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ALEXITHYMIA AND COPING IN A LIFE-THREATENING SITUATION. SAMPLE OF BULGARIAN MILITARY AND POLICE SPECIAL FORCES OPERATORS: PSYCHOLOGICAL CARE AND COUNSELING

DISSERTATION ABSTRACT

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CONTENTS:

Introduction: Relevance and significance of the topic

Each of the constructs studied here has been a subject of scientific interest for decades and continues to provoke scientific research to this day, which is indicative of each of them being significant to psychological science. There are numerous studies that separately examine alexithymia (see section 1.1.), coping with life-threatening stressors (see section 1.3.), the personality profile of persons who have chosen professions that confront them with such stressors (e.g., special forces operators in the Ministry of Interior (MoI) and the Ministry of Defense (MoD), responsible for national security) (see section 1.2.) and the effective psychological counseling[1] approaches in working with each of the cited constructs (see section 1.1.3. and Chapter III). However, as far as the author`s knowledge, these constructs have never been studied together, their interaction and how it affects the construction of an effective counseling framework has not been studied. Research to date on effective approaches for high alexithymia, for example, has rarely focused specifically on alexithymia, and those that did, have rarely considered the valence of emotion, which the individual finds more difficult to process. In addition, there are almost no explicitly formulated diagnostic criteria for high alexithymia (see sections 1.1. and 3.1.). Studies on effective counseling approaches for individuals facing a life-threatening stressor, on the other hand, are based on instruments measuring coping with everyday stress. This is a limitation insofar as there is evidence that coping categories derived from studies of daily stress are not adequately applicable to life-threatening contexts (e.g., Hyun & Bae, 2017). Furthermore, there is no comprehensive explanatory framework of the process of coping with a life-threatening stressor in general – research usually focuses on a single high-risk stressor, e.g. life-threatening disease, which does not allow to draw a conclusion about the applicability of the data to another life-threatening situation. The process of dealing with such a stressor also requires taking into account the appraisal – research is usually limited to threat-loss, leaving out the challenge appraisal. All these limitations do not allow to derive a comprehensive explanatory model of coping with life-threatening situations (see sections 2.8. and 3.2.). As for counseling approaches aimed at

[1] It is important to clarify that for the purposes of this paper the words "counseling" and "therapy," "client" and "patient" will be used interchangeably, since the focus here is not on differentiating psychological approaches in clinical and non-clinical, short-, and long-term, etc. contexts, but on discussing the (potentially) effective ones in general.

individuals in a high-risk professions, they are usually focused on the individual's suitability to perform their duties effectively. Studies that examine the personality profile of special forces operators in the MoI and the MoD in order to formulate an approach that favors the overall functioning of the person are rare. And a study that considers alexithymia as a personality trait in the profile of these employees and takes it into account in the process of employees selection and planning of *preventive* psychological care programs has not been conducted (see section 3.3.). This may prove to be a limitation if it is confirmed that alexithymia (as hypothesized below) is related to the choice of such a profession in the first place.

This work aims to address the mentioned limitations by analyzing the cited constructs together and from a new perspective, questioning some of the widely accepted notions – such as that high alexithymia is perceived as a rather "undesirable" personality trait[2], and also that situational coping with a life-threatening stressor does not differ significantly from coping with other type of stressors[3]. By discussing these two assumptions, this paper will seek answers to the following questions:

- „Does elevated alexithymia[4] favor the choice of professions with a high degree of risk to one's own life, but also of high social importance?" An example of such type of professions are those involved in national security and population protection, i.e., the special forces operators in the MoD and MoI, the main requirements to whom are precisely to deal with high-risk and life-threatening situations.
- „Is elevated alexithymia uniquely linked to ineffective coping with life-threatening stressors? What would the empirical data show if a coping instrument adapted specifically for this context is used to study the issue?“.

[2] See e.g., Taylor et al., 1997; Lumley et al., 2007.

[3] Coping instruments applied to the study of coping with a life-threatening illness, for example, are interpreted on the basis of a factor structure derived from research on everyday stress (see sections 1.3., 2.8., 3.2.), i.e., not addressed is the possibility that the strategies found in a given factor in the study of daily stress are not in the same structural interaction and do not form the same factor solution in coping with a survival-threatening stressor. Thus "healthy"/"effective" coping with everyday stress is seen as akin to coping with a stressor threatening person's survival.

[4] By "elevated" should be understood values close to the upper end of the mean, as high alexithymia (i.e., one or more standard deviations above the mean) is related to clinical diagnoses (e.g., Panayiotou, 2018). Given the strict and regular medical examinations these employees undergo, it is unlikely that such clinical symptoms would be present (it is important to emphasize again that this paper focuses on alexithymia as a personality trait in a sample of clinically healthy and currently serving special forces operators).

Based on the interaction between alexithymia, on the one hand, coping in a life-threatening situation, on the other, and the choice of a profession possessing an immediate risk to one's own life, on the third, *specific proposals for psychological counseling practices will be formulated*.

In summary, this paper covers several up-to-date and important for the mental and somatic health constructs, namely:

- The construct "Alexithymia" – this paper aims to:
  - *Translate in Bulgarian and adapt an assessment tool* so that a second one is available in our country, which will support research and consulting practices;
  - Formulate a proposal for a *counseling framework specifically targeting alexithymia and tailored to the valence of the affect*, while at the same time lays out specific guidelines for *diagnostics as a key first step in the counseling process*.
- The construct "Coping with a life-threatening stressor" – this paper aims to:
  - *Adapt a coping assessment tool specifically aimed at research on coping with a life-threatening situations*;
  - Propose a *comprehensive explanatory model* of coping with a life-threatening stressor, accounting for *different stressors of such a nature*, *their appraisal* and *coping*;
  - Formulate a proposal for a *counseling framework* aimed at *individuals (including such with high alexithymia) facing a life-threatening situation*.
- The relations between alexithymia and coping with a life-threatening stressor, by:
  - Comparing a control group with one that has been trained to deal with such stressors (the MoI and MoD special forces operators);
  - Formulating a *proposal for psychological care practices, specifically aimed at the MoI and MoD special units* (in case elevated alexithymia is confirmed). This would be of particular importance, since the *adequate selection and psychological care* for them are directly related to our security, especially given the current global events.

In summary, this paper will study three constructs, adapt two psychometric instruments and formulate three counseling frameworks, thereby enriching theoretical knowledge and practice.

CHAPTER I. THEORETICAL FRAMEWORK

1.1. Alexithymia

1.1.1. Nature of the construct

In their work together Nemiah and Sifneos (1970; Sifneos, 1973) use the word of Greek origin, "alexithymia", to describe their clinical observations of patients suffering from the so-called "classic" psychosomatic disorders. They reported that these patients were characterized by (i) difficulties in identifying feelings and differentiating them from bodily sensations; (ii) difficulties in verbalizing feelings; (iii) undeveloped skills for fantasizing[5] and dreaming, as well as (iv) externally oriented thinking, the so-called pensée opératoire (operational thinking), which is characterized by pragmatism, concentration only on current events and lack of imagination. Already with the introduction of the term, there have been many discussions regarding its nature, etiology and stability, and after decades of research, to date, alexithymia is considered as a personality trait, i.e., dimensional, multifaceted and multideterminant[6] construct, consisting of: (i) difficulties in identifying feelings and differentiating them from bodily sensations, (ii) difficulties in verbalizing feelings, and (iii) externally oriented thinking, characterized by being pragmatic and operative. It is important to emphasize that alexithymia is not about experiencing emotions, but about giving individual meaning to those experienced. When asked to describe their inner world, individuals high in alexithymia tend to use broad and vague statements such as: "I feel bad" instead of "I feel offended/disappointed…" and also use their bodily sensations to verbalize affect: "My stomach is bad" or to directly share their confusion with answers such as: "I don't know how I am".

Over the decades, studies have established that alexithymia is a transdiagnostic risk factor (Panayiotou, 2018), which however goes beyond the clinical context, i.e., high values of alexithymia are also found among mentally and somatically healthy individuals. These empirical data lead to the assumption that alexithymia is a personality trait that could be a predisposing factor to developing diverse disorders, but it is not one in itself. To what extent it should be perceived as a predisposing factor has not yet been definitively established, given the

[5] One of the most serious and long-standing debates regarding the nature and the differentiating components of the construct "Alexithymia" concerns precisely this subscale. The topic will be detailed below.

[6] Numerous theories attempt to explain the etiology, pointing to biological, genetic factors; environmental factors; intrapsychic factors, etc. (for a detailed discussion, see section 1.1.2. in the dissertation full text version).

lack of sufficient data from longitudinal studies of the premorbid personality, as well as the lack of explicitly formulated diagnostic criteria that are unanimously accepted by the scientific community. This could be partially explained by the lack of consensus regarding construct assessment.

1.1.2. Alexithymia – psychometric instruments

Various theoretical models attempt to explain and, accordingly, assess alexithymia. To date, there is a variety of tools. In this paper special attention will be paid to the two currently leading theoretical models and the psychometric tools built on their basis.

The Toronto model – Toronto Alexithymia Scale (TAS-20) – consists of (i) difficulties in identifying feelings, (ii) difficulties in verbalizing them and (iii) externally oriented thinking. As far as the latter, the authors insist that imagination and fantasizing are important components that the instrument assesses indirectly (Bagby, Taylor, & Parker, 1994). However, the most recent empirical evidence reports that fantasizing is related to, but separate from, alexithymia construct (Preece, Becerra, Robinson et al., 2020; Preece & Gross, in press). Thus, among the many evidence for the psychometric qualities of the TAS-20, some of its main shortcomings are:

- The reliability of the EOT subscale: The reasons for this subscale reliability issues can be sought both in the five reverse items there, and in the already discussed fantasizing that the EOT aims to assess. Recent empirical evidence indicates that this is problematic insofar as fantasizing is a separate construct from alexithymia, i.e., TAS-20 EOT subscale seeks to assess two separate constructs.
- The unstable factor structure: The three-factor solution has been replicated in many samples, but there are also those in which two or four factors are identified. It is the same with the Bulgarian adaptation, where two factors are extracted (Popov et al., 2016).
- Assesses depressive and anxious tendencies and negative affect, therefore results should be interpreted with caution (Rosenberg et al., 2016; Preece, Becerra, Boyes et al., 2020).
- It does not allow evaluation regarding the valence of the affect. In individuals high in alexithymia, anhedonic tendencies have been found, which appear to be the mediator of the alexithymia – mental health relation. The relation between alexithymia and positive emotions is important because they are seen as a "buffer" against stress, and in this sense, anhedonic

tendencies appear to be a risk factor for the development of psychological and physical symptoms (Bernard, 2014).

Attention-Appraisal model – The Perth Alexithymia Questionnaire (PAQ) (Preece et al., 2018) was created in an attempt to overcome the limitations of previous theoretical models and their corresponding psychometric instruments. According to the Attention–Appraisal model, alexithymia is a dimensional construct consisting of: (i) difficulties in identifying feelings, (ii) difficulties in describing them, and (iii) externally oriented thinking. Each of them depends on the processing of the emotional stimulus, as well as on the person's reaction in regards to the processing. The model considers four stages, namely: situation (i.e., the occurrence of the emotional reaction) – attention (directing attention to it) – appraisal (assessing what this emotional reaction is and what it means) – response (based on the appraisal, the person can take steps to change own`s reaction). In this model, externally oriented thinking represents a difficulty at the attention stage, and the other two subscales are associated with difficulties at the appraisal stage.

Based on this model, the PAQ is a 24-item questionnaire forming five subscales: Difficulty Identifying Negative (N-DIF) and Positive Feelings (P-DIF), Difficulty Describing Negative (N-DDF) and Positive Feelings (P-DDF) and External Oriented Thinking (G-EOT). These five subscales form: General Difficulties in Identifying (G-DIF) and Describing Feelings (G-DDF), Difficulties in Appraising Negative (N-DAF) and Positive Feelings (P-DAF), General Difficulty Appraising Feelings (G-DAF). All of them together form the total alexithymia scale score. Thus, PAQ provides a better differentiated approach. Discriminant validity is another advantage of the PAQ over the TAS-20 (Preece, Becerra, Boyes et al., 2020).

On the other hand, the PAQ also has its potential limitations, and specifically the assessment of fantasizing. The EOT subscale, as formulated in the PAQ, does not directly nor indirectly assess fantasizing skills, which according to the authors of the TAS-20 is a serious shortcoming (Taylor & Bagby, 2021). At present, however, empirical evidence indicates that fantasizing is not a dimension of the alexithymia construct (Preece, Becerra, Robinson et al., 2020; Preece & Gross, in press).

Considering the above it can be concluded that, science is still looking for answers to questions important for the counseling practice such as the precise diagnostics (reliability and

validity of alexithymia assessment). This naturally leads to difficulties in formulating an appropriate therapeutic plan.

1.1.3. Alexithymia – counseling practices

The importance of assessing alexithymia early in the counseling process has already been suggested as a key first step (Rufer et al., 2010). Increasingly, researchers are emphasizing the need to develop specialized, evidence-based psychological practice that specifically targets the construct (rather than correlates such as depression and emotion dysregulation, for example) and its effectiveness – evaluated to ensure that intervention is targeted towards the transdiagnostic phenomenon of "Alexithymia" rather than the specific symptoms of a given diagnosis (Hemming et al., 2019). On the other hand, however, personality traits are very difficult to modify, which is why, with the exception of borderline personality disorder, personality is not a major focus of clinical interventions. Given this, it is not surprising that the conceptual framework for intervention aimed at high alexithymia has not advanced significantly (Lane, 2020), despite decades of research on the construct.

According to some authors, alexithymia leads to unsatisfactory results of psychotherapy (see e.g., Yılmaz et al., 2019), while according to others, there is no such connection (Äärelä et al., 1997). The differences cited can probably be explained by the therapeutic approach used as well as the specifics of the therapeutic relationship. A positive correlation has been found between alexithymia and the insecure attachment style, which relates to difficulties in establishing a therapeutic alliance and trusting relationships in general (Bernard, 2014). Negative reactions from therapists to their clients high in alexithymia have been reported, with the higher the alexithymia, the more negative the therapist's reactions, leading to the more negative the outcome of the therapy (Ogrodniczuk et al., 2005). Often this behavior of therapists is explained by the lack of expression of positive emotions on the part of these patients (Yılmaz et al., 2019) or by the therapist's feeling that the patient does not want to trust (Lumley et al., 2007). It is important for those working with such patients to understand that this behavior does not reflect provocation, sabotage, lack of trust or underestimation of expertise. Sharing bodily pains and fatigue or describing daily life in detail is an attempt by people high in alexithymia to trust and let the other into their phenomenological world, which is more somatic and externally oriented than psychological (Lumley et al., 2007).

As far as therapies effectiveness, the scientific literature consistently reports that therapeutic programs based on introspection and insight have unsatisfactory results (e.g., Taylor et al., 1997). One of the most frequently reported effective therapies for this patient group is cognitive behavioral therapy. It reduces DIF and DDF levels but does not affect EOT (Rufer et al., 2010). Compared to interpretive therapies, cognitive-behavioral leads to more satisfactory long-term results because the educational component is an invariable part of the process. Individuals high in alexithymia are able to apply relaxation and affect regulation techniques if given clear guidance and instructions (Rufer et al., 2010). Techniques modifying cognitive distortions and maladaptive behaviors, as well as assertiveness and communication skills training, are also among those frequently cited as effective (Taylor et al., 1997; Lumley et al., 2007). The existential-humanist approach also has its empirical arguments. It reduces EOT and was found to be more effective for this subscale than cognitive behavioral therapy, but did not affect DIF and DDF (Yılmaz et al., 2019). Another therapeutic approach that is finding empirical support is positive psychotherapy. Recent research has reported that individuals high in alexithymia do not use somatic distress as a motivator for psychotherapy (Terock et al., 2017), so it may be effective for them to perceive therapy as a tool for developing personal qualities and achieving well-being rather than as a process aimed at dealing with somatic and mental distress, since distress is not a predictor of motivation for psychotherapy in this group.

As the review points out, information is available on the effectiveness of different counseling approaches. However, these data are usually derived from the study of samples suffering from somatic and/or psychiatric disorders. It would be interesting to investigate the effectiveness of the counseling approach as a form of prevention in clinically healthy individuals high in alexithymia. It is also important to emphasize that the choice of approach should be determined by the individuality of the patient, and depending on the specific needs, an integrative approach should be applied that can best meet them. The process of adapting the approach to the personality requires consideration of the socio-demographic characteristics, especially given the reported links between them and alexithymia. Sex differences are one of the most frequently found, with data varying from studies reporting higher values in males (Bernard, 2014; Popov et al., 2016) to those reporting higher values in women (Timoney & Holder, 2013) or no sex difference (Garaigordobil, 2013). It has been found that age also has an impact – in late adulthood, higher alexithymia is present (Garaigordobil, 2013; Grigorova,

2018). A negative correlation between alexithymia and level of education is also reported (Garaigordobil, 2013; Grigorova, 2018), as well as a relation between the level of alexithymia and the choice of major in higher education (Hošková-Mayerová & Mokrá, 2010) and, accordingly, the future professional direction.

1.2. High-risk activities, Alexithymia and Choice of profession

To the best of the author's knowledge, the relation between alexithymia and the choice of an occupation posing an immediate threat to own`s life has not been investigated until now, although a relation between alexithymia and high-risk activities has been found for decades (see, e.g., Woodman et al., 2008). Of interest here are the special forces operators in the MoI and MoD[7], whose professions can be considered high-risk since operators put their own lives in immediate danger, i.e., they accept the possibility of serious injury or death as an invariable part of the activity (Breivik, 1999, p. 10) (cited in Barlow et al., 2015, p. 83). The choice of such a profession is tied to a specific personality profile. That of the successful military diver, for example, correlates positively with intelligence, it`s characterized by neuroticism at or below the mean, self-sufficiency, independence, and emotional stability (Shopov & Vazharov, 2017). A significant proportion of divers demonstrate antisocial personality traits, an analytical, logical thinking style, and a decision-making approach based on objective judgments and facts rather than emotions (Beckman et al., 1996). Research with military parachutists, on the other hand, found that the emotions that accompany skydiving are restlessness, vigor, and happiness, with more frequent use of strategies to increase unpleasant emotions being reported in the hour before the skydive (Lane et al., 2012). It has also been established that different high-risk sports satisfy different needs, for example, the motivation to engage in skydiving is strongly linked to sensation seeking, while the motive for mountaineering is associated with the sense of agency. These data confirm the relation between high-risk activities and emotional regulation. It is hypothesized that practitioners of high-risk activities could use those as a learning environment

[7] MoI special force operators are usually engaged in specific high-risk tasks within the country territory (e.g., special operations, counter-terrorism, etc.) that other police officers are not prepared to handle. The MoD special force operators (military parachutists, divers, sappers) are trained to perform highly specialized and high-risk tasks for which other military personnel do not have the training needed.

for emotional self-regulation skills that they would subsequently transfer to their daily lives (Barlow et al., 2013).

Based on this, it can be assumed that individuals with elevated (values close to the upper end of the mean) or high (one or more standard deviations above the mean) alexithymia are likely to find precisely in high-risk activities an environment, which provides an opportunity to regulate emotions. Some authors explain the tendency of individuals high in alexithymia to seek out and engage in such activities with the fact that this environment provides the experience of more easily recognizable feelings, for example, fear (Barlow et al., 2015). Others point out that high-risk behavior is characteristic of individuals with chronic hypoactivity[8] of the nervous system, which prompts them to seek experiences that increase it to an optimal level (Cooper et al., 2000), and still others associate high-risk sports with coping with negative affect, by avoiding focusing on the internal dysphoric state and directing attention to the bodily sensations that the high-risk activity leads to (Castanier et al., 2010).

As for police special force operators, it has been reported that among the main qualities required is "virility", i.e., the ability without any hesitation or expression of emotion to inflict pain and suffering on another human being in order to establish order or achieve supremacy. If police special force operators allow themselves to think too much about their emotions, it can greatly affect their professional performance. Therefore, emotions are separated from operational thinking (Le Scanff & Taugis, 2002).

In summary, the profile of the successful MoI / MoD special forces operator in different socio-cultural samples is similar (Le Scanff & Taugis, 2002; Garbarino et al., 2014): a pattern of emotionally distant, logical, pragmatic functioning style is repeated, combined with a tendency towards antisocial behavior, moderate to low neuroticism, and low agreeableness. This profile largely overlaps with that found in individuals high in alexithymia. However, the literature does not discuss alexithymia as a personality trait relevant to the choice of such a profession. In support of this perspective on alexithymia are also results, according to which certain aspects of alexithymia could have a protective effect. Persons high in alexithymia are described as practical and rigid, with conservative understandings, grounded, with reduced emotional expressiveness. The latter is linked to emotional stability, and the tendency to

[8] The most recent research on the organic basis of alexithymia cites hypo- rather than hyper-arousal (Panayiotou et al., 2018).

pragmatic evaluation can act as a protective factor against stress and anxiety (Rosenberg et al., 2016).

Given what has been discussed so far, it can be hypothesized that individuals high in alexithymia would seek out occupational environments that offer opportunities for emotional self-regulation, as the high-risk domain does. Moreover, given their difficulties in directing their attention to their inner world, it would be reasonable for them to prefer a profession that does not require high emotional differentiation, but rather a focus on specific stimuli of the external environment, requiring clear, observable, predictable and practical actions. The presented analysis leads to the assumption that it is likely that certain structures of the Ministry of the Interior and the Ministry of Defense offer precisely such settings. However, it is important to emphasize the following: (i) Not every position in the MoI and MoD meets the stated needs, i.e., of interest to persons with elevated alexithymia would be operational activity, that "on the ground", and not administrative and managerial positions. (ii) Not every operational activity offers the necessary high-risk context, i.e., individuals with elevated alexithymia are more likely to find themselves among the so-called "special units" whose life and health are actually put in immediate danger during every performance of official duties (every parachute jump, every diving, etc.). Based on the above, it can be assumed that alexithymia, despite its connections with different clinical disorders and with a tendency to risky behavior, also has its prosocial manifestation, since it (probably) favors the choice of professions that are of high social importance and from coping with which the safety of the population depends.

1.3. Coping with a life-threatening stressor and Alexithymia

1.3.1. Nature of the construct "Coping"

Coping (styles and strategies) has been a subject of scientific interest for decades. The transactional model of stress and coping is currently accepted as the main explanatory model. It differentiates two main coping styles: problem-focused and emotion-focused. Furthermore, depending on the appraisal made, the stressor can be defined as a "threat" (when the person assesses the situation as highly demanding, matching it with the subjective assessment of one's own resource) or a "challenge" (when one assesses the stressor as somewhat exceeding one's own resources, but still considers themselves as capable meeting the requirements of the situation). Given the complexity of the construct, it is not surprising that there are numerous

psychometric instruments attempting to measure it. Here, special attention will be paid to COPE (Coping orientation of problem experience) (Carver et al., 1989) as an example of a valid and reliable instrument with proven psychometric properties. In addition, COPE allows the research of both dispositional[9] (i.e., a "habitual" response to stress) and situational coping[10] (i.e., a specific response in a particular stressful situation) (Carver et al., 1989). This, combined with its psychometric characteristics, makes COPE one of the most commonly used coping assessment instrument.

1.3.2. Coping and alexithymia

Regarding the relations between coping and alexithymia, the data are consistent concerning avoidant behavior (consistently reported positive correlation) and problem-focused coping (consistently reported negative correlation) (see Zorroza Ruesta et al., 1998; Parker et al., 1998). The results regarding emotion-focused coping are not so consistent – some authors report a positive correlation (Parker et al., 1998), others find no correlation at all (Zorroza Ruesta et al., 1998), and still others find a negative one (Gießelmann, 2019). Taking into account the fact that alexithymia presents a difficulty precisely in the cognitive-affective domain, in order to draw a conclusion, a more detailed analysis is needed that examines both constructs at a subscale level.

The data are also interesting regarding the "usefulness" of alexithymia in coping with significant stressors. Despite the common perception that it is a risk factor and associated with "ineffective" coping, alexithymia appears to facilitate coping with a significant stressor such as undergoing an in vitro procedure. This medical intervention requires mechanical following of strict stages. An externally oriented, step-by-step process may be appropriate for women high in alexithymia, who generally use a concrete thinking style and rather prefer to cope through

[9] In dispositional coping, three factors are extracted as follows:

Problem-Focused Coping – Active coping, Planning, Suppression of competing activities, Restraint, Seeking instrumental social support;

Emotion-Focused Coping – Seeking emotional social support, Positive reinterpretation, Acceptance, Denial, Turning to religion;

Less useful coping – Focusing on and venting emotions, Behavioral disengagement, Mental disengagement.

[10] In situational coping, four factors are extracted as follows:

I – Active coping, Planning, Suppression of competing activities;

II – Seeking social support (both scales), Focusing on and venting emotions;

III – Acceptance, Restraint, Positive reinterpretation;

IV – Denial, Disengagement (both scales), Turning to religion.

pragmatic, planned, and clearly structured procedures (Kakatsaki et al., 2009). It is precisely because of the variety of stressors, environmental factors, personal and emotional determinants that it is challenging to draw a clear dividing line between a "helpful" and "unhelpful" personality trait. The subject is even more complex when dealing with a life-threatening stressor.

1.3.3. Alexithymia and coping with a life-threatening stressor

Before going into detail on the subject, it is necessary to clarify that "life-threatening situation" is a broad and complex construct that should be understood as something "likely to cause death" (see Cambridge Dictionaries, n.d. and Oxford, n.d.). Through numerous studies and collected statistics, it has been found which are the most common threats to people's lives worldwide, namely: Life-threatening diseases (WHO, 2020); Natural hazards and disasters (UNOCHA, 2023); Violent conflicts (UN, n.d.); Accidents and incidents (CDCP, 2023); Physical and sexual assault (WHO, 2021; UN, 2019). Despite their heterogeneous nature, all these events share a fundamental similarity – they place the person in a situation of actual threat to their physical survival. Not coincidentally, these events also form the basis of the most widely used psychometric instruments for the assessment of traumatic experiences and the PTSD diagnostics (see, e.g., Foa et al., 2013). For the purposes of this paper, it is important to clarify that the construct "life-threatening situation" here refers to the respondent's perception of what happened, and not to the objective medical condition or factual circumstances. Individual perception (i.e., stressor appraisal) has been found to be a key factor in understanding coping as a process. However, when studying life-threatening events, this key factor is often missed, possibly because the phrase "life-threatening" disease/accident/etc. contains a guideline as to what the appraisal of the event should be, namely, "threat to life".

Although life-threatening situations pose a threat to physical survival, it is limiting and not reasoned to assume that the cognitive assessment of any person faced with such a situation would be: "threat". It has been found that when facing a highly intense stressor, the appraisal "challenge" can facilitate positive personal development and growth (Lazarus & Folkman, 1984). Therefore, the "challenge" appraisal is good to be included in the study design, even when the life-threatening event is characterized by a high degree of violence and trauma. However, such studies are almost lacking. Those that cover both aspects – stressor appraisal and coping – are also rare. Research conducted so far has focused on life-threatening diseases

(e.g., lung cancer – Poręba-Chabros et al., 2022; HIV – Meade et al., 2010). The data they reported were consistent: a threat appraisal led to poor health outcomes, psychological distress, and lower quality of life, while a challenge appraisal was associated with a positive health impact (Alhurani et al., 2018; Meade et al., 2010). Regarding coping, problem-oriented strategies were associated with lower levels of helplessness and depression, while emotion-oriented ones – with helplessness, hopelessness, and anxiety (Poręba-Chabros et al., 2022). However, it is not known to what extent these results can be applied to other types of life-threatening situations, beyond the scope of adverse medical diagnoses. Research on another type of life-threatening event – road traffic accidents – reported that perceived threat was a more significant predictor than severity of physical injury in diagnosing and predicting PTSD, while coping was unrelated to PTSD symptoms (Hyun & Bae, 2017). However, this study did not consider the challenge appraisal in its design.

Another limitation in the scientific literature is that research conducted to date on coping with a high-risk stressor is based on categorization lying on coping with everyday stressors. There is evidence that this is an ineffective approach. A study conducted with traffic accident victims, for example, reported that the effect of problem-focused category on the coping process was minimal, so the authors suggested that the effectiveness and role of this category in a traumatic situation should be reconsidered (Hyun & Bae, 2017). Similar were the results of a study conducted in Bulgaria with a sample of persons evaluating their environment and work as high-risk. It was found that active strategies oriented towards planned and well-thought-out problem solving were not significant mediators in the process of coping and the feeling of well-being (Zarbova, 2019). The cited data point to the need to revise the coping categorization and the influence of each coping category when studying coping in high-risk contexts.

With regard to alexithymia, it appears that research studying its relations with coping in life-threatening situations has focused on clinical diagnoses (e.g., cancer – Carver & Scheier, 1994). This does not allow to draw conclusions about the influence of alexithymia on coping with other high-risk situations. According to the transactional model of stress and coping, it is not the situation itself but the appraisal of it that is relevant to the coping process. However, there is insufficient research to confirm or reject this assumption about the relation: high-risk situation – stressor appraisal – coping in individuals high in alexithymia.

In summary, there are theoretical grounds for considering elevated alexithymia as part of the personality profile of persons choosing life-threatening professions in the special force units of the Ministry of Interior and Ministry of Defense (see section 1.2.). Typically, the training of special force operators in coping with high-risk stressors involves the use of problem-focused coping strategies, suggesting that despite their (hypothesized) elevated alexithymia, these individuals would not use less problem-focused coping nor more avoidant coping compared to control group individuals (i.e., individuals with (hypothesized) lower alexithymia who have not been trained to deal with high-risk, life-threatening stressors). The presented above subjects to discussion two widely accepted assumptions, namely: 1) that elevated alexithymia is among the "undesirable" personality traits (if it favors the choice of professions with high social significance, then a revision of the scientific understanding of the construct is necessary) and 2) that it is unambiguously linked to maladaptive coping (increased alexithymia – via EOT – would probably favor the effective application of coping techniques in which these professionals were trained, instead of focusing on affective experiences that in a high-risk situation may prove to be survival-threatening). At the same time, however, it is good not to miss the risk that elevated alexithymia may represent for mental and somatic health, which is why (in case the above is confirmed) it would be necessary to develop specialized psychological care program aimed at this specific group of professionals, taking into account both the specifics of their personality profile (including the personality trait "Alexithymia", which could be seen as a challenge for therapy) and the specifics of the units in which these persons work. In addition, results obtained from research with such a focus would be valuable for counseling practice with civilians as well, as it would help to better understand the overall framework of the coping process with a life-threatening stressor, as well as the place of alexithymia in this process.

CHAPTER II. DESIGN, METHOD AND RESULTS

2.1. Aims and objectives

- To study topics that haven`t been researched until now, namely:
    - The relations between alexithymia and choice of profession with a high degree of risk for one's own life and high social significance (special force operators in MoI and MoD);
    - The relations between the constructs "Alexithymia" and "Situational coping with a life-threatening stressor" in a control sample and in a sample of special forces operators in MoI and MoD;
- To enrich the assessment instruments available for studying the constructs of interest here, namely:
    - To translate and adapt the Perth Alexithymia Questionnaire (PAQ) into Bulgarian, which will allow researchers and practitioners in our country to have a second assessment instrument for researching alexithymia;
    - To adapt an assessment instrument specifically aimed at researching coping with a life-threatening stressor (and specifically the COPE Inventory);
- Enrich counseling practice by:
    - Suggesting a counseling framework specifically targeting alexithymia and tailored to the valence of affect, laying out specific guidelines for diagnostics as a key first step in the counseling process;
    - Suggesting a comprehensive framework for counseling individuals (including those high in alexithymia) facing a life-threatening stressor, covering simultaneously the three key constructs: stressor (different life-threatening situations), stressor appraisal (including "challenge"), and coping used (using an instrument adapted for the context), studying how the interaction between these three components affects mental health. In doing so, empirically based suggestions will be provided as to which factors in the process of coping with such stressors are common to most life-threatening situations and therefore key to the overall process.

- Suggesting a conceptual framework for psychological care, aimed specifically at persons practicing professions that possess an immediate threat to one own`s life in the special force units of MoI and MoD (in case elevated alexithymia is confirmed).

2.2. Design

- Given the complex objectives of the present paper, it requires a wide-ranging assessment battery that would allow the adaptation of the two instruments, as well as the formulation of empirically based proposals for counseling approaches. In order to avoid artefacts caused by respondent fatigue or the questionnaires sequence, they were randomly distributed, therefore a different number of respondents completed each of the instruments. For the purposes of the study, it is planned in two stages (pilot and main study), each with substages as follows:

Pilot study – conducted only in a control group and aims to:

- Substage I and II – Psychometric testing (exploratory factor analysis, reliability, validity analyses) of the PAQ translated version and of the COPE with modified instruction, respectively, as well as studying their relations with constructs (see footnote 12) whose significance for mental and somatic health has already been found. As a result of these substages, corrections will be made if necessary before submitting the questionnaires for the main study;
- Substage III – A psychometric study of the relations between alexithymia (as assessed through PAQ and TAS-20[11]) and situational coping with a life-threatening stressor (assessed through COPE with modified instruction).

Main Study – conducted in control and experimental groups:

- Substage I and II – Studying the psychometric properties of PAQ and the modified-instruction COPE through confirmatory factor analyses and their relations with constructs (see footnote 12) whose relevance to mental and somatic health has already been reported;
- Substage III – Studying the relations between alexithymia (assessed through PAQ and TAS-20) and situational coping with a life-threatening stressor (assessed through COPE with modified instruction) comparing control and experimental groups.

[11] As one of the aims of this paper is to formulate a framework for psychological interventions specifically targeting alexithymia, it is advisable the same to rely on empirical data from more than one alexithymia assessment instrument. Therefore it was decided to analyze the psychometric properties of the two alexithymia assessment tools available in our country.

It was decided to organize the empirical research in the way described above in order for the assessment instruments adaptation to go through the necessary psychometric procedures in different samples, studying the relations with diverse constructs[12]. Thus, the empirical research provides comprehensive results on which to base the proposals for building counseling approaches (see Chapter III).

2.3. Materials

- Perth Alexithymia Questionnaire – PAQ (Preece et al. 2018)[13] – 24 items, 7-point Likert scale.
- Toronto Alexithymia Scale – TAS-20 (Bagby, Parker, & Taylor, 1994; Bagby, Taylor, & Parker, 1994)[14] – 20 items, 5-point Likert scale. The adaptation in Bulgarian is by Popov et al. (2016).
- Coping Orientation of Problem Experience – COPE (Carver et al., 1989) – 53 items, 4-point Likert scale. The adaptation in Bulgarian by Kamelia Hancheva (2013) was used. For the purposes of this paper, the questionnaire instruction was modified, requiring from the respondents to recall a situation (*actually experienced*) of immediate risk to one's own life and fill the questionnaire thinking about it[15].
- Stressor Appraisal: "Challenge" / "Threat"[16] – one dichotomous response item. After completing the COPE, respondents answer how they appraised the event at the time it occurred, choosing between: "Challenge" ("I was confident, hopeful, and ready") and "Threat" ("I was worried, scared, and anxious") . The selection and description of appraisals is based on the work of Carver and Scheier (1994) and Tomaka et al. (1997).
- Stressor[17] – Participants indicated the nature of the event they were thinking about while completing the COPE. The categories and their descriptions are given as options based on the work of Foa et al. (2013).

[12] Their selection is based on the theoretical overview and the most frequently reported relations relevant to mental and somatic health (for a detailed discussion, see Chapter I here, as well as the dissertation full version).
[13] Used in both the pilot and main study.
[14] Used in both the pilot and main study.
[15] Used in both the pilot and main study.
[16] Used in the main study.
[17] Used in the main study.

- Patient Health Questionnaire – PHQ-9 (Kroenke et al., 2001)[18] – 9 items, 4-point Likert scale. Extracts: no depression / mild / moderate / moderately severe / severe depression categories. The Bulgarian version is available through https://www.phqscreeners.com/.
- Satisfaction with Life – SWL-3 (Kjell & Diener, 2021)[19] – 3 items, 7-point Likert scale. Assesses satisfaction with life in general, not domain specific. The Bulgarian version is available through https://eddiener.com/scales/7.
- The Personality Inventory for DSM-5 – PID-5, Adult (Krueger et al., 2012)[20] – 220 items, 4-point Likert scale. The Bulgarian adaptation is by Kamelia Hancheva (in press). Only the subscales measuring Anhedonia and Anxiousness were used in this paper.
- The Personality Inventory for DSM-5 Brief form – PID-5-BF (Krueger et al., 2013)[21] – 25 items, 4-point Likert scale. Extracts: "Negative Affect", "Detachment", "Antagonism", "Disinhibition", "Psychoticism". It was adapted into Bulgarian by Kamelia Hancheva (manuscript in preparation).
- The Basic Empathy Scale in adults – BES-A (Carré et al., 2013)[22] – 20 items, 4-point Likert scale. Extracts: "Emotional Contagion", "Cognitive Empathy", "Emotional Disconnection". The instrument was adapted into Bulgarian by Kamelia Hancheva (manuscript in preparation).
- Socio-demographic survey[23]

2.4. Hypotheses

1. The theoretically assumed factor structure of the PAQ, as well as its reliability and validity will be confirmed for the Bulgarian translation of the instrument[24].

1.1. A weaker positive correlation will be found between PAQ and the constructs: "Negative Affect", "Anhedonia", "Anxiousness" and "Depression", and a weaker negative correlation with "Life Satisfaction" compared to TAS- 20[25];

[18] Used in the main study.
[19] Used in the main study.
[20] Used in the main study.
[21] Used in the pilot study.
[22] Used in the pilot study.
[23] Used in both the pilot and main study.
[24] Based on the body of research confirming robust psychometric properties across different linguistic and cultural communities (e.g., Bilge & Bilge, 2020; Becerra et al., 2021).
[25] Based on previous research (e.g., Rosenberg et al., 2016).

1.2. A stronger positive correlation will be found between TAS-20 subscales and their corresponding from PAQ, measuring affect with negative valence[26];

1.3. Affect valence in alexithymia will be a predictor of anhedonia, depression, and life satisfaction, with difficulties processing positive affect having a higher predictive value than difficulties with negative affect[27].

2. The adapted version of COPE for assessing situational coping with a life-threatening stressor will demonstrate good psychometric properties (reliability and validity), providing a factor structure different from the one extracted when studying everyday stress. Analyses conducted with this version of the COPE will highlight the importance of the stressor appraisal, and in particular the "Challenge", in coping with such stressors:

2.1. Exploratory and Confirmatory factor analyses will confirm a new factor structure for the COPE with modified instruction[28]. Its reliability and validity will be confirmed;

2.2. Not the type of life-threatening stressor but the appraisal of it will be relevant to coping choices in a life-threatening context[29], being the Challenge appraisal associated with less avoidant and more problem-focused coping; higher life satisfaction and lower depression[30].

3. Differences in levels of alexithymia and coping choices will be found between control and experimental groups:

3.1. Special forces operators in the MoD (EG_{MoD}) and the MoI (EG_{MoI}) will have higher alexithymia compared to the control group (CG)[31], but without reaching clinical values (of one or more standard deviations above the mean), i.e., experimental groups will be at the upper end of the mean for the control group[32];

[26] Based on previous research (e.g., Preece, Becerra, Allan et al., 2020).
[27] Based on previous research (e.g., Bernard, 2014).
[28] Based on previous research (e.g., Hyun & Bae, 2017; Zarbova, 2019).
[29] Based on transactional model of stress and coping.
[30] Based on evidence of the beneficial effect of challenge appraisal on health (e.g., Meade et al., 2010), suggesting that it is associated with more "adaptive" coping and less use of strategies within "less useful coping" (respectively – problem-focused and avoidant coping).
[31] Based on section 1.2.
[32] Based on the theoretical review according to which high alexithymia (i.e., one or more standard deviations above the mean) is statistically significantly associated with clinical (somatic and psychiatric) diagnoses (for detailed discussion, see section 1.1. in the dissertation full text version). Given the strict and regular medical examinations these employees undergo, it is unlikely that such clinical symptoms would be present (it is important to emphasize again that this paper focuses on alexithymia as a personality trait in a sample of clinically healthy and currently serving special forces operators).

3.2. Special force operators in the MoD will have higher levels of alexithymia compared to special force operators in the MoI[33];

3.3. Individuals in the EG, despite their higher alexithymia than those in CG, would not use more avoidant or less problem-focused coping with a life-threatening stressor compared to CG[34].

2.5. Procedure

Participants (N=1456, 230 of whom in the pilot study[35]) were informed about the aims and duration of the study. Given the need to recall a situation in which one's own life was at immediate risk, to respondents was explained that they could terminate their participation at any time. Channels of psychological, emotional, and medical support in case the recall of this experience provokes emotionally intense reactions were also provided to the respondents. They gave their informed consent to participate anonymously, voluntarily and without financial remuneration. The study was approved by the ethics committee at the Sofia University "St. Kliment Ohridski" (№ 95-T-5/01.02.2022).

The data were collected online (via Google Forms) and on paper, according to the respondents` preferences. Statistical packages PSPP (version 1.4.1) and JASP (version 0.16.1.0.) were used for data processing.

2.6. Pilot study: Results

Sample

Table 1. Socio-demographic characteristics of the sample

Sex	Male – 93 (40.4%)	Female – 137 (59.6%)	
Age	18-28 years – 74 (32.2%)	29-39 years – 83 (36.1%)	40-50 years – 49 (21.3%)
	51-60 years – 17 (7.4%)	Above 60 years – 7 (3.0%)	
Education	Primary – 3 (1.3%)	Secondary – 59 (25.8%)	Higher – 167 (72.9%)
Marital status	Married / In cohabitation – 111 (48.3%)		Widower/Widow – 1 (0.4%)
	Not Married / Not in cohabitation – 102 (44.3%)		Divorced – 16 (7.0%)

[33] Based on section 1.2. and the fact that individuals in EG_{MoD} are professionally engaged in activities that on a daily basis imply a higher immediate risk to survival than individuals in EG_{MoI}. The same is valid including in trainings, when each diving and each parachute jump implies a higher degree of immediate risk to life compared to the training activities of operators in the EG_{MoI}.

[34] Basen on section 1.3., p.17.

[35] This is the total number of respondents, after excluding inconsistently completed protocols (18 in total). Consistency was checked as, after correlation analyses (Pearson's r), the difference (in absolute values) in responses to each pair of items was calculated. All differences between 0-1 were recoded to 0 and the rest to 1, i.e., a difference of one degree was accepted as consistent responding.

Employment status	Employed – 183 (79.6%) Unemployed – 43 (18.7%) Retired – 4 (1.7%)
Employment – current position	Manager/Head of department – 37 (16.3%) Subordinate – 141 (62.1%)

2.6.1. Substage I – Pilot testing of the PAQ translated version

The language adaptation procedure was followed. Five forward and one backward translations were made. The latter was provided to the PAQ lead author, D. Preece, for a feedback. After one was received, final edits were made to the Bulgarian language version.

Factor structure of the alexithymia questionnaires in the present sample – Exploratory factor analyses were conducted (Estimation method: Maximum likelihood; Parallel analysis based on FA; Promax rotation; PAQ: KMO = 0.930, Bartlett`s test $p<0.001$; TAS-20: KMO = 0.847, Bartlett`s test $p<0.001$). The percentage of variance explained after rotation is as follows: PAQ: 59.2% (P-DAF – 22.8%, N-DAF – 18.8%, G-EOT – 17.6%); TAS-20: 39.2% (DIF – 16.5%, DDF – 14.9%, EOT – 7.8%). The PAQ factor structure highlights the importance of the valence in the assessment of alexithymia. The resulting three-factor structure of the TAS-20 corresponds to the theoretical formulation in the original version of the instrument and confirms the applicability of the Bulgarian adaptation made by Popov et al. (2016). The two-factor structure they reported could be explained by specifics of the sample in their study.

Reliability analyses of the instruments used in this substage – there is good or very good reliability (Cronbach's α), as presented in the Table 2.

Table 2. Internal consistency (Cronbach's α)

PAQ	Difficulty identifying negative feelings (N-DIF)	0.854
	Difficulty identifying positive feelings (P-DIF)	0.888
	Difficulty describing negative feelings (N-DDF)	0.874
	Difficulty describing positive feelings (P-DDF)	0.884
	Externally oriented thinking (G-EOT)	0.831
	Difficulty appraising negative feelings (N-DAF)	0.919
	Difficulty appraising positive feelings (P-DAF)	0.937
	General difficulty identifying feelings (G-DIF)	0.911
	General difficulty describing feelings (G-DDF)	0.920
	General difficulty appraising feelings (G-DAF)	0.945
	Total alexithymia scale score	0.943
TAS-20	Difficulty identifying feelings (DIF)	0.862
	Difficulty describing feelings (DDF)	0.799
	Externally oriented thinking (EOT)	0.608
	Total alexithymia scale score	0.849
BES-A	Emotional contagion	0.698
	Cognitive empathy	0.748
	Emotional disconnection	0.699

PID-5-BF	Negative affect	0.809
	Detachment	0.710
	Antagonism	0.641
	Disinhibition	0.782
	Psychoticism	0.753

Correlation analyses – those conducted between TAS-20 and PAQ confirmed the relations reported in other samples (e.g., Preece, Becerra, Allan et al., 2020): the correlation is stronger between TAS-20 subscales and their corresponding in PAQ, assessing negative valence (e.g., N-DIF_PAQ – DIF_TAS-20: r=0.80, p<.001; P-DIF_PAQ – DIF_TAS-20: r=0.62, p<.001). As for the EOT and G-EOT, the correlation values (r=0.37, p<.001) confirmed PAQ and TAS-20 authors different approach when studying the externally oriented thinking. The correlation between the total scale score of the two instruments confirms the good convergent validity (r=0.75, p<.001). Regarding the correlations between alexithymia and personality and emotional characteristics, the data previously reported in scientific literature were confirmed: positive correlations between alexithymia (assessed through both the TAS-20 and the PAQ) and personality and emotional characteristics commonly perceived as "less desirable" (e.g., Negative Affect – PAQ: r=0.39, p<.001; TAS-20: r=0.46, p<.001), and negative correlations with characteristics commonly seen as "desirable" (e.g., Cognitive Empathy – PAQ: r=-0.40, p<.001; TAS-20: r=-0.42, p<.001).

Relations between alexithymia (assessed through the TAS-20 and the PAQ) and socio-demographic indicators – No statistically significant differences were found in terms of age, employment status and current position. However, males were found to have higher alexithymia according to PAQ ($t(208) = 1.99$, $p = 0.048$, $d = 0.28$). Accoring to both instruments, a higher value was found in men on the externally oriented thinking (for PAQ: $t(210) = 4.08$, $p < .001$, $d = 0.57$; for TAS-20: $t(209) = 4.73$, $p < .001$, $d = 0.66$). It was also found that individuals with up to secondary education have higher alexithymia compared to those with higher education (for TAS-20: $t(204) = 2.58$, $p = 0.01$, $d = 0.41$; for PAQ: $t(207) = 2.37$, $p = 0.02$, $d = 0.37$).

2.6.2. Substage II – Pilot testing of the COPE adapted version[36]

Sample (N=134) **–** from all those who participated in the pilot study, the persons who were or are part of the MoI and/or MoD (as well as those who did not answer this question from the

[36] Substage II of the pilot study was conducted together with Assoc. Prof. Kamelia Hancheva, PhD.

socio-demographic survey) were excluded, since the work in these systems implies trainings for coping in high-risk situations, which could be an artifact in the current design.

Factor analyses of the modifed version of COPE to study situational coping with a life-threatening stressor – An exploratory factor analysis was conducted (PCA, Varimax rotation, KMO = 0.767, Bartlett's test $p<0.001$) for 4 factors (according to the original factor solution in situational coping, see footnote 10). In the present sample, the 4-factor solution was problematic due to the split of four of the theoretically defined subscales.

An exploratory factor analysis was conducted with 3 factors set (according to the original structure in dispositional coping, see footnote 9), the percentage of explained variance after rotation was 38.07% (factor 1 – 15.23%, factor 2 – 13.61%, factor 3 – 9.23%). In the three-factor solution, three of the items did not fall into their theoretically assumed subscales. After a content analysis and considering the possibility that the split is due to specifics of the sample and not to the construct per se, it was decided to keep the items in their theoretically set subscales (see Table 3).

Table 3. COPE with modified instruction: Factor structure

Factor 1	**Factor 2**	**Factor 3**
Active coping	Seeking of instrumental social support	Acceptance
Planning	Seeking of emotional social support	Denial
Suppression of competing activities	Focus on and venting of emotions	Behavioral disengagement
Restraint coping		Mental disengagement
Positive reinterpretation		Turning to religion

Given the content of the factors, it was decided to name them as follows: Factor 1: "Problem-focused coping"; Factor 2: "Active emotional coping" and Factor 3: "Avoidant emotional coping".

Reliability analyses of the psychometric instruments used at this substage – there is good or very good reliability (Table 4).

Table 4. Internal consistency (Cronbach's α)

COPE	Problem-focused coping	0.857
	Active emotional coping	0.911
	Avoidant emotional coping	0.777
BES-A	Emotional contagion	0.698
	Cognitive empathy	0.748

	Emotional disconnection	0.699
PID-5-BF	Negative affect	0.809
	Detachment	0.710
	Antagonism	0.641
	Disinhibition	0.782
	Psychoticism	0.753

Correlation analyses – Data confirmed the relations between more "desirable" personality and emotional characteristics with perceived as "more helpful" coping styles (e.g., Cognitive Empathy – Problem-focused coping: r=0.27, p<.01; Negative affect – Problem-focused coping: r=-0.25, p<.01) and also between the "less desirable" personality and emotional characteristics with the "less helpful" coping (Negative affect – Avoidant emotional coping: r=0.27, p<.01).

Analyses of the relations between coping and sociodemographics – No statistically significant differences were found regarding gender, age, marital status and employment. As far as education, a difference was found only in Avoidant emotional coping. People with primary and secondary education (mean rank 52.64) less often resort to this coping in a situation directly threatening their own life and health, compared to people with higher education (mean rank 70.43) (U=1229, p=0.016, r=0.21, small effect size).

2.6.3. Substage III – Studying the relations between alexithymia (assessed through the PAQ and the TAS-20) and coping in a life-threatening situation (assessed through the adapted version of the COPE) in a control group

Correlation analyses – A positive correlation was found between Alexithymia and Avoidant emotional coping (PAQ: r=0.25, p<.001; TAS-20: r=0.26, p<.001) and a negative correlation with Problem-focused coping (PAQ: r=-0.21, p<.01; TAS-20: r=-0.31, p<.01). Active emotional coping correlated negatively with the PAQ (r=-0.18, p<.05) and was unrelated to the TAS-20.

To further explore, independent samples T-tests were conducted comparing individuals high (minimum +1SD) and those low (minimum -1SD) in alexithymia as assessed through both the TAS-20 (M=44.35, SD=9.73) and the PAQ (M=60.06, SD=23.55). Only statistically significant results when assessed through both alexithymia assessment tools were analyzed. There was a statistically significant difference between people high and low in alexithymia in only 5 of the 13 strategies. Compared to people low in alexithymia, those high in it used less often the strategies: "Active coping" (PAQ: t(66)=3.42, p=0.001, d=0.83; TAS-20: t(64)=4.45,

p<0.001, d=1.11); "Planning" (PAQ: t(67)=2.39, p=0.020, d=0.58; TAS-20: t(64)=3.21, p=0.002, d=0.80); "Positive Reframing" (PAQ: t(66)=3.42, p=0.001, d=0.83; TAS-20: t(64)=3.97, p<0.001, d=0.98); and more frequently "Behavioral Disengagement" (PAQ: t(54)=4.42, p<0.001, d=1.06; TAS-20: t(38)=3.67, p=0.001, d=0.98) and "Denial" (PAQ: t(53)=4.26, p<0.001, d=1.02; TAS-20: t(39)=3.03, p=0.004, d=0.81).

Linear regression analyses showed that alexithymia (as a total scale score) could not statistically significantly predict the strategies: "Restraint"; "Acceptance"; "Turning to religion" and "Focus on and venting of emotions" in a life-threatening context. The weakest prognostic value was found in relation to: "Suppression of competing activities" (only when assessed through TAS-20 (F(1,204)=5.160, p=0.024, adjusted R^2=0.020); "Seeking instrumental social support" (only when assessed through PAQ (F(1,208)=5.400, p=0.021, adjusted R^2=0.021) and "Mental disengagement" (TAS-20 (F(1,205)=3.886, p=0.05, adjusted R^2=0.014), PAQ (F(1,208)=6.117, p=0.014, adjusted R^2=0.024). The greatest prognostic value was found in relation to "Active Coping" (PAQ (F(1,205)=9.346, p=0.003, adjusted R^2=0.039, TAS-20 (F(1,203)=21.248, p<0.001, adjusted R^2=0.090) and "Denial" (PAQ(F (1,208)=21.686, p<0.001, adjusted R^2=0.090), TAS-20 (F(1,204)=18.484, p<0.001, adjusted R^2=0.079). The effect size was small (Cohen, 1988).

Regarding sociodemographics, education was the only one to have statistically significant relations with both alexithymia and coping. People with higher education had lower alexithymia (PAQ: t(207)=2.37, p=0.02, d=0.37; TAS-20: t(204)=2.58, p=0.01, d=0.41), but at the same time were more likely to resort to the "less helpful" coping strategies than those with up to secondary education (t(208)= 3.39, p<0.01, d=0.53).

2.7. Main study: Results

2.7.1. Substage I – PAQ – Confirmatory factor analysis and psychometric properties of the Bulgarian language adaptation

Sample

Table 5. Socio-demographic characteristics of the sample

Sex	Male – 147 (40.8%)	Female – 211 (58.6%)	Not stated – 2 (0.6%)
Age	18-28 years – 61 (16.9%) 40-50 years – 111 (30.8%)	29-39 years – 139 (38.6%) 51-60 years – 34 (9.4%)	Above 60 years – 9 (2.5%) Not stated – 6 (1.7%)
Education	Primary – 4 (1.1%)	Secondary – 114 (31.7%)	Higher – 239 (66.4%) Not stated – 3 (0.8%)

Marital status	Married/In cohabitation – 223 (61.9%) Not married/ Not in cohabitation – 92 (25.6%) Divorced – 34 (9.4%) Widower/Widow – 5 (1.4%) Not stated – 6 (1.7%)
Employment	Manager/Head of department – 56 (15.6%) Subordinate – 244 (67.8%) Of working age but unemployed – 30 (8.3%) Retired – 6 (1.7%) Not stated – 24 (6.7%)

Confirmatory factor analyzes – Confirmatory factor analyses were conducted to examine the factor structures of the two alexithymia assessment instruments[37]. The goodness of fit indices used here are: CFI, TLI, RMSEA and SRMR, being CFI and TLI around ≥ 0.90, RMSEA and SRMR around ≤ 0.08 accepted as satisfactory.

Table 6. PAQ – Goodness-of-fit indices (N=233)

Model	X^2/df	CFI	TLI	RMSEA	SRMR
1-factor solution	999.380/252	0.740	0.716	0.116	0.084
2-factor solution: GDAF – GEOT	769.526/251	0.820	0.802	0.097	0.065
3-factor solution (no valence): GDIF – GDDF – GEOT	667.035/249	0.855	0.839	0.087	0.062
3-factor solution (with valence): NDAF – PDAF – GEOT	726.616/249	0.834	0.816	0.093	0.064
5-factor solution: NDIF – PDIF – NDDF – PDDF – GEOT	540.522/230	0.892	0.870	0.078	0.053

As presented in Table 6, the 5-factor solution for the PAQ has the best psychometric properties compared to the other 4 models, reflecting the theoretically assumed factor structure of the questionnaire.

Table 7. TAS-20 – Goodness-of-fit indices (N=280)

Model	X^2/df	CFI	TLI	RMSEA	SRMR
1-factor solution	601.587/170	0.698	0.663	0.102	0.101
2-factor solution: DIF&DDF – EOT	404.907/169	0.835	0.815	0.075	0.078
3-factor solution: DIF – DDF – EOT	387.026/167	0.846	0.825	0.073	0.075

As presented in Table 7, the 3-factor solution for the TAS-20 has the best psychometric characteristics compared to the other 2 models, reflecting the theoretically assumed factor structure of the questionnaire. Although the TLI index does not reach the value of ≥ 0.90, the obtained (0.83) is close to the desired one, which, combined with the values of the other indices,

[37] Although the main focus of this substage is adapting the Bulgarian version of the PAQ, it was decided to study the psychometric properties of the TAS-20 as well, as one of the aims of this paper is to propose a counseling framework specifically targeting alexithymia. To this end, it is advisable to rely on comprehensive empirical data from more than one assessment tool, so that diagnostic recommendations (see section 3.1.) are not limited to one specific instrument, and also that the guidance provided is thoroughly empirically reasoned.

allows the conclusion that the 3-factor model is the best solution from empirical and theoretical points of view in the present sample.

Reliability analyses of the instruments used in this substage – Good or very good reliability is present. For the PAQ, it was also confirmed by test-retest analysis (with an interval of 3 months) (Table 8).

Table 8. Internal consistency (Cronbach's α) for all instruments used in this substage and test–retest data for PAQ

Scales and subscales		Cronbach's α	Test-Retest
PAQ	Difficulty identifying negative feelings (N-DIF)	0.797	0.971***
	Difficulty identifying positive feelings (P-DIF)	0.844	0.977***
	Difficulty describing negative feelings (N-DDF)	0.791	0.972***
	Difficulty describing positive feelings (P-DDF)	0.826	0.983***
	Externally oriented thinking (G-EOT)	0.804	0.974***
	Difficulty appraising negative feelings (N-DAF)	0.892	0.983***
	Difficulty appraising positive feelings (P-DAF)	0.887	0.980***
	General difficulty identifying feelings (G-DIF)	0.875	0.980***
	General difficulty describing feelings (G-DDF)	0.889	0.981***
	General difficulty appraising feelings (G-DAF)	0.932	0.983***
	Total alexithymia scale score	0.928	0.979***
TAS-20	Difficulty identifying feelings (DIF)	0.824	
	Difficulty describing feelings (DDF)	0.758	
	Externally oriented thinking (EOT)	0.651	
	Total alexithymia scale score	0.799	
PID-5	Anhedonia	0.894	
	Anxiousness	0.913	
	PHQ-9 – Depression	0.867	
	SWL-3 – Satisfaction with life	0.765	

* p<0.05, ** p<0.01, *** p<0.001

Special attention should be paid to the Cronbach's α values of the TAS-20 total scale score – it reaches 0.8, which is an acceptable value for research and screening purposes, but not satisfactory for clinical diagnostics (Groth-Marnat, 2009). As far as the PAQ, its total scale score Cronbach's α exceeds 0.9, which is an advantage over the TAS-20 and suggests that the PAQ is probably the more appropriate psychometric instrument for diagnostics and clinical purposes.

Correlation analyses – Data confirm the validity of the PAQ and TAS-20. Stronger correlations were found between TAS-20 subscales and their corresponding PAQ subscales assessing negative affective valence (e.g., TAS-20_DIF – PAQ_NDIF: r=0.55, p<.001; TAS-20_DIF – PAQ_PDIF: r=0.46 , p<.001). The different approach in assessing externally oriented thinking was confirmed (TAS-20_EOT – PAQ_GEOT: r=0.44, p<.001), along with the

convergent validity (TAS-20_total scale score – PAQ_total scale score: r=0.67, p<.001). These data are consistent with those obtained in the pilot study.

Specific relations were found between alexithymia and the constructs: "Anhedonia", "Anxoiusness", "Depression" and "Satisfaction with life", depending on which alexithymia assessment instrument was used (Table 9).

Table 9. Correlation analysis: PAQ/TAS-20 Alexithymia (factor level), Anhedonia, Anxoiusness, Depression, and Life Satisfaction

	Anhedonia	Anxiousness	Depression	Life Satisfaction
PAQ	0.378***	0.289***	0.389***	-0.070
TAS-20	0.430***	0.509***	0.457***	-0.312***

* p<0.05, ** p<0.01, *** p<0.001

There were weaker positive correlations between the PAQ and Anhedonia, Anxiousness, and Depression compared to the TAS-20. There was no correlation between the PAQ and Life satisfaction, in contrast to the TAS-20, where a negative correlation was found. The tendency of TAS-20 to assess negative affect and distress, also reported by other authors (e.g., Rosenberg et al., 2016), could explain the difference between TAS-20 and PAQ in terms of their relations with life satisfaction.

Relations between the studied constructs and sociodemographics – Consistent with the results of the pilot study, sex differences on the EOT subscale were also found in this sample EOT (TAS-20_EOT: Male (M=20.37; SD=4.26), Female (M=17.32; SD=3.57): t(278)=6.51, p<0.001, Cohen`s d=0.784; PAQ_GEOT: Male (M=25.25; SD=8.12), Female (M=21.75; SD=8.48): t(227)=3.19, p=0.002, Cohen`s d=0.422), as well as in terms of total scale score – as in the pilot study, again only according to the PAQ (PAQ_total scale score: Male (M=67.20; SD=23.38), Female (M=60.67; SD=21.23): t(218)=2.17, p=0.031, Cohen`s d=0.292). Regarding the age, a difference was found between individuals under 40 and above 40 years old on the EOT subscale of the TAS-20, but not on the PAQ, suggesting that the data should be interpreted with caution given the psychometric specificities of TAS-20 EOT subscale (TAS-20_EOT: up to 40- (M=18.11; SD=4.24), above 40-years-old (M=19.28; SD=3.96): t(274)=2.33, p=0.021, Cohen`s d=0.284). As far as education – people with higher education had lower alexithymia (TAS-20_total scale score: up to secondary (M=45.97; SD=8.83), higher (M=42.58; SD=8.28): t(274)=3.10, p=0.002, Cohen`s d=0.400; PAQ_total scale score: up to

secondary (M=70.41; SD=24.16), higher (M=60.13; SD=20.60): t(216)=3.34, p=0.001, Cohen`s d=0.467). Regarding marital status, the differences were most evident on the DDF subscales, and as it can be expected, married/in cohabitation had lower values than the not married/not in cohabitation ones (TAS-20_DDF: Married/In cohabitation (M=10.53; SD=3.15), Not married/Not in cohabitation (incl. divorced) (M=11.90; SD=3.70): t(271)=3.24, p=0.001, Cohen`s d=0.408; PAQ_GDDF: Married/In cohabitation (M=20.72; SD=9.09), Not married/Not in cohabitation (incl. divorced) (M=23.95 ; SD=9.76): t(220)=2.45, p=0.015, Cohen's d=0.346)[38].

Linear regression analyses – The data indicated that alexithymia was a predictor of all three studied variables – Anhedonia (PAQ_total scale score: F(1,92)=15.32, p<0.001, R^2_{adj}=0.13, R=0.38; TAS-20_total scale score: F(1,167)=37.85, p<0.001, R^2_{adj}=0.18, R=0.43), Depression (PAQ_total scale score: F(1,92)=16.43, p<0.001, R^2_{adj}=0.14, R=0.39; TAS-20_total scale score: F(1,167)=44.06, p<0.001, R^2_{adj}=0.20, R=0.46), Life satisfaction (TAS-20_total scale score: F(1,167)=17.98, p<0.001, R^2_{adj}=0.09, R=0.31). Regarding affective valence, results indicated that difficulty in appraising negative feelings was a stronger predictor of anhedonia than difficulty in appraising positive feelings (***NDAF***: F(1,92)=10.52, p=0.002, R^2_{adj}=0.09, R=0.32; *PDAF*: F(1,92)=6.31, p=0.014, R^2_{adj}=0.05, R=0.25), while the opposite was true for depression (*NDAF*: F(1,92)=8.98, p=0.004, R^2_{adj}=0.08, R=0.30; ***PDAF***: F(1,92)=12.66, p<0.001, R^2_{adj}=0.11, R=0.35)[39].

2.7.2. Substage II – COPE – Confirmatory factor analysis and psychometric properties of the adapted version for assessing situational coping with a life-threatening stressor

2.7.2.1. Exploratory factor analysis

Sample (N=153) **–** From the initial sample (N=360), people who are (were) part of the MoI and/or MoD (as well as those who did not answer this question from the socio-demographic survey) were excluded. The reasons for this are the same as those set out in 2.6.2.

Reliability analysis of the instruments used in this substage – As presented in Table 10, the instruments used had good or very good reliability: Cronbach's α ranged from 0.6 to 0.9, with values around 0.6 considered acceptable given the small number of items within COPE

[38] The detailed data can be found in Table 24 of the dissertation full text version.
[39] The detailed data can be found in Table 25 of the dissertation full text version.

subscales. Due to the small difference between the values in the second and third columns, it was decided not to change the theoretically determined structure of the subscales. However, special attention is needed regarding "Restraint" subscale, where Cronbach's α value remains below 0.6, even if items are dropped from the subscale. This suggests that additional psychometric procedures and further testing of COPE factor structure is needed, when the instrument is applied to situational coping with a real life-threatening situation.

Table 10. Internal consistency (Cronbach's α) for all instruments used in this substage

Scales and Subscales		Cronbach's α	Cronbach's α if item deleted
COPE	Active coping	0.685	
	Planning	0.803	
	Suppression of competing activities	0.655	0.685 if item 3 deleted
	Restraint	0.428	0.478 if item 1 deleted
	Seeking social instrumental support	0.856	
	Seeking social emotional support	0.902	
	Positive reinterpretation	0.817	0.859 if item 8 deleted
	Acceptance	0.634	0.677 if item 52 deleted
	Turning to religion	0.935	
	Focusing on and venting emotions	0.788	0.804 if item 50 deleted
	Denial	0.685	0.702 if item 42 deleted
	Behavioral disengagement	0.787	
	Mental disengagement	0.571	
	COPE total scale score	0.707	
	PHQ-9 (Depression)	0.853	
	SWL-3 (Satisfaction with life)	0.766	

COPE factor structure analyses – An exploratory factor analysis (Table 11) was conducted (Maximum likelihood; Parallel analysis based on PC; highlight 0.2; Promax rotation, KMO = 0.758, Bartlett's test $p<0.001$). Four factors were extracted, with the percentage of explained variance after rotation as follows: Factor I – 11.7%, Factor II – 11.5%, Factor III – 8.5%, Factor IV – 6.5%, total of 38.2%.

Table 11. Exploratory factor analysis (Parallel analysis)

I	II	III	IV
Active coping Planning Suppression of competing activities Positive reinterpretation *Acceptance* (only items 13 and 52) Restraint (only items 1 and 47)	Seeking social instrumental support Seeking social emotional support Focusing on and venting emotions	Behavioral disengagement Mental disengagement Denial *Acceptance* (only items 20 and 27) *Restraint* (only items 12 and 26)	Turning to religion

Considering the split of two of the theoretically assumed strategies ("Acceptance" and "Restraint"), an exploratory factor analysis was conducted again, but setting the extraction of three factors, according to the original structure of the questionnaire (Maximum likelihood; Manual set of 3 factors; highlight 0.2; Promax rotation, KMO = 0.758, Bartlett's test $p<0.001$). The percentage of explained variance after rotation was as follows: Factor I – 12.7%, Factor II – 11.8%, Factor III – 6.9%, total of 31.4% (Table 12).

Given the consistent split of the "Acceptance" and "Restraint" subscales (both in the current sample and in that of the pilot study, i.e., the result was not sample specific), an item content analysis was conducted for these two subscales. It was concluded that items 13 and 52 were in clear contrast to Denial as a strategy, and items 1 and 47 were closely related to deliberate, thought-out approach without taking any hasty or potentially aggravating the life-threatening situation decisions. In contrast, items 20, 27, 12, and 26 describe behaviors that may increase the risk to survival since they suggest that one should get used to the idea of losing one's life and wait for the situation to change on its own – behavior that in a situation of immediate danger may not be adaptive in nature.

Table 12. Exploratory factor analysis (Manual, 3 factors)

I	II	III
Active coping Planning Suppression of competing activities Positive reinterpretation *Acceptance* (only items 13 and 52) *Restraint* (only items 1 and 47)	Seeking social instrumental support Seeking social emotional support Focusing on and venting emotions	Behavioral disengagement Mental disengagement Denial Turning to religion *Acceptance* (only items 20 and 27) *Restraint* (only items 12 and 26)

Considering all of the above, it was decided to use the four-factor solution. The extracted factors were named and their reliability was calculated as presented in the Table 13.

Table 13. COPE – factor names and reliability analysis (Cronbach's α)

	Factor name	Cronbach's α
I	Problem-focused coping	0.873
II	Active emotional coping	0.910
III	Avoidant emotional coping	0.813
IV	Turning to religion	0.935

An analysis of the influence of the type of life-threatening stressor on coping and levels of depression and life satisfaction – No differences were found in coping or levels of depression and life satisfaction between people who had experienced a life-threatening illness, a physical assault or an accident.

An analysis of the influence of the stressor appraisal on coping and levels of depression and life satisfaction – Individuals who perceived the stressor as a "challenge" (M=61.07; SD=9.07) were found to be more likely to use Problem-focused coping than individuals who appraised the situation as a "threat" (M=55.43; SD =10.01), (t(151)=3.19, p=0.002, Cohen's d=0.577). There were no statistically significant differences regarding the other coping categories.

As for the relations between stressor appraisal and the constructs "Depression" and "Life satisfaction", it was found that people who perceived the stressor as a "threat" had higher depression (Challenge (M=13.88); Threat (M=17.08): U=1631.0, p=0.004, Rank-Biserial Correlation (r)=0.30) and lower life satisfaction (Challenge (M=15.76; SD=2.96); Threat (M=13.97; SD=3.62): t(151) = 2.85, p=0.005, Cohen`s d=0.517) compared to people who appraised the situation as "challenge".

An analysis of the relations between coping, depression, life satisfaction and socio-demographics – No statistically significant results were found regarding sex and education. Age was only related to Turning to religion – people between 18 and 28 years of age were less likely to use this coping compared to those aged 40 and above ($F(2,150)=3.09$, $p=0.041$, $\eta=0.2$, $M_{18\text{-}28}=6.74$, $M_{29\text{-}39}=7.69$, $M_{40 \text{ and above}}=8.67$, Tukey Post hoc test). There was no difference between respondents aged 29-39 compared to those aged 18-28, and 40 and over.

Correlation analyses – In order to further examine the relations between coping with a life-threatening situation, depression, and life satisfaction, correlational analyses were conducted.

Table 14. Correlation analysis: coping (factor level), depression, life satisfaction

	Problem-focused coping	Active emotional coping	Avoidant emotional coping	Turning to religion	Depression
Problem-focused coping	—				
Active emotional coping	0.299***	—			
Avoidant emotional coping	-0.130	0.084	—		

	Problem-focused coping	Active emotional coping	Avoidant emotional coping	Turning to religion	Depression
Turning to religion	0.071	0.221 **	0.197 *	—	
Depression	-0.206 *	-0.046	0.332 ***	-0.057	—
Life Satisfaction	0.264 ***	-0.045	-0.178 *	0.066	-0.499 ***

* p<0.05, ** p<0.01, *** p<0.001

The data (Table 14) confirmed that life satisfaction and depression are negatively correlated. Regarding coping, Problem-focused coping was found to have a statistically significant correlation with only one of the other three coping categories, namely, Active emotional coping (positive correlation). The latter also correlated positively with Turning to religion. The data regarding Turning to religion was interesting, as it had a statistically significant positive correlation with Avoidant emotional coping as well.

Other interesting data were those regarding the relations between coping and the constructs "Depression" and "Satisfaction with life". While Problem-focused coping and Avoidant emotional coping correlated statistically significantly with both constructs, Active emotional coping and Turning to religion had no statistically significant correlations with them. This could mean that these two coping categories alone are not related to the outcome of coping and adaptation. For further clarification, a correlation analysis was conducted at the subscale level. None of the strategies falling under Active emotional coping and Turning to religion correlated with Depression nor Life satisfaction, suggesting that the influence of these coping strategies is likely determined by how are they combined with the rest during the process of coping with a life-threatening stressor. This assumption will be further studied through regression analyses.

Linear regression analyses – Single and multiple (method: Enter) linear regression analyses were conducted to examine whether stressor appraisal and coping in a life-threatening context could statistically significantly predict levels of depression and life satisfaction. Evidence suggests that stressor appraisal was a predictor of both "Depression" ($F(1,151)=9.76$, $p=0.002$, adjusted $R^2=0.06$, $R=0.246$), and "Life satisfaction" ($F(1,151)=8.13$, $p=0.005$, adjusted $R^2=0.05$, $R=0.226$). The same was found for Problem-focused coping (Depression: ($F(1,151)=6.71$, $p=0.011$, adjusted $R^2=0.04$, $R=0.206$; Life Satisfaction: ($F(1,151)=11.34$, $p<0.001$, adjusted $R^2=0.64$, $R=0.264$), as well as for Avoidant emotional coping (Depression: ($F(1,151)=18.76$, $p<0.001$, adjusted $R^2=0.105$, $R=0.332$); Life Satisfaction: ($F(1,151)=4.92$,

p=0.03, adjusted R^2=0.025, R=0.178). Active emotional coping and Turning to religion were not independent predictors. However, Turning to religion, combined with Avoidant emotional coping, accounting for stressor appraisal, marital status, and age, was a predictor of depression (F(6,146)=6.88, p<0.001, adjusted R^2=0.19, R=0.469). Turning to religion and Active emotional coping combined with Problem-focused coping, accounting for stressor appraisal, marital status, and age, were predictors of life satisfaction (F(7,145)=3.92, p<0.001, adjusted R^2=0.12, R=0.399). These data outline guidelines for psychological practice (see Chapter III).

Before that, however, further psychometric testing of the adapted version of the COPE is needed, given that the two samples in which the instrument has been tested so far yield similar but not identical factor structures.

2.7.2.2.Confirmatory factor analysis

Sample – a new sample was collected for the purposes of the confirmatory factor analysis (Table 15).

Table 15. Socio-demographic characteristics of the sample

Sex	Male – 326 (37.7%)	Female – 539 (62.3%)	
Age	18-28 years – 185 (21.8%) 40-50 years – 234 (27.6%)	29-39 years – 307 (36.2%) 51-60 years – 95 (11.2%)	60 and above – 27 (3.2%)
Education	Primary – 7 (0.8%)	Secondary – 263 (30.8%)	Higher– 585 (68.4%)
Marital status	Married/In cohabitation – 492 (58.0%) Divorced – 74 (8.7%)	Not married/Not in cohabitation – 237 (32.2%) Widower/Widow – 10 (1.2%)	

Confirmatory factor analysis – The four currently empirically and theoretically argued factor solutions were compared, namely: Dispositional coping, according to the original factor solution (see footnote 9); Situational coping, according to the original factor solution (see footnote 10); Situational coping with a life-threatening stressor, according to the factor solution in the pilot study (see 2.6.2.); Situational coping with a life-threatening stressor, according to the factor solution in the main study (see 2.7.2.1.). The goodness of fit indices used are: CFI, TLI, RMSEA and SRMR, being CFI and TLI around ≥ 0.90, RMSEA and SRMR around ≤ 0.08 accepted as satisfactory.

Table 16. COPE – Goodness-of-fit indices (N=827)

Model	X^2/df	CFI	TLI	RMSEA	SRMR
3-factor solution (dispositional coping, Carver et al., 1989) *I. Problem-focused coping* *II.Emotion-focused coping*	1064.500/61	0.633	0.531	0.145	0.118

III. Less useful coping					
4-factor solution (situational coping, Carver et al., 1989)[40]	673.609/59	0.775	0.703	0.115	0.099
3-factor solution (situational coping, pilot study here) *I. Problem-focused coping* *II. Active emotional coping* *III. Avoidant emotional coping (incl. religion)*	2106.437/206	0.690	0.652	0.109	0.113
4-factor solution (situational coping, main study here) *I. Problem-focused coping* *II. Active emotional coping* *III. Avoidant emotional coping* *IV. Turning to religion*	1421.476/203	0.801	0.774	0.088	0.089

The four-factor solution extracted in the main study here had the best psychometric properties compared to the other 3 models (see Table 16). Although the goodness of fit indices did not reach the desired values, the obtained ones were close to the desired ones, which, combined with the fact that the goodness of fit indices for the remaining three models were significantly farther from the desired values, confirms that the 4-factor model of: "Problem-focused coping", "Active emotional coping", "Avoidant emotional coping" and "Turning to religion", is the best empirically and theoretically argued solution in this sample. This is also the factor solution on which the analyses below will be based. Following the original procedure of Carver et al. (1989), the relations between coping and determinants of personal and emotional functioning was sought.

Correlation analyses

Table 17. Correlation analysis: COPE – anxiousness, anhedonia, alexithymia (PAQ and TAS-20 total scale scores)

	Anxiousness	Anhedonia	TAS-20 total scale score	PAQ total scale score
Problem-focused coping	-0.292***	-0.317***	-0.358***	-0.298***
Active emotional coping	0.066	-0.066	-0.161*	-0.167*
Avoidant emotional coping	0.321***	0.297***	0.250***	0.277***
Turning to religion	0.104	-0.051	0.030	0.078

* p<0.05, ** p<0.01, *** p<0.001

As presented above (Table 17), Turning to religion was not related to any of the variables studied, confirming the assumptions of section 2.7.2.1. that the relations of this coping

[40] Carver et al. (1989) do not name these factors, but only describe them, see footnote 10.

category with constructs of mental health and personality functioning are determined by its interaction with the rest of the coping categories. The next coping category with weakest correlations was Active emotional coping – correlated only with alexithymia. These negative correlations were expected given that Active emotional coping involves seeking social support and sharing emotions – behaviors not particularly characteristic of individuals high in alexithymia. Regarding the relations of this coping category with anxiousness and with anhedonia, the lack of statistically significant results supports the assumptions set out in section 2.7.2.1. – the influence of this coping category, like Turning to religion, is determined by its interaction with the remaining copings. As far as the rest of the correlations found, as expected, negative ones of Problem-focused coping and positive ones of Avoidant emotional coping with the constructs: "Anxiousness", "Anhedonia", and the total scale scores of "Alexithymia" (assessed through PAQ and TAS-20) were present.

The data obtained indicated that the PAQ and the COPE, adapted to assess coping with life-threatening situations, are valid and reliable instruments, allowing to proceed to substage III of the main study.

2.7.3. Substage III – Alexithymia and Coping with a life-threatening stressor: Control group and groups of special forces operators in the MoI and MoD

2.7.3.1. Alexithymia and Coping: A comparison between special forces operators in the MoI and the MoD

Sample

Table 18. Socio-demographic characteristics of the sample

	Special force operators in MoI	Special force operators in MoD
Sex		
Male	28 (87.5%)	15 (100%)
Female	4 (12.5%)	0
Age		
18-28 years old	2 (6.3%)	1 (6.7%)
29-39 years old	21 (65.6%)	8 (53.3%)
40-50 years old	8 (25.0%)	6 (40.0%)
51-60 years old	1 (3.1%)	0
Education		
Secondary	9 (28.1%)	8 (53.3%)
Higher	22 (68.8%)	7 (46.7%)
Marital status		
Married / In cohabitation	24 (75.0%)	11 (73.3%)
Not married / Not in cohabitation	4 (12.5%)	3 (20.0%)
Divorced	2 (6.3%)	1 (6.7%)
Employment		

Team leader	3 (9.38%)	1 (6.67%)
Not a team leader	21 (65.63%)	13 (86.67%)
Time served		
Up to 10 years	14 (43.75%)	5 (33.33%)
11-20 years	3 (9.38%)	8 (53.33%)
21 years and above	4 (12.50%)	1 (6.67%)

Comparing levels of alexithymia in both groups – It was found that special force operators in the MoD have higher alexithymia compared to special force operators in the MoI. These data support hypothesis 3.2. A detailed description of the obtained values is presented below:

TAS-20_DIF:
MoD (M=14.27); MoI (M=11.03): U=338.0, p=0.006, Rank-Biserial Correlation (r)=0.50
TAS-20_DDF:
MoD (M=11.80; SD=2.81), MoI (M=9.11; SD=2.74): t(41)=3.05, p=0.004, Cohen`s d=0.974
TAS-20_EOT:
MoD (M=22.93); MoI (M=20.80): U=356.0, p=0.002, Rank-Biserial Correlation (r)=0.58
TAS-20_TOTAL:
MoD (M=49.00); MoI (M=40.86): U=360.0, p<0.001, Rank-Biserial Correlation (r)=0.71
PAQ_GEOT:
MoD (M=29.47); MoI (M=22.93): U=307.0, p=0.049, Rank-Biserial Correlation (r)=0.36
PAQ_GDDF:
MoD (M=24.93; SD=9.22), MoI (M=19.42; SD=7.34): t(39)=2.11, p=0.042, Cohen`s d=0.683
PAQ_TOTAL:
MoD (M=75.40; SD=24.43), MoI (M=60.00; SD=16.87): t(39)=2.39, p=0.022, Cohen`s d=0.773

Comparing coping with a life-threatening stressor in the two groups – MoI special force operators rely more often on Active emotional coping (MoD (M=21.07; SD=4.50), MoI (M=26.96; SD=6.78): t(40)=3.01, p=0.004, Cohen`s d=0.970) and Turning to religion (MoD (M=4.20); MoI (M=6.74): U=88.0, p=0.001, Rank-Biserial Correlation (r)=0.57) compared to MoD special force operators. No differences were found in regards to the other two coping categories, confirming that alexithymia is not uniquely linked to ineffective coping, as despite higher alexithymia in EG_{MoD} neither more frequent use of avoidant nor less frequent use of problem-focused coping was found.

2.7.3.2. Alexithymia and Coping: A comparison between MoI special force operators and a control group

Sample – For the purposes of these analyses, the control group was formed based on the following criteria:

- No depressive symptoms – all subjects with some degree of depression (as assessed through the PHQ-9) were excluded from subsequent analyses. Given the consistently found positive correlations between alexithymia and depression, it was decided to retain only individuals without any depressive symptoms in the sample;
- Sociodemographic similarity between the control and experimental groups – in the control group, randomly, such a number of women were left as to correspond in percentage to those in the experimental group (EG_{MoI}), since sex differences in alexithymia are reported in the scientific literature and such were also found in this paper.

Comparing levels of alexithymia in both groups – Differences were found only in relation to externally oriented thinking, assessed through both instruments, and in relation to PAQ total scale score:

TAS-20_EOT:

EG_{MoI} (M=20.80); CG (M=14.17): U=40.500, p<0.001, Rank-Biserial Correlation (r)=0.775

PAQ_GEOT:

EG_{MoI} (M=22.93; SD=5.62), CG (M=16.33; SD=4.09): t(37)=3.26, p=0.002, Cohen`s d=1.239

PAQ_total scale score:

EG_{MoI} (M=60.00); CG (M=46.44): U=56.000, p=0.022, Rank-Biserial Correlation (r)=0.521

In order to assume that elevated alexithymia is present, however, it is necessary to observe elevations in both all the subscales and the total scale score (Lumley et al., 2007). Based on the data obtained here, it can be concluded that there is a tendency for alexithymia levels to increase in EG_{MoI} compared to CG, which supports hypothesis 3.1.

Comparing coping with a life-threatening stressor in the two groups – Differences were found only in regards to "Turning to religion" – MoI special force operators were more likely to use it compared to individuals from the control group (EG_{MoI} (M=6.74); CG (M=5.33): U=152.500, p=0.025, Rank-Biserial Correlation (r)=0.372). Considering that Turning to religion does not have independent predictive value for mental health, as confirmed in substage II of the main study, the difference found here does not indicate more nor less effective coping with a life-threatening stressor for either group. The lack of difference in relation to Problem-focused coping and Avoidant emotional coping, which have already been found to have an independent predictive value in relation to mental health (see substage II of the main study),

points to the conclusion that EG_{MoI} individuals, despite their tendency for elevated alexithymia, do not cope more unhealthily with life-threatening situations compared to CG. The cited data confirm hypothesis 3.3.

2.7.3.3. Alexithymia and Coping: A comparison between MoD special force operators and a control group

Sample – For the purposes of these analyses, the control group was formed based on the same criteria set out in 2.7.3.2., but this time excluding all women from the control group, considering that there were no women in the experimental group (EG_{MoD}).

Comparing levels of alexithymia in both groups – With the sole exception of the TAS-20 DIF subscale, on all other subscales and on total scale scores according to both alexithymia instruments, MoD special force operators had higher alexithymia compared to the control group. The effect size is large (Cohen, 1988). These data confirm hypothesis 3.1:

TAS-20_DDF:

EG_{MoD} (M=11.80; SD=2.81), CG (M=9.83; SD=1.95): t(25)=2.06, p=0.050, Cohen`s d=0.797

TAS-20_EOT:

EG_{MoD} (M=22.93); CG (M=14.17): U=0.000, p<0.001, Rank-Biserial Correlation (r)=1.00

TAS-20_total scale score:

EG_{MoD} (M=49.00); CG (M=36.50): U=11.000, p<0.001, Rank-Biserial Correlation (r)=0.878

PAQ_NDIF:

EG_{MoD} (M=10.73; SD=3.85), CG (M=7.29; SD=2.06): t(20)=2.21, p=0.039, Cohen`s d=1.011

PAQ_PDIF:

EG_{MoD} (M=10.27); CG (M=6.57): U=15.500, p=0.008, Rank-Biserial Correlation (r)=0.705

PAQ_NDDF:

EG_{MoD} (M=12.87; SD=4.97), CG (M=7.14; SD=2.41): t(20)=2.87, p=0.010, Cohen`s d=1.312

PAQ_PDDF:

EG_{MoD} (M=12.07; SD=4.47), CG (M=7.71; SD=2.69): t(20)=2.37, p=0.028, Cohen`s d=1.084

PAQ_GEOT:

EG_{MoD} (M=29.47); CG (M=15.57): U=16.000, p=0.011, Rank-Biserial Correlation (r)=0.695

PAQ_GDIF:

EG_{MoD} (M=21.00); CG (M=13.86): U=11.000, p=0.003, Rank-Biserial Correlation (r)=0.790

PAQ_GDDF:

EG_{MoD} (M=24.93); CG (M=14.86): U=17.000, p=0.013, Rank-Biserial Correlation (r)=0.676

PAQ_NDAF:

EG_{MoD} (M=23.60); CG (M=14.43): U=11.000, p=0.004, Rank-Biserial Correlation (r)=0.790

PAQ_PDAF:

EG_{MoD} (M=22.33); CG (M=14.29): U=17.500, p=0.014, Rank-Biserial Correlation (r)=0.667

PAQ_GDAF:

EG_{MoD} (M=45.93); CG (M=28.71): U=13.500, p=0.007, Rank-Biserial Correlation (r)=0.743

PAQ_total scale score:

EG_{MoD} (M=75.40); CG (M=44.29): U=11.000, p=0.004, Rank-Biserial Correlation (r)=0.790

Comparing coping with a life-threatening stressor in the two groups – A difference was found only in relation to Active emotional coping – MoD special force operators were less likely to use it (EG_{MoD} (M=21.07); CG (M=29.81): U=181.000, p=0.017, Rank-Biserial Correlation (r)=0.508). Since Active emotional coping has no independent predictive value in terms of mental health, as confirmed in substage II of the main study, the difference found does not indicate more nor less effective coping with a life-threatening stressor for either group. The lack of difference regarding Problem-focused and Avoidant emotional coping points to the conclusion that individuals from EG_{MoD}, despite their higher alexithymia, do not cope more unhealthily with life-threatening situations compared to CG. The cited data confirm hypothesis 3.3.

Correlation analyses – In contrast to the control group, where negative correlations of Problem-focused coping and positive ones of Avoidant emotional coping were found with alexithymia assessed through both PAQ and TAS-20 (see p. 27), no such relations were found in the experimental group. The only statistically significant correlation concerned Avoidant emotional coping and alexithymia, assessed through PAQ ($r=0.344$, $p<0.05$). Given that the cited correlation concerns only one of the alexithymia instruments, and no statistically significant correlations with Problem-focused coping were found at all, these data appear to support the assumption that alexithymia is not uniquely associated with unhealthy coping for the experimental group.

In order to test the last part of hypothesis 3.1., descriptive statistics analyses was conducted for the two alexithymia instruments (Table 19).

Table 19. Descriptive statistics (means and standard deviations) – Experimental – Control groups comparison

PAQ[41]			TAS-20		
Subscale / Total scale score	M / SD Control group	Experimental group highest value	Subscale / Total scale score	M / SD Control group	Experimental group highest value
N-DIF	9.51 / 4.57	13.77	DIF	15.00 / 4.35	15.86
P-DIF	9.02 / 4.38	13.21	DDF	11.26 / 3.48	13.07
N-DDF	11.28 / 5.45	15.18	EOT	16.78 / 3.59	24.47
P-DDF	10.26 / 5.00	15.23	Total scale score	43.18 / 8.83	51.12
G-EOT	21.97 / 9.09	33.60			
G-DIF	18.54 / 8.24	26.65			
G-DDF	21.54 / 9.72	29.85			
N-DAF	20.77 / 9.39	28.09			
P-DAF	19.27 / 8.87	28.06			
G-DAF	40.10 / 17.09	55.01			
Total scale score	61.91 / 23.49	86.68			

As it can be seen from the data presented, the highest values of alexithymia in the experimental group fall near the upper end of the mean for the control group (as assessed through both the PAQ and the TAS-20), and do not exceed with one or more standard deviations the mean. These data confirm the last part of the hypothesis 3.1.

2.8. Discussion of pilot and main studies data[42]

Hypothesis 1 was confirmed. The results confirm the validity, reliability, and theoretically assumed factor structure of the PAQ. Furthermore, the reliability of the PAQ total scale score (α=0.93) exceeds the minimum required ($\alpha \geq 0.90$) for a psychometric instrument to be accepted as reliable for clinical decision making (Groth-Marnat, 2009). This is not the case with the TAS-20, however (α=0.8), suggesting that the TAS-20 is a reliable and valid screening tool, but for diagnostic purposes it is more appropriate to rely on the PAQ.

The data regarding hypothesis 1.1. in the part concerning life satisfaction are interesting. The lack of association between this construct and PAQ calls into question the widely held assumption that alexithymia is associated with lower life satisfaction. It is possible that such results reported in previous research (e.g., Mattila et al., 2007) are due to specifics of the alexithymia assessment tool used rather than the phenomenon itself. The results of hypothesis

[41] A detailed description of means and standard deviations for both control and experimental groups on each of the PAQ subscales, including sex differences, is presented in Appendix 2 in the full text of the dissertation.
[42] A detailed discussion of hypotheses and sub-hypotheses is presented in the full text of the dissertation. The main points will be discussed here, with an emphasis on those results that set the direction for future research.

1.3. are also interesting – it was confirmed that affective valence is an independent predictor of anhedonia and depression, with difficulty in processing positive affect having a higher predictive value than difficulty with negative affect, but only in relation to depression. The opposite was true for anhedonia. For a detailed discussion of the applicability of these data in counseling practice, see Chapter III.

Hypothesis 2 was confirmed. Exploratory and confirmatory factor analyses conducted (Hypothesis 2.1.) found that the study of coping with a life-threatening stressor requires different assessment approach and interpretation than the study of coping with everyday stressors. A new factor structure was extracted, namely, "Problem-focused coping", "Active emotional coping", "Avoidant emotional coping" and "Turning to religion". The reliability and validity of the adapted version were also confirmed. As far as Hypothesis 2.2., the stressor itself was found to be unrelated to coping, unlike the stressor appraisal. The "Challenge" appraisal was associated with more frequent use of Problem-focused coping. No differences were found for the other coping categories. It can be assumed that they are influenced to a greater extent by temperamental and personality characteristics (since these copings concern emotionality, personal values and religion) than by the stressor appraisal per se. Regarding the last part of Hypothesis 2.2, the "Challenge" appraisal was found to be associated with lower depression and higher life satisfaction.

Hypothesis 3 was confirmed. Regarding hypothesis 3.1. it was confirmed that MoD special force operators have higher levels of alexithymia compared to the control group. For the MoI special force operators, a tendency for alexithymia levels to increase was found – differences were present only on the EOT subscales and on PAQ total scale score – these data point to the need for additional testing in order to further study the topic in MoI operators samples. In relation to the last part of hypothesis 3.1. it was found that individuals from EG have elevated alexithymia – around the upper end of CG`s mean, but not exceeding it with one or more standard deviations (see Table 19). It could be assumed that this is the optimal alexithymia level for the individual to wish to engage in this type of occupation, but at the same time be clinically healthy and effectively coping with environmental stressors. This, of course, needs to be explored in further research. In relation to hypothesis 3.2. – the data confirms it. This is in compliance with the results reported by other authors, as far as the professional tasks in the special force units of the Ministry of Defense imply engaging with activities that have

been repeatedly found to be positively correlated with alexithymia, namely, high-risk sports (diving and parachuting sports, see section 1.2.). Special force units in the Ministry of the Interior also provide a high-risk context during the actual performance of official duties, but such is not present during the training process, while for the special forces in the Ministry of Defense parachuting and diving trainings imply an immediate risk to life. Hypothesis 3.3. was also confirmed – EG individuals, despite their higher alexithymia, do not apply more avoidant or less problem-focused coping than CG individuals. Analyzing in more depth the relations between alexithymia and coping with a life-threatening stressor, it is good to pay attention to the results of the correlation analyses conducted (see sections 2.6.2., p. 27 и 2.7.2., p. 43). From these, it is clear that while for the control group (see p. 27) elevated alexithymia is associated with less Problem-focused coping and more Avoidant emotional coping, and this is true when assessing alexithymia, both through PAQ and TAS-20, higher alexithymia is not associated with less use of Problem-focused coping in the experimental group. Also, the relation with Avoidant coping in the experimental group concerns assessment with only one of the alexithymia instruments (see p. 43). The results of the pilot study are also interesting – there is a statistically significant difference between individuals high and those low in alexithymia on only five of the coping strategies, with alexithymia predicting nine of the strategies, but with a small effect size. Combined with other variables, alexithymia is a predictor only of "Seeking emotional social support" and "Denial". It was also found that individuals with higher education had lower alexithymia, but at the same time were more likely to resort to the "less useful" coping. These data, obtained across different samples in the pilot and the main studies, consistently confirm that alexithymia is not uniquely associated with ineffective coping with high-risk stressors and suggest that elevations in alexithymia should rather be viewed as an indicator that the person needs a clear behavioral guidelines how to deal with the stressor (as such clear guidelines are provided in the special force units of the Ministry of Defense and the Ministry of Interior).

CHAPTER III. APPLICABILITY OF DATA IN COUNSELING PRACTICE

Thus far, this paper has presented data regarding precise diagnostics as a key first step to effective counseling. Based on the results obtained, as well as on an extensive theoretical overview, this section will propose specific counseling approaches targeting the variables under study.

3.1. Proposal for a counsuling framework specifically aimed at alexithymia and tailored to affective valence

Numerous studies have been conducted regarding therapy for high alexithymia, but they share three limitations: 1) usually interventions do not target alexithymia specifically (rather, disorders with which it is associated, see e.g., Yılmaz et al. , 2019); 2) approaches that take affective valence into account are rare (see e.g., Lane et al., 2013) and 3) the criteria and steps for diagnostics of high alexithymia are not unified, and are sometimes not even explicitly formulated by the authors (see e.g., Hemming et al., 2019). These are serious limitations that this paper aims to overcome.

Before initiating any counseling approach aimed at reducing alexithymia, it is extremely important that the mental health professional is convinced that high alexithymia is present at all. For this reason, precise assessment is a necessary first step:

I. Diagnostic process

This paper studies in detail the two most widely used alexithymia assessment tools and provides guidance on their applicability as follows:

- For screening and research purposes, both the PAQ and TAS-20 are valid and reliable instruments. For clinical and diagnostic work, however, the PAQ is the more empirically sound choice.
- It is important to consider the consistently found patterns of associations of the TAS-20 with negative affective valence, anxiousness, anhedonia, and depression, as it is possible that elevated TAS-20 scores are not entirely due to the Alexithymia construct. *If the mental health specialist chooses to use TAS-20, it is recommendable to apply it along with instruments to assess the cited constructs.*

- Another specificity is the *difference between the subscales of the PAQ and the TAS-20 assessing externally oriented thinking. If it is important for the mental health professional to also assess fantasy, it is advisable to use an instrument specifically developed for these purposes* along with an alexithymia assessment instrument (see Taylor and Bagby, 2021), as these are two separate constructs.
- It is also important to keep in mind that the *TAS-20 was designed to assess alexithymia total scale score, not the subscales levels*. For a more detailed profile of the manifestations of this personality trait in the particular patient, it is advisable to use an instrument that can make this assessment with satisfactory psychometric reliability and validity.

In summary – diagnostic process should go through the following steps:

Step 1: Overall alexithymia assessment, i.e., alexithymia total scale score

Step 2: Alexithymia subscale assessment – Researchers recommend that subscale assessment be done (e.g., Lumley et al., 2007). This is especially recommended when a clinical diagnostic evaluation is required.

Step 3: Affective valence assessment – Researchers recommend that valence be considered (e.g., Panayiotou, 2018).

It is important to emphasize that *it is not advisable to conclude about the presence of high alexithymia based only on the values of one of the subscales*. Furthermore, it is recommended that *high alexithymia be considered present only when there is at least one standard deviation from the mean for all subscales – something that the total scale score does not warrant* (Lumley et al., 2007). Of course, the diagnostic process could not be exhausted solely by the application of psychometric instruments. The professional and expert conduct of the psychodiagnostic interview is a key component in the process.

Step 4: To take into account the socio-demographic characteristics

Data are heterogeneous across linguistic and cultural communities, so it would be helpful for mental health professionals to be informed of what the normative data are for their linguistic and cultural community for the instrument they choose to use. In this paper, it was found that men consistently register higher alexithymia and more pronounced externally oriented thinking. This suggests that it is important for therapists to consider the sex specifics and that the goal of the therapeutic process is not to bring the patient closer to the mean in general, but to this of the respective sex. In this sense, it would be good for mental health

professionals to have the normative data, as well as statistics regarding sociodemographics, and then make an empirically-based decision about the presence or absence of high alexithymia.

After the diagnostic stage is completed, if the presence of high alexithymia is confirmed, the counseling process should be planned.

II. Formulation of the counseling plan

The guidelines proposed below are not intended to exhaust the variety of possible approaches, but only to frame those that the empirical evidence currently supports.

Highest value present at difficulties in identifying feelings

For people with the most pronounced difficulties on this subscale, interventions aimed at self-monitoring, recognizing bodily sensations and learning to distinguish them from feelings can be an effective direction. Cognitive-behavioral therapy has been shown to be effective in reducing DIF levels (Rufer et al., 2010), but to the author's knowledge, whether its effectiveness holds for both valences has not been tested. The counseling process could also be supported by the inclusion of biofeedback (Taylor et al., 1997) and neurofeedback (Kolev and Deinovich-Velichkov, 2016), as they could be very useful not only for reducing the values on this subscale, but also regarding the valence of the affect – to train the patient to distinguish positive, negative affect and bodily sensations.

Highest value present at difficulties in verbalizing feelings

For people with the most pronounced difficulties on this subscale, it would be effective for the therapeutic process to focus on improving communication skills. Cognitive-behavioral therapy has been shown to be effective in reducing DDF levels (Rufer et al., 2010) (again, whether effectiveness is maintained across both valences is not tested yet). Also, combining individual and group therapy is often recommended, as the former allows for a detailed and individually modeled approach, and the latter – for putting into practice what has been learned in individual sessions (Taylor et al., 1997; Yılmaz et al., 2019). The data regarding the role of oxytocin in this process are interesting. High alexithymia itself does not require medical intervention, but oxytocin has been found to improve socioemotional communication and is associated with sociocognitive processes that are impaired in people high in alexithymia (Samur et al., 2013). Since intranasal administration of oxytocin does not lead to improved communication in general, but only to increased sharing of painful emotions (Lane et al., 2013), this may be of particular interest with regard to the verbalization of negative affect.

Highest value present at the externally oriented cognitive style

For people with the most pronounced value of externally oriented thinking, an approach that helps direct attention to the response to emotional stimuli is needed. Useful in this regard are the existential-humanistic approach (Yılmaz et al., 2019), as well as cognitive-behavioral therapies of the third and fourth waves (Lumley et al., 2007). However, when analyzing externally oriented thinking, it is important to consider its adaptive role. EOT can serve a protective function as it prevents excessive introspection. Applied long-term, however, it is likely to lead to adverse effects. Therefore, before taking decision about therapy aproach here, it is important for the therapist to analyze the context of the manifestation (e.g., what stage of coping with the given stressor the patient is at), since it is possible that at the time, externally oriented thinking is an effective way and that no immediate intervention is necessary.

The therapy course and its modeling should consider both each alexithymia subscale value, as well as the context of their manifestation. Otherwise it is likely to observe not only therapy failure, but even patient`s deterioration (Norman et al., 2021).

By examining the interaction between each of the subscales and the valence of the affect, this paper formulates specific guidelines also in regards to the counseling process for individuals with *high alexithymia combined with anhedonia, depression or life dissatisfaction* – constructs with which alexithymia has been consistently linked. From the data obtained in the regression analyses, it can be concluded that *directing attention to the emotional reaction and the processing of negative affect in individuals with high alexithymia and anhedonia* is probably an effective approach. *Therapeutic interventions for individuals with depressive symptoms and high alexithymia should be focused on directing attention to emotional response and the appraisal of positive affect*. Regarding life satisfaction, alexithymia as measured by the PAQ was not related to this construct. Of course, further research is needed, and *if it is confirmed that alexithymia is not associated with lower life satisfaction, it may turn out that positive psychotherapy would be particularly effective* (see section 1.1.3., p. 10).

In summary, once diagnostic is complete, if high alexithymia is present, therapy should be tailored to subscale scores and valence differentiation, i.e., to take into account the specific manifestations of alexithymia in the specific person. As far as the author's knowledge, *this is the first attempt to formulate an integrative counseling framework specifically aimet at*

alexithymia and tailored to the affective valence, also explicitly outlining the diagnostic steps and criteria.

3.2. Proposal for a comprehensive counseling framework focused on coping with life-threatening stressors

The data in this paper demonstrate that coping with a life-threatening situation cannot be studied, analyzed, or interpreted relying on models of coping with everyday stress. Based on the empirical data obtained here, the following stages and their corresponding guidelines for psychological care are suggested:

I. Diagnostic process:

- *Step 1: Stressor appraisal* – it is advisable to focus on it *at the very beginning* of the counseling process. The data in this paper indicate that it is not the type of life-threatening stressor (e.g., illness, accident, physical assault, etc.) but the appraisal of it that influences subsequent coping and adaptation.
- *Step 2: Assessment of the coping used* – The COPE new factor structure confirms that it is important for the mental health specialist to have a reliable and valid psychometric tool for assessing coping specifically with life-threatening stressors. Otherwise, professionals risk to:
    - Misjudge the effectiveness of a given coping – examples of this are the "Acceptance" and "Restraint" subscales, which when applied in such a context split and their items fall into two different coping categories that even have opposite effects on coping and adaptation in high risk context;
    - Focus the counseling process on coping that has no independent predictive value on dealing with a life-threatening stressor – an example of this is "Focus on and venting of emotions" which is seen as "less useful" when facing everyday stressors, but when the stressor represents an immediate danger for own`s life, this strategy appears to have no independent influence on coping and adaptation.

The data in this paper suggests that special attention should be paid precisely to *"Active emotional coping"* (of which "Focus on and venting of emotions" is part of according to the new factor solution), as well as to *"Turning to religion"*, since it was found that these two are *not independent predictors* of neither depression nor life satisfaction. *The impact of these coping categories on mental health is determined by how are they combined with the rest of the*

copings. As for the *Problem-focused* and *Avoidant emotional copings*, as expected, the data suggests that *both are independent predictors* of depression and life satisfaction.

Only after the diagnostic stage is completed it can be proceeded to the planning of the counseling approach.

II. Formulation of the counseling plan

- With focus on the stressor appraisal: In case that at the diagnostic stage it is found that the person is inclined to evaluate the stressor as a "threat", the counseling work *should start precisely from here*, by *reformulating the interpretation of the event*. Of course, if dysfunctional behavior is present that exacerbates the immediate danger to life (e.g., substance abuse, alcohol, other forms of autoaggression or aggression), the therapist may decide that managing this behavior is a priority and therefore may choose to focus on coping training. It is important to keep in mind, however, that the consideration of the stressor appraisal is needs to be an integral part of the counseling process.
- With focus on coping used: The results in this paper outline a clear direction for counseling work, namely: focus on reducing Avoidant and promoting Problem-oriented coping, of course, always taking into account the stressor appraisal. The remaining two coping categories can be used as helpful tools in the counseling process – individuals who rely primarily on them should be given the opportunity to freely express these emotional and religious needs, while at the same time being supported to combine them with strategies from Problem-focused coping.

It is important to emphasize that the literature consistently recommends the implementation of an integrative counseling approach (e.g., Corey, 2017), and for it to be effective, it is necessary that the mental health professional has formulated a plan for the interventions. Cognitive-behavioral therapy, for example, has proven qualities when the person needs training in certain coping skills, while the existential-humanistic approach, as well as third- and fourth-wave cognitive-behavioral therapies, are particularly effective when the emphasis needs to be placed on reconstructing the appraisal of the stressor. Positive psychotherapy is an effective tool when the person needs to build a vision of how to meet the current stressor, but not by focusing on the current distress, but by focusing on the satisfying aspects of life and past successes, so that from these the patient derives the toolkit to apply to the current stressor. When the mental health specialist has made the precise diagnostic and

formulated the main tasks in the counseling process, then its implementation should rest on the idea of integrative approach.

The approach becomes even more specific when the person facing a life-threatening stressor is high in alexithymia.

3.2.1. Counseling approach aimed at individuals elevated/high in alexithymia facing a life-threatening stressor

After a precise diagnostic stage at the very beginning of the therapy both in terms of alexithymia and the coping process, mental health specialist can move on to formulating the therapy plan. The table below presents a sample counseling framework that takes both constructs into account.

Table 20. A sample counseling framework for a patient high in alexithymia and facing a life-threatening stressor

Alexithymia Assessment	**Coping Assessment**	**A potentially effective counseling approach**
Highest value present at DIF / DDF*	Focus on stressor appraisal	A cognitive-behavioral approach (including third and fourth wave techniques)
	Focus on coping	A cognitive-behavioral approach (trainings)
Highest value present at EOT	Focus on stressor appraisal	Existential-humanistic approach or Cognitive-behavioral techniques of the third and fourth wave
	Focus on coping	A cognitive-behavioral approach (training techniques) – a clear, concrete, practical framework for behavior

*taking into account the valence of the affect, with the processing of which the person experiences more difficulties, the approach can also include: positive psychotherapy, biofeedback, neurofeedback, and also the use of literature (see Samur et al., 2013) – e.g., reading biographical stories about coping with such a stressor. This will help the person high in alexithymia to learn about their own emotional experiences through the character's and also to borrow coping ideas.

3.3. Proposal for a psychological care program in which alexithymia is considered as a personality trait of special forces operators in the Ministry of Defense and the Ministry of Interior[43]

Given that these individuals face situations of immediate risk to their survival as part of their job, it is reasonable for psychological care programs not to consider the life-threatening situation as an "extraordinary" stressor, but part of the natural course of professional realization. However, it should be noted that frequent and voluntary exposure to such stressors is linked to a personality profile, which requires an approach tailored to individual specifics, as well as to those of the context in which the individual functions. The literature cites numerous programs for prevention and psychological care in special force units in different countries. However, none of these programs consider alexithymia[44]. Moreover, some of them focus only on optimizing the professional performance, and not on promoting mental health in general (e.g., Le Scanff & Taugis, 2002). Others develop the idea of a holistic prevention program (Cornum & Lester, 2012), but again omitting alexithymia. Below is a proposal for an approach that overcomes these limitations.

All of the approaches discussed in sections 1.1.3. and 3.1. should be considered potentially applicable here as well. In this section, however, special attention will be paid to specific forms of counseling practice, potentially applicable specifically in special force units. An example of this is the greater reliance on technology since it provides the anonymity and privacy sought by employees in these units. Such technological solutions are, for example, computerized cognitive behavioral therapy (Morie et al., 2015) and a smartphone app for recognizing emotions (mindtastic alexithymia app, MT-ALEX) (Lukas et al., 2019), the effectiveness of which has been reported in individuals high in alexithymia. Of course, these technological means should be seen as a tool in the counseling process (and not as a substitute for live interactions) to be applied selectively, for example only at the beginning of the therapy or during periods of overseas missions, when counseling in the office of the therapist is impossible.

[43] Although hypothesis 3.1. in its part concerning the EG_{MoI} was partially confirmed, it was decided to include these special force operators in this section, since the topic is a direction for future research, in which it is advisable to further study the role of alexithymia as a personality trait in such a sample.

[44] It is considered only when clinical symptoms are present (see section 3.3.3. in the full text of the dissertation).

Another potentially applicable and effective approach in such sample could be that of the sports psychology, insofar as there are similarities between the two contexts. In both, physical fitness is key. Additionally, performing both military/police and sports tasks often requires the individual to perform effectively in a complex, dynamic environment and gain a tactical advantage over an adversary, even when only partial or incomplete information is available. Successful performance in both domains usually depends on the ability to work both independently and in a team in an effective manner, by combining perceptual, cognitive, motor and social skills, often under stressful circumstances (Ward et al., 2008). It has also been found that techniques for activating and managing certain emotions, such as anger and anxiety for example, can be beneficial insofar as, at their optimal levels for the particular competitor and the specific competition context, these emotions raise the energy level and direct the attention towards the information relevant to the sports performance (Hanin, 2010). Considering this emotional regulatory function of sport, it is easy to find a similarity between it and the practice of high-risk activities and their connections with alexithymia (see section 1.2.).

Results reported for persons (not in special force units) with high-risk behavior on the road are also interesting and potentially applicable to special forces operators. It was found that the relation of this behavior with alexithymia depends on the private self-consciousness. It correlates negatively with alexithymia and, more specifically, with externally oriented thinking. When private self-consciousness is high, alexithymia and high-risk behavior are again correlated, but negatively, suggesting that behavioral "overcorrection" has occured. For this reason, it is recommended that when counseling individuals high in alexithymia who have high-risk behavior behind the wheel, tools that activate self-monitoring (i.e., reduce externally oriented thinking) are used (Lheureux et al., 2016). It is reasonable to assume that persons who have chosen professions that possess an immediate risk to one's own life (e.g., special force units of the MoI and the MoD), find it difficult to direct their attention towards inner experiences[45] (since these professionals are expected to be guided not by an analysis of their emotional states, but by strict statutes and orders). In this regard, it would be interesting to study the effectiveness of a psychological program promoting private self-consciousness in a sample

[45] This was confirmed by the empirical data obtained in this paper – see hypothesis 3.1., as with regard to the EG_{MoI}, the only subscale on which a statistically significant difference with CG was found is namely: "Externally oriented thinking". In addition, the data in Table 19 indicate that this is again the subscale with the highest elevation when assessed through both the TAS-20 and the PAQ.

of special force operators. However, then the following questions should be asked: "How would this affect the performance of official duties?"; "To what extent is alexithymia healthy and desirable, so that it does not hinder professional realization, but also does not put the operator at risk of mental, psychiatric and somatic disorders?". Probably, given the data obtained in connection with hypothesis 3.1., it can be assumed that values around the upper end of the mean are optimal. However, this assumption requires further empirical verification in future research.

It would be useful to address also both difficulties in verbalizing feelings (to the extent that sharing them is uncommon in these units) and humor as a form of communication. It is known that humor can be seen as a type of coping (Carver, 1997), and its linked to both alexithymia (Atkinson et al., 2015) and certain helping professions (Wormer & Boes, 1997). An interesting fact is that the association between alexithymia and sense of humor concerns the aggressive and humiliating style of humor. The same type of humor has been found in samples of emergency service professionals (Rowe & Regehr, 2010). Given the settings in which special forces operators work, it would be interesting to study the influence of this type of humor in the process of fitting into the collective, coping with stressors, and also its possible protective function. Furthermore, through jokes that in the civilian world would be perceived as offensive or aggressive, it is possible for operators to verbalize their inner experiences in a safe and contextually acceptable way. In this sense, it may turn out that traditional communication trainings are not adequate for the needs of this sample. It would be interesting to test if and how this type of humor can be used as a communicative culture-specific tool for the operators.

Of course, the psychological care programs do not need to be limited to current operators only. Even on the contrary, a comprehensive program promoting mental health should cover the period from the moment of selection (to recruit those for whom high-risk professional situations would not constitute a traumatic experience, but even on the contrary – would have an emotional-regulatory function), through training period (including training operators to be emotionally prepared for the distressing events they will face), through all years of service (to preserve their mental and somatic health) to support in the process of adaptation after retirement. In this regard, a hitherto unexplored topic is the applicability of sports psychology and high-risk sports as a tool for emotional self-regulation in persons from special force units after retirement. In view of the emotional regulatory function that the high-risk professional tasks had, it is reasonable to assume that after leaving the special force unit, the person will

need to find other ways to maintain a balanced emotional functioning. Involvement in high-risk sports such as mountaineering, parachuting, diving, etc. can support ex-operators to cope more effectively with the transition. The role of the MoI/MoD special force units in this process can be either informative (i.e., providing information to retirees about where in the city this type of sport is practiced, for example, and why they recommend it) or more active (providing the ex-operators access at preferential rates to such clubs and/or facilities or the unit itself to organize sports events for these ex-employees).

In summary, an *integrative approach* to psychological care, combining *new technological tools* with *already established effective approaches* (see sections 1.1.3. and 3.1.) and with components from *sports psychology, revising traditional communication trainings,* could prove particularly effective in such a sample.

Limitations of the study

As already discussed, this paper should be seen as a first step towards more precise diagnostic process (both in relation to alexithymia and in relation to situational coping with a life-threatening stressor), and from there towards the formulation of specific counseling approaches. Thus, the conclusions and guidelines presented here should be thoroughly tested in the future.

One of the limitations of this study are the samples sizes and characteristics. Testing the relations between alexithymia and situational coping with a life-threatening stressor in a larger sample of the experimental group would be particularly valuable. Additionally, testing at different stages of the coping process may be beneficial in order to study how variables interact during the process. Another limitation is the interval between the individual's participation in this study and the event they were thinking about when filling the COPE – for some respondents, coping may still be ongoing, while for others it may have ended decades ago. This could have influenced the results given the retrospective nature of the study.

Another limitation is the application of self-report instruments only. Although the choice of only self-report scales is to a certain extent justified[46], it is still reasonable to consider this choice as a limitation, since the application of a heterogeneous test battery could yield additional information about the interaction between the studied variables.

[46] Self-report instruments are the most frequently used tools in psychological practice. In this sense, the counseling frameworks proposed here should describe the diagnostic stages, relying on the most widely used and accessible tools.

Conclusion and future directions

This paper studied three constructs, adapted two psychometric instruments, and formulated three counseling frameworks, contributing this way both theoretically and practically.

- Both adaptations – PAQ and COPE for assessing situational coping with a life-threatening stressor[47] – are valid and reliable instruments. Thus, they allow more precise and detailed diagnostics of their corresponding constructs which favors the refinement of the psychological interventions as well.
- The Bulgarian translation versions of both PAQ and TAS-20 are valid and reliable and can be applied for screening or research purposes. However, when a diagnostic, clinical assessment is intended, the PAQ is psychometrically the better self-report solution.
- Regarding COPE with modified instruction, it is important for mental health professionals to consider the empirical evidence reported here, which indicates that the therapist's interpretation of the client's coping should be context-specific and to not rely on the categories of "helpful" / "less helpful" coping based on studies of coping with everyday stress. This paper reports a new factor solution that better statistically and logically explains coping with a stressor that immediately endangers a person's physical survival.

After the psychometric properties of the applied instruments were confirmed, this paper focused on testing the interrelations between the studied constructs.

- Elevated levels of alexithymia were hypothesized as linked to the choice of socially significant professions, namely, the special force operators in the Ministry of Defense and the Ministry of Internal Affairs. As far as the author`s knowledge, this is the first research that studies this personality trait as part of the profile of MoD/MoI special forces operators. The data reported here confirmed that operators have higher alexithymia compared to the control group, while at the same time do not resort more often to Avoidant or less often to Problem-focused coping compared to the control group. These results call into question the widely accepted notion that high alexithymia is an "undesirable" personality trait (given that it is part

[47] The cited instruments, as well as others used in this paper, can be found in the full text of the dissertation (Appendices 2 and 3). Dissertation full text contains also a reference list with the most frequently used in it abbreviations (Apendix 1), as well as a complete bibliographic reference.

of the personality profile of individuals who have chosen socially significant professions related to the protection of the civilian population) and also that it is associated with less effective coping (it turns out that elevated alexithymia is not uniquely linked to unhealthy coping with a life-threatening stressor).

- This is also the first research to study the relations between alexithymia and coping with heterogeneous life-threatening stressors, providing a framework that explains the overall process of coping with such a stressor, without being limited to one type of life-threatening situation, analyzing simultaneously also: stressor appraisal (including "challenge", which is rarely considered in research designs but appears to be key); coping (providing a new factor solution that better explains the process in a life-threatening context) and mental health.

Based on the results obtained, specific guidelines for counseling practice and the formulation of psychological care programs were presented. Of course, further empirical testing in heterogeneous samples and designs is needed. Thus, each of the suggestions described in Chapter III outlines a direction for future research in order to clarify which psychological approaches are most effective. Topics of future research may also be:

- Studying the relation between alexithymia and life satisfaction, using different alexithymia assessment tools.
- Continuing the research on the affective valence and its importance in alexithymia by studying the effectiveness of different therapeutic approaches tailored to the valence.
- Researching the interaction between frequency of high-risk stressors exposure and stressor appraisals in both CG and EG. It can be assumed that successful coping in similar situations in the past favors perceiving the next high-risk stressor as a challenge rather than a threat.
- Conducting a detailed study on the personality profile of the most successfully dealing with high-risk tasks operators, analyzing the place of alexithymia in their profile. Thus, it will be possible to make an assumption about what is the optimal level of this personality trait for the special forces operators.

In summary, it can be concluded that the results of this paper have contributed to theory and practice while at the same time formulating new questions of research interest.

Reference list of dissertation`s scientific contributions

- This paper contributes to the development of the psychological science in our country by *adapting the Perth Alexithymia Questionnaire (PAQ) into Bulgarian*. It is one of the most widely used self-report tools in recent years. The PAQ overcomes the limitations of the self-report scales that preceded it, which is why its adaptation in Bulgarian allows not only a more comprehensive research work, but also a more precise diagnostic and counseling one.
- This is the first study in Bulgaria that, *through confirmatory factor analyses*, examines two of the most widely used instruments for assessing alexithymia – *PAQ and TAS-20, comparing the psychometric properties of the Bulgarian translations and analyzing their applicability in terms of mental health and therapy*. Thus, empirically based data was reported regarding the advantages and disadvantages of both instruments (and more specifically, their Bulgarian versions), so that mental health specialists in our country can make an informed decision when choosing an assessment instrument.
- To the best of the author's knowledge, this paper is the first attempt to formulate an *integrative counseling framework specifically targeting alexithymia and tailored to the valence of the affect*. The framework contains guidance both for *accurate diagnostics as a key first step* (so that alexithymia is not overdiagnosed due to confusion with other phenomena with which links have been reported – such as depression, repressive style, etc.) and for potentially effective psychological approaches, considering each subscale level and the valence of the affect, with the processing of which the person experiences more difficulties.
- This paper contributes to the development of the psychological science also by *adapting a coping assessment instrument to the specifics of dealing with life-threatening stressors*. As far as the author`s knowledge, this is the first study with such a focus. The new factor structure reported here in three different samples emphasizes that coping with a life-threatening stressor is a situation specific in nature and should be explored and analyzed as such. Applying coping categories based on the study of everyday stress is not an optimal approach when it comes to situational coping with a high-risk and life-threatening stressor.
- This is the first study to provide a *framework explaining the overall process of coping with this type of stressor*. For the first time, *different life-threatening situations* are studied simultaneously, analyzing both *stressor appraisal (including "challenge")* and *coping (using a*

context-tailored instrument). Based on theoretical arguments and empirical data, specific guidelines are formulated on *how the results of this paper are applicable in the work of mental health professionals*.

- As far as the author`s knowledge, *alexithymia is being studied for the first time as a construct related to the choice of profession in the special forces units of the Ministry of Internal Affairs and Ministry of Defense.* The data reported in this paper can serve both in the selection and during the service of these individuals, so that they are supported in maintaining optimal physical and mental health while effectively performing their official duties. The data also provide valuable guidance on how to support their adaptation once they retire from the special forces units.
- This dissertation provides empirical data, theoretical arguments and suggestions for *effective diagnostics and psychological counseling practices, valuable both for special forces* and mental health professionals working with them, and *for the civilian population*.

Publications

Dimitrova, T. & Hancheva, C. (2021). Coping in high-risk situations – personality determinants and individual style. *Bulgarian Journal of Psychology, 3*(4), 217-226. http://psychology-bg.org/wp-content/uploads/Sp_br-34-sekcia-3-i-4-final-za-pe4at.pdf

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Dimitrova, T. (2023). Counseling framework, specifically aimed at alexithymia, and tailored to affective valence: Precise assessment as a key. *Psychological Research (in the Balkans), 26*(3), 187-202. https://doi.org/10.7546/PsyRB.2023.26.03.02

Participation in scientific forums

IX International Congress of Psychology, organized by the Bulgarian Psychological Society;

Jubilee international conference "Psychology – tradition and modernity", organized on the occasion of the 50th anniversary of the establishment of the "Psychology" Specialty at the Sofia University "St. Kliment Ohridski";

The National School for Doctoral Students and Young Researchers in Social Sciences, "Pathways to sustainable development: Approaches and contributions of the social sciences", organized by the Institute for Population and Human Studies, Bulgarian Academy of Sciences.