

Resilience and mindfulness in active duty and veteran U.S. military service members

Valerie J. Rice
Army Research Lab
U.S. Army Futures Command
Fort Sam Houston, U.S.A.
valerie.j.rice.civ@mail.mil

Paul J. Schroeder
DCS Corp
Alexandria, VA, U.S.A.
pschroeder@descorp.com

Abstract – In the present study, we examined self-reported trait resilience and mindfulness in 236 active duty (AD) and veteran U.S. Military service members. Although trait resilience was found to be significantly higher for the AD participants relative to veterans, scores on the mindfulness measures were not significantly different between the groups. For both groups, nonreactivity to inner experience was found to significantly predict scores on the resilience scale. In addition, mindful attention predicted resilience among AD participants, while describing inner experience predicted resilience among veterans. One implication of the findings is that training in mindfulness meditation may enhance personal resilience by boosting an individual's ability to regulate inner emotional experiences during stressful experiences. Providing community mindfulness training may lessen psychological trauma, improve community response to disaster, and hasten the effects of targeted crisis interventions.

Keywords - resilience, mindfulness, military, readiness

I. INTRODUCTION

Almost everyone experiences some form of trauma during their lifetime; yet, few events cause more collective devastation than war. In contrast to other types of disasters, war-related devastation may result from multiple sources (bombing, terrorism, exposure to death and maiming, etc.) and may endure for an indeterminate length of time. Surviving war can be a traumatic experience for both civilians and military service members. Whereas some people quickly recover and persevere after experiencing trauma, others struggle. Research on trait resilience provides a window into individual differences in how people recover and thrive after trauma. For example, studies with refugees from war-torn countries showed that individuals who score high in resilience tend to be educated, [1] display fewer symptoms of Post-Traumatic Stress Disorder (PTSD), [2] and show fewer symptoms of depression and behavioral difficulties. [3] In the present study, we examined the relationship between trait resilience and mindfulness in U.S. military active duty (AD) and veteran service members.

Drawing from the available literature, Rice and Liu [4] identified 22 characteristics of resilient people. Examples of these characteristics were “accepting reality/facing facts”, “hardiness”, “meaning making”, and “self-care”. Importantly, they noted that individual variability in resilience may emerge after a traumatic event, rather than before the event. Prior research with AD and veteran military samples has shown resilience was positively correlated with age, self-rated health, time on AD military service, [5] trait mindfulness, [6] use of emotion-focused coping strategies (e.g., acceptance and positive reframing), [7] help-seeking behaviors, perceived personal control, purpose in life, [8] and negatively correlated with somatization, [5] use of

dysfunctional coping strategies (e.g., behavioral disengagement and self-blame), [7] chronic health complaints, alcoholism, or experiences with suicidal thoughts, [9] and symptoms of PTSD. [9-11] These findings highlight the complex relationship between psychological resilience, demographics, and coping strategies.

One correlate of resilience that has received recent attention is mindfulness. Mindfulness has been defined as “awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment”. [12] The original concept of mindfulness is rooted in the Buddhist tradition of understanding one's own suffering and the suffering of others. [12-13] As with resilience, mindfulness has been studied as a trait. [14-15] Baer and colleagues [16-17] used factor analysis on a measure of mindfulness to derive five “facets”, which are displayed in Table 1.

TABLE I. FIVE FACETS OF MINDFULNESS

Facet	Description
Observe	Attending to both internal (thoughts, feelings, and emotions) and external events (sights, sounds, and smells)
Describe	Using verbal expressions to identify observations in a noncritical manner
Acting with awareness	Focusing attention on one activity rather than mindlessly engaging in multiple activities
Non-judgement of experience	Experiencing event and situations without critical appraisal
Nonreactivity to experience	Experiencing emotions and thoughts without becoming overwhelmed

The relationship between resilience and mindfulness is complex. Few studies have directly examined the relationship between trait resilience and mindfulness, and fewer have examined the relationship between these constructs in military service members. In a study of AD and veteran U.S. military service members, Rice et al. [6] found high self-reported resilience was significantly correlated with high scores on measures of three of the five facets: describing, acting with awareness and nonreactivity to inner experience, but resilience was not significantly correlated with observing or non-judgement of experience. These findings suggest that aspects of mindfulness contribute to resilience by helping service members recognize and manage their emotional

responses to stress. In a different study with AD and veteran participants, Rice and Schroeder [18] found scores on the observe facet of mindfulness were similar for those who scored in the 25th and 50th percentiles on resilience, while scores differed for participants who scored in the 75th and 95th percentiles on resilience. In the same study, the authors found responses on the describe, non-judgement and nonreactivity measures were not significantly different between participants who scored in the 50th and 75th percentiles on the resilience measure. The collective picture that emerges from these outcomes suggest that individual differences in resilience are tied to individual differences in mindfulness. One possibility is that facets of mindfulness bolster resilience by facilitating healthy coping strategies, such as positive reappraisal [19], and that mindfulness and resilience characteristics may vary for individuals in divergent careers or in alternate life stages.

Following prior research in our laboratory, in the present study we examined the relationship between self-reported resilience and mindfulness in AD and veteran military service members. Based on outcomes in our previous work, we hypothesized that aspects of mindfulness, specifically observing and non-reactivity to inner experience would significantly predict participants total scores on a measure of resilience.

II. PRESENT STUDY

A. Participants

Participants were 80 AD and 156 veteran U.S. Military service members. This study was approved by a military Institutional Review Board. Participants signed an informed consent document. No compensation was exchanged for their participation.

B. Measures

Participants completed four measures:

- **Demographic Survey:** The demographic survey included multiple-choice response items about volunteers' age, race/ethnicity, gender, education, marital status, military status, military deployment (i.e., whether they had deployed into harms' way), and time-in-service (the amount of time the respondent was on active duty military). Respondents answered the questions using a computerized questionnaire created with Microsoft Access.
- **Resilience Scale (RS-14)** [20]: The 14-item version of the Resilience Scale was used. Respondents rated their level of agreement with each statement on a seven-point Likert scale where 1 = "Strongly disagree" and 7 = "Strongly agree". Example statements are: "I can get through difficult times because I've experienced difficulty before" and "My belief in myself gets me through the hard times". The Resilience Scale has been shown to be a valid and reliable measure. [21] A respondent's resilience is the sum of their responses to each item. Score interpretation is 14-56 = very low, 57-64 = low, 65-73 = on low end, 74-81 = moderate, 82-90 = moderately high, and 91-98 = high. [22] In an open

sample on the Resilience Scale website, $n=1161$), the mean and standard deviation were 76.17 ± 13.9 , and the median was 79.00.

- **Mindful Attention Awareness scale (MAAS)** [14]: The MAAS consists of 15 statements. Respondents rate their level of agreement with each statement on a six-point scale where 1 = "Almost never" and 6 = "Almost always". Example statements are: "It seems I am running on automatic without much awareness of what I'm doing" and "I find myself preoccupied with the future or past". The MAAS has been found to be both a valid and reliable measure of mindfulness. [23] Total scores on the MAAS were calculated as the mean of the responses to each item.
- **Five Facet Mindfulness Questionnaire (FFMQ)** [17]: The FFMQ consists of 39 statements. Respondents rate their level of agreement with each statement on a five-point scale where 1 = "Never or very rarely" and 5 = "Very often or always". Example statements are: "I perceive my feelings and emotions without having to react to them" and "In difficult situations, I can pause without immediately reacting". The FFMQ has been found to be both a reliable and valid measure of mindfulness. [24] Summary scores for the five FFMQ subscales were calculated separately.

C. Procedure

The data reported here were collected as part of a larger study on resilience in the military. The data are from the pre-intervention, baseline data. The larger study examined the effects of an eight-week Mindfulness-Based Stress Reduction training program offered in-person and via a virtual world on AD and veterans physical and psychological health.

D. Data Analysis

Data analyses were conducted with the IBM SPSS Statistics for Windows (Version 21, Armonk, NY: IBM Corp, released 2012). Descriptive statistics and frequency analyses were used to examine mean differences. Mann-Whitney U tests were used to compare non-parametric demographic data. An Analysis of variance (ANOVA) was used to examine group differences in RS-14 and MAAS scores. Multivariate analysis of variance (MANOVA) was used to examine group differences in FFMQ scores. Pearson Product Moment correlations were used to examine the relationships between variables of interest. Forward entry regression was used to examine the predictive relationship between relevant demographic data, self-reported mindfulness, and resilience scores. A significance level of $p = 0.05$ was used to determine significance.

III. RESULTS

Scores from ten people were removed from the final data and not analyzed, due to incomplete data or participant withdrawal from the study.

Volunteer's demographic data is shown in Table 2. Active service volunteers were significantly younger than veteran volunteers, $F(1,235) = 83.19$, $p < 0.01$. Mann-Whitney U tests indicated that active service members had less education, than veterans, $z = -2.57$, $p < 0.01$. Gender, race,

and marital status did not differ significantly between the two groups of volunteers, p 's > 0.05 . Although time on AD service was not significantly different between AD and veteran participants, $p > 0.05$, significantly fewer veterans (53%) deployed than AD (73%), $z = -2.88$, $p < 0.05$.

TABLE II. DEMOGRAPHICS

	AD		Veterans	
<i>Demographic</i>	#	%	#	%
Gender				
Male	37	46.3	89	57.1
Female	43	53.8	67	42.9
Race				
African-American	19	23.8	41	26.3
Native American	1	1.3	3	1.9
Caucasian	47	58.8	79	50.6
Hispanic	11	13.8	30	19.2
Asian	2	2.5	2	1.3
Other	0	0.0	1	0.6
Education				
HS/GED	27	33.8	16	10.3
Some college/AA	18	22.5	51	32.7
Bachelors	25	31.3	40	25.6
MA/PhD	10	12.5	45	28.8
Other professional degree	0	0.0	4	2.6
Marital status				
Married	45	56.3	88	56.4
Divorced	18	22.5	33	21.2
Widowed	1	1.3	2	1.3
Single/separated	15	18.8	26	16.7
Partnered with significant other	1	1.3	7	4.5

As shown in Table 3, although AD scored significantly higher than veterans on the RS-14, scores on the mindfulness measures did not differ significantly between the two groups. Table 4 shows both groups of participants had high scores on the RS-14 and high scores on the mindfulness measures, which were significantly correlated with one another.

TABLE III. MEANS (M), STANDARD DEVIATIONS (SD), F-VALUES (F), AND SIGNIFICANCE (P) FOR THE RS-14, MAAS, AND FFMQ

	AD		Veterans			
<i>Measure</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P</i>

RS-14	79.87	14.03	73.67	17.19	7.76	0.01
MAAS	3.82	1.00	3.72	1.03	0.31	0.58
FFMQ						
FFMQ-O	24.81	7.14	24.97	6.16	0.03	0.85
FFMQ-D	27.40	7.75	25.48	7.53	3.30	0.07
FFMQ-A	25.62	7.71	25.04	7.36	0.31	0.58
FFMQ-NJ	27.55	7.46	25.93	7.30	2.53	0.11
FFMQ-NR	20.99	5.57	20.07	5.35	1.48	0.23

NOTE. FFMQ-O = observe, FFMQ-D = describe, FFMQ-A = acting with awareness, FFMQ-NJ = non-judgement, FFMQ-NR = non-reactivity

TABLE IV. PEARSON CORRELATIONS BETWEEN SCORES ON THE RS-14 AND THE MINDFULNESS MEASURES

	Score on the RS-14	
<i>Measure</i>	<i>AD</i>	<i>Veterans</i>
MAAS	0.48**	0.41**
FFMQ-O	0.28*	0.32**
FFMQ-D	0.38**	0.53**
FFMQ-A	0.39**	0.46**
FFMQ-NJ	0.28*	0.42**
FFMQ-NR	0.58**	0.67**

* = $p < .05$, ** = $p < .01$

Because the scores on the RS-14 differed significantly between the AD and veteran participants, separate regression analyses were run for the two groups of participants. Table 5 shows the results of the regression analysis for AD participants, with 45% of the variance being explained by scores on the mindfulness measures, $R^2 = 0.45$, $F(6, 77) = 9.65$, $p < 0.0001$ (both primary- correlated and secondary – not correlated measures were included). Among the measures included in the regression analysis, total scores on the MAAS and scores on the FFMQ-NR subscale contributed significantly to the prediction of higher resilience for the AD participants. Therefore, only these variables were entered into a separate regression analysis. Scores on both measures were found to account for 41.5% of the variance in AD participants total scores on the RS-14, $R^2 = 0.415$, $F(2, 77) = 26.62$, $p < 0.01$.

TABLE V. REGRESSION ANALYSIS PREDICTING SCORES ON THE RS-14 FOR AD PARTICIPANTS

	Unstandardized coefficients		Standardized coefficients		
<i>Measure</i>	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
Constant**	37.31	7.19		5.19	0.01
MAAS**	6.09	1.80	0.43	3.38	0.01
FFMQ-O	-0.27	0.23	-0.14	-1.17	0.25
FFMQ-D	0.19	0.20	0.11	0.10	0.33
FFMQ-A	-0.48	0.29	-0.26	-1.68	0.10
FFMQ-NJ	0.13	0.22	0.07	0.60	0.55

FFMQ-NR**	1.41	0.35	0.56	4.03	0.01
-----------	------	------	------	------	------

** = $p < .01$

Table 6 shows the results of the regression analysis for veterans. Because age, education and time-on-active duty were significantly positively correlated with scores on the RS-14, p 's < 0.02 , they were included in the regression analysis. The output revealed that 53% of the variance in scores on the RS-14 were explained by demographics, total score on the MASS, and scores on the FFMQ-D and NR subscales, $R^2 = 0.53$, $F(9, 153) = 18.15$, $p = 0.01$. Because scores on the FFMQ-D and NR subscales contributed significantly to the prediction of resilience for the veteran participant, only these variables were entered into a separate regression analysis. Scores on both measures were found to account for 50.0% of the variance in veteran participants total scores on the RS-14, $R^2 = 0.50$, $F(2, 155) = 76.43$, $p < .01$.

TABLE VI. REGRESSION ANALYSIS PREDICTING SCORES ON THE RS-14 FOR VETERAN PARTICIPANTS

Measure	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>Std. error</i>	<i>Beta</i>		
Constant	15.41	6.62		2.33	0.02
Age	0.05	0.09	0.03	0.47	0.64
Education	1.17	1.08	0.07	1.09	0.28
Time-in-service	0.13	0.13	0.07	1.02	0.31
MAAS	-0.26	1.70	-0.02	-0.15	0.88
FFMQ-O	0.07	0.19	0.02	0.34	0.73
FFMQ-D*	0.37	0.18	0.16	2.10	0.04
FFMQ-A	0.32	0.24	0.14	1.30	0.19
FFMQ-NJ	0.10	0.17	0.04	0.60	0.55
FFMQ-NR**	1.49	0.24	0.47	6.34	0.01

* = $p < .05$, ** = $p < .01$

IV. DISCUSSION

In the present study we examined the relationship between self-reported resilience and mindfulness in AD and veteran U.S. Military. Current military status had an impact on trait resilience, as demonstrated by the significant difference in scores on the RS-14 for AD and veteran participants. One explanation could be the presence of security and comradery among AD military service members bolsters personal resilience. This explanation is supported by prior research in our lab which found that time on AD was significantly positively associated with scores on measures of mindfulness [18], while age was not significantly correlated with scores on measures of trait mindfulness when controlling for time on AD. [25] However, in the present analysis, although age, education, and time-on-active duty were significantly associated with veteran's scores on the RS-14, they were not found to significantly predict scores on the

RS-14. Future research should examine this issue more closely.

Second, for both groups of participants, scores on the FFMQ-NR subscale were found to significantly predict scores on the RS-14. This finding is partially supported by research conducted by Kalill, Treanor, and Roemer [26]. They reported that nonreactivity (as measured by the FFMQ) was associated with fewer symptoms of posttraumatic stress in college students that experienced a traumatic event. Nonreactivity is the ability to be aware of internal experiences (including emotions) without automatically reacting to them. In this way, an individual can balance their emotional responses, thus supporting the protective benefits of resilience, for example harnessing the tendency to ruminate on unpleasant experiences. [27] Indeed, Coffey, Hartman, and Fredrickson [28] reported that nonreactivity to inner experience was a significant component of managing negative emotions. This ability to experience an event or trigger, without an immediate reaction, is valuable in high-stress situations that require focused regulation of internal (and external) experiences. Responding, rather than reacting, is a relevant skill for combat, adapting to emergencies, or for making a successful transition from military to civilian life. [29]

Third, although scores on the MAAS significantly predicted scores on the RS-14 for AD participants, it was not found to be a significant predictor of scores on the RS-14 for veterans. This finding suggests that, although individual differences in attending to present moment awareness may affect how resilient people process stressful events, [30] it did not significantly contribute to the trait resilience reported by veterans in this study. This may be due to the fact that our participants were not currently undergoing significant stress, as entrance criteria to the study.

Finally, we found that scores on the FFMQ-describe subscale significantly predicted scores on the RS-14 for veteran but not AD participants. This finding suggests that with age, experience, and removal from the active external stress of AD military service may come the ability to describe internal experiences. In turn, the self-awareness necessary to understand and describe personal experiences may improve integration into civilian life and boost resilience, as indicated in studies of emotional intelligence and resilience. [31]

These results demonstrate that self-reported resilience and mindfulness are positively associated with one another, suggesting that improving mindfulness improves resilience and vice-versa. Non-reacting on the FFMQ was predictive of resilience among AD service members, while self-rated health and scores on the FFMQ describe and non-reacting predicted resilience among veterans. Although not causative, these findings support prior research showing non-reactivity on the FFMQ was associated with indications of high resilience, such as lower symptoms of PTSD [26], lower tendency to ruminate [27], and greater ability to manage negative emotions. These results also support recent mindfulness intervention studies. For example, active duty and veteran participants attending in-person mindfulness training have experienced significantly decreased symptoms of PTSD, inattention [32], stress, daytime sleepiness, and pain [33].

These findings suggest that 1) teaching mindfulness meditation, perhaps with differing emphases may benefit active duty and veteran populations by increasing their ability to ‘bounce back’ from significant exposure to high stress situations, 2) individual differences occur in mindfulness and resilience, and 3) the characteristics of resilience may differ according to career and life stages. In addition, improving individual resilience may strengthen the resilience of individuals and of a community to deal with tragedy and disasters, helping them to recover more quickly.

ACKNOWLEDGEMENTS

We acknowledge the men and women of the United States Armed Forces, especially those who volunteered their time to participate in this research. Also, we would like to thank Gary Boykin, Angela Jeter, Baoxia Liu, Cory Overby, Mariah Tree, and Jessica Villarreal for their assistance with this project. Paul Schroeder is now at Booz Allen Hamilton.

DISCLAIMER

The views expressed in this article are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

REFERENCES

- [1] A.F. Alqudah, “Resiliency levels among Iraqi refugees in Jordan and its relation to some demographic variables,” *Int J Psychol Stud*, Vol. 5, pp. 50-59, 2013.
- [2] J. Snynoga, J., V. Owens, and D.K. Olema, “Posttraumatic growth, resilience, and posttraumatic stress disorder (PTSD) among refugees,” *Procedia*, Vol. 82(3), pp. 144-148, 2013.
- [3] T. Ziaian, H. de Anstiss, G. Antoniou, P. Baghurst, and M. Sawyer, “Resilience and its association with depression, emotional and behavioral problems, and mental health service utilization among refugee adolescents living in South Australia” *Child Adolesc Ment Health*, vol. 17(3), pp.146-152, 2012.
- [4] V.J. Rice and B. Liu, “Personal resilience and coping with implications for work. Part I: a review,” *Work*, vol. 54(2), pp. 325-333, 2016.
- [5] V.J. Rice and B. Liu, “Demographics, military status, and physical health as indicators of personal resilience among U.S. active duty service members and veterans”, vol. 482, V. Duffy and N. Lightner, Eds. Springer, Cham. 2016, pp. 433-443.
- [6] V. Rice, G. Boykin, A. Jeter, J. Villarreal, C. Overby, and P. Alfred, “The relationship between mindfulness and resiliency among AD service members and military veterans,” *Proc Hum Factors Ergon Soc Annu Meet*, vol. 57(1), pp.1387-1391, 2013.
- [7] V. Rice, and B. Liu, “Personal resilience and coping with implications for work. Part II: Identifying resilience and coping among U.S. military service members and veterans with implications for work,” *Work*, vol. 54, pp. 335-350, 2016.
- [8] R.H. Pietrzak, D.C. Johnson, M.B. Goldstein, J.C. Malley, and S.M. Southwick, S.M. “Psychological resilience and post-deployment social support protect against traumatic stress and depressive symptoms in soldiers returning from Operations Enduring Freedom and Iraqi Freedom,” *J Spec Oper Med*, vol. 9(3), pp.67-73, 2009.
- [9] K.T. Green, P.S. Calhoun, M.F. Dennis, and J.C. Beckham, “Exploration of the resilience construct in posttraumatic stress disorder severity and functional correlates in military combat veterans who have served since September 11, 2001,” *J Clin Psychiatry*, vol. 71, pp.823-830. 2010.
- [10] S. Maguen, D.M. Turcotte, A.L. Peterson, T.L. Drensa, H.N. Garb, R.J. McNally, “Description of risk and resilience factors among military medical personnel before deployment to Iraq,” *Mil Med*, vol.173, pp. 1-9, 2008.
- [11] R.H. Pietrzak, D.C. Johnson, M.B. Goldstein, J.C. Malley, A.J. Rivers, “Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom: the role of resilience, unit support, and postdeployment social support,” *J Affect Disord*, vol. 120, pp.188-192, 2010.
- [12] J. Kabat-Zinn, “Mindfulness-based interventions in context: past, present, and future”, *Clin Psychol (New York)*, vol. 10, pp.144-156, 2003.
- [13] J. Kabat-Zinn, *Wherever you go, there you are: mindfulness meditation in everyday life*. New York, NY: Hyperion, 1994.
- [14] K.W. Brown and R. Ryan, “The benefits of being present: Mindfulness and its role in psychological well-being,” *J Pers Soc Psychol*, vol. 84, pp.822-848, 2003.
- [15] R.A. Baer, “Mindfulness training as a clinical intervention: A conceptual and empirical review,” *Clin Psycho (New York)*, vol. 10, pp.125-143, 2003.
- [16] R.A. Baer, G.T. Smith, and K.B. Allen, K.B. “Assessment of mindfulness by self-report: the Kentucky Inventory of Mindfulness Skills,” *Assessment*, vol. 11, pp.191-206, 2004.
- [17] R.A. Baer, G.T. Smith, J. Hopkins, J. Krietemeyer, and L. Toney, “Using self-report assessment methods to explore facets of mindfulness,” *Assessment*, vol. 13, pp.27- 45, 2006.
- [18] V.J. Rice and P.J. Schroeder, “Are those who are more mindful also more resilient? Dispositional resilience and mindfulness among AD and veteran U.S. Military,” Poster presented at the International Conference on Mindfulness, Amsterdam, Netherlands, 2018.
- [19] E.L. Garland, S.A. Gaylord, and B.L. Fredrickson, “Positive reappraisal mediates the stress-reductive effects of mindfulness: an upward spiral process,” *Mindfulness*, vol.2 (1), pp. 59-67, 2011.
- [20] G.M. Wagnild, and H.M. Young “Development and psychometric evaluation of the Resilience Scale,” *J Nurs Meas*, vol. 1, pp.165-178, 1993.
- [21] G. Wagnild, “A review of the Resilience Scale,” *J Nurs Meas*, vol.17(2), pp.105-113, 2009.
- [22] G. Wagnild, *The resilience scale user’s guide*. Worden, MN: The Resilience Center, 2011
- [23] K.W. Brown, A.M. West, T.M. Loverich, and G.M. Biegel, “Assessing adolescent mindfulness: Validation of an adapted Mindful Attention Awareness Scale in adolescent normative and psychiatric populations,” *Psychol Assessment*, vol.23(4), 1023-1033, 2011.
- [24] R.A. Baer, G.T. Smith, E. Lykins, D. Button, J. Krietemeyer, S. Sauer, “Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples,” *Assessment*, vol.15, pp.329-342, 2008.
- [25] V.J.B. Rice and P.J. Schroeder, “The relationship between mindful awareness and cognition among U.S. Military service members and veterans,” *Proc Hum Factors Ergon Soc Annu Meet*, vol. 61, pp. 843-847, 2017.
- [26] K.S. Kalill, M. Treanor, and L. Roemer, “The importance of non-reactivity to posttraumatic stress symptoms: A case for mindfulness,” *Mindfulness*, vol.5 (3), pp.314-321, 2014.
- [27] R.A. Baer, “Self-focused attention and mechanisms of change in mindfulness-based treatment,” *Cogn Behav Ther*, vol. 38 (suppl), pp. 15-20, 2009.
- [28] K.A. Coffey, M. Hartman, and B.L. Fredrickson, “Deconstructing mindfulness and constructing mental health: understanding mindfulness and its mechanisms of action,” *Mindfulness*, vol. 1, pp.235-253, 2010.
- [29] C.P. McAllister, J.D. Mackey, K.J. Hackney, and P.L. Perrewé, “From combat to khakis: an exploratory examination of job stress with veterans,” *Mil Psychol*, vol. 27(2), pp.93-107, 2015.
- [30] N. Weinstein, K.W. Brown, and R.M. Ryan “A multi-method examination of the effect of mindfulness on stress attribution, coping, and emotional well-being,” *J Res Pers*, vol. 43, pp.374-385. 2009.
- [31] A.R. Armstrong, R.F. Galligan, and C.R. Critchley, “Emotional intelligence and psychological resilience to negative life events,” *Pers Individ Dif*, vol. 51, pp. 331-336, 2011.
- [32] V.J. Rice, B. Liu, P.J. Schroeder, “Impact of in-person and virtual world mindfulness training on symptoms of post-traumatic stress disorder and attention deficit and hyperactivity disorder,” *Mil Med*, vol.183 (suppl_1), pp.413-420, 2018.
- [33] V.J. Rice, B. Liu, S.C. Allison, P.J. Schroeder, “Mindfulness training offered in-person and in a virtual world – Weekly self-reports of stress, energy, pain, and sleepiness among U.S. Military active duty and veteran personnel,” *Mindfulness*, vol.10 (9), pp.1815-1827, 2019.