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Understanding resilience: Investigating the relationship between risk factors, resilience, and psychological well-being

Paulyna Schulz
Fort Hays State University, pmalcorn@mail.fhsu.edu

Jisook Park
Fort Hays State University, j_park7@fhsu.edu

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Running head: Understanding resilience

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ABSTRACT

Adversity in life is rarely considered positive. Adverse events can increase stress levels and decrease psychological well-being. However, experience of overcoming hardship can be the start of developing psychological resilience in life. Resilience is known to help regulate negative emotions and provides protection to one's psychological well-being. The current study focused on contributing to present literature by further investigating the role of resilience on mitigating the negative impact of stress on psychological well-being. In the current study, resilience is expected to positively influence the relationship between perceived stress and psychological well-being by negating the direct negative effect of stress on psychological well-being. Participants in the study included adults between 25- and 71-years-old in the U.S. recruited through Amazon Mechanical Turk (MTurk). The survey included questions addressing demographic information, perceived stress, resilience, and psychological well-being. A mediation analysis was used to analyze the hypotheses. Results showed a partial mediation found between perceived stress and psychological well-being and this relation suggests that resilience plays a small role in negating the negative effects caused by stress.

Keywords: Resilience, Perceived Stress, Psychological Well-being

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Life is a journey that can bring unexpected hardship or changes. How we respond to these hardships often greatly influences our psychological well-being. Some individuals are better than others at adapting to changed environments and circumstances while effectively overcoming such adversities. Others may be more likely to perceive high levels of stress and experience greater psychological distress as a result of adverse events in life. The healthy adaptation and overcoming of adversity are often exhibited through psychological resilience. Throughout literature, it is consistently suggested that adversity plays a significant role in the development of resilience. However, a posing question is why individuals who experienced similar adversity display different levels of resilience. Though the answer to this question is complex, in an attempt to understand the construct of resilience, this study examined the indirect role of resilience on psychological well-being during stress.

Resilience

Resilience derives from the Latin word *resiliens*, which means to rebound or recoil (Garcia-Dia, DiNapoli, Garcia-Ona, Jakubowski, & O'Flaherty, 2013). However, psychological resilience is much more complex than what is implied by *resiliens.* Resilience is defined as a measure of stress-coping ability that includes personal qualities that allow individuals to grow and even thrive in the face of adversity (Connor, 2006). This concept reflects an individual's ability to maintain a stable equilibrium of healthy psychological and physical functioning as well as the capacity for generative experiences and positive emotions despite adversity (Bonnano, 2004; Garcia-Dia et al., 2013).

Most resilient individuals have high positive emotionality and use positive emotions to achieve effective coping through humor, creative exploration, and optimistic thinking (Fredrickson, Tugade, Waugh, & Larkin, 2003). The use of positive emotions has shown to have

additional effects on individuals. These effects include flexibility in thinking and problem solving, counteracting the physiological effects of negative emotions, facilitating adaptive coping, building enduring social resources, and increasing well-being (Ong, Bergeman, Bisconti, & Wallace, 2006). Positive emotions have shown to alter one's modes of thinking such as broadening attention and thinking in a process called cognitive broadening. This process of cognitive broadening helps to expand and improve the way people cope during crises. The continued practice of positive emotions can become habitual which develops a style of broad-minded coping that can become a durable and personal psychological resource in the face of adversity. This development of broad-minded coping from positive emotions is considered to be a component of resilience (Fredrickson et al., 2003).

Although positive emotions and optimism are included as identifiable characteristics of resilience, they cannot serve as stand-alone identifiers when evaluating resilience. Individuals can be naturally optimistic but may not display the other primary characteristics of resilience. In fact, research has found that general positivity is considered more vital for individuals who have lower levels of psychological resilience. Positive emotions and optimism play a role in the coping strategies seen among resilient individuals; however, resilience is a multidimensional concept that entails the ability of effectively using psychological and environmental resources to overcome adversity.

Definition and Conceptualization of Resilience

Resilience has been defined in two differing points of views across literature: 1) resilience is fixed or stable versus 2) resilience is a dynamic, developmental process (Lee, Nam, Kim, Kim, Lee, & Lee, 2013). The argument of resilience as a fixed and stable trait is supported by the personality theory. In this perspective, resilience is treated as a personality trait involved

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in negotiating, managing, and adapting to significant events of trauma or stress. Some researchers have argued this view of resilience is unfavorable because it fails to address the notion of adaptation serving a primary role in shaping an individual's ability to bounce back from adversity (Lee et al., 2013). Thus, the second point of view of resilience as a dynamic, developmental process has become more favorable and more strongly supported in recent years.

In the growth model perspective, individuals may emerge stronger and develop new capacities after experiencing adversity. Research has shown that resilience displayed during one point in psychological development predicts a higher likelihood of the individual displaying resilience at a later point in development (Gillespie, Chaboyer, & Wallis, 2007; Klika & Herrenkohl, 2013). Some literature also considers resilience as innate energy or a motivating life force within an individual that can be developed. In this context, resilience is described as a complex interaction between innate strength and outer support, such that resilience serves as an accessible internal resource that enables a positive stress response that can be enhanced by external resources. This further illustrates how resilience is not a fixed trait and instead a dynamic process in development because it is influenced and dependent on various factors. Research has identified and termed these factors as protective factors and risk factors (Grafton, Gillespie, & Henderson, 2010).

In earlier conceptualizations of resilience, protective factors were primarily considered to be individual traits and behaviors such as intelligence, positive temperament, and personal agency. However, the importance of the social environment as a protective factor in resilience, especially during childhood, has been discovered in recent studies. For example, a supportive and/or safe neighborhood, non-family adult support, safe school, T.V. and media restriction,

parents' knowledge of friends, activity participation, and religion may serve as protective factors that can lead to building resilience (Klika & Herrenkohl, 2013; Moore & Ramirez, 2015).

In contrast to protective factors, there are circumstances and influences called risk factors that negatively affect resilience and promote the probability of poor outcomes because of adversity. Some of the most commonly discussed risk factors include but are not limited to: gender, race, history of medical issues, poor academic skills and achievement, low IQ, low levels of self-determination, emotional problems, stressful life events, low socioeconomic status, history of child maltreatment, and poor peer relationships (Murray, 2003). The presence and absence of risk and protective factors strongly influence the development of resilience and the potential effects of adverse events while one practices resilience, however, there are additional variables mentioned in literature that are influential in the development of resilience, some of which are required in order for an individual to be considered resilient.

Characteristics of Individuals with Resilience

Beyond the definition and conceptualization of resilience, there is a diverse set of criteria used to judge resilience; these criteria include characteristics such as positive behavior, presence of other desirable behaviors, happiness/life satisfaction, or the absence of undesirable behaviors (Masten, Cutuli, Heber, & Reed, 2009). The core characteristics and attributes of resilience vary among scholars; however, the common theme is the ability to rebound to normal functioning after experiencing an adverse event, and this common ability is judged by an array of characteristics. These characteristics include adapting to change, determination and tenacity, social support and interpersonal connectedness, self-efficacy, strong self-esteem, calm and innovative, non-dogmatic thinking, action-oriented when problem-solving, and optimism with a positive perspective specifically towards one's life (Connor, 2006; Everly, McCormack, &

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
DOI: 10.58809/YVGX6692

Strouse, 2012; Garcia-Dia et al., 2013). Also, resilient individuals oftentimes view stress as having a strengthening effect and view obstacles as an opportunity for self-growth (Connor, 2006).

Impact of Perceived Levels of Stress

Perceived stress is considered a subjective evaluation of an experienced stress level by an individual to an objective event as well as their coping response to the stress-inducing event (Cohen, Karmack, & Mermelstein, 1983). This concept is further understood as the feelings or thoughts an individual has about how much stress they are experiencing at a specific time or over a period of time. The feelings considered in perceived stress evaluations include uncontrollability and unpredictability about one's life as well as one's confidence in their ability to deal with their problems or difficulties. Perceived stress ultimately reviews how an individual feels and examines the general stressfulness of their life or a specific event as well as their ability to handle the stress (Cohen et al., 1983; Phillips, 2013).

Literature states that high perceived stress is positively associated with emotional disturbances such as anxiety, depression, and post-traumatic stress disorder (Yan, Gan, Ding, Wu, & Duan, 2021). Furthermore, it has been discovered that beyond the prolonged exposure to stress, the continued perception of an event being unmanageable can elicit the development of self-destructive behaviors and poorer coping methods such as rumination and poor self-concept (Willis & Burnett, 2016). Studies evaluating the perceived stress among college students have provided the most insight into the impact of perceived stress. High perceived stress has been found to be associated with lower levels of life satisfaction and lower levels of psychological well-being (Abolghasemi & Taklayi Varaniyab, 2010; Shi, Wang, Bian, & Wang 2015; Willis & Burnett, 2016).

Stress and Resilience

Friborg et al., discovered that high resilience provides a protection effect against stress (2006). However, the presence of a stressful or adverse event has been recognized in literature as a primary prerequisite for resilience development. This suggests that perceived stress and resilience development could be related, such that an individual who perceives their stressful situation as manageable (lower perceived stress) may display higher levels of resilience. In addition, the opposite effect occurs as well, which considers perceived stress to act more as a risk factor to resilience development and psychological well-being. The relationship between resilience and perceived stress was examined among the college student population. Abolghasemi and Varaniyab found that successful students were most commonly associated with lower levels of perceived stress and higher levels of resilience and life satisfaction than students who were identified as failing students (2010). Similar results have been found by Shi et al., who identified resilience serving as a partial mediator between stress and life satisfaction among Chinese medical students (2015). Resilient individuals seem to demonstrate greater ability to manage and perceive stressful situations in a healthier style to alleviate the negative effects of stress. The presence of resilience has been shown to be positively related to higher levels in life satisfaction and psychological well-being.

Resilience and Psychological Well-Being

Specific characteristics of resilience such as hardiness, self-efficacy, and positive perspective of life have led researchers to investigate the influential role of resilience on psychological well-being. Well-being is a broad concept that reviews one's cognitive and affective values of life. This review includes the experience of high levels of pleasant emotions,

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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low levels of negative emotions, and high life satisfaction. Well-being serves as an important factor in helping individuals define meaning and purpose in their life and developing optimism (Diener, Lucas, & Oishi, 2005). Psychological well-being was once studied as a unidimensional concept, but Ryff introduced a universally accepted model of psychological well-being that includes six domains that more accurately encompasses the definition and concept of well-being (1989). This multidimensional approach of studying well-being analyzes the following six domains: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Ryff, 1989).

Studies have shown highly resilient individuals demonstrate a more positive outlook on life and this significantly correlates with increased life satisfaction and psychological well-being (Abaolshamat, Alsiyud, Al-Sayed, Alreddadi, Faqiehi, & Alehmadi, 2018; Liu, Wang, & Li, 2012; Mehta, Grover, Didonato & Kirkhar, 2018). Also, highly resilient individuals are more likely to meet the challenges in their lives effectively, as well as flexibly adapt to their stress. This enables such individuals to experience greater life satisfaction and increased psychological well-being (Liu et al., 2012). The cause of this increase in psychological well-being is suggested to be more strongly influenced by other specific characteristics of resilience such as optimism, increased positive affect, and positive self-image (Mehta et al., 2018). This suggests that specific characteristics related to resilience can help enhance psychological well-being, despite experiences of stress and hardship.

CURRENT STUDY

The purpose of this study was to gain a better understanding of the influential role of resilience during adulthood as a mediator between the negative effects of perceived stress on psychological well-being. This study contributes to present literature by further investigating the

roles of perceived stress on resilience development, as well as the relationship between perceived stress, resilience, and well-being in adulthood.

Mediating Role of Resilience

The mediating role of resilience between perceived stress and psychological well-being in adulthood was examined. Recent evidence suggests that high levels of resiliency circumvent or alleviate the negative impacts of perceived stress on psychological well-being. The current study expanded on this finding and examined resilience as it serves as a mitigating factor that buffers the experience from adversity by helping reduce the impact of perceived stress and increase opportunities for recovery. It was hypothesized that the relationship between stress and psychological well-being will be mediated by resilience, such that resilience protects individuals from current high stress so that they can maintain psychological well-being (*Figure* 1).

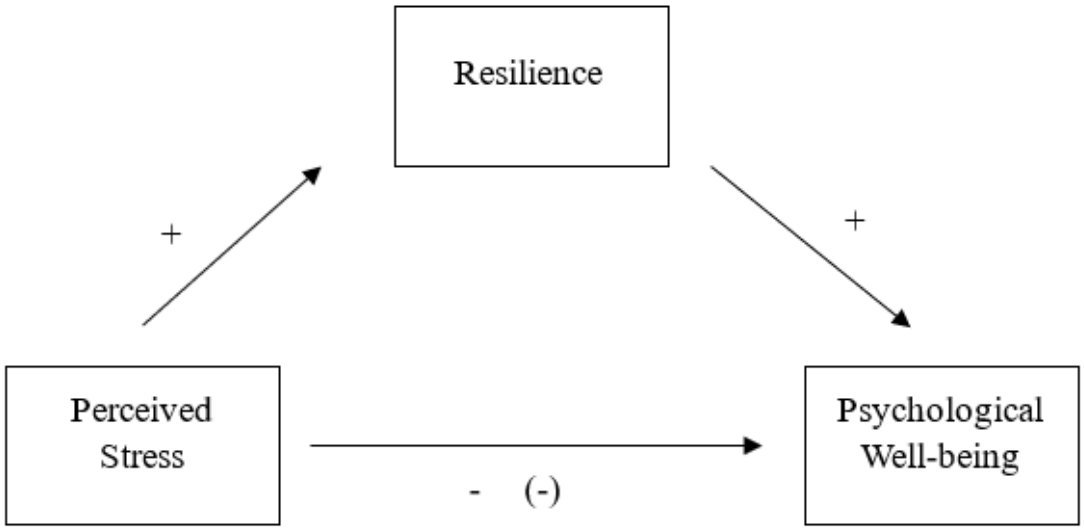

Figure 1. Illustration of the hypothesized relationship between perceived stress and psychological well-being mediated by resilience.

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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METHODS

Participants

The study recruited 299 participants. Participants who did not complete 90% of the survey materials, or did not consent to the study were removed, and the final 291 participants were included in further statistical analysis. The sample of participants included 105 females (36.1%), 183 males (62.9%) and 3 unspecified (1%). The age of participants ranged from 25-71 years old with average being 37.5 years of age (*SD* = 10.31). A majority of participants self-identified their ethnicity as White/Caucasian (64.6%) followed by 18.2% identified as African American, 11.3% as Hispanic/Latino/Spanish, 4.1% as Asian, 1% as American Indian/Alaskan Native, and 0.7% who preferred not to specify their ethnicity. 62.2 percent of the sample reported having a bachelor's degree as their highest level of education followed by 25.1% having a master's degree. One percent reported having an applied or professional doctorate degree, 3.8% with an associate degree, 4.8% with some college experience, 0.7% with vocational training, and 2.1% with a high school diploma/GED as their highest level of education.

The majority of participants (49.5%) reported an annual income classified as average middle class ($50,000 - $114,999 per year) followed by 26.1% with an income of working class ($25,000 - $49,999 per year). 11.3% of participants reported an income of lower class (less than $25,000 per year) and 11.7% reported earning an income in the upper middle class ($115,000 - $249,999 per year). Lastly, 0.3% reported earning more than $250,000 per year.

Due to the recent events of COVID-19, participants were inquired about their current employment status and if they had experienced a decrease in income due to the COVID-19 pandemic. A majority of the participants reported being employed (95.9%) at the time of the

study while 2.4% reported being unemployed, and 0.3% reported being retired. A total of 215 participants (73.9%) reported experiencing a decrease in income due to COVID-19 and 70 participants (24.1%) reported that they did not experience a decrease in income.

The sample was selected from the United States of America population using random sampling through the service Amazon Mechanical Turk (MTurk). The only restriction placed was that participants must be 18 years or older and currently living in the United States. All APA ethical guidelines were followed in gaining consent, providing a debriefing, and keeping the data of all participants anonymous.

Materials

The Connor-Davidson Resilience Scale (CD-RISC)

The Connor-Davidson Resilience Scale was constructed by Connor, M.D. and Davidson, M.D. in response to a need for a well-validated measure of resilience that is a brief self-rated assessment to quantify resilience based on the characteristics identified in literature (2003). The CD-RISC consists of 25 items on 5-point Likert scale responses. These responses are as follows: not true at all (0), rarely true (1), sometimes true (2) often true, (3), and true nearly all of the time (4). The sum of the score is the numeric representation of an individual's resilience in which a higher score reflects greater resilience (Connor & Davidson, 2003). Example items of CD-RISC include “I am able to adapt when changes occur” and “In time of stress, I know where to find help.”

Numerous studies have examined the psychometric properties of the CD-RISC. It is documented that the CD-RISC has better psychometric properties compared to other resilience scales and is widely accepted and utilized (Salisu & Hashim, 2017). During the development of the CD-RISC, Connor and Davidson assessed the reliability and validity of the scale. Cronbach’s

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
DOI: 10.58809/YVGX6692

alpha was used to measure internal consistency, which was reported as 0.89 for the full scale. The test-retest reliability assessment showed high levels of agreement with an interclass correlation coefficient of 0.87. The scale further exhibits validity relative to other measures of stress and hardiness (Connor & Davidson, 2003). An average score for all 25 items in the CD-RISC scale was calculated to assess the resilience score. Cronbach's alpha for the current sample was .93, indicating a good internal consistency.

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983)

The Perceived Stress Scale (PSS) is a widely used tool to measure the degree in which individuals perceive situations in their lives as stressful. The original PSS was 14-items but was shortened to 10-items in 1988 (Cohen). The original study with PSS showed an acceptable range of test-retest reliability, as well as concurrent and predictive validity (Cohen et al., 1983). The 10-item PSS has been found to have superior psychometric properties across numerous studies with internal consistency Cronbach's alpha values and test-retest reliability values greater than 0.70 (e.g., see Lee 2012). The PSS 10-item scale requires participants to respond to statements using a 5-point Likert scale (0 = never; 4 = very often). Example items of the PSS include "In the last month, how often have you been angered because of things that were outside of your control?" and "In the last month, how often have you felt that things were going your way?" An average score for all 14 items in the PSS scale was calculated to assess the perceived stress score. Cronbach's alpha for the current sample was .81, indicating a good internal consistency.

Ryff Scales of Psychological Well-Being (RSPWB)

The 42-item RSPWB was developed by psychologist Carol D. Ryff to measure the six domains of well-being (1989): self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. This scale has been used in national

studies in which the psychometric properties of the scale were found to be strong, specifically in construct validity and inter-factor correlations (Abbott, Ploubidis, Huppert, Kuh, Wadsworth, & Croudace, 2006).

The 42-item RSPWB has 7 items for each of the 6 domains of well-being in which participants respond to statements using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Example items include "I am not afraid to voice my opinions even when they are in opposition to the opinions of most people" and "I have been able to build a home and lifestyle for myself that is much to my liking." For this study, an average score for all 42 items in the RSPWB scale were calculated to assess psychological well-being as one variable. Cronbach's alpha for the current sample was .93, indicating a good internal consistency.

Procedure

Participants were recruited online using Amazon's MTurk. The participants were asked to read and electronically sign a consent form prior to the survey questionnaire. After consent, the participants completed a survey that included demographic questions and the questions from the following scales: PSS, RSPWB, and CD-RISC. The questions were in randomized order to reduce potential order effects. Once the survey was completed, participants were presented with a debriefing form that included more information about the study and national resources in case psychological distress was experienced during the study. Participants were paid a minimal monetary compensation ($. 50) to acknowledge the time and errort they provided in this research. All American Psychological Association (APA) ethics guidelines were strictly followed during the data collection process and maintenance of the data and IRB approval was obtained from the researchers' institution. The data collected was directly transferred from MTurk to SPSS for statistical analysis.

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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RESULTS

Hypothesis testing was accomplished through the use of SPSS Version 26 software. The data were screened using the explore function of SPSS to assess for missing data and outliers, and to examine skewness and kurtosis. Data that appeared to be missing at random were filled in with mean values. Examination of the boxplots indicated no outliers. The histograms indicated that the distribution shape for the variables of interest may be normally distributed, however, the distributions were further assessed by examining the values for kurtosis and skewness. Skewness and kurtosis values were within acceptable range for all variables in the study which indicates normal distribution. Means and standard deviations were calculated for three main variables for our mediation model (see Table 1)

Table 1.

Means, standard deviations, and correlations for main variables in the current study.

Variable	M	SD	1	2	3
1. Perceived stress	3.28	.85			
2. Psychological well-being	3.22	.51	-.75*		
3. Resilience	2.91	.60	-.16*	.43*	

Note. M and *SD* are used to represent mean and standard deviation, respectively.

* indicates $p < .05$

We followed the mediation analysis steps by Baron and Kenny (1986) to examine a model of perceived stress predicting psychological well-being with resilience as a mediator. Baron and Kenny outlined a causal-steps approach to test a mediation effect which has been one of the most commonly used models (MacKinnon & Fairchild, 2009) and this analysis method was used because it allows us to examine how the latent factor of resilience relates to our two variables which are perceived stress and psychological well-being. If the relationship strength between perceived stress and psychological well-being is reduced or non-significant when controlling for resilience, the result will confirm our hypothesis regarding the mediated effect or the indirect effect of resilience. We tested Baron and Kenny's (1986) statistical criteria for establishing mediation and started by establishing a causal effect between perceived stress and psychological well-being.

Results suggest that a partial mediation is occurring, and resilience served as a significant mediator in the model, F (2, 288) = 273.52, $p < 0.001$. The findings show that perceived stress negatively predicts psychological well-being (β = -0.75, $p < 0.001$). However, when resilience is included in the regression, the strength of this prediction decreases (β = -0.70, $p < 0.001$) (see Figure 2).

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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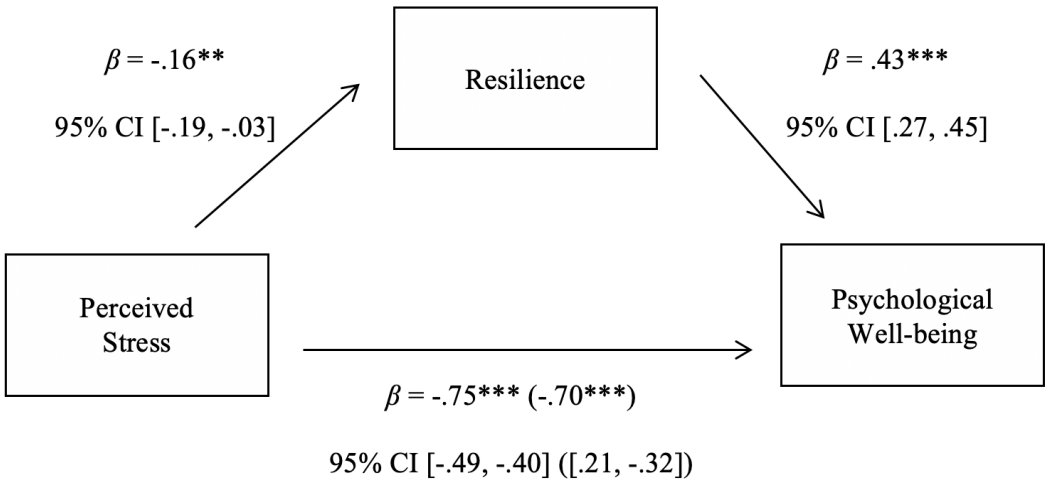

Figure 2. Standardized regression coefficients (β) for the relationship between perceived stress and psychological well-being as mediated by resilience. The standardized regression coefficient (β) between perceived stress and psychological well-being, controlling for resilience, is in parentheses. $^{**}p < 0.05$; $^{***}p < 0.01$

DISCUSSION

Previous research has shown the comprehensive effects adversity has on psychological well-being, the influence of perceived stress on resilience development and psychological well-being, and the positive relationship between psychological well-being and resilience. The purpose of this study was to investigate these variables in such a way that new information regarding the relationship between perceived stress, resilience, and psychological well-being in adulthood could be added to existing literature to assist in forming a greater understanding of psychological resilience.

The mediation model of this study investigated the relationship between perceived stress and psychological well-being whereas resilience serves as a mediator. It was hypothesized that resilience positively influences the relationship between perceived stress and psychological well-being by negating the direct negative effect of stress on psychological well-being. The results of the statistical analysis partially supported the hypothesis which indicates that resilience may serve a role in decreasing the negative effects that stress has on psychological well-being.

The relationships found with perceived stress could suggest that an individual's current stress during the COVID-19 pandemic and life events may play a greater role in current resilience development. Such inclination also relates to the dynamic nature of resilience. As discussed, individuals who experienced a low to moderate perceived stress of adversity are more likely to exhibit resilience later in their adulthood during another stressful event, thus the onset of resilience development may not follow immediately after an adverse event (Banyard & Williams, 2007; Widom et al., 2007). The results of this study pose a question of whether psychological resilience can be situation specific. For instance, participants in the study have not had to previously experience the stress related to the sudden changes caused by the COVID-19 pandemic, thus, they may not be as psychologically resilient to the negative effects of such adversity than they are to adverse events they have previously experienced. The occurrence of the COVID-19 pandemic may have challenged the integrity of some individual's psychological resilience and may explain why perceived stress is playing a more significant role in the mediation model of this study.

Limitations

The research conducted includes a few limitations that need to be considered. First, the sample of participants collected through MTurk may not serve as the most accurate

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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representation of the general population, especially during COVID-19. Individuals who may have experienced greater stress due to COVID-19 may not have had access to the technology to participate in the study. Furthermore, it was expected that measuring perceived stress during the pandemic could limit the generalizability of these findings, however, the event of the pandemic also provided an opportunity to measure and observe the role that resilience plays during stressful situations. An additional limitation in this study is that there are additional risk factors that could be considered to expand this research. Such risk factors could include socioeconomic status and more comprehensive examination of current life stressors including but not limited to health, family dynamic, and occupation related stressors. For example, early childhood events are known to have lingering impact throughout individuals' lifespan and should be considered in future research. To broaden our understanding of the mediating role of resilience, trait-based adversity (as opposed to state-based stress) should be examined in relation to psychological well-being.

Conclusions and Implications

The role that resilience has in partially mediating the relationship between perceived stress and psychological well-being is consistent with literature and further supports the important role that protective factors have in resilience development. This finding provides insight on why individuals who face similar adversity experience different levels of psychological well-being and this may result for the differing levels of protective factors individuals have, how the individual perceives stress, and how these factors strongly influenced development of resilience. Within clinical psychology, this can become especially important as psychologists work with trauma victims because the absence or presence of past and current protective factors can help better understand the individual's capacity of developing resilience,

healing, and handling future stressors. This study contributed to current literature about the influence resilience plays in improving well-being while experiencing stress and adversity, and future studies can be dedicated to increase our understanding about the dynamic nature of resilience and investigate domain specific resilience.

https://scholars.fhsu.edu/aljsr/vol6/iss1/2
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