all 15 items is calculated to obtain a score, with higher scores indicative of greater enhanced self-awareness. The MAAS has demonstrated good psychometric properties (Brown & Ryan, 2003), including among a cancer population (Carlson & Brown, 2005).

Posttraumatic Growth Inventory Short Form (PTGSF).

Only CISM-trained responders were asked to respond to the 10-item self-report PTGSF (Cann et al., 2010) along the proactive resilience pathway. Participants responded to 10 statements (e.g., "I changed my priorities about what is important in life") based on the degree of change that had occurred in their life as a result of their experience as a CISM/disaster mental health (DMH) service provider utilizing a 6-point Likert scale ranging from *0* ("*I did not experience this change as a result of my CISM/DMHS experience*") to *5* ("*I experienced this change to a very great degree as a result of my CISM/DMH experience*"). This measure was not used in the Burnett et al. (2019) and Burnett et al. (2020) studies. All responses are summed to obtain a total score. Higher scores are indicative of greater positive change following traumatic life events. The PTGSF has demonstrated good internal reliability (Cann et al., 2010).

Perceived Stress Scale (PSS).

The 2-item self-report PSS (Buchanan & McConnell, 2017) was utilized to assess perceived stress. Participants responded to

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the statement, "I consider myself _____" on a 7-point Likert scale (ranging from *1* "*not a very stressed person*" to *7* "*a very stressed person*"), and then to the statement, "I consider myself _____" on a 7-point Likert scale (ranging from *1* "*less stressed*" to *7* "*more stressed*"). Scores range from 1 to 7 after calculating the mean of the two items. Higher scores are indicative of higher perceived stress.

Brief Symptom Inventory 18 (BSI-18).

The self-report BSI-18 (Derogatis, 2001) was utilized to assess psychological distress. Participants were asked to rate 18 statements (i.e., "Feeling hopeless about the future") they considered distressing or bothersome during the past seven days utilizing a 5-point Likert scale ranging from *0* ("*not at all*") to *4* ("*extremely*"). Raw scores are summed to obtain a Global Severity Index, ranging from 0 to 72. Higher scores are indicative of greater psychological distress. The BSI-18 has demonstrated good internal reliability, test-retest reliability, convergent validity and discriminant validity (Derogatis, 2001).

Patient-Reported Outcomes Measurement Information System-Sleep Disturbance-Short Form (PROMIS-SD-SF).

The one-item sleep quality question that was used in the Burnett et al. (2019) and Burnett et al. (2020) studies was replaced with the more robust 8-item self-report PROMIS-SD-SF (Yu et al., 2011) to measure sleep quality. Participants were asked to respond to eight statements (e.g., "My sleep was restless") based on the last seven days using a 5-point Likert scale ranging from *1* ("*not at all*") to *5* ("*very much*"). Raw scores range from 8 to 40 after summing all responses, with higher scores indicating

greater severity of sleep disturbance. The PROMIS-SD-SF has demonstrated decent internal consistency, construct validity and convergent and divergent validity (Yu et al., 2011).

International Physical Activity Questionnaire-Short Form (IPAQ-SF).

The one-item physical activity question that was used in the Burnett et al. (2019) and Burnett et al. (2020) studies was replaced with the more reliable 7-item self-report IPAQ-SF (Craig et al., 2003; Lee et al., 2011) to measure physical activity. Participants were asked to respond to seven questions that capture their average daily time spent sitting, walking and engaging in moderate and vigorous physical activity over the last seven days. For the purposes of this study, scoring was calculated as a continuous variable (MET minutes in a week), where a MET is a multiple of one's estimated resting energy expenditure. A total MET score is a summation of all MET minutes in the categories of walking, moderate activity and vigorous activity. Higher scores represent greater physical activity during the week. The IPAQ-SF has demonstrated good overall psychometrics (Craig et al, 2003; Lee et al., 2011).

Rapid Eating Assessment for Participants-Shortened Version (REAPS).

The three-item nutrition questionnaire that was used in the Burnett et al. (2019) and Burnett et al. (2020) studies was replaced with the widely used 13-item self-report REAPS (Segal-Isaacson et al., 2004) to assess diet quality. Participants were asked to respond to 13 questions (e.g., "In an average week, how often do you skip breakfast?") that encapsulate their diet intake in an average week utilizing a 4-point Likert scale ranging from *0* ("*does not apply to me*"), to *1* ("*usually/often*") to *3* ("*rarely/never*"). All responses are summed to obtain a total score

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ranging from 3 to 39, with higher scores indicating better diet quality.

COVID-19 Social Disruption Questionnaire (SDQ).

The 5-item SDQ (Saw, Burnett & Bailey, 2021) was utilized to measure one's level of social disruption due to the COVID-19 pandemic. The SDQ assesses the effect of the current pandemic on job loss, financial insecurity, social distancing and confinement. A 5-point Likert response format was used for job loss ("This happened to me because of the coronavirus outbreak") ranging from "*Was already unemployed or not working prior to the outbreak*" (scored *1*), "*Neither lost my job nor took a cut in pay*" (scored *2*), "*Did not lose my job but had to take a cut in pay*" (scored *3*), "*Been laid off or furloughed*" (scored *4*), to "*Lost my job*" (scored *5*). A 7-point Likert response format was used, ranging from *0* ("*Has not affected my life at all*") to *7* ("*Has severely affected my life*") for financial insecurity ("How much has financial insecurity affected my life after the coronavirus outbreak?"), social distancing ("How much has maintaining social distancing affected my life during the coronavirus outbreak?"), confinement ("How much has having to remain confined to home affected my life during the coronavirus?"), and general social disruption ("Overall, how much has the coronavirus outbreak affected my life?"). SDQ scores range from 1 to 7 after calculating the mean of the five items, with higher scores indicating greater severity of social disruption due to COVID-19.

Spiritual Wellness Question.

Only CISM-trained responders were asked to write extensively about their spiritual wellness activities that they actively engage in, to the following question: "There are many ways in which people maintain their spiritual wellness. Please describe, how do you maintain your spiritual wellness? Feel free to write in as much detail as possible."

Procedure

Our study utilized a survey methods design. Institutional Review Board for Human Subjects Research approval was obtained from our institution prior to initiating the study (IRB renewal Protocol #17-143). Participants who volunteered to complete the study were invited through an email blast from ICISF and MCRA that provided a web link to the study online. Informed consent was provided prior to participants completing all study measures.

Results

Data was analyzed through the IBM SPSS 24 version statistical software. The means, standard deviations, and ranges for each measure utilized in this study are reported in Tables 1 and 2.

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Table 1

Means, Standard Deviations, Ranges and Reliability Scores for all Study Measures for MTurk Sample (N = 509)

Measures	*M*	*SD*	Range	α
CD-RISC 10 – overall resilience	26.6	5.72	4 – 40	.79
BSI-18 – psychological distress	37.9	18.8	0 – 72	.97
PL – purpose in life	30.4	6.30	14 – 54	.69
SA – self-acceptance	35.5	5.32	9 – 54	.61
PRWO – positive relationships with others	32.2	5.48	18 – 54	.62
PSS – perceived stress	4.61	1.62	1 – 7	.86
SHS – subjective happiness	4.63	.86	1 – 7	.54
SWBS – spiritual well-being	30.5	7.68	0 – 42	.88
Spiritual activity question	4.34	1.28	1 – 6	-
PROMIS-SD-SF – sleep quality	23.5	4.21	10 – 37	.51
REAPS – nutrition quality	24.3	5.13	4 – 36	.78
IPAQ – physical activity	13976.5	21742.0	0 – 335129	.73
MAAS – mindfulness	3.99	1.04	1 – 6	.94
NGSES – self-efficacy	3.87	.60	1 – 5	.81
ACCESS – access to crisis intervention services	4.44	1.51	0 – 7	.91
SDQ – social disruption due to COVID-19	4.23	1.21	.40 – 6.60	.83

Table 2

Means, Standard Deviations, Ranges and Reliability Scores for all Study Measures for CISM Sample (N = 343)

Measures	*M*	*SD*	Range	α
CD-RISC 10 – overall resilience	32.3	4.67	15 – 40	.84
BSI-18 – psychological distress	7.37	8.15	0 – 55	.89
PL – purpose in life	45.0	6.52	21 – 54	.77
SA – self-acceptance	44.1	7.31	9 – 54	.84
PRWO – positive relationships with others	42.4	8.63	13 – 54	.85
PSS – perceived stress	2.98	1.74	1 – 7	.90
SHS – subjective happiness	5.59	1.24	1 – 7	.88
SWBS – spiritual well-being	33.2	9.53	0 – 42	.89
Spiritual activity question	4.18	1.86	1 – 6	-
PROMIS-SD-SF – sleep quality	21.8	6.11	11 – 36	.80
REAPS – nutrition quality	20.8	7.70	6 – 35	.77
IPAQ – physical activity	1052.4	1033.0	0 - 6096	.74
MAAS – mindfulness	4.53	.78	1 – 6	.89
NGSES – self-efficacy	4.25	.56	1 – 5	.92
PTGSF – posttraumatic growth	23.3	14.3	0 – 50	.95
ACCESS – access to crisis intervention services	3.63	2.14	0 – 7	.85
RECOG – self-recognition of own signs of CF, BO and STS	5.70	1.38	0 – 7	.88
SDQ – social disruption due to COVID-19	2.62	1.48	.20 – 6.60	.77

Note. CF = compassion fatigue. BO = burnout. STS = secondary traumatic stress

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Partial Correlational Analysis

Our study examined the partial correlations between overall resilience and the mechanism variables for each pathway while controlling for scores on the Social Disruption Questionnaire due to the COVID-19 pandemic. An inspection of the zero-order correlations suggested that controlling for social disruption due to COVID-19 had very little effect on the strength of the relationship between all proactive and reactive resilience variables (see Table 3).

In comparison to the two earlier Burnett and colleague studies regarding the proactive pathway, our present study replicated a significant positive association between overall resilience and subjective happiness (MTurk sample $r(509) = .52$, $p < .001$; CISM sample $r(343) = .32$, $p < .001$), self-acceptance (MTurk sample $r(509) = .51$, $p < .001$; CISM sample $r(343) = .43$, $p < .001$), purpose in life (MTurk sample $r(509) = .20$, $p < .001$; CISM sample $r(343) = .37$, $p < .001$) and spiritual practices (only with MTurk sample $r(509) = .09$, $p < .05$).

Regarding the revised and new variables, a significant positive relationship was found between overall resilience and spiritual well-being (MTurk sample $r(509) = .43$, $p < .001$; CISM sample $r(343) = .12$, $p < .05$), mindfulness (MTurk sample $r(509) = .20$, $p < .001$; CISM sample $r(343) = .39$, $p < .001$) and self-efficacy (MTurk sample $r(509) = .63$, $p < 001$; CISM sample $r(343) =$

.54, $p <.001$). No significant relationship was found between resilience and posttraumatic growth (CISM sample only $r(343) = .01$, $p = .86$).

For the reactive pathway, our study was able to replicate a significant positive relationship between overall resilience and positive relationships with others (MTurk sample $r(509) = .36$, $p < .001$; CISM sample $r(343) = .33$, $p < .001$). A significant negative relationship was found between resilience and perceived stress (MTurk sample $r(509) = -.13$, $p < .05$; CISM sample $r(343) = -.22$, $p < .001$); however, this finding is opposite of the original Burnett and colleagues studies which found significant positive relationships.

Among the revised and new variables, a significant inverse relationship was found between overall resilience and sleep quality (MTurk sample $r(509) = -.27$, $p < .001$; CISM sample $r(343) = -.20$, $p < .001$) and a significant positive relationship with access to crisis intervention services (MTurk sample $r(509) = .34$, $p < .001$; CISM sample $r(343) = .14$, $p < .01$). A significant positive relationship between overall resilience and physical fitness activities ($r(509) = .09$, $p < .05$) and nutrition ($r(509) = .23$, $p < .001$) was only found among the MTurk sample. Finally, for the CISM sample in our present study, a significant positive correlation was found between overall resilience and their ability to self-recognize signs of compassion fatigue, burnout and secondary traumatic stress ($r(343) = .23$, $p < .001$).

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Table 3

Partial and Zero-Order Correlations for Overall Resilience and each Mechanism Variable for the Proactive and Reactive Resilience Pathways while Controlling for Social Disruption due to the COVID-19 Pandemic in Comparison to Bivariate Correlations in Burnett, Pichot and Bailey (2019) and Burnett, Bailey and Pichot (2020) Studies

Pathways and Mechanism Variables	Present Study: MTurk Sample (N = 509)	Present Study: CISM Sample (N = 343)	Burnett et al. (2019) MTurk Sample (N = 202)	Burnett et al. (2020) CISM Sample (N = 63)
Proactive Pathway				
Subjective Happiness	.52*** (.54***)	.32*** (.35***)	.64***	.55***
Purpose in Life	.20*** (.08)	.37*** (.39***)	.47***	.52***
Self-Acceptance	.51*** (.51***)	.43*** (.45***)	.62***	.56***
Spirituality (Practices)	.09* (.20***)	.11* (.12*)	.16*	.07
Spiritual Well-Being	.44*** (.48***)	.12* (.13*)	-	-
Mindfulness	.20*** (.23***)	.39*** (.41***)	-	-
Self-Efficacy	.63*** (.65***)	.54*** (.55***)	-	-
Posttraumatic Growth	-	.01 (.01)	-	-
Reactive Pathway				
Perceived Stress	-.13** (-.003)	-.22*** (-.26***)	-.40***	-.53***
Psychological Distress	-.07 (.07)	-.32*** (-.36***)	-.48***	-.72***
Relationships with Others	.36*** (.23***)	.33*** (.33***)	.49***	.49***
Sleep Quality	-.27*** (-.19***)	-.20*** (-.25***)	.26***	.23
Physical Fitness Activities	.09* (.15*)	.02 (.04)	.20***	-.08
Nutrition (Three Meals)	-	-	.11	.02
Nutrition (Sugary Drinks)	-	-	.14	.06
Nutrition (Caffeinated Drinks)	-	-	-.01	-.26*
Nutrition	.23*** (.31***)	-.09 (-.11*)	-	-
Access to Crisis Intervention Services	.34*** (.39***)	.14** (.17**)	-	-
Self-Recognition of own signs of CF, BO and STS	-	.23*** (.25***)	-	-

Note. *p < .05. **p < .01. ***p < .001. Zero-order correlations are italicized.

Hierarchical Regression Analysis

Hierarchical regression analysis was used to assess the unique effects of the proactive and reactive mechanism variables to predict overall resilience by entering them into three steps for the MTurk and CISM samples after controlling for the influence of social disruption due to COVID-19 (see Table 4). There were no violation of the assumptions of normality, linearity,

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multicollinearity, and homoscedasticity observed based on preliminary analysis.

For the MTurk sample at Step 1, social disruption due to COVID-19 was entered and explained 6% of the variance in overall resilience. At Step 2, the well-being variables of purpose in life, self-acceptance, subjective happiness, spiritual well-being, mindfulness and self-efficacy were entered and explained 49.3% of the variance in overall resilience. At Step 3, the behavioral variable of spiritual practices was entered, hence the total variance explained by the model as a whole was 49.4%, $F(8, 500) = 60.90$, $p < .001$. The

spiritual practices mechanism explained an additional .10% of the variance in overall resilience after controlling for social disruption due to COVID-19 and the six well-being variables, R square change = .001, F change (1, 500) = .912, $p = .34$. In the final model, only three of the well-being mechanism variables were statistically significant in predicting overall resilience through the proactive pathway in the following highest to lowest order: self-efficacy (*beta* = .45), subjective happiness (*beta* = .20), and mindfulness (*beta* = .12) (see Appendix: Supplemental Table 1).

Table 4

Hierarchal Regression Results for each Mechanism Variable for the Proactive and Reactive Resilience Pathways Predicting Overall Resilience while Controlling for Social Disruption due COVID-19 in Comparison to hierarchal Regression Results from Burnett, Pichot and Bailey (2019) and Burnett, Bailey and Pichot (2020) Studies

Pathways and Mechanism Variables	Present Study: MTurk Sample (*N* = 509) β	Present Study: CISM Sample (*N* = 343) β	Burnett et al. (2019) MTurk Sample (*N* = 202) β	Burnett et al. (2020) CISM Sample (*N* = 63) β
Proactive Pathway				
Subjective Happiness	.20***	-.04	.38***	.30*
Purpose in Life	.02	.07	.01	.22
Self-Acceptance	.05	.22***	.26**	.27*
Spirituality (Practices)	.04	.09	.67	-.23*
Spiritual Well-Being	.05	-.07	-	-
Mindfulness	.12***	.16**	-	-
Self-Efficacy	.45***	.39***	-	-
Posttraumatic Growth	-	-.06	-	-
Social Disruption due to COVID-19	.04	-.07	-	-
Reactive Pathway				
Perceived Stress	-.09	-.12**	-.12	-.23*
Psychological Distress	-.06	-.18*	-.24**	-.58***

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Relationships with Others	.33***	.18**	.32***	.06
Sleep Quality	-.16***	-.02	.11	-.08
Physical Fitness Activities	.09*	-.004	.13*	-.07
Nutrition (Three Meals)	-	-	-.34	.02
Nutrition (Sugary Drinks)	-	-	-.01	.07
Nutrition (Caffeinated Drinks)	-	-	-.03	-.02
Nutrition	.33***	-.003	-	-
Access to Crisis Intervention Services	.32***	.01	-	-
Self-Recognition of own signs of CF, BO and STS	-	.14**	-	-
Social Disruption due to COVID-19	.15**	-.08	-	-

Note. *p < .05. **p < .01. ***p < .001.

For the CISM sample at Step 1, social disruption due to COVID-19 was entered and explained 4% of the variance in overall resilience. At Step 2, the well-being variables of purpose in life, self-acceptance, subjective happiness, spiritual well-being, mindfulness, self-efficacy and posttraumatic growth were entered and explained 40.9% of the variance in overall resilience. At Step 3, the behavioral variable of spiritual practices was entered, hence the total variance explained by the model as a whole was 41.4%, $F(9, 333) = 29.17$, $p < .001$. The spiritual practices mechanism explained an additional .50% of the variance in overall resilience after controlling for social disruption due to COVID-19 and the seven well-being variables, R square change = .005, F change $(1, 333) = 2.894$, $p = .09$. In the final model, only three of the well-being mechanism variables were statistically significant in predicting overall resilience through the proactive pathway in the following highest to

lowest order: self-efficacy (*beta* = .40), self-acceptance (*beta* = .22) and mindfulness (*beta* = .16) (see Appendix: Supplemental Table 2).

For the MTurk sample at Step 1, social disruption due to COVID-19 was entered and explained 6% of the variance in overall resilience. At Step 2, the well-being variables of positive relationships with others, psychological distress and perceived stress were entered and explained 19.3% of the variance in overall resilience. At Step 3, the behavioral variables of sleep quality, nutrition, physical fitness activities, and access to crisis intervention services were entered, hence the total variance explained by the model as a whole was 39%, $F(8, 500) = 49.90$, $p < .001$. The four behavioral mechanism variables explained an additional 19.7% of the variance in overall resilience after controlling for social disruption due to COVID-19 and the three well-being variables, R square change = .197, F change

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$(4, 500) = 40.25$, $p < .001$. In the final model, only one of the well-being mechanism variables, four of the behavioral mechanism variables and social disruption due to COVID-19 were statistically significant in predicting overall resilience through the reactive pathway in the following highest to lowest order: nutrition (*beta* = .33), positive relationships with others (*beta* = .33), access to crisis intervention services (*beta* = .32), sleep quality (*beta* = -.16), social disruption due to COVID-19 (*beta* = .15) and physical fitness activities (*beta* = .09) (see Appendix: Supplemental Table 3).

Regarding the CISM sample at Step 1, social disruption due to COVID-19 was entered and explained 4% of the variance in overall resilience. At Step 2, the well-being variables of positive relationships with others, psychological distress, perceived stress, and self-recognition of own signs of CF, BO and STS were entered and explained 21.6% of the variance in overall resilience. At Step 3, the behavioral variables of sleep quality, nutrition, physical fitness activities, and access to crisis intervention services were entered, hence the total variance explained by the model as a whole was 21.7%, $F(9, 333) = 10.23$, $p < .001$. The four behavioral mechanism variables did not explain any additional variance in overall resilience after controlling for social disruption due to COVID-19 and the four well-being variables, R square change = .000, F change $(4, 333) = .048$, $p = .996$. In the final model, only the well-being mechanism variables were statistically significant in predicting overall resilience through the reactive pathway in the following highest to lowest order: psychological distress (*beta* = -.18), positive relationships with others (*beta* = .18), self-recognition of own signs of CF, BO and STS (*beta* = .14) and perceived stress (*beta* = -.12) (see Appendix: Supplemental Table 4).

Qualitative Comparative Analysis

A qualitative comparative analysis (QCA) was utilized to identify all configurations of factors for the proactive and reactive pathways that consistently overlap with the outcome variable of overall resilience (see Burnett et al., 2019 for a summary of QCA). Our present study combined the MTurk and CISM samples data ($N_{Combined} = 852$) in order to produce a more robust analysis. Truth tables (see Appendix: Supplemental Table 5) constructed from our dataset for the proactive pathway to resilience found 21 of 64 possible configurations based on two levels for each of our five exogenous factors (self-acceptance, purpose in life, subjective happiness, spiritual practices, and has professional CISM training). Thus, the proactive pathway to resilience produced the configuration of purpose in life and has professional CISM training, with a consistency of 98% (327 cases) of relevantly high resilience cases and coverage of 42% of cases with that configuration of factors (see Table 5). In other words, highly resilience subjects for both samples exhibit a high purpose in life and have professional CISM training. This finding is partially consistent with the Burnett et al. (2020) study that also found highly resilient subjects also had professional CISM training.

Regarding the reactive pathway to resilience, truth tables (see Appendix: Supplemental Table 6) constructed from our combined dataset found 35 of 256 possible configurations based on two levels for each of our seven exogenous factors (positive relationships with others, perceived stress, psychological distress, sleep quality, physical fitness activities, nutrition, and has professional CISM training). Thus, the reactive pathway to resilience produced the configuration of having professional CISM training with a consistency of 99% (339

cases) of relevantly high resilience cases and coverage of 44% of cases with that configuration of factors across four possible models (see Table 5). Hence, highly resilient subjects have professional CISM training for both samples, which is consistent to the findings in the Burnett et al. (2020) study.

Table 5

QCA Solutions for Proactive and Reactive Pathways with Strong Resilience as an Outcome in Comparison to Burnett, Pichot and Bailey (2019) and Burnett, Bailey and Pichot (2020) Studies

Configurations	Consistency[a]	Raw coverage[b]	Unique coverage[c]	Consistent Cases
Proactive Pathway				
High purpose in life, has professional CISM training	99%	42%	3%	327
Strong self-acceptance, strong happiness	96%	89%	24%	690
Low purpose in life, high spiritual practices	94%	28%	2%	218
High self-acceptance[1,2], high happiness[1,2] (Burnett et al., 2019[1] and Burnett et al., 2020[2])	98%[1] 98%[2]	81%[1] 81%[2]	81%[1] 81%[2]	142[1] 190[2]
Overall (present study)	95%	94%	-	-
Reactive Pathway				
Has professional CISM training	99%	44%	14%	339
High positive relationships with others, low sleep quality	95%	43%	8%	335
High psychological distress, high physical fitness activities, high nutrition	93%	34%	14%	267
High sleep quality[1], has professional CISM training[2] (Burnett et al., 2019[1] and Burnett et al., 2020[2])	91%[1] 98%[2]	52%[1] 26%[2]	9%[1] 4%[2]	92[1] 62[2]
Overall (present study)	95%	94%	-	-

[a] *Consistency is the percentage of cases in the strong resilience outcome that are also in the configuration identified in that row.*
[b] *Raw coverage is the percentage of cases in that configuration that intersect with the strong resilience outcome.*
[c] *Unique coverage is the proportion that only includes cases that are not in any other configuration.*

For the new variables added to our study, truth tables (see Appendix: Supplemental Table 7) constructed from our dataset for the proactive pathway to resilience found 23 of 512 possible configurations based on two levels for each of our eight exogenous factors. Thus, the proactive pathway to resilience produced the configuration of high spiritual practices with a consistency of 95% (450 cases) of relevantly high resilience cases

and coverage of 58% with that configuration of factors (see Table 6). Regarding the reactive pathway to resilience, adding the access to formal crisis intervention services variable produced too much ambiguity due to the model space being too large. Hence, no possible configurations based on two levels for each of our eight exogenous factors was produced.

Table 6

QCA Solutions for Proactive Pathways with Strong Resilience as an Outcome in with the Added Variables of Spiritual Well-Being, Mindfulness and Self-Efficacy

Configurations	Consistency[a]	Raw coverage[b]	Unique coverage[c]	Consistent Cases
Proactive Pathway				
High spiritual practices	95%	56%	4%	450
Low spiritual wellbeing	75%	11%	3%	89
High self-acceptance and high happiness	96%	89%	29%	690
Overall (present study)	93%	96%	-	-

[a] *Consistency is the percentage of cases in the strong resilience outcome that are also in the configuration identified in that row.*

[b] *Raw coverage is the percentage of cases in that configuration that intersect with the strong resilience outcome.*

[c] *Unique coverage is the proportion that only includes cases that are not in any other configuration.*

Transcendental Phenomenological Data Analysis

Moustakas' (1994) transcendental phenomenological methodology was utilized to analyze our qualitative spiritual wellness question. From the 343 verbatim written responses, 496 significant statements were extracted. Fourteen themes were identified based on organizing and coding the formulated meanings into clusters: prayer, reading spiritual literature, meditation, attending religious services, spiritual routines – other, music (praise, worship), spending time in nature, exercise/fitness, participating in religious study groups, outdoor activities, devotionals/journaling and mindfulness (see Table 7). The top four spiritual wellness routines incorporated by CISM-trained responders were: prayer ($f = 137$), reading spiritual literature ($f = 62$), meditation ($f = 54$) and attending religious services ($f = 53$).

Table 7

Spiritual Wellness Routine Themes, Frequencies and Examples of Narrative Responses for CISM-Trained Responders (N = 343)

Theme	f	Subject ID # and Example of Narrative Response
Prayer	137	#118 – "I pray often." #319 – "Talk with the Lord any time and all time."

Reading spiritual literature	62	#2 – "Ready my bible … study Scriptures." #18 – "Bible study."
Meditation	54	#128 – "I meditate." #343 – "Yoga … meditation."
Attending religious services	53	#63 – "I attend religious and faith-based services weekly." #283 – "Regularly attend Church services."
Spiritual routines – other	47	#3 – "Appreciation, comparing my good fortune to those who are less fortunate." #74 – "My superpower is humor and the ability to make others feel joy." #87 – "I have a personal relationship with God that enables me to stay centered throughout my life." #205 – "Use of Native American medicine such as smudging." #245 – "Practicing gratitude."
Music (praise, worship)	29	#159 – "Listen to or play music." #162 – "Listening to worship music."
Spending time in nature	24	#136 – "I spend time alone in nature." #335 – "Walking in woods … going for drives in mountains."
Exercise/fitness	20	#152 – "I walk with God." #338 – "While running, I have conversations with God."
Participating in religious study groups	17	#16 – "Fellowship with a small group." #106 – "We have a weekly bible study at work."
Outdoor activities	15	#13 – "I would spend most of my time outside doing yard work." #42 – "Hiking, camping, canoeing."
Devotionals/journaling	14	#48 – "Gratitude journal." #234 – "Daily bible devotions."
Mindfulness	12	#37 – "Mindfulness practices." #62 – "I attempt to practice mindfulness."
Podcasts	6	#19 – "Meditation podcasts." #128 – "Listen to podcasts."
Pets	6	#28 – "Caring for my pups." #124 – "Cuddling and playing with my pets."
Total	496	

Discussion

Our study reexamined overall resilience capacity through mechanism variables reflective of PBA's proactive and reactive resilience pathways utilizing: (1) larger MTurk and CISM-trained responder samples, (2) more reliable spiritual wellness, sleep quality, nutrition and physical fitness activities measures, (3) added measures of self-efficacy, mindfulness, posttraumatic growth, access to formal crisis intervention services, ability to self-recognize CF, STS and BO, and an open-ended question regarding one's spiritual wellness routines, while (4) controlling for the influence of social disruption due to COVID-19. Results for partial correlational and hierarchical regression analyses had findings that were

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similar and more robust compared to the two original Burnett et al., (2019, 2020) studies. Similar to the Burnett et al. (2019) study, QCA of our combined datasets showed that having CISM training was associated more with strong resilience capacity.

In comparison to the 2019 and 2020 studies, our present study was able to replicate significant correlations for subjective happiness, purpose in life, self-acceptance and frequency of spiritual practices across MTurk and CISM samples through the proactive pathway using the previous and revised measures. Furthermore, our present study was partially able to replicate self-acceptance and subject happiness as predictor variables of overall resilience through the proactive pathway. Regarding the reactive pathway, our study was partially able to replicate the 2019 and 2020 studies, with positive relations with others, psychological distress, perceived stress, physical fitness activities, sleep quality and nutrition as significant predictors of overall resilience using the previous and revised measures which varied across samples. Significant correlations were also replicated for perceived stress, positive relationships with others, physical fitness activities and sleep quality, but replicated partially for psychological distress and nutrition. As noted in the discussion sections of the Burnett et al., studies (2019, 2020), our findings are consistent with previous research that have reported significance between resilience and these variables across different populations.

Using the new proactive pathway measures of spiritual well-being, mindfulness and self-efficacy, our study found significant correlations between them and overall resilience among both samples. Additionally, mindfulness and self-efficacy were also found as significant predictors of overall resilience for both samples. Meta-analysis has shown that spirituality is correlated with resilience (Schwalm et al., 2021). Previous research has also found that mindfulness (Harker et al., 2016; Joyce et al., 2018; Joyce et al., 2019; Liu et al., 2020;) and self-efficacy (Benight & Cieslak, 2011; Keye & Pidgeon, 2013; Lee et al., 2013) were associated with resilience. Hence, the empirical evidence from our study suggests that spiritual well-being, mindfulness and self-efficacy are important components to overall resilience through the proactive pathway of PBA.

An unexpected finding was the absence of a significant relationship between resilience and PTG among CISM-trained responders. Hobfoll et al. (2007) conceptualized PTG as action-focused and equates it with resilience or superior to resilient outcomes. However, Westphal and Bonanno (2007) argue that the majority of people are resilient when exposed to traumatic events and that resilient outcomes provide minimal opportunity for PTG. This assertion seems empirically supported from the research of Levine et al. (2009) that found high levels of resilience were inversely associated with low PTG scores. Thus, our study seems more in line with Westphal and Bonanno's (2007) argument that PTG is not superior to resilient outcomes, but rather involves adaptive processes that may facilitate resilient outcomes based on individual differences in coping responses to traumatic experiences.

Among the new variable of having access to formal crisis intervention services was shown to have a significant positive correlation with overall resilience through the reactive pathway for both samples. This variable was also shown as a significant predictor of overall resilience through the reactive pathway among the MTurk sample, while the new variable of self-recognition of own signs of CF, BO and STS was found as

a significant predictor for the CISM sample. Our findings seem in step with Abramson et al. (2015) who proposed the conceptual model of the Resilience Activation Framework that is based on the premise that exposure to traumatic experiences leads to "resource loss, stress and psychological reactivity," however, access to social resources can trigger "resilience attributes that are inherent in individuals and communities, which can lead to better psychological adjustment, health and well-being" (p. 45). In fact, the Substance Abuse and Mental Health Service Administration (SAMHSA) has developed the National Guidelines for Behavioral Health Crisis Care Best Practice Tool Kit which provides guidance on best-practices to the behavioral health field for crisis services (SAMHSA, 2020). Therefore, it is vital that the general population, as well as CISM-trained re-sponders increase their own self-awareness in recognizing their need to access formal crisis intervention support services to reduce their susceptibility to the negative symptoms associated with experiencing adverse events or by working vicariously with those affected by such impactful incidents.

Utilizing a combined dataset, our study was also able to replicate through the set-theoretical approach of QCA that having professional training in disaster mental health and other associated crisis intervention techniques was a substantial contributor to robust resilience. Research as cited in Burnett's (2020) discussion section has shown that having professional training is significantly associated with higher resilience. For instance, Atkins and Burnett (2016) found that disaster mental health workers trained in small and larger group crisis interventions, as well as in individual and peer crisis intervention were associated with greater resilience and lower levels of burnout. This finding reinforces the

importance of CISM and other disaster mental health responders obtaining baseline crisis intervention trainings to boost their resilience capacity to help reduce their susceptibility to the negative effects of working in the trauma response field.

An important finding of our study involved the quantitative and qualitative results regarding spiritual wellness. For both the MTurk and CISM samples, spiritual well-being and frequency of engaging in spiritual practices were significantly correlated with overall resilience through the proactive pathway. This finding is consistent with previous correlational studies that found similar associations (Duran et al., 2020; Faigin & Pargament, 2011; Manning, 2013). Using an open-ended question that was assessed utilizing transcendental phenomenological analysis, our study identified 14 routines (i.e., prayer, reading spiritual literature, meditation, and attending religious services) that contributed to maintaining spiritual wellness among CISM responders. Manning et al. (2019) theorized that spiritual resilience is a life-long "tool" that is developed over time which can help one deal with and recover from adversity. Furthermore, his study found several key themes that were rooted in relationships with spirituality: reliance on social support systems from one's spiritual community or with the divine/God; reliance on rituals like prayer, meditation, contemplative journaling, fitness and cultivating an ethos of gratitude; dependence on a commitment to trusting in their belief framework; exhibiting an openness to growth and expansion; and employing coping approaches to make meaning of adverse experiences and provide a source of comfort and emotional sustenance. Although our study was unable to employ follow-up and clarification interview questioning due to the methodological limitations caused by the COVID-19

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pandemic, we were able to identify spirituality themes consistent within the framework proposed by Manning et al. (2019) that are essential for CISM responders maintaining proactive resilience immunity.

Limitations

Although our replication study had some successes there were several limitations. One limitation of our study was utilizing revised and new self-report measures in a replication study. Although our study yielded several significant results from the revised and new measures, further research is warranted to confirm these findings are consistent among MTurk and CISM-trained populations. Another limitation of our study was the use of a convenience sample, even though the sample sizes were significantly larger than the two earlier Burnett et al. (2019, 2020) studies. Convenience samples are often not representative of the population under study which affects generalizability of the findings. Additionally, our study utilized the Amazon MTurk crowdsourcing platform to collect data. Concerns have been raised regarding the reliability of using crowdsourcing platforms to collect trauma data (Hauser et al., 2019). However, Engle et al. (2020) found that trauma-exposed MTurk samples are similar to more traditional samples. A further limitation concerns the composition of the CISM sample utilized in our study. The trained CISM responders were a cross-section of various professional disciplines compared to the majority of resilience studies that use more homogenous samples (i.e., nurses, social workers, etc.). While our study provided insight regarding PBA among this cross-section population, further research is needed to explore PBA among homogenous CISM-trained responders groups and compare the results in order to identify discipline-specific resilience pathway commonalities and differences. Finally, the COVID-19 pandemic significantly limited our ability to ask follow-up and clarification interview questions regarding the spiritual wellness routines query. Further qualitative research is needed to expound on the importance of spiritual wellness practices that enhance PBA through the proactive resilience pathway among CISM-trained responders and the general population.

Implications

Our study was able to replicate and identify several mechanism variables that significantly contribute to overall PBA resilience through the proactive and reactive pathways. More importantly, Everly's (2017) theoretical framework suggests that overall PBA capacity can be developed, strengthened, and maintained in order to enhance one's immunity to crisis events but also to assist in the ability to bounce back from adverse experiences. Therefore, a major implication of our study is the development of an evidence-based PBA training curriculum that focuses on building resilience capacity for both, CISM-trained responders and the general public. In fact, Everly has recently developed an evidence-based training program ("The Secrets of Psychological Body Armor™ – Holistic Wellness for Emergency Services and Healthcare Professions") through the International Critical Incident Stress Foundation that is designed to build personal resilience and holistic health among emergency services and healthcare professions. Several components of the training program are in line with the findings of our study.

A final implication of our study centers on the need to create a single measure that can quickly and pragmatically assess an individual's PBA capacity. Although our study and the Burnett and colleagues studies provide evidence-based data on which PBA

components significantly contribute to overall resilience through its two pathways, the methodology is not conducive for individually administered self-assessment. Further research is needed to develop a psychometrically sound instrument that can be used by individuals, emergency services and disaster mental health responders, clinicians, and researchers to rapidly assess one's current PBA level. Such a measure could provide insight, support and understanding regarding one's ability to manage adverse life experiences, but also empower one to incorporate evidence-based practices to help build personal resilience capacity.

In conclusion, our study strengthened evidence-based support for Psychological Body Armor™ as a unique form of human resilience through two distinct pathways. By applying PBA, CISM-trained responders and the general population can build their resilience capacity to better manage adverse experiences. Unfortunately, traumatic events will continue to occur on individual and community-wide levels, thereby potentially contributing to the risk of developing posttraumatic stress and/or other psychological distress disorders. Therefore, it is critical that evidence-driven training programs that help to build resilience capacity are developed and delivered to meet this challenge.

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APPENDIX:

SUPPLEMENTAL TABLES

Supplemental Table 1

Hierarchical Regression Results for Proactive Resilience Mechanism Variables Predicting Overall Resilience among MTurk Sample (N = 509)

Variable	B	95% CI for B		$SE\ B$	β	R^2	ΔR^2
		LL	UL				
Step 1						.24	.06***
Constant	21.8	20.1	23.6	.90	-		
COVID-19	1.13	.73	1.53	.20	.24***		
Step 2						.49	.44***
Constant	-3.22	-6.58	.15	1.71	-		
COVID-19	.26	-.10	.62	.18	.06		
Purpose in Life[ab]	.01	-.06	.08	.04	.01		
Se1f-Acceptance	.05	-.05	.15	.05	.05		
Subjective Happiness[ab]	1.35	.78	1.92	.29	.20***		
Spiritual Well-Being	.05	-.02	.11	.04	.06		
Mindfulness	.69	.33	1.04	.18	.13***		
Self-Efficacy	4.19	3.30	5.08	.45	.44***		
Step 3						.49	.001
Constant	-3.80	-7.36	-.23	1.81	-		
COVID-19	.21	-.16	.59	.19	.05		
Purpose in Life	.02	-.05	.09	.04	.02		
Se1f-Acceptance	.05	-.05	.16	.05	.05		
Subjective Happiness	1.33	.75	1.90	.29	.20***		
Spiritual Well-Being	.03	-.04	.11	.04	.04		
Mindfulness	.68	.33	1.04	.18	.12***		
Self-Efficacy	4.27	3.36	5.18	.46	.45***		
Spiritual Activities[b]	.18	-.19	.55	.19	.04		

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit. [a]Variable was significant in the Burnett et al. (2019) study at Step 1. [b]Variable was significant in the Burnett et al. (2020) study at Step 2.
*p < .05. **p < .01. ***p < .001.

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Supplemental Table 2

Hierarchical Regression Results for Proactive Resilience Mechanism Variables Predicting Overall Resilience among CISM Sample (N = 343)

Variable	B	95% CI for B		$SE\ B$	β	R^2	ΔR^2
		LL	UL				
Step 1						.04	.04***
Constant	34.1	33.1	35.1	.50	-		
COVID-19	-.66	-.99	-.33	.17	-.21***		
Step 2						.41	.37***
Constant	7.80	3.93	11.7	1.97	-		
COVID-19	-.22	-.49	.05	.14	-.07		
Purpose in Life	.05	-.03	.12	.04	.06		
Se1f-Acceptance[ab]	.14	.06	.21	.04	.21***		
Subjective Happiness[ab]	-.09	-.52	.33	.21	-.03		
Spiritual Well-Being	-.01	-.05	.04	.02	-.01		
Mindfulness	1.04	.45	1.63	.30	.17**		
Self-Efficacy	3.19	2.41	3.98	.40	.39***		
Posttraumatic Growth	-.02	-.05	.01	.01	-.06		
Step 3						.41	.005
Constant	7.63	3.76	11.5	1.97	-		
COVID-19	-.22	-.49	.05	.14	-.07		
Purpose in Life	.05	-.03	.12	.04	.07		
Se1f-Acceptance	.14	.07	.22	.04	.22***		
Subjective Happiness	-.14	-.56	.29	.22	-.04		
Spiritual Well-Being	-.03	-.09	.02	.03	-.07		
Mindfulness	.96	.36	1.56	.30	.16**		
Self-Efficacy	3.25	2.47	4.04	.40	.39***		
Posttraumatic Growth	-.02	-.05	.01	.01	-.06		
Spiritual Activities[b]	.23	-.04	.50	.14	.09		

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit. [a]Variable was significant in the Burnett et al. (2019) study at Step 1. [b]Variable was significant in the Burnett et al. (2020) study at Step 2.
*$p < .05$. **$p < .01$. ***$p < .001$.

REVISITING PROACTIVE AND REACTIVE PATHWAYS TO RESILIENCE AMONG CISM-TRAINED RESPONDERS AND GENERAL POPULATION PARTICIPANTS

Supplemental Table 3

Hierarchical Regression Results for Reactive Resilience Mechanism Variables Predicting Overall Resilience among MTurk Sample (N = 509)

Variable	B	95% CI for B		$SE\ B$	β	R^2	ΔR^2
		LL	UL				
Step 1						.06	.06***
Constant	21.9	20.1	23.6	.90	-		
COVID-19	1.13	.73	1.53	.20	.24***		
Step 2						.19	.14***
Constant	5.12	.72	9.51	2.24	-		
COVID-19	1.37	.92	1.82	.23	.29***		
Relations with Others[a]	.45	.34	.55	.05	.43***		
Psychological Distress[ab]	.05	.02	.09	.02	.17**		
Perceived Stress[b]	-.13	-.50	.24	.19	-.04		
Step 3						.39	.20***
Constant	5.23	.19	10.1	2.51	-		
COVID-19	.72	.31	1.13	.21	.15**		
Relations with Others	.34	.25	.43	.05	.33***		
Psychological Distress	-.02	-.05	.02	.02	-.06		
Perceived Stress	-.31	-.64	.03	.17	-.09		
Sleep Quality	-.22	-.34	-.10	.06	-.16***		
Nutrition	.37	.27	.47	.05	.33***		
Physical Fitness Activities[a]	.00002	.00	.00	.00	.09*		
Access to CIS	1.19	.89	1.50	.16	.32***		

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit; CIS = crisis intervention services. [a]Variable was significant in the Burnett et al. (2019) study at Step 1. [b]Variable was significant in the Burnett et al. (2020) study at Step 2.
*p < .05. **p < .01. ***p < .001.

REVISITING PROACTIVE AND REACTIVE PATHWAYS TO RESILIENCE AMONG CISM-TRAINED RESPONDERS AND GENERAL POPULATION PARTICIPANTS

Supplemental Table 4

Hierarchical Regression Results for Reactive Resilience Mechanism Variables Predicting Overall Resilience among CISM Sample (N = 343)

Variable	B	95% CI for B LL	UL	$SE\ B$	β	R^2	ΔR^2
Step 1						.04	.04***
Constant	34.1	33.1	35.1	.50	-		
COVID-19	-.66	-.99	-.33	.17	-.21***		
Step 2						.20	.16***
Constant	29.7	26.9	32.5	1.42	-		
COVID-19	-.33	-.65	-.00	.16	-.10*		
Relations with Others[a]	.12	.07	.18	.03	.23***		
Psychological Distress[ab]	-.11	-.18	-.04	.03	-.19**		
Perceived Stress[b]	-.31	-.59	-.02	.15	-.11*		
Step 3						.22	.02
Constant	28.2	24.3	32.1	1.99	-		
COVID-19	-.26	-.59	.07	.17	-.08		
Relations with Others	.10	.04	.16	.03	.18**		
Psychological Distress	-.10	-.18	-.03	.04	-.18**		
Perceived Stress	-.33	-.62	-.04	.15	-.12*		
Sleep Quality	-.02	-.11	.07	.05	-.02		
Nutrition	.002	-.08	.08	.04	.003		
Physical Fitness Activities[a]	.00001	.00	.00	.00	-.004		
Access to CIS	.03	-.20	.30	.12	.01		
Self-Recognition	.48	.13	.83	.18	.14**		

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit; CIS = crisis intervention services; Recognition = self-recognition of own signs of compassion fatigue, burnout and secondary traumatic stress. [a]Variable was significant in the Burnett et al. (2019) study at Step 1. [b]Variable was significant in the Burnett et al. (2020) study at Step 2.
*p < .05. **p < .01. ***p < .001.

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Supplemental Table 5

Proactive Resilience Mechanisms (Replication) Truth Table for all Configurations with at least Four Cases ($N_{Combined} = 852$).

Exogenous Factors[a]					Consistency[b]		n[c]
SA	PL	SHS	SPIRIT	PROF	%	OUT	
0	0	0	0	0	25	0	8
0	0	0	0	1	75	0	4
0	0	1	0	0	63	0	16
0	0	1	1	0	91	1	11
0	1	0	0	0	30	0	10
0	1	0	0	1	100	1	5
0	1	1	0	0	63	0	19
0	1	1	1	0	78	0	9
0	1	1	1	1	100	1	4
1	0	0	0	0	75	0	8
1	0	1	0	0	91	1	101
1	0	1	0	1	100	1	4
1	0	1	1	0	95	1	213
1	1	0	0	0	0	0	5
1	1	0	0	1	100	1	7
1	1	0	1	0	75	0	4
1	1	0	1	1	100	1	4
1	1	1	0	0	90	1	50
1	1	1	0	1	100	1	134
1	1	1	1	0	88	1	49
1	1	1	1	1	99	1	171

[a]Exogenous factors defined as follows: SA – self-acceptance (0 = low, 1 = high); PL = purpose in life (0 = low, 1 high); SHS = subjective happiness (0 = low, 1 = high); SPIRIT = spirituality (0 = low, 1 = high); PROF = has professional CISM training (0 = low, 1 = high).
[b] Consistency is the percentage of cases with (OUT = 1) or without (OUT = 0) the target outcome (high resilience). OUT = whether or not row is in the output as a consistent pattern (> or = 80% consistency, minimum of 4 cases.
[c] n = number of cases with the pattern in the row.

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Supplemental Table 6

Reactive Resilience Mechanisms (Replication) Truth Table for all Configurations with at Least Four Cases ($N_{Combined} = 852$)

Exogenous Factors[a]							Consistency[b]		n[c]
PRWO	PSS	BSI-18	SLEEP	FIT	NUTRI	PROF	%	OUT	
0	0	0	0	0	0	0	33	0	6
0	0	0	0	0	1	0	100	1	4
0	0	0	0	0	1	1	100	1	4
0	0	0	0	1	0	0	60	0	5
0	0	0	0	1	1	0	79	0	29
0	0	0	0	1	1	1	100	1	10
0	0	0	1	0	1	1	100	1	8
0	0	0	1	1	0	0	60	0	5
0	0	0	1	1	0	1	100	1	7
0	0	0	1	1	1	0	65	0	17
0	0	0	1	1	1	1	100	1	6
0	0	1	0	0	1	0	90	1	10
0	0	1	0	1	0	0	60	0	5
0	0	1	0	1	1	0	90	1	80
0	0	1	1	0	1	0	60	0	5
0	0	1	1	1	0	0	60	0	5
0	0	1	1	1	1	0	97	1	115
1	0	0	0	0	0	0	83	1	12
1	0	0	0	0	0	1	100	1	30
1	0	0	0	0	1	0	94	1	18
1	0	0	0	0	1	1	100	1	42
1	0	0	0	1	0	0	91	1	23
1	0	0	0	1	0	1	99	1	72
1	0	0	0	1	1	0	83	1	29
1	0	0	0	1	1	1	99	1	71
1	0	0	1	0	0	0	60	0	5
1	0	0	1	0	0	1	100	1	7
1	0	0	1	0	1	0	60	0	5
1	0	0	1	0	1	1	100	1	19
1	0	0	1	1	0	1	95	1	20
1	0	0	1	1	1	0	78	0	18
1	0	0	1	1	1	1	100	1	37
1	0	1	0	1	0	0	100	1	4
1	0	1	0	1	1	0	92	1	48
1	0	1	1	0	1	0	83	1	6
1	0	1	1	1	0	0	50	0	4
1	0	1	1	1	1	0	90	1	40

[a] Exogenous factors defined as follows: PRWO = personal relationships with others (0 = low, 1 = high); PSS = perceived stress (0 = low, 1 = high); BSI-18 = psychological distress (0 = low, 1 = high); SLEEP = sleep quality (0 = low, 1 = high); FIT = fitness (0 = low, 1 = high); NUTRI = nutrition (0 = low, 1 = high); PROF = has professional CISM training (0 = low, 1 = high).
[b] Consistency is the percentage of cases with (OUT = 1) or without (OUT = 0) the target outcome (high resilience). OUT = whether or not row is in the output as a consistent pattern (> or = 80% consistency, minimum of 4 cases.
[c] n = number of cases with the pattern in the row.

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Supplemental Table 7

Proactive Resilience Mechanisms (Including Added Variables of Spiritual Well-Being, Mindfulness and Self-Efficacy) Truth Table for all Configurations with at Least Four Cases ($N_{Combined} = 852$)

			Exogenous Factors[a]					Consistency[b]		n[c]
SA	PL	SHS	SPIRIT	SWB	MIND	SELF	PROF	%	OUT	
0	0	1	0	1	1	1	0	75	0	8
0	0	1	1	1	1	1	0	100	1	7
0	1	1	0	0	1	1	0	100	1	7
0	1	1	0	1	1	1	0	75	0	7
1	0	0	0	1	1	1	0	75	0	7
1	0	1	0	1	0	1	0	83	1	23
1	0	1	0	1	1	1	0	97	1	71
1	0	1	1	1	0	1	0	95	1	60
1	0	1	1	1	1	0	0	80	1	5
1	0	1	1	1	1	1	0	95	1	147
1	1	0	1	1	1	1	1	100	1	4
1	1	1	0	0	0	1	1	100	1	4
1	1	1	0	0	1	1	0	90	1	10
1	1	1	0	0	1	1	1	100	1	29
1	1	1	0	1	0	1	0	100	1	10
1	1	1	0	1	0	1	1	100	1	13
1	1	1	0	1	1	1	0	96	1	24
1	1	1	0	1	1	1	1	100	1	86
1	1	1	1	0	1	1	1	100	1	10
1	1	1	1	1	0	1	0	92	1	13
1	1	1	1	1	0	1	1	100	1	6
1	1	1	1	1	1	1	0	88	1	32
1	1	1	1	1	1	1	1	99	1	155

[a] Exogenous factors defined as follows: SA = self-acceptance (0 = low, 1 = high); PL = purpose in life (0 = low, 1 = high); SHS = happiness (0 = low, 1 = high); SPIRIT = spiritual (0 = low, 1 = high); SWB = spiritual well-being (0 = low, 1 = high); MIND = mindfulness (0 = low, 1 = high); SELF = self-efficacy (0 = low, 1 = high); PROF = has professional CISM training (0 = low, 1 = high).
[b] Consistency is the percentage of cases with (OUT = 1) or without (OUT = 0) the target outcome (high resilience). OUT = whether or not row is in the output as a consistent pattern (> or = 80% consistency, minimum of 4 cases.
[c] n = number of cases with the pattern in the row.

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Declaration of Conflicting Interests

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