



Effects of Acceptance and Commitment Training on the Reduction of Burnout in Clinical Specialist Residents

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Abstract. *Purpose.* This research has pursued aims at evaluating the effects of acceptance and commitment training on reducing burnout in Clinical Specialist Residents, considering the moderating role of personality traits. *Design.* 202 residents studying emergency medicine, obstetrics and gynecology completed the Neuroticism (N) and Extraversion (E) subscales of the Big Five Personality Inventory. Then, they were assigned into two experimental and control groups (four groups, each composed of 18 participants). The E+N- and E-N+ experimental groups received Acceptance and Commitment Training, while the E+N- and E-N+ control groups remained on the waiting list. *Findings.* The results showed that acceptance and commitment training was effective on reduction of burnout in medical residents. In addition, E+N- residents benefit more from acceptance and commitment training than E-N+ residents. *Research limitations.* This study needs to be reproduced by other groups of residents to demonstrate the efficacy of this intervention in anything other than this population. We also only examined the effect of Acceptance and Commitment Training on the two combinations E & N (E-N+ & E+N-). *Practical implications.* The findings of this study indicated that acceptance and commitment training was effective in decreasing the rate of burnout among residents considering the moderating role of their personality traits. *Originality.* None of the existing studies have examined the effect of acceptance and commitment training on burnout in physicians, in addition most research on burnout reduction among residents has only reported the effects of one or several types of intervention, without examining the role of the moderator variables.

Keywords: Physicians, Burnout, Neuroticism, Extraversion, Acceptance and Commitment Training.

Introduction

Research has shown that burnout among residents is more common than among general medicine students (Dyrbye et al., 2014). Medical residency courses are challenging and demand high levels of physical and mental energy (Prins et al., 2007). Emergency medicine, obstetrics and gynecology,

and internal medicine residents are high risk groups (Mareiniss, 2018; Peckham, Grisham, 2017; Sheikhmoonesi, Khani, Khademloo, Saravi, 2017). Burnout syndrome is characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (Maslach, 1982). Stress, tension and the other factors that cause burnout among physicians are often unavoidable and cannot be eliminated. For example, physicians are faced with demands and expectations of their patients on the one hand, and lack of time, resources, and the sense of responsibility on the other hand.

Therefore, we should develop some strategies that enable residents to accept and face job difficulties and pressures. It seems that *Acceptance and Commitment Training* (herein referred to as ACT) can provide such an opportunity. Many researchers have used ACT in healthcare systems and find it is an effective intervention in such workplaces (McConachie, McKenzie, Morris, Walley, 2014; Waters, Frude, Flaxman, Boyd, 2018). Some researchers have examined the effect of ACT on burnout, and their results have shown that ACT has a significant effect on reducing burnout (Hayes et al., 2004; Hofer et al., 2018; Lloyd, Bond, Flaxman, 2013).

ACT is behavioral treatment / training which core is the enhancement of psychological flexibility (Herbert, Forman, 2011). From the perspective of ACT, human suffering is rooted in psychological inflexibility. ACT aims at establishing psychological flexibility through six main processes: acceptance, cognitive diffusion, contact with the present moment, the observing of self (self as a context), values, and committed action (Hayes, 2004). These processes are interconnected and affect each other to enhance psychological flexibility. ACT defines psychological flexibility as the ability of individuals to connect with their experiences in the present, making decisions according to what is possible at the moment, and acting in a way that matches their chosen values (Hayes, Strosahl, Wilson, 2011).

The goal of ACT is to create a rich and meaningful life, while accepting the inevitable pains therein. Interventions based on ACT focus on two main processes: developing acceptance of unwanted private experiences which are out of personal control, commitment, and action towards living a valuable life (Harris, 2006). In other words, ACT enhances people's willingness to experience difficult internal states by persisting with and pursuing actions guided by personal values.

Based upon the mechanisms described in ACT and the components of burnout, the logical prediction of this study was that acceptance and commitment training can reduce burnout among medical residents. By explaining and highlighting work values (for example, the desire to maintain and improve patient's health), ACT is likely to be effective both in enhancing the sense of personal accomplishment and in reducing burnout. It also helps medical residents to reduce their experiential avoidance and boost their ability so that cognitive fusion can be weakened. Thus, it may lead to a reduction in the depersonalization and emotional exhaustion. Also, by increasing psychological acceptance, ACT allows physicians to accept the difficulties of their work, feelings, emotions, and the associated physical sensations, and to invest their energy on professional values and objectives, rather than surrender and avoidance.

Finally, psychological flexibility can be defined as the general mechanism through which ACT reduces mental stress (Bond, Bunce, 2000). Since the emotional exhaustion is often considered synonymous with psychological stress (Maslach, 2003; Maslach, Schaufeli, Leiter, 2001), ACT is expected to reduce this component. But it seems the effectiveness of ACT could be mediated by different variables, which are not controllable in all cases. Some of these factors are shaped as personality traits and considering them is a useful strategy before applying the ACT interventions.

Studies and meta-analyses have shown that extraversion (E) and neuroticism (N) are among the strongest personality variables predicting burnout in a variety of professions, including medical professions (Alarcon, Eschleman, Bowling, 2009; Iorga, Soponaru, Hanganu, Ioan, 2016; McManus, Keeling, Paice, 2004; Myhren, Ekeberg, Stokland, 2013; Taycan, Taycan SE, Çelik, 2014). Evidence

also suggests that these two personality variables affect the level of an individual's ability to utilize ACT's various skills and techniques. For example, Neuroticism has a significant negative relationship with mindfulness and the willingness to acquire this skill (Baer, Smith, Hopkins, Krietemeyer, Toney, 2006; Giluk, 2009; Menon, Doddoli, Singh, Bhogal, 2014). Moreover, Neuroticism has a significant positive relationship with worry, rumination, meta-worries (worries about worries) (Matthews, Derryberry, Siegle, 2000; Muris, Roelofs, Rassin, Franken, Mayer, 2005) and psychological inflexibility (Latzman, Masuda, 2013). While all efforts in ACT are focused on increasing mindfulness (i.e., relating to events without implementing judgment and bias, here and now), acceptance, cognitive diffusion, and flexibility of individuals. This means that we want to teach the skills to people with Neuroticism that are in contrast with their personality traits. Therefore, it seems logical that individuals with less flexibility due to neurotic personality traits will be benefited less by ACT.

Some researchers reported that there was a positive relationship between extraversion and mindfulness (Baer, Smith, Allen, 2004) while there was a negative relationship between extraversion and inflexibility (Gloster, Klotsche, Chaker, Hummel, Hoyer, 2011). Therefore, it can be assumed that high levels of extraversion have a moderate impact in effectiveness of ACT.

Therefore, we cannot expect all individuals to benefit equally from ACT, and individual differences can probably induce some moderating roles. We need to know who benefits the most from a particular intervention. The present research regards personality traits as moderator variables. Another important point is that, in assessment of E and N dimensions, we should consider the presence of both dimensions in the subjects. A great deal of researches have explored neuroticism and extraversion separately (Robinson, 2001). Crowe, Andel, Pedersen, Fratiglioni, Gatz (2006) have regretted the lack of research investigating the combination of these two traits, because, as Robinson (2001) states, studying neuroticism and extraversion separately is look like trying to find a location on a map using only one of its coordinates. According to Gary, the combination of high neuroticism and low extroversion is associated with a higher psychological risk factor (Gray, 1981). Therefore, the present study has taken the combination of these traits into account. More specifically, we have compared the effect of ACT on burnout in E+N- and E-N+ residents.

Method

The proposal of present research, with No. 62d/2052, was approved based on the National Code of Biological Ethics.

Participants

Participants were medical residents of emergency medicine ($N = 56$), obstetrics and gynecology ($N = 50$) and internal medicine ($N = 96$) in Isfahan University of Medical Sciences in the 2018 academic year. All people with informed consent participated in the research.

Procedure

All participants completed the Neuroticism (N) and Extraversion (E) subscales of the Big Five Personality Inventory. Then to achieve a pure sample, we regard participant in the top and bottom of E and N distribution. A group of 36 subjects with E+N- (high extraversion — low neuroticism), and another group of 36 subjects with E-N+ (low extraversion — high neuroticism), were selected based on their distribution of the E & N dimensions scores. Then, each group were randomly assigned into two experimental and control groups (four groups, each composed of 18 participants). The E+N- and E-N+ experimental groups received ACT, while the E+N- and E-N+ control groups remained on the waiting list (see Figure. 1 Study flow diagram).

Intervention

The experimental group received nine hours of acceptance and commitment training based on a protocol developed by Flaxman, Bond, and Livheim (2013) through three sessions, while the other group remained in the waiting list. All sessions were conducted by a clinical psychologist having four years of ACT experience. No intervention was conducted for the control group, whose was placed on the waiting list. The Maslach Burnout Inventory was employed to conduct pretest and posttest in both groups. After the completion of the study, ACT intervention was conducted for the waiting list.

Measures

The Maslach Burnout Inventory (MBI)

The Maslach Burnout Inventory (MBI) (Maslach, Jackson, Leiter, Schaufeli, Schwab, 1986) was used to assess burnout for pre-test and post-test. This Inventory measures emotional exhaustion, depersonalization, and reduced sense of personal accomplishment in a 7-point Likert scale from zero to six (insignificant to very high). A higher score on the MBI indicates higher burnout levels. The same is true for the MBI dimension; Higher scores in all three dimensions (emotional exhaustion, depersonalization, and reduced sense of personal accomplishment) indicate high levels and a more unfavorable situation. Cronbach's alpha coefficients of 0.90, 0.79, and 0.71 in three dimensions, and test-retest reliability coefficients of 0.82, 0.60 and 0.80 have been reported by Maslach, Jackson, Leiter (1997). In addition, they have confirmed the convergent and divergent validity of the MBI. Also, in a research that includes physicians, the reliability and validity of this measure have been confirmed (Rafferty, Lemkau, Purdy, Rudisill, 1986). The reliability and validity of MBI has been confirmed by Filian in Farsi language as well (1991). Other researchers (in Farsi) also confirmed content validity and reported Cronbach's alpha coefficients as satisfactory (Taei, Safi zadeh, Divsalar, 2010). Some of these studies included physicians in their samples. In the present study, Cronbach's alpha coefficient was 0.65. In the present study, Cronbach's alpha coefficient obtained 0.91, 0.80, and 0.74 for emotional exhaustion, depersonalization, and sense of personal accomplishment.

Revised NEO Personality Inventory

Revised NEO Personality Inventory (NEO PI-R): to measure the personality variables of the present study, two scales of Neuroticism and Extraversion of NEO PI-R were used. Validity and reliability of NEO PI-R have been confirmed by P. T. Costa and R. R. McCrae (1992). Also, in standardization of NEO Personality Inventory which was performed by T. Grusi farshi (2002) on a sample out of 2000 Iranian students. Correlation coefficients for five dimensions were reported 0.56 to 0.87 and Cronbach's alpha coefficients for the main factors of neuroticism and extraversion were obtained 0.86 and 0.73 respectively. In order to analyze the content validity of this inventory, the authors used the correlation between self-reported and observer-evaluation formats who have reported the maximum correlation of 0.66 for extraversion and the minimum of 0.45 for agreeableness. The validity of this inventory has also been examined and confirmed by Fathi-Ashtiani in Farsi (2015). In the present study, Cronbach's alpha coefficients obtained 0.87 and 0.86 for neuroticism and extraversion.

Statistical Analysis

We used either Student's *t*-test or Pearson's χ^2 -analysis to compare the baseline characteristics of participants. The Two-Way Analysis of Covariance method (ANCOVA) was implemented to investigate the effectiveness of ACT in reducing burnout by considering the moderating role of personality traits.

Whereas residents in the experimental group were aware of the allocated group, the outcome assessors and data analysts were kept blinded to the allocation.

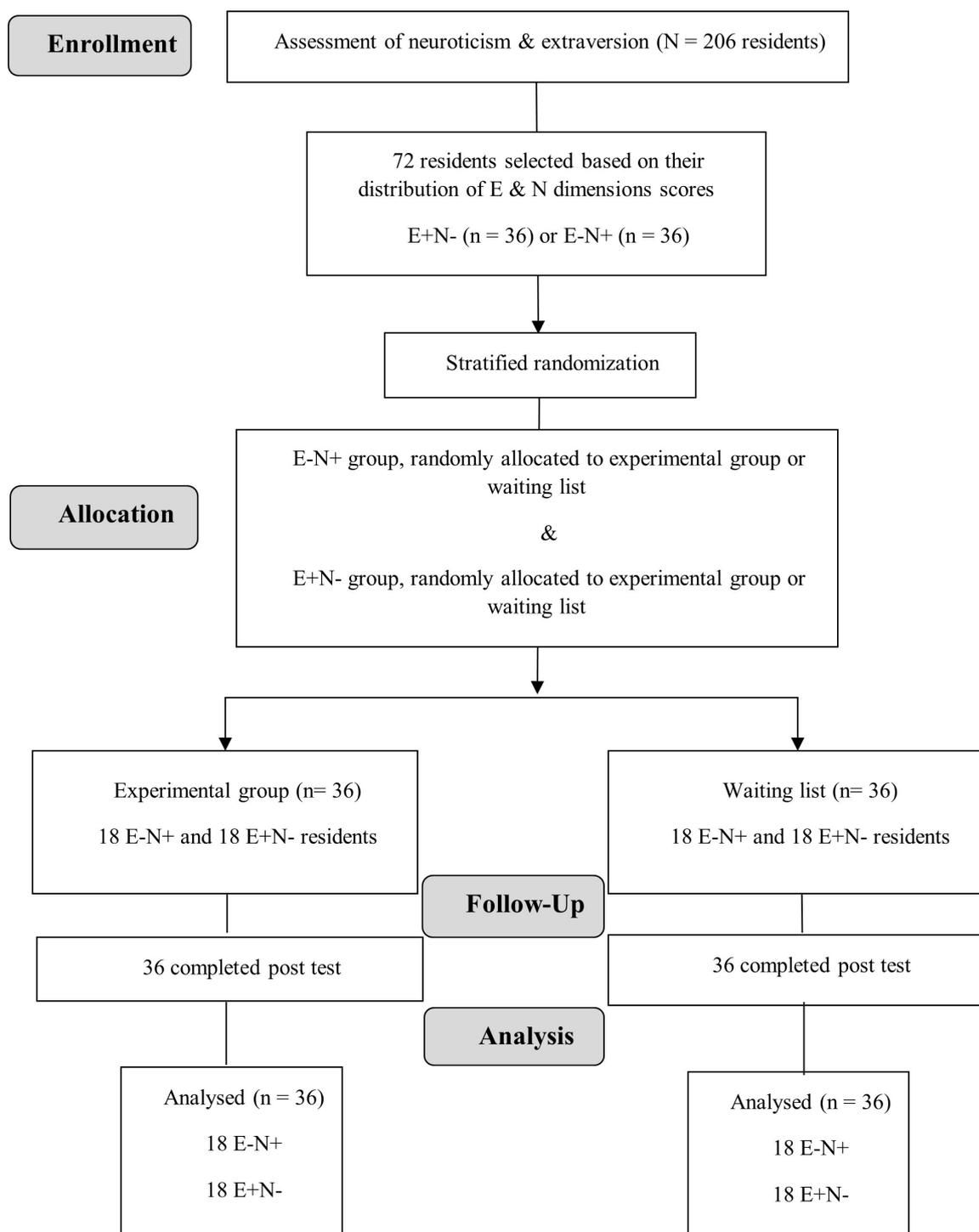


Figure. 1 Study flow diagram

Therefore, ACT intervention was the independent variable; Personality dimensions were the moderating variable; Pre-test of burnout was the covariate variable and Post-test of the burnout was dependent variable.

Results

A total of 72 emergency medicine, internal medicine, and obstetrics and gynecology residents, whose demographic characteristics are presented in Table 1, participated in this research.

Table 1. Baseline characteristics of participants in the study

Variable	Intervention	Waiting list	P value	Effect size	
				Cramer's V	Cohen's d
Gender: male / female	19 / 17	16 / 20	.24	.13	.28
Age (years, mean \pm SD)	34.41 \pm 5.06	36.12 \pm 7.74	.28	-	.26
Marital status: Single/Married	7/29	7/29		.00	.00
Specialty:			.24	.14	.29
Emergency Medicine	25	21			
Obstetrics and Gynecology	6	6			
Internal Medicine	5	9			
Residence year:			.06	.52	1.26
First year	6	22			
Second year	19	6			
Third year	8	2			
Fourth year	3	6			

Table 1 shows that there was no significance difference in the age means between the intervention group and the waiting list ($t = 1.08, p = 0.28$). Also, the number of women and men in intervention group and waiting list was not significantly different ($\chi^2 = 1.39, p = 0.23$). The number of various specialties in the intervention and the waiting list was not significantly different. The effect size (Cohen's d) for these comparisons between intervention group and waiting list, were small (from 0.00 to 0.29). The small effect size indicates that the differences between groups were negligible.

The number of residents of first to fourth years, in the intervention and the waiting list is not significantly different. But its effect size is large (1.26). This means the number of residents of different years in intervention group and the waiting list is significantly different.

Table 2 presents present the mean and the Std Error scores of burnout syndrome in pre-test and post-test.

Table2. Comparing the burnout in pre-test & post-test

Group	Personality	Dependent variable	Pre-test		Post-test		95% confidence interval	
			Mean	Std. Error	Mean (adjusted-mean)	Std. Error	Lower bound	Upper bound
Intervention	E-N+	Burnout	50.83	3.54	48.90	1.90	45.10	52.71
		Exhaustion	19.77	1.96	19.61	1.31	16.99	22.23
		Depersonalization	11.22	1.18	9.93	.77	8.39	11.48
	E+N-	Reduced sense of personal accomplishment	19.83	1.01	19.65	.83	17.98	21.33
		Burnout	54.33	4.12	29.54	1.92	25.69	33.39
		Exhaustion	25.11	2.81	1.22	1.33	7.56	12.89
E+N-	Depersonalization	9.22	1.04	5.29	.73	3.81	6.76	
	Reduced sense of personal accomplishment	20.00	1.44	14.46	.84	12.79	16.14	
	Waiting list	E-N+	Burnout	41.00	4.94	56.93	1.95	53.04
Exhaustion			18.16	2.52	24.21	1.32	21.57	26.86
Depersonalization			6.22	1.14	9.26	.75	7.75	10.77
E+N-		Reduced sense of personal accomplishment	16.66	2.12	23.02	.83	21.34	24.69
		Burnout	48.33	3.62	55.39	1.90	51.59	59.18
		Exhaustion	21.88	1.83	23.38	1.30	2.77	25.99
E+N-	Depersonalization	6.72	.89	8.78	.74	7.29	10.28	
	Reduced sense of personal accomplishment	19.72	2.16	22.90	.85	21.21	24.60	

A baseline comparison on MBI means between four groups (intervention E-N+, intervention E+N-, control E-N+ and control E+N-) showed that these groups did not have a significant difference ($F = 1.89, p = 0.13$).

The results of the two-way covariance analysis showed the interaction between the two variables of group membership (intervention and waiting list) and personality traits (E-N+ and E+N-) is significant ($F = 21.88, p < 0.001$). In addition, each of the main effects was significant ($F_{\text{group}} = 75.16, P < 0.001$ & $F_{\text{personality trait}} = 29.44, p < 0.001$). Therefore, considering the significance of the interactive effect, we can conclude that the personality traits of the subjects have a moderating role in the effectiveness of Acceptance and Commitment Training. The results of tables 2 and 3 show that both research hypotheses have been confirmed. A Figure 2 shows the means of burnout in post-test for each of the four groups (experimental vs control and E-N+ vs E+N-).

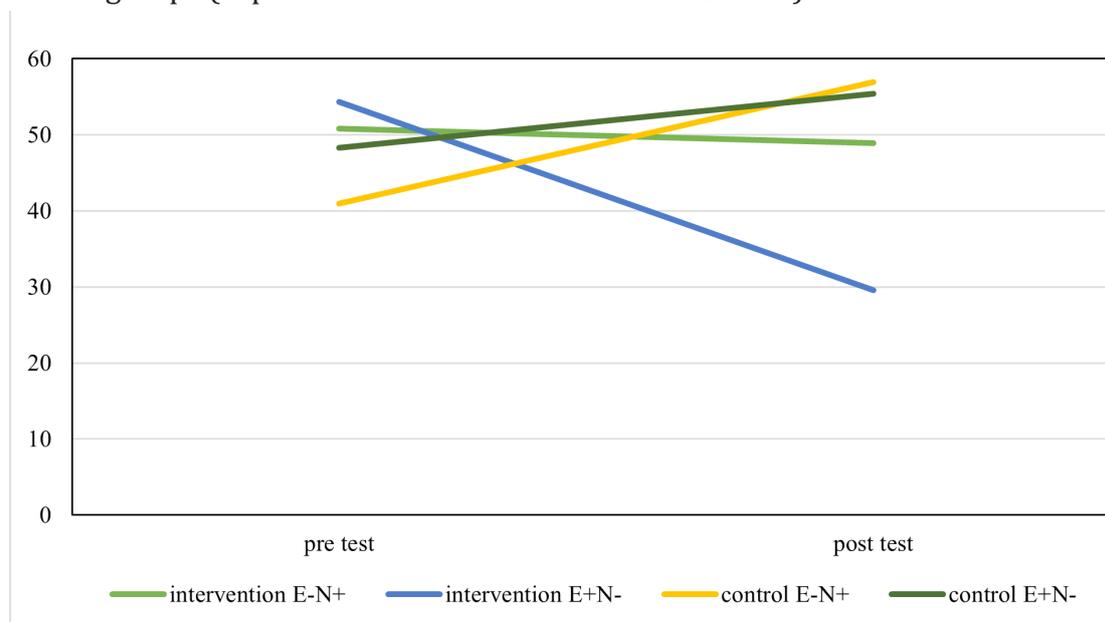


Figure 2. Interaction effect

Discussion

Burnout was thought to have major negative consequences for physicians, patients, and healthcare systems. Among physicians, this syndrome is associated with lower job satisfaction, disruption of work and personal relationships, drug abuse, a decline in the quality of patient care, turnover, depression and even suicide (Chang, Carter, Ng, Flynn, Tan, 2018; Dewa, Loong, Bonato, Thanh, Jacobs, 2014; Dyrbye et al., 2013; Ratanawongsa et al., 2008; Shanafelt et al., 2010; Shanafelt et al., 2016; Shanafelt et al., 2010; Van der Heijden, Dillingh, Bakker, Prins, 2008; Wurm et al., 2016).

The results of the study indicated that E+N- residents with low neuroticism-high extraversion benefit more from ACT than those who with high neuroticism — low extraversion. ACT always puts emphasis on the fact that behavioural, cognitive, and emotional avoidances as well as control of behaviour, emotions and physical senses will make the situation worse. Some studies have revealed that people who have a high neuroticism have tendency to be anxious, egocentric, moody and insecure. In comparison to other people, this group of people was more susceptible to psychological stress and acts weakly when getting along with stress (Nagel, Speed, van der Sluis, Østergaard, 2020) in that they often use passive and inefficient coping styles such as idealistic thoughts, blaming oneself, or avoidance and denial (Widiger, 2017; Leszko, Iwański, Jarzębińska, 2020; Elfaoumy, 2018). Also, the results of a review show that neuroticism are positively related to avoiding conflict resolution style (Tehrani, Yamini, 2020). Evidence shows that anxiety and rumination as well as meta-worry (worry about worry) in people with high neuroticism is more than people with low neuroticism (Spada, Gay, Nikčević, Fernie, Caselli, 2016).

Extroverted people rarely use passive coping styles when encountering unpleasant events and conversely, they want excitement (they might have less experiential avoidance) (Melendez, Satorres, Delhom, 2020; Alacreu-Crespo, Fuentes, Abad-Tortosa, Cano-Lopez, González, 2019). They have positive attitudes, and can focus on both positive and negative experiences (Smillie, Kern, Uljarevic, 2019) (in line with observing thoughts, emotions, physical senses, and accepting the same in ACT); therefore, it may be logical to imagine that individuals who have a combination of E+N-, tend to show less experiential avoidance and they can realize acceptance and diffusion processes in themselves in a more difficult way and slower procedure.

Another important mechanism of ACT is mindfulness. Research has shown that people with high neuroticism pay more attention to the information with emotional load rather than to the information with neutral load in cognitive processing and they have negative bias toward emotional information. In comparison to the people with low neuroticism, they pay more attention to negative or threatening information and comparing them with people who have mindfulness, they show different emotional adjustment patterns (Hanley, 2016; Hanley, Garland, 2017). People with high extraversion have positive attitudes and tend to experience positive states in interactions with other people and their environment. They also have a feeling of high self-efficacy (Wilt, Revelle, 2017; Şahin, Çetin, 2017); therefore, they have a higher motivation to adhere to commitments (Arora, Rangnekar, 2016). Those who have this trait tend to enjoy and participate in social activities, share their feelings and they can think about different things rather than only focusing on negative experiences (Wilt, Revelle, 2017). Alinasab, Shahgholian, Farahani (2017) have reported a positive relation of extraversion with mindfulness. Accordingly, it seems that people who have a combination of E+N- have probably been more successful in the process of acquiring the skill of mindfulness.

At the end, the important point is that ACT makes its all attempts to focus on increase of individuals' flexibility whereas mental inflexibility is one of the features of neuroticism (Latzman, Masuda, 2013). Therefore, it is logical to come to this conclusion that N+ has worked as an obstacle to increase of flexibility skills in physicians.

Given the above and knowing about the negative relation of neuroticism with burnout and positive relation of extraversion with burnout, we can conclude that the effect of ACT on reduction of burnout is adjusted by the combinations of these two personality traits.

Conclusion

The findings of this study indicate the effectiveness of Acceptance and Commitment Training in decreasing the rate of burnout among residents and the moderating role of their personality traits in this effect.

Suggestions and Limitations

1. The beneficial effect of this intervention may be more related to the skill of the practitioner and may not be replicated by other practitioners.
2. This study needs to be reproduced by other practitioners and in other groups of residents (e.g., from other cultures) to demonstrate the efficacy of this intervention in anything other than this population.
3. We also only examined the effect of ACT on the two combinations E & N (E-N+ & E+N-) and suggest that the effect of the independent variable be examined for other variants of the combination of the two personality variables (E+N+ & E-N-).

According to the results of this study, it is suggested that acceptance and commitment training courses be designed to prevent or improve occupational burnout of residents.

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Влияние тренинга принятия и приверженности на снижение эмоционального выгорания у врачей-ординаторов

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Аннотация. *Цель.* Это исследование преследовало целью оценить влияние тренинга принятия и приверженности на снижение выгорания у клинических специалистов-ординаторов с учётом регулирующей роли личностных качеств. *Дизайн.* 202 ординатора, изучающие неотложную медицину, акушерство и гинекологию, были протестированы с помощью субшкал нейротизма (N) и экстраверсии (E) в «Личностном опроснике «Большая пятёрка». Затем они были разделены на две экспериментальные и контрольные группы (всего четыре группы по 18 человек в каждой). Экспериментальные группы E+N- и E-N+ прошли тренинг принятия и приверженности, в то время как контрольные группы E+N- и E-N+ остались в списке ожидания. *Выводы.* Результаты показали, что обучение принятию и приверженности было эффективным для снижения выгорания у медицинских ординаторов. Кроме того, люди с индексом E+N- получают больше пользы от обучения принятию и приверженности, чем люди с индексом E-N+. *Ограничения исследования.* Это исследование должно быть воспроизведено на других выборках, чтобы продемонстрировать эффективность этого вмешательства в любой другой группе населения. Мы также исследовали только влияние тренинга принятия и приверженности на две комбинации E и N (E-N+ и E+N-). *Практические последствия.* Результаты этого исследования показали, что обучение принятию и приверженности было эффективным в снижении уровня выгорания среди жителей, учитывая сдерживающую роль их личностных качеств. *Оригинальность.* Ни в одном из существующих исследований не изучалось влияние обучения принятию и приверженности на выгорание у врачей, кроме того, в большинстве исследований по снижению выгорания среди пациентов сообщалось только о влиянии одного или нескольких типов вмешательства, без изучения роли опосредующих переменных.

Ключевые слова: врачи, эмоциональное выгорание, нейротизм, экстраверсия, тренинг принятия и приверженности.