

COVID-19 stress, resilience, and job loss concerns in people with chronic conditions and disabilities

Roberta Thimbriel^a, Bilal Urkmez^b, Beatrice Lee^c and Emre Umucu^{c,*}

^a*Interdisciplinary Health Sciences, University of Texas at El Paso, El Paso, TX, USA*

^b*Department of Counseling and Higher Education, Ohio University, Athens, OH, USA*

^c*Department of Rehabilitation Counseling, Educational Psychology, and Special Education, Michigan State University, East Lansing, MI, USA*

Received 28 November 2021

Revised 19 May 2022

Accepted 26 May 2022

Pre-press 30 September 2022

Published 22 November 2022

Abstract.

BACKGROUND: People experience higher levels of psychological distress during times of crisis, such as the current COVID-19 pandemic. Resilience is a psychological resource that helps people to recover from adverse events.

OBJECTIVE: The purpose of this study was to determine the effects of resilience on COVID-19-related stress and worry about job loss in people with chronic conditions and disabilities (PwCID).

METHODS: The *Perceived Stress Questionnaire -8* (PSQ-8) and the *Brief Resilience Scale* were used to measure COVID-19-related stress and resilience, respectively. Demographics were also assessed. A two-step hierarchical regression and binary regression analyses were conducted.

RESULTS: A moderate amount of perceived stress and resilience with mean scores of 2.45 (SD = 0.69; range 1-4) and 3.17 (SD = 0.98; range 1-5), respectively, were found among the 269 participants. Resilience ($\beta = -0.44, p < 0.001$) was significantly associated with COVID-19-related stress after controlling for demographic variables. Results also revealed that those with higher resilience scores had lower probability to worry about job loss.

CONCLUSION: PwCID who have higher scores on resilience reported lower levels of COVID-19-related stress. Resilience can be cultivated among PwCID for better psychological outcomes during times of crisis. Vocational rehabilitation counselors can implement strategies to improve resilience in PwCID.

Keywords: Resilience, stress, pandemic, disability, chronic conditions, employment

1. Introduction

The COVID-19 pandemic caused by the novel coronavirus has caused a global distress (Chen & Bonanno, 2020; Gruber et al., 2020). Psychological stress related to the pandemic may affect vulnerable groups such as people with chronic conditions and

disabilities (PwCID) in unique ways given they may already experience a higher level of stress due to their illnesses and conditions. PwCID experience seven times higher levels of stress (Okoro et al., 2009) at greater severity (Okoro & Dhingra, 2014) compared to those without chronic illness and disability (CID). This could be partially due to functional limitations, unemployment, perceived discrimination, poor health perception, lack of support, and newer diagnosis of disability (Kagan, Itzick, & Tal-Katz, 2018; Okoro et al., 2009). Besides, PwCID may experience higher levels of stress and distress due to physical

*Address for correspondence: Emre Umucu, Department of Rehabilitation Counseling, Educational Psychology, and Special Education, Michigan State University, East Lansing, MI, USA.
E-mail: umucuemr@msu.edu.

and mental health related activities, while attending to daily life activities such as caring for family, employment and meeting financial obligations (Kagan et al., 2018; Lee, 2020; Lee, Tansey, et al., 2022; Lee & Chan, 2022; Turner & Kelly, 2000; Umucu, Fortuna et al., 2022).

Recent studies revealed that, in a time of crisis such as the COVID-19 pandemic, PwCID are at an increased risk for experiencing greater levels of psychological stress and other physical and psychological concerns (Lee et al., 2021; Gurovich et al., 2021; Picaza Gorrochategi et al., 2020; Xiong et al., 2020; Umucu & Lee, 2020; Umucu et al., 2021). For example, research showed that social distance and isolation, financial insecurity, hopelessness, and fear of becoming infected with the COVID-19 may cause higher levels of stress in PwCID (Polizzi, Lynn, & Perry, 2020). Researchers found that PwCID experienced a moderate level of COVID-19-related stress (Umucu & Lee, 2020). Based on disability type, PwCID may experience stress due to disability specific stress during COVID-19. For example, individuals with physical disabilities may face unique challenges in transportation during the pandemic (Llanes Mabalot, 2020). Researchers also reported that PwCID uses coping strategies including active coping, denial, use of emotional support, humor, and religion which were also found to be positively associated with well-being (Umucu & Lee, 2020). There are many studies examining the psychological impact of COVID-19 among different groups; however, there is a need to further examine the relationship between resilience and COVID-19-related stress in PwCID.

Resilience is described as “the ability to bounce back or recover from stress” (Smith et al., 2008). The ability to cope and adapt to the social, environmental and healthcare challenges invoked by the pandemic are essential to PwCID (Vinkers et al., 2020). Resilience is a protective factor when facing adverse life events and helps to mediate or reduce the impact of negative events on physical, mental, and emotional well-being (Ran et al., 2020). For example resilience contributes positively to mental health among people with chronic pain (Alschuler, Kratz, & Ehde, 2016) and quality of life among those with physical disabilities (Battalio et al., 2017). Resilience is fostered by the ability to accept, adjust and adapt to their illness or disability in PwCID (Kralik, van Loon, & Visentin, 2006).

Employment plays an important role in PwCID’s economic security, social participation, and physi-

cal and psychological well-being (Dutta et al., 2008; Chiu et al., 2013). The severe economic effects of the COVID-19 pandemic have an impact on financial security in families and PwCID. Job loss and unemployment can be devastating especially for PwCID who are experiencing poverty (Kuper & Heydt, 2019). The COVID-19 pandemic’s financial challenges may increase worry about loss of employment in PwCID (Umucu, 2021). Although some research findings revealed that some positive psychology factors are protective against COVID-19-related stress (e.g., Umucu et al., 2021), it is not clear if PwCID who have higher resilience scores have less worry about losing their job. Overall, research related to resilience and psychological and employment outcomes during the COVID-19 pandemic among PwCID is scarce. Given resilience is a protective factor in the PwCID during times of emergency and crisis, it is important to examine whether resilience is a protective factor in COVID-19-related stress and worry about job loss in PwCID. While studies have investigated the impact of the COVID-19 pandemic on psychosocial and physical well-being and health, few have addressed the PwCID. In addition, there is no data on the positive effects of resilience on COVID-19-related stress in PwCID. The purpose of this study, therefore, is to determine the level of resilience in PwCID and examine the relationships between resilience and COVID-19-related stress and worry about job loss.

2. Materials and methods

2.1. Procedure and design

This study was a cross-sectional design. An online data collection tool called Amazon MTurk was used as a source for recruiting participants. This method of recruitment and data collection for research purposes was found to be reliable, valid and cost effective (Goodman, Cryder, & Cheema, 2013; Rand, 2012). Lund et al (2018) reported that “Amazon’s MTurk may be a good platform with which to recruit American adults with disabilities” (p. 7). The MTurk has options to limit participants based on specific criteria such as location. In this study, participation was restricted to residents in the U.S. Participants received \$2.00 upon completing the survey. Participants were provided the title of the study, a brief description about the study, compensation amount, study purpose and inclusion criteria, and the Qualtrics survey link. All participants read an online consent form and

consent by checking “I read consent and agree to participate.” All data were collected in April 2020. People who were 18 years and older and reported having a chronic condition or disability were selected for inclusion. The survey was produced using the Qualtrics platform. Participants were compensated with \$2.00 USD upon completion of the survey. The study was approved by the Institutional Review Board of UT El Paso (no. 1589589-2).

2.2. Measures

Participants’ age, race, sex, marital status, education, and chronic illness and/or disability information were collected using a demographic survey. The adapted version of the *Perceived Stress Questionnaire-8* (PSQ-8) which a brief 8-item (“Due to COVID-19, you feel tense,”) version (Umucu et al., 2018) of the PSQ-20 (Fliege et al., 2005), was used to measure perceived stress related to COVID-19. Each item is rated on a 4-point Likert scale, ranging from 1 to 4 and values were summed. The average scores were calculated. Higher levels of perceived stress were indicated by higher mean scores. Participants’ worry about job loss was measured with a single item (i.e., “Are you worried to lose your job?”). This item is dichotomously coded as yes (1) vs. no (0). The *Brief Resilience Scale* (BRS) (Smith et al., 2008) was used to measure resilience. The scale consists of six items and each item is rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The mean of the scores were calculated and those with higher values indicated higher levels of resilience.

2.3. Data analysis

All analyses were performed using SPSS version 26.0. Descriptive statistics of participants’ demographic, stress, and resilience measures were generated. A two-step hierarchical regression analysis was done to determine the effect of resilience on perceived stress after controlling for participants’ demographic characteristics (i.e., age, gender [1 = male], race [1 = white], marital status [1 = married]). In first step, we included demographic variables (i.e., age, gender [1 = male], race [1 = white], marital status [1 = married]) as covariates. In second step, we included resilience to examine whether resilience is associated with COVID-19-related stress after controlling demographic characteristics.

After main analyses, we tested whether resilience predict participants worry to lose job after controlling demographic variables (age, gender [1 = male], race [1 = white], marital status [1 = married]). For this analysis, a total of 219 employed participants were extracted from a total of 269 individuals with disabilities and chronic conditions.

3. Results

3.1. Descriptive statistics

The mean age of participants was 39.37 (SD = 12.18). Majority were white (84%), male (56.1%), and married (53.9%). The participants reported a moderate amount of perceived stress and resilience with mean scores of 2.45 (SD = 0.69; range 1-4) and 3.17 (SD = 0.98; range 1-5), respectively. About 69% of participants had at least a bachelor’s degree.

3.2. Hierarchical regression analysis

In the first step, we found that age ($\beta = -0.174$, $p < 0.01$) and sex ($\beta = -0.13$, $p < 0.05$) were significantly negatively associated with COVID-19 stress. After controlling demographic variables (i.e., age, gender [1 = male], race [1 = white], and marital status [1 = married]), resilience ($\beta = -0.44$, $p < 0.001$) was significantly associated with COVID-19-related stress and explained 23% of the variance in COVID-19-related stress; $R = 0.48$, $R^2 = 0.23$, $\Delta R^2 = 0.19$, $F(5, 263) = 15.69$, $p < 0.001$.

3.3. Logistic regression analysis

We entered demographic variables (i.e., age, gender, race, marital status) in the first block, followed by resilience in the second block. The first block with demographic variables only was not significantly associated with worry about job loss ($\chi^2 = 5.95$, $df = 4$, $p = .20$) with the Nagelkerke $R^2 = .03$. The second block with demographic variables and resilience was associated with worry about job loss ($\chi^2 = 16.34$, $df = 5$, $p = .006$) with the Nagelkerke $R^2 = .10$. By examining specific variables in the second block, we found that resilience was significantly negatively associated with worry about job loss (AOR = .59, CI 95% [.42 -.82], $p < .01$). Overall, the entire model containing all predictor variables in two blocks explained 10% (Nagelkerke R^2) of the variance in worry about job loss, indicating that resilience scores

were able to distinguish between PwCID who were worried to lose their jobs versus those who were not.

4. Discussion

The purpose of this study was to determine the level of resilience in PwCID and examine the relationship between resilience and COVID-19 stress. In addition, we also checked whether resilience was associated with worry about job loss in PwCID. The results revealed moderate amounts of resilience and COVID-19-related stress among PwCID. Studies found similar patterns of resiliency and psychological distress during the COVID-19 pandemic (Kimhi, Marciano, Eshel, & Adini, 2020; Petzold et al., 2020). PwCID are highly susceptible to psychological distress (Okoro & Dhingra, 2014; Okoro et al., 2009) which could be increased by the pandemic (Picaza Gorrochategi et al., 2020). The study findings revealed that PwCID who have higher scores on resilience endorsed lower levels of COVID-19 related stress. Besides, we found that higher levels of resilience scores were associated with less probability to worry about job loss among PwCID. These finding is similar to that seen in the general population where those with higher levels of resilience reportedly experienced lower levels of distress during the pandemic (Kimhi et al., 2020). The protective role of resilience to mitigate the adverse experiences of COVID-19 in PwCID is also highlighted by this finding. Prior to the pandemic, resilience was found to be protective against decreased capacity in performing activities of daily living and deleterious impact of a new chronic illnesses among older adults (Manning, Carr, & Kail, 2016). The study also found that males and older people had significantly lower levels of perceived COVID-19-related stress.

Resilience is a critical psychological resource that helps individuals to bounce back from adverse experiences (Smith et al., 2008). Building resilience is very important to PwCID in dealing with their long-term illness and daily activities; having such a resource to harness is valuable during the current pandemic (Chen & Bonanno, 2020; Lissoni et al., 2020). Cultivating resilience factors that include control, connectedness and coherence (Reich, 2006) through strategies such as acceptance, mindfulness, finding meaning and developing a value-based goal-oriented approach are essential to managing the psychological distress that arises from the pandemic (Polizzi et al., 2020). Finding ways to stay socially connected,

making new meaningful connections and developing an appreciation for human interconnectedness by embracing that all are experiencing the same crisis together also help to build resilience and to minimize COVID-19-related stress (Polizzi et al., 2020). In addition to fostering a sense of purpose and belonging, building one's own self-efficacy is also a mechanism to enhance resilience during the pandemic (Lissoni et al., 2020). Increasing optimism (Chen & Bonanno, 2020; Lee, Reyes, et al., 2022), creating positive emotions (Polizzi et al., 2020), and increasing gratitude (Lee, 2022; Umucu, Lo et al., 2022), grit (Lee, Rumrill, et al., 2022; Umucu, Villegas et al., 2021), and overall character strengths (Umucu, Lee et al., 2022) may also help to build resilience and overall psychological wellbeing. The results of this study show the protective role of resilience to mitigate the deleterious effects of psychological distress due to the current COVID-19 crisis; strategies to help build resilience in PwCID are highly recommended.

This study found that higher levels of resilience scores are negatively associated with worry about job loss in PwCID, meaning that PwCID who have higher resilience scores are significantly less likely to be worried about their job loss compared to those with lower levels of resilience scores. VR counselors should consider the link between resilience and worries about job loss when working with PwCID given worry about job loss may significantly impact quality of life in PwCID. VR counselors should have knowledge of effects of resilience on COVID-19-related stress and worry about job loss. Rehabilitation and mental health professionals may follow up with their clients to screen their stress and anxiety caused by COVID-19. Lower levels of resilience and higher levels of COVID-19-related stress may limit obtaining and maintaining employment among PwCID. With greater knowledge of resilience and COVID-19 stress, practitioners may implement evidence-based positive psychology and resilience interventions to help PwCID control their stress and worry, which may eventually help PwCID find or maintain their job.

4.1. Limitations of the study

The study was based on self-reported data which could impact the validity of the results. The online recruitment site is well established and past research using data from this site have been found to produce valid and reliable results; however, it is still important consider that some participants may have filled

Table 1
Hierarchical multiple regression analysis

Variable	β	R^2	ΔR^2	F
Step 1 – Demographics		0.039	0.039	2.657
Age	-0.159*			
Sex ^a	-0.086 [†]			
Race ^a	-0.028 [†]			
Marital status ^a	0.035 [†]			
Step 2 – Psychological variable		0.230	0.191	65.211
Resilience	-0.440**			

Note. β reported are standardized values in final model. ^a Sex (men = 1), race (white = 1), marital status (married = 1). [†] p = not significant. * $p < 0.01$. ** $p < 0.001$.

survey only for receiving incentive. The participants were limited to those in the United States and were predominantly white males with internet access and subscriptions to Amazon's MTurk platform, which limit the generalizability of the results. Next, we did not have a sample to compare our findings with those who do not have any CID.

5. Conclusion

Our exploratory study revealed that PwCID who have higher scores on resilience endorsed lower levels of COVID-19-related stress. Further studies are needed to better characterize the source of this resilience in PwCID to better understand how these resources can be leveraged for better psychological support and health outcomes in times of crisis.

Acknowledgments

None to report.

Conflict of interest

None to report.

Ethics approval

The study was approved by the Institutional Review Board of UT El Paso (no. 1589589-2).

Funding

The study was financially supported by UT El Paso (PI: Emre Umucu, no fund number assigned).

Informed consent

Participants completed an online informed consent form.

References

- Alschuler, K. N., Kratz, A. L., & Ehde, D. M. (2016). Resilience and vulnerability in individuals with chronic pain and physical disability. *Rehabilitation psychology, 61*(1), 7-18. <https://doi.org/10.1037/rep0000055>
- Battalio, S. L., Silverman, A. M., Ehde, D. M., Amtmann, D., Edwards, K. A., & Jensen, M. P. (2017). Resilience and Function in Adults With Physical Disabilities: An Observational Study. *Archives of Physical Medicine and Rehabilitation, 98*(6), 1158-1164. <https://doi.org/10.1016/j.apmr.2016.11.012>
- Chen, S., & Bonanno, G. A. (2020). Psychological adjustment during the global outbreak of COVID-19: A resilience perspective. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(S1), S51-S54. <https://doi.org/10.1037/tra0000685>
- Fliege, H., Rose, M., Arck, P., Walter, O. B., Kocalevent, R., Weber, C., & Klapp, B. F. (2005). The Perceived Stress Questionnaire (PSQ) reconsidered: validation and reference values from different clinical and healthy adult samples. *Psychosomatic Medicine, 67*(1), 78-88. <https://doi.org/10.1097/01.psy.0000151491.80178.78>
- Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data Collection in a Flat World: The Strengths and Weaknesses of Mechanical Turk Samples. *Journal of Behavioral Decision Making, 26*(3), 213-224. <https://doi.org/10.1002/bdm.1753>
- Gruber, J., Prinstein, M. J., Clark, L. A., Rottenberg, J., Abramowitz, J. S., Albano, A. M.,.... Weinstock, L. M. (2020). Mental health and clinical psychological science in the time of COVID-19: Challenges, opportunities, and a call to action. *American Psychologist, 75*(1), 1-11. <https://doi.org/10.1037/amp0000707>
- Kagan, M., Itzick, M., & Tal-Katz, P. (2018). Demographic, psychosocial, and health- and disability-related factors associated with psychological distress among people with physical disabilities. *Rehabilitation Psychology, 63*(3), 392-399. <https://doi.org/10.1037/rep0000206>
- Kimhi, S., Marciano, H., Eshel, Y., & Adini, B. (2020). Recovery from the COVID-19 pandemic: Distress and resilience. *International Journal of Disaster Risk Reduction, 50*. <https://doi.org/10.1016/j.ijdr.2020.101843>

- Kralik, D., van Loon, A., & Visentin, K. (2006). Resilience in the chronic illness experience. *Educational Action Research, 14*(2), 187-201. <https://doi.org/10.1080/09650790600718035>
- Lee, Y. P. B. (2020). *Protective Person-Environment Factors as Mediators Between Functional Disability and Stress in Individuals with Multiple Sclerosis: A Parallel Mediation Model*. The University of Wisconsin-Madison.
- Lee, B., Mangadu, T., Tansey, T. N., Rumrill, P., Estala-Gutierrez, V., & Umucu, E. (2021). The Intermediary Role of Loneliness in the Relationship between COVID-19 Stress and Maladaptive Coping among People with Disabilities and Chronic Health Conditions. *Journal of Rehabilitation, 87*(1).
- Lee, B. (2022). A serial mediation model of gratitude on life satisfaction in people with multiple sclerosis: The intermediary role of perceived stress and mental health symptoms. *Multiple Sclerosis and Related Disorders, 58*, 103421.
- Lee, B., & Chan, F. (2022). The Development and Psychometric Validation of the Brief Disability-Related Stress Scale in Individuals With Multiple Sclerosis. *Rehabilitation Counseling Bulletin, 00343552221087173*.
- Lee, B., Reyes, A., Rumrill, S., & Bishop, M. (2022). The Intermediary Role of Optimism and Mental Health in the Relationship Between Disability-Related Stress and Life Satisfaction: A Serial Mediation Model. *Rehabilitation Counseling Bulletin, 00343552221080434*.
- Lee, B., Rumrill, P., & Tansey, T. (2022). Examining the Role of Resilience and Hope in Grit in Multiple Sclerosis. *Frontiers in Neurology, 13*. <https://doi.org/10.3389/fneur.2022.875133>
- Lee, B., Tansey, T. N., Chan, F., Bishop, M., Hoyt, W. T., & Hancock, L. M. (2022). Exploration of the Effects of Protective Person-Environment Factors Between Functional Impairments and Stress in Individuals With Multiple Sclerosis: Mediation and Moderation Analyses. *Rehabilitation Counseling Bulletin, 65*(2), 95-107.
- Lissoni, B., Del Negro, S., Briosci, P., Casella, G., Fontana, I., Bruni, C., & Lamiani, G. (2020). Promoting resilience in the acute phase of the COVID-19 pandemic: Psychological interventions for intensive care unit (ICU) clinicians and family members. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(S1), S105-S107. doi:10.1037/tra0000802
- Llanes Mabalot, C. (2020). Advocacy During Covid-19. *Exceptional Parent, 50*(6), 14-16. Retrieved from <https://0-search.ebscohost.com.lib.utep.edu/login.aspx?direct=true&db=edo&AN=143897146&site=eds-live&scope=site>
- Lund, E. M., Nadorff, M. R., Galbraith, K., & Thomas, K. B. (2018). Using Amazon Mechanical Turk to recruit participants with disabilities. *SAGE Research Methods Cases, 1*. <https://dx.doi.org/10.4135/9781526437280>
- Manning, L. K., Carr, D. C., & Kail, B. L. (2016). Do higher levels of resilience buffer the deleterious impact of chronic illness on disability in later life? *The Gerontologist, 56*(3), 514. <https://doi.org/10.1093/geront/gnu068>
- Okoro, C. A., & Dhingra, S. S. (2014). Severity of psychological distress among adults with and without disabilities. *Social work in public health, 29*(7), 671-685. <https://doi.org/10.1080/19371918.2014.938386>
- Okoro, C. A., Strine, T. W., Balluz, L. S., Crews, J. E., Dhingra, S., Berry, J. T., & Mokdad, A. H. (2009). Serious psychological distress among adults with and without disabilities. *International journal of public health, 54 Suppl 1*, 52-60. <https://doi.org/10.1007/s00038-009-0077-z>
- Petzold, M. B., Bendau, A., Plag, J., Pyrkosch, L., Mascarell Maricic, L., Betzler, F.,... Ströhle, A. (2020). Risk, resilience, psychological distress, and anxiety at the beginning of the COVID-19 pandemic in Germany. *Brain Behav, e01745*. <https://doi.org/10.1002/brb3.1745>
- Picaza Gorrochategi, M., Eiguren Munitis, A., Dosil Santamaria, M., & Ozamiz Etxebarria, N. (2020). Stress, Anxiety, and Depression in People Aged Over 60 in the COVID-19 Outbreak in a Sample Collected in Northern Spain. *American Journal of Geriatric Psychiatry, 28*(9), 993-998. <https://doi.org/10.1016/j.jagp.2020.05.022>
- Polizzi, C., Lynn, S. J., & Perry, A. (2020). Stress and coping in the time of COVID-19: Pathways to resilience and recovery. *Clinical Neuropsychiatry: Journal of Treatment Evaluation, 17*(2), 59-62. Retrieved from <https://0-search.ebscohost.com.lib.utep.edu/login.aspx?direct=true&db=psyh&AN=2020-27302-003&site=eds-live&scope=site>
- Ran, L., Wang, W., Ai, M., Kong, Y., Chen, J., & Kuang, L. (2020). Psychological resilience, depression, anxiety, and somatization symptoms in response to COVID-19: A study of the general population in China at the peak of its epidemic. *Social Science & Medicine, 262*. <https://doi.org/10.1016/j.socscimed.2020.113261>
- Rand, D. G. (2012). The promise of Mechanical Turk: how online labor markets can help theorists run behavioral experiments. *Journal of theoretical biology, 299*, 172-179. <https://doi.org/10.1016/j.jtbi.2011.03.004>
- Reich, J. W. (2006). Three psychological principles of resilience in natural disasters. *Disaster Prevention and Management: An International Journal, 15*(5), 793-798. <https://doi.org/10.1108/09653560610712739>
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The Brief Resilience Scale: Assessing the Ability to Bounce Back. *International Journal of Behavioral Medicine, 15*(3), 194-200. <https://doi.org/10.1080/10705500802222972>
- Turner, J., & Kelly, B. (2000). Emotional dimensions of chronic disease. *The Western journal of medicine, 172*(2), 124-128. <https://doi.org/10.1136/ewj.172.2.124>
- Umucu, E., Iwanaga, K., Wu, J.-R., Brooks, J. M., Ditchman, N., Flowers-Benton, S., & Chan, F. (2018). Preliminary Validation of a Short Form of the Perceived Stress Questionnaire for Use in Clinical Rehabilitation Counseling Research and Practice. *Rehabilitation Research, Policy, and Education, 32*(4), 232-243. Retrieved from <https://0-search.ebscohost.com.lib.utep.edu/login.aspx?direct=true&db=eric&AN=EJ1203023&site=eds-live&scope=site> <https://dx.doi.org/10.1891/0889-7018.32.4.232>
- Umucu, E., & Lee, B. (2020). Examining the impact of COVID-19 on stress and coping strategies in individuals with disabilities and chronic conditions. *Rehabilitation psychology, 65*(3), 193-198. <https://doi.org/10.1037/rep0000328>
- Umucu, E. (2021). Functional limitations and worrying to lose employment among individuals with chronic conditions and disabilities during COVID-19: A hierarchical logistic regression model. *Journal of Vocational Rehabilitation, 54*(1), 25-32.
- Umucu, E., Tansey, T. N., Brooks, J., & Lee, B. (2021). The protective role of character strengths in COVID-19 stress and well-being in individuals with chronic conditions and disabilities: An exploratory study. *Rehabilitation Counseling Bulletin, 64*(2), 67-74.

- Umucu, E., Reyes, A., Urkmez, B., Ergun, G., Rios, Y. C., & Kosyluk, K. (2021). Development and Validation of a Scale of Negative Attitudes Toward COVID-19 With a Sample of People With Chronic Conditions and Disabilities. *Journal of Applied Rehabilitation Counseling*.
- Umucu, E., Villegas, D., Viramontes, R., Jung, H., & Lee, B. (2021). Measuring grit in veterans with mental illnesses: Examining the model structure of grit. *Psychiatric Rehabilitation Journal*, 44(1), 87.
- Umucu, E., Lee, B., Genova, H. M., Chopik, W. J., Sung, C., Yasuoka, M., & Niemiec, R. M. (2022). Character Strengths Across Disabilities: An International Exploratory Study and Implications for Positive Psychiatry and Psychology. *Frontiers in psychiatry*, 13.
- Umucu, E., Lo, C. L., Lee, B., Vargas-Medrano, J., Diaz-Pacheco, V., Misra, K.,... & Gadad, B. S. (2022). Is Gratitude Associated With Suicidal Ideation in Veterans With Mental Illness and Student Veterans With PTSD Symptoms? *The Journal of Nervous and Mental Disease*, 210(1), 26-31.
- Umucu, E., Fortuna, K., Jung, H., Bialunska, A., Lee, B., Mangadu, T.,... & Brooks, J. (2022). A national study to assess validity and psychometrics of the short Kessler psychological distress scale (K6). *Rehabilitation Counseling Bulletin*, 65(2), 140-149.
- Vinkers, C. H., van Amelsvoort, T., Bisson, J. I., Branchi, I., Cryan, J. F., Domschke, K.,... van der Wee, N. J. A. (2020). Stress resilience during the coronavirus pandemic. *European Neuropsychopharmacology*, 35, 12-16. <https://doi.org/10.1016/j.euroneuro.2020.05.003>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L.,... & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55-64. <https://doi.org/10.1016/j.jad.2020.08.001>