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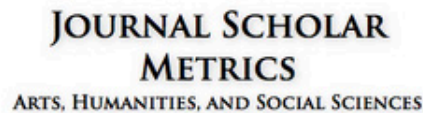
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# Risk of Developing Alcohol Addiction in Military Personnel with Different Structures of Negative Emotional Reactions and States after Participation in Hostilities

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## ABSTRACT

On February 24, 2022, the armed forces of the Russian Federation invaded Ukraine. After participating in hostilities Ukrainian military personnel accumulated combat stress. Drinking alcohol was one of the ways to overcome them. This study aimed to identify the role of negative emotional reactions and states in increasing the risk of alcohol addiction in Ukrainian military personnel after participation in hostilities. Ukrainian Defense Forces military personnel ( $N= 405$ , between 20-60 years of age) participated in this study. To determine the risk of developing alcohol addiction the Alcohol Use Disorders Identification Test was used. To determine the negative emotional experiences the Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire was used. Multiple regression analysis, hierarchical cluster analysis, and exploratory factor analysis were used to determine the relationship between negative emotional experiences and states in military personnel and the risk of alcohol abuse. The results showed that not only the strength of negative affect but also its structure, which determines the ability to regulate emotional experience and behavior, is associated with the risk of alcohol abuse among military personnel after participating in combat operations. As a result, after leaving the combat zone, military personnel with high levels of negative affect abused alcohol to relieve stress artificially. Other servicemen who had a less affective reaction to manifestations of combat stress could timely control the manifestation of negative emotions and were able to predict the negative development of the situation and prepare for it.

*Key words:* alcohol addiction, negative emotions, military personnel, professional training, combat.

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### Novelty and Significance

*What is already known about the topic?*

- Participation in combat increases alcohol abuse in military personnel, and probability of developing alcohol addiction.
- Mission characteristics, time, deployment conditions and factors, personality traits, and development of post-traumatic stress disorder increases alcohol use among military personnel.

*What this paper adds?*

- The first study that determined risk of developing alcohol addiction in Ukrainian military personnel after participating in hostilities in the Russian-Ukrainian war.
- This study allowed to build two group profiles of negative emotional experiences to predict risk of developing alcohol addiction and alcohol abuse among military personnel.

With the outbreak of large-scale hostilities that began on February 24, 2024, hundreds of thousands of civilians were mobilized into the Ukrainian defense forces. They had no military or combat experience before and were not fully prepared for the challenges of war (Kokun, Pischko, & Lozinska, 2023; Motyka, 2023). Many military personnel who participated in combat experienced combat stress (Prykhodko *et alii*, 2022; 2024). It manifested itself in the form of acute stress reactions, adaptation disorders,

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affective and anxiety disorders, addictive and delinquent behavior, and suicidal symptoms (Kokun, Pischko, & Lozinska, 2022; Prykhodko *et alii*, 2021, 2023b). Intense and prolonged physical and emotional stress exhausted the military personnel and created a feeling of endless trials and suffering. To normalize their mental state and restore their physical and psychological resources, such military personnel from the combat zone were sent to a rehabilitation center to undergo a psychological recovery program (Prykhodko, Matsehora, Kolesnichenko, Baida, & Vasytkovskyi, 2023a). However, having found themselves in the relatively safe conditions of treatment with more loyal requirements for discipline and control than in combat units, some military personnel began to systematically drink alcoholic beverages, which significantly worsened the results of psychological recovery. Therefore, it was necessary to determine the factors and causes that triggered alcohol abuse among military personnel.

It should be noted that many studies have been conducted on the abuse of alcohol by military personnel before deployment, during combat missions, and in post-deployment periods. However, the time, factors, and conditions that military personnel experienced during deployment and participation in hostilities differed from the duration and intensity of hostilities experienced by Ukrainian military personnel.

An analysis of the factors and causes of alcohol use in military personnel was conducted by Osborne, Wilson-Menzfeld, McGill, and Kiernan (2022), considering papers published between 2001 and March 2021. This was due to the “global war on terror” which saw an increase in combat deployments of military personnel from many countries around the world, a more complex form of modern technological warfare, and changes like deployments, which affected the role of military service. The authors report that other aspects have also contributed to the increase in alcohol abuse among military personnel including the dangerous and stressful nature of deployment and combat stress, family problems during and after operational service, age, type of service, active participation in hostilities, mental health and marital status, pre-deployment preparedness, quality of leadership, and suitability of training for mission requirements (Osborne *et alii*, 2022).

Besse, Toomey, Hunt, Lenk, Widome, and Nelson (2018) found that alcohol use was perceived to be highest among those who performed more combat missions or were involved in more intense combat activities. According to Dretsch, Neff, Caserta, Deagle, Hoge, and Adler (2020) the prevalence of alcohol abuse among Special Operations Forces personnel was the same as or less than in other branches of the US military. Wilk, Bliese, Kim, Thomas, McGurk, and Hoge (2010) found that military personnel who frequently experienced the threat of death or injury were more likely to abuse alcohol. However, Russell, Russell, Riviere, Thomas, Wilk, and Bliese (2014) confirmed that while combat experience was positively correlated with alcohol use, killing combat experience significantly reduced post-deployment alcohol use. This was explained by the awareness of one’s mortality and the activation of self-preservation mechanisms, which was manifested by a decrease in alcohol consumption.

Personal interviews with U.S. Navy recruits (Ames & Cunradi, 2004) revealed established drinking rituals and routines, as well as elements of the work environment that encouraged drinking while on duty at land bases and during leisure time (such as shore leave). Young seafarers viewed drinking with colleagues during the work week as an appropriate coping mechanism for stress, boredom, loneliness, and lack of other recreational activities.

Availability of alcohol has been a known risk factor for increased alcohol use in the general population and the workplace (Ames & Grube, 1999; Gruenewald, Millar,

& Treno, 1993). Gruenewald *et alii* (1993) determined that another factor influencing alcohol abuse and binge drinking among military youth was the physical and social availability of alcohol. For example, US Navy personnel interviewed in the study reported that alcohol and drinking facilities were readily available both in foreign ports and on US bases (Ames & Cunradi, 2004). In summary, most studies found that alcohol misuse among military personnel occurred before and after deployments, which was associated with the period and nature of the service, as well as the availability of alcohol.

A significant body of research has also focused on the consequences of military service in alcohol addiction among veterans, particularly the role of post-traumatic stress disorder (PTSD). Topic that has gained relevance following combat in Iraq and Afghanistan (e.g., Capone, McGrath, Reddy, & Shea, 2013; Jakupcak, Tull, McDermott, Kaysen, Hunt, & Simpson, 2010; Norman, Schmied, & Larson, 2014). Heavy drinking among military personnel has been associated with higher rates of anxiety, mood disorders, sleep disturbances, functional impairment, and suicidality (Herberman Mash, Fullerton, Ng, Nock, Wynn, & Ursano, 2016; Rona, Jones, Fear, Hull, Hotopf, & Wessely, 2010; Trautmann, Schönfeld, Behrendt, Höfler, Zimmermann, & Wittchen, 2014).

Some studies have been focused on finding factors that increase the risk of alcohol addiction in military personnel (Clarke-Walper, Riviere, & Wilk, 2014; Edlund, Steffick, Hudson, Harris, & Sullivan, 2007), concluding that military personnel and veterans who are prone to increased anxiety, neuroticism, and depression are at increased risk for alcohol or drug use. Ferrier-Auerbach, Kehle, Erbes, Arbisi, Thuras, and Polusny (2007) showed that the presence of the personality trait neuroticism is associated with an increased frequency and total amount of alcohol consumed among military personnel and veterans. Also, Kehle, Ferrier-Auerbach, Meis, Arbisi, Erbes, and Polusny (2012) determined that among U.S. National Guard troops with low positive affectivity (e.g., limited ability to experience satisfaction or success), they were more likely to develop alcohol use disorders after serving in combat in Iraq.

In accordance with line of research, this study aimed to identify the role of negative emotional reactions and states in increasing the risk of alcohol addiction in Ukrainian military personnel after participation in hostilities in the Russian-Ukrainian war.

## METHOD

### *Participants*

Four hundred and five members of Ukrainian Defense Forces, (20-60 years of age,  $M= 41.84$ ) participated in this study. All participants were men (71% privates, and 29% non-commissioned officers) taking part in the Russian-Ukrainian war with combat experience of 6 to 10 months ( $M= 8.75$ ). The participants had been sent to the rehabilitation center from combat positions to participate in the psychological recovery program lasting 14 days (Prykhodko *et alii*, 2023a) showing several levels of acute stress reactions, significant negative experiences including signs of depression and suicidal ideation, presence of PTSD symptoms, sleep problems (more than 50%), somatic complaints (more than 80%), wounds and contusions (more than 75%), and difficulties in returning to combat missions due to the consequences of illness, injury, and wounds. According to military specialties, there were infantrymen, attack aircraft, scouts, snipers, tankers, artillerymen, and other military specialists.

### *Design and Procedure*

This study is a cross-sectional, descriptive study conducted throughout 2023. Participants were randomly selected. The risk of developing alcohol addiction and negative emotional experiences in participants was determined using paper tests. All participants gave their informed consent for inclusion before participating in the study. All procedures performed in this study involving human participants were by the ethical standards specified by the institutional and national research committee and with the Helsinki Declaration and its later amendments or comparable ethical standards.

### *Instruments and Measures*

To determine the risk of developing alcohol addiction and the negative emotional experiences the following instruments was used:

*Alcohol Use Disorders Identification Test (AUDIT*, Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT is a 10-item screening tool developed by the World Health Organization (WHO) to assess alcohol consumption, drinking behaviors, and alcohol-related problems. The AUDIT is one of the most common tests for studies related to alcohol use problems in military personnel (Osborne *et alii*, 2022). Participants indicated their level of agreement with statements regarding their drinking habits using the following indicators: "never," "once a month or less," "monthly," "weekly," "daily or almost daily." An example item is "How often did you drink alcohol before the war?" The test allowed us to determine the risk levels of alcohol addiction: 0-7 points low level; 8-15 points average level; 16-19 points high level; and 20 or more points probabilistic alcohol addiction level. Cronbach's alpha (.864) was high, indicating sufficient internal consistency.

*Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire (ANMRCMPQ*, Matsegora, Prykhodko, Kolesnichenko, & Bayda, 2023). The ANMRCMPQ was developed to determine negative emotional experiences in military personnel after participation in hostilities. The ANMRCMPQ contained 16 items: "Irritability", "Anxiety", "Aggressiveness", "Anger", "Inattention", "Self-doubt", "Devastation", "Apathy", "Concern", "Sense of guilt", "Sense of powerlessness", "Lack of concentration", "Unwillingness to communicate", "Lack of trust in comrades in the service", "Lack of trust in commanders", "Inability to perform the assigned tasks". Self-assessment of the psychological state of the participants rated on a 10-point Likert scale, where 0 is the state is not expressed at all, and 10 is expressed to the maximum extent. The results were evaluated separately for each feature as follows: 1-3 points the condition is not expressed; 4-6 points the condition is expressed moderately; 7-10 points the condition is expressed at a high level, and it is necessary to conduct an individual consultation. Cronbach's alpha was .944, indicating sufficient internal consistency.

### *Data Analysis*

To determine the relationship between the risk of alcohol consumption by military personnel and negative emotional experiences and states, multiple regression analysis (linear regression) was used. A hierarchical cluster analysis procedure was used to identify groups of military personnel with different negative emotional experiences and states. To represent the data, we used the main descriptive statistics (*M*, *SD*). The reliability of differences in the results of the mean values in two interrelated groups was determined using the Student's *t*-test. To assess the statistical significance of differences, we used the significance level  $p < .01$ . Exploratory factor analysis was used to determine the structure of negative emotional experiences and states in each of the groups of participants. Exploratory factor analysis of matrices was carried out using the extraction method (principal component analysis) and the rotation method (Varimax

with Kaiser normalization). The statistical analysis of the study results was carried out using the program SPSS 20.0.

## RESULTS

A low level of risk of developing alcohol dependence was identified in 69.14%, an average level in 29.01%, a high level in 1.23%, and probable alcohol dependence in 0.62% of participants in the psychological recovery program. More than 30% of participants were diagnosed with moderate to high risk of developing alcohol dependence: the threshold at which a service member may lose the ability to control their drinking.

A regression equation was developed to determine the influence of various negative emotional experiences and states on the risk of developing alcohol addiction in military personnel after participating in combat operations:

$$RIAA = 4.140 - 0.235 Ir + 0.230 A + 0.349 G + 0.343 In + 0.216 DC - 0.259 IPAT + 0.861$$

where *RIAA* is the Risk Indicator for Alcohol Addiction using AUDIT; 4.140 is a constant; *Ir* is Irritability, *A* is Anxiety, *G* is Guilt; *In* is Inattention; *DC* is Distrust of Commanders; *IPAT* is Inability to Perform the Assigned Tasks; and 0.861 is an error.

The results of hierarchical cluster analysis showed that the sample of participants was heterogeneous in terms of indicators of negative emotional experiences and the risk of developing alcohol addiction. In it, two typical groups can be distinguished, relatively equal in number of participants. Group 1 consisted of 176 participants (43.46% of the total sample), Group 2 consisted of 211 participants (52.10% of the total sample). Another 18 participants (4.44% of the total sample) formed small groups, each of which included less than 1% of the total number of participants and were not included in the analysis. A comparison between the two main groups in terms of indicators of negative emotional experiences and the risk of developing alcohol addiction of participants is shown in Table 1.

Table 1. Comparison of groups in terms of negative emotional experiences and the risk of developing alcohol addiction (in standard points).

	Scales	Group 1	Group 2	<i>t</i> *
ANMRCMPQ	Risk of developing alcohol addiction	7.54±5.74	5.28±3.64	4.52**
	Irritability	5.72±2.50	2.70±2.35	12.14**
	Anxiety	6.71±2.28	3.26±2.69	13.68**
	Aggressiveness	4.61±2.62	2.04±2.17	10.41**
	Anger	4.66±2.41	1.96±2.11	11.61**
	Inattention	5.24±2.34	2.41±2.40	11.71**
	Self-doubt	5.38±2.36	1.64±1.80	17.27**
	Devastation	5.94±2.64	1.51±1.82	18.81**
	Apathy	5.59±2.70	1.55±2.01	16.39**
	Concern	6.41±2.23	2.47±2.18	17.48**
	Guilt	4.92±2.97	1.31±1.77	14.14**
	Powerlessness	5.97±2.55	1.90±2.07	16.98**
	Lack of concentration	5.59±2.23	1.83±2.01	17.31**
	Unwillingness to communicate	5.72±2.68	2.11±2.34	13.99**
	Distrust of comrades in the service	4.53±2.70	1.72±1.96	11.51**
	Distrust of commanders	5.95±3.24	2.84±3.17	9.49**
	Inability to perform the assigned tasks	5.32±2.90	2.06±2.58	11.56**
General indicator of negative emotional experiences	5.52±1.27	2.08±1.20	27.16**	

Notes: *t*\*= Differences between groups 1 and 2; \*\*= *p* < .01.

As can be seen from Table 1, both groups differed significantly in all indicators of negative emotional reactions and states, so it was advisable to create and analyze their profiles (see Figure 1).

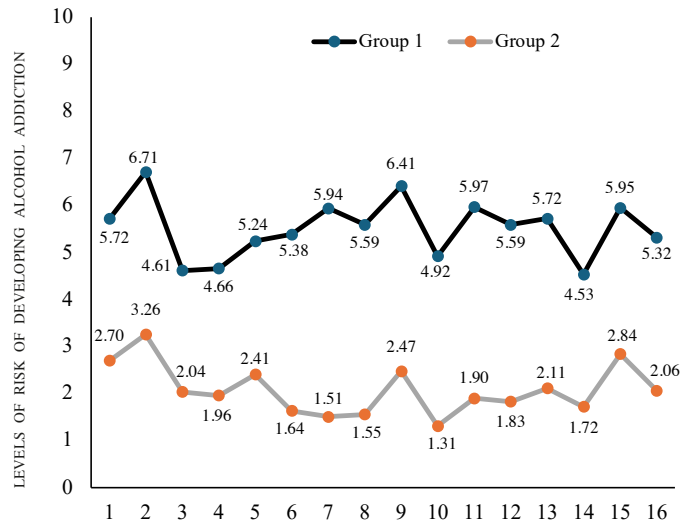


Figure 1. Typical profiles of negative emotional reactions and states in participants with different levels of risk of developing alcohol addiction (in standard points): 1) Irritability; 2) Anxiety; 3) Aggressiveness; 4) Anger; 5) Inattention; 6) Self-doubt; 7) Devastation; 8) Apathy; 9) Concern; 10) Guilt; 11) Powerlessness; 12) Lack of concentration; 13) Unwillingness to communicate; 14) Distrust of comrades in the service; 15) Distrust of commanders; 16) Inability to perform the assigned tasks.

The results of exploratory factor analysis made it possible to determine the structure of negative emotions in each group. Table 2 presents the factor matrix of grouping (after the simplification procedure) of negative emotional experiences among participants in Group 1.

Table 2. Factor matrix for grouping negative emotional experiences among participants in Group 1, rotated component matrix<sup>a</sup>.

The negative emotional experiences (variables)	Factors				
	1 (23.27%)	2 (19.75%)	3 (12.95%)	4 (10.42%)	5 (10.09%)
Irritability	0.81	0.16	0.10	0.01	0.09
Aggressiveness	0.90	-0.01	0.14	-0.04	0.12
Anger	0.85	0.09	0.05	0.15	-0.01
Inattention	0.09	0.85	-0.03	-0.13	-0.03
Concern	0.09	0.08	-0.07	0.97	0.06
Guilt	0.13	0.06	0.01	0.06	0.98
Lack of concentration	0.25	0.80	-0.07	0.11	0.07
Distrust of comrades in the service	0.22	0.06	0.67	-0.12	0.09
Distrust of commanders	0.02	0.03	0.84	0.03	-0.07
Inability to perform the assigned tasks	-0.10	0.75	0.31	0.20	0.06

Notes: Extraction method=principal component analysis; Rotation method= Varimax with Kaiser normalization; <sup>a</sup>= Rotation converged in 5 iterations.

The resulting factor structure described 76.48% of the trait variance. The decision was made to include only items with factor loadings of .60 or higher, used as a criterion for the level of significance, which made it possible to avoid the inclusion of negative emotional experiences (variables) with a low factor load in the factors (Howard, 2016).



The first factor (23.27%) combined variables reflecting sthenic negative emotions: Aggressiveness, Anger, and Irritability. The second factor (19.75%) combined variables reflecting the inability to maintain attention on an object: Inattention, Lack of concentration, and Inability to perform the assigned tasks. The third factor (12.95%) combined variables related to distrust: Distrust of commanders and Distrust of comrades in the service. The fourth factor (10.42%) and the fifth factor (10.09%) were fully correlated with one variable Concern and Guilt, respectively.

Table 3 presents the factor matrix of grouping (after the simplification procedure) of negative emotional experiences among participants in Group 2.

The first factor (20.17%) combined the variables Inattention, Lack of concentration, Self -doubt and Unwillingness to communicate. The second factor (19.66%) combined the variables Aggressiveness, Anger and Irritability. The third factor (13.80%) combined the variables Concern and Anxiety. The fourth factor (10.90%) combined variables associated with asthenic states: Apathy and Powerlessness. The fifth factor (8.90%) was fully correlated with the variable Distrust of commanders.

Table 3. Factor matrix for grouping negative emotional experiences among participants in Group 2, rotated component matrix<sup>a</sup>.

The negative emotional experiences (variables)	Factors				
	1 (20.17%)	2 (19.66%)	3 (13.80%)	4 (10.90%)	5 (8.90%)
Irritability	0.13	0.71	0.36	0.14	0.18
Anxiety	0.16	0.35	0.81	0.01	0.06
Aggressiveness	0.02	0.92	0.14	0.07	0.07
Anger	0.13	0.90	0.02	0.12	-0.02
Inattention	0.81	0.17	0.10	0.01	-0.03
Self -doubt	0.76	0.08	0.07	0.14	0.02
Apathy	0.12	0.11	0.08	0.81	-0.14
Concern	0.16	0.05	0.87	0.19	0.04
Powerlessness	0.18	0.13	0.11	0.72	0.15
Lack of concentration	0.79	-0.01	0.23	0.14	-0.04
Unwillingness to communicate	0.66	0.06	0.01	0.15	0.32
Distrust of commanders	0.07	0.12	0.07	-0.01	0.94

Notes: Extraction method= principal component analysis; Rotation method= Varimax with Kaiser normalization; <sup>a</sup>= Rotation converged in 5 iterations.

## DISCUSSION

The results showed that 29% of participants were at moderate risk of developing alcohol addiction: the threshold at which a service member might lose the ability to control their drinking. It can be assumed that it is negative emotional experiences that were one of the main factors that forced a serviceman to seek out and systematically drink alcohol after leaving the combat zone.

It was found that such negative emotional reactions as Irritability and Inability to perform the assigned tasks, reduce the risk of developing alcohol dependence. Both negative emotional experiences are associated with a decrease in the ability to regulate emotions, so it is quite unusual to see them as a factor in reducing the likelihood of developing alcohol dependence. However, in previous studies, one of the identified personality types of military personnel who committed alcohol-related incidents (offenses) was characterized by “constitutional weakness and an astheno-neurotic type of reaction, manifested by severe irritation and rapid exhaustion” (Matsegora *et alii*, 2022). For this personality type, alcohol consumption was a factor that prevented other maladaptive actions, in particular suicide. It is possible that individual instances of alcohol consumption

with such personal characteristics do not develop into chronic forms of alcohol abuse. Therefore, it can be assumed that a strong reaction of irritation (emotional release) with its subsequent attenuation (felt exhaustion as complete inability to perform tasks) makes it unnecessary to use additional means (alcohol) to artificially reduce negative experiences. In this interpretation, Irritation and Inability to complete assigned tasks are elements of a natural way of reducing negative experiences.

Among the negative emotions that increased the risk of developing alcohol addiction, Guilt and Lack of concentration had a larger coefficient. The first was associated with a negative self-assessment of the action and maintaining activity aimed at correcting the consequences, which is often impossible in combat conditions; the second was a manifestation of the negative impact of emotions on cognitive functions. Lack of concentration made it much more difficult to correct mistakes, potentially exacerbating guilt, forming, together with guilt, a *vicious circle* that did not allow negative experiences to subside. The influence of anxiety and mistrust of commanders on the formation of alcohol dependence was somewhat less. Having previously repeatedly encountered the variable "Distrust of commanders" in research, it was found that this factor increases significantly in military personnel with signs of PTSD (Matsegora *et alii*, 2023). Therefore, there is a possibility that distrust of commanders is associated with the action of psychological defense, including a depressing feeling of guilt, accompanied by the experience of this feeling. Anxiety could also indicate a negative mood background due to the experience of guilt or an inability to attenuate negative experiences that were a consequence of prolonged negative affect.

Such data from multiple regression analysis could be explained by using of alcohol as a means of accelerating the attenuation of negative emotional experiences, when the individual has not developed the ability to respond to emotions, leading to their attenuation, or when there were no conditions for such a response, for example, in combat conditions.

Cluster analysis made it possible to identify two groups of participants based on indicators of negative emotional experiences and the risk of developing alcohol addiction. Group 1 had a higher profile of negative emotional experiences, suggesting the presence of post-traumatic stress symptoms and maladjustment in participants in this group. The profiles of both groups, although they differed in height, were quite similar in shape (negative and positive peaks), differing only in some features. Group 1 had a higher profile, where the total negative emotional experience score was  $5.52 \pm 1.27$ , which suggested the presence of signs of post-traumatic stress and impaired adaptation of participants in this group. This group was characterized by an average level of risk of developing alcohol addiction ( $7.54 \pm 5.74$ ). The participants in this group were characterized by the following peaks of negative emotional experiences: Anxiety, Concern, Powerlessness, Distrust of commanders, and Devastation. They sought to get rid of Guilt, the sthenic emotions Anger and Aggressiveness were slightly lower. Even less pronounced was Distrust of comrades in the service, as they might need their support. These servicemen had increased emotionality (higher overall profile), felt completely weakened by negative experiences, were unable to resist them, sought to find the culprits and relieve themselves of responsibility for what happened to them, and sought support from others.

Group 2 had a low emotional profile and a level of total negative experiences of  $2.08 \pm 1.20$ , which indicated a possible absence of signs of post-traumatic reactions and maladaptation. Participants in this group were characterized by a low level of risk of developing alcohol addiction ( $5.28 \pm 3.64$ ). The most pronounced were "Anxiety", Distrust

of commanders and Irritability, which indicated a critical attitude towards the situation as a whole. Less pronounced were Concern and Inattention, which reflected the ability to reflect on the impact of negative emotional experiences on the effectiveness of their activities. The least pronounced were Apathy, Devastation, and Guilt. In this group, the vector of negative emotional experiences was meaningfully directed from low-expressed feelings of guilt, emptiness, and apathy toward increased criticality of the situation. However, this situation did not reach a level that created a threat to the effectiveness of professional activities or the subjective perception of the ability to perform assigned combat missions. That is, these servicemen were more able to constructively overcome the current situation and use their emotions to quickly assess it.

In our opinion and as a result of other studies (de Graaff, Schut, Verweij, Vermetten, & Giebels, 2016), guilt, was the negative emotion that supported the constant return to memories of one's own wrong actions, one's own inadequacy to the situation. This structure of negative affect indicated certain characteristics of the emotional response in individuals more prone to developing alcohol dependence. Probably, such individuals are more prone to a strong emotional reaction to the situation, which led to cognitive dysfunction (negative impact of affect on intelligence) and, accordingly, to erroneous actions and destruction of relationships (insulted a comrade, disrespected the commander, incorrectly followed orders, etc.). The resulting feeling of guilt supported negative experiences and activity aimed at correcting the situation, which in combat conditions with cognitive dysfunction and lack of outside support led to a constant negative mood, further depletion of psychological resources, and awareness of the inability to stop independently ("slow yourself down") in this circle. Alcohol was used as such a means of coping with these problems when it became available and discipline control decreased.

Our result about a higher emotional profile in military personnel with a greater risk of alcohol dependence confirmed the data of other researchers (Ashton, Bellis, Davies, Hughes, & Winstock, 2017). The authors found that the level of alcohol dependence is closely related to the experience of all emotions, with the likelihood of aggression being significantly higher among addicts than among those who have a low level of risk for alcohol dependence. Difficulties in emotion regulation have also been identified as a factor in increased risk for alcohol use as a maladaptive coping mechanism by Paulus, Heggeness, Raines, and Zvolensky (2021).

There have been many studies indicating the relationship between post-traumatic stress (PTS), PTSD, and increased alcohol abuse. Therefore, problems with suppression of negative emotional experiences are likely to be transdiagnostic and act as a mediator between PTSD symptoms and alcohol abuse-related outcomes. Tripp, McDevitt-Murphy, Avery, and Bracken (2014) found that two aspects of emotion regulation, difficulty with impulse control and difficulty with goal-directed behavior, mediated the relationship between PTSD symptoms and alcohol-related outcomes in a sample of men and women. The difficulty of fear suppression in individuals with PTSD was presented in studies by Jovanovic *et alii* (2009). They found that in people without signs of PTSD and with signs, fear arose equally, but if in the former it subsequently faded, then in the latter this did not happen.

Simons, Hahn, Simons, and Murase (2017) reported that individuals who lack emotion regulation strategies or have difficulty accepting negative emotions are more likely to use alcohol to cope with them. In addition, they hypothesized that impulsivity and higher initial drinking rates would be associated with drinking for social and enhancement motives. However, their study found that impulsivity and social motives

were associated with drinking problems, while improvement motives did predict drinking. They were able to generally confirm that drinking alcohol to reduce negative or enhance positive emotions increased alcohol use and alcohol-related problems.

Anger, despair, and guilt have been identified as moderators of alcohol-related stress coping (Dermody, Cheong, & Manuck, 2013). Poor leadership (in our study, Distrust of commanders) was identified as a factor in alcohol abuse among deployed service members whose role was outside their training and experience in the theater of operations identified by Browne *et alii* (2008).

Considering negative affect as a transdiagnostic risk factor for the formation of many types of pathologies, for example, PTS and addiction, Mekawi *et alii* (2019) pointed out that increased negative affect made a person sensitive to threats and shifted his attention toward threats. Their findings suggested that negative affect was one important construct through which attentional bias toward threat may influence PTS symptom severity. Maintaining attention to threatening stimuli led to an increase in the number of negative signals that contributed to the emergence of negative affect. The presence of a certain vicious circle of negative affect that contributes to the formation of alcohol dependence was also indicated in the studies of Holahan, Moos, Holahan, Cronkite, and Randall (2001). They found that during stress-related drinking, individuals who initially had a greater tendency to use alcohol to cope had a greater relationship between symptoms of anxiety, depression, and alcohol use outcomes.

Drinking to reduce negative affect (e.g., guilt, shame, and anxiety) is a commonly reported motivation for consuming alcohol (Treeby *et alii*, 2022). The authors found that shame-proneness is associated with general emotion regulation difficulties, while guilt-proneness tends to be unrelated to such problems. Luoma, Guinther, Potter, and Cheslock (2017) found that overall shame, and guilt were most strongly related to alcohol-related problems and not drinking amount per se, and shame was more strongly related to alcohol-related problems than guilt. Thus, it cannot be unequivocally stated that the components identified in the structure that support negative emotional experiences, such as guilt, shame, anxiety, etc., are exclusively associated with the risk of alcohol dependence. Rather, we are talking about a transdiagnostic problem, common to PTSD, depression, and the formation of alcohol dependence or dependence on psychoactive substances.

The identified role of anxiety in our study, as in the articles of other authors, is quite diverse. Thus, anxiety may be one of the signs of persistent negative affect and indicate sensitivity to negative stimulation. Anxiety can be seen as a component of an avoidance strategy, leading to both alcohol abuse, and can play a positive role in the desire to avoid drinking alcohol. The function of anxiety also depends on its location in the structure of negative affect. One version of the ambiguous role of anxiety as a factor in alcohol use is indicated in a study by Chandley, Luebbe, Messman-Moore, and Ward (2014). The authors found that in women, anxiety sensitivity is associated, due to negative reinforcement, not with alcohol consumption, but with problems that arise when drinking alcohol in connection with emotion dysregulation. Moreover, with increasing emotion dysregulation, the strength of the connection between motives for combating alcohol use and problems with alcohol increases. These findings provide partial support that anxiety may be indirectly associated with reduced risk of alcohol use.

Unfortunately, the results of exploratory factor analysis did not allow us to identify functional connections between the identified structural elements and conclude the functioning of the structure of negative emotional reactions and states in general.

The conclusions we have drawn regarding the functioning of the identified structures in military personnel with different risks of developing alcohol addiction are based on existing theories of emotion regulation and their effectiveness. In addition, different interpretations of the identified structural elements and their role in the regulation of emotions and their place in the process of developing alcohol addiction are possible by different models of emotion regulation. Tull and Aldao (2015) provided an interesting summary of emotion regulation strategies and abilities. These researchers pointed out that emotion regulation is one of those branches of psychology that is currently developing intensively. The authors noted that many models and concepts have been developed to both identify emotion regulation strategies and the ability to regulate them. In the constructed models, significant tolerance to distress could increase the degree of readiness of a person, process emotional experience, and combine it with it in situations where it is useful. When stress tolerance is low, people tend to inflexibly use avoidance-oriented strategies to regulate their emotions. Additionally, established models of emotion regulation have moved away from the idea of eliminating, controlling, or reducing negative emotions. Tull and Aldao (2015) focused on introducing the idea of adaptive regulation, which may involve seeking out and intensifying negative emotions or even suppressing positive emotions according to the situation. It was also proposed to separate the intensity, quality, and content of emotions. Thus, the intensity of emotions can be both an individual characteristic, which was determined as the typical strength of an individual reaction and a consequence of the significance of the negative stimulus that caused it, as well because of a violation of emotional regulation (Larsen & Diener, 1987).

Thus, the identified structure of negative emotional experiences in groups with different levels of risk of developing alcohol dependence could have several interpretations and models of functioning, and, accordingly, suggest different ways of helping people whose risk of developing alcohol dependence has significantly increased.

This study certainly had limitations. First, female military personnel were not included in this study because, over the entire period of the psychological recovery program, less than 0.5% of female combatants participated. Secondly, the sample of participants included only ordinary military personnel and sergeants; officers did not take part in the study. Thirdly, the study was limited by the short period of the psychological recovery program and the inappropriateness to overload participants with additional activities that did not correspond to the purpose of the program, which reduced the possibility of using research methods, repeatability of the survey, etc. Fourthly, exploratory factor analysis made it possible to identify only certain structural elements of negative emotional experiences of military personnel after participation in intense combat operations. However, it did not allow us to identify their functional connections and the functioning of the structure as a whole. Therefore, the models of functioning of these structures that we have constructed are only assumptions based on known models of emotional regulation in adaptive and maladaptive behavior. It is advisable to use them only for a similar sample: male military personnel after participating in intense combat operations, do not always can react to their emotions in combat conditions and not all can cope with the power of emotions. Emotional experiences that arise during combat or accumulate because of chronic stress often cause feelings of guilt, and moral injury, and for many, negative affect does not go away due to both the effect of guilt (*vicious circle*) and the duration of stress factors. A significant percentage of these military personnel were called up for military service upon mobilization or came to

fight as volunteers: their previously chosen path in life did not include military service and such heavy life trials. Finally, the current study was limited by not having an active comparison condition and by not having a longitudinal follow-up.

The study showed that not only the strength of negative affect but also its structure, which determines the ability to regulate emotional experience and behavior, is associated with the risk of alcohol abuse among military personnel after participating in combat operations. Significant affect made it more difficult to control emotions, increased the likelihood of cognitive dysfunction, caused damage to relationships with coworkers, and contributed to an increase in erroneous actions. The lack of outside help to correct the problems that had arisen, the experience of feeling, and its constant intensification ultimately formed a *vicious circle of guilt* and did not allow negative emotional experiences to *fade out*. As a result, after leaving the combat zone, a decrease in disciplinary control, and the availability of alcohol, military personnel with such features of the structure of negative affect could try to use alcohol to artificially slow down this *vicious circle*.

Military personnel who had a less affective reaction to the situation or were naturally able to react to negative emotions and direct them in a *useful* direction, needed less maladaptive means such as alcohol to reduce negative experiences. They were more able to assess the consequences of negative affect, timely control the manifestation of negative emotions, and were able to predict the negative development of the situation and prepare for it.

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