

Age-Related Differences in the Qualities and Properties of Personality in Relation to the Readiness of Ukrainian Winterers for Life in the Antarctic

Вікові відмінності якостей та властивостей особистості щодо готовності українських зимівників до життєдіяльності в умовах Антарктики

Miroshnychenko Olena

Ph.D. in Pedagogy, Assistant Professor,
Assistant Professor of the Department of Vocational,
Pedagogical and Special Education, Andragogy and Management,
Ivan Franko Zhytomyr State University,
Zhytomyr (Ukraine)

e-mail: perspektiva-z@ukr.net

ORCID ID: 0000-0002-5712-3752

Researcher ID: AAU-2501-2020

Scopus AuthorID: 57190283480

Мірошніченко Олена

кандидат педагогічних наук, доцент,
доцент кафедри професійно-педагогічної,
спеціальної освіти, андрагогіки і управління,
Житомирський державний університет імені Івана Франка,
м. Житомир (Україна)

ABSTRACT

The article reveals the age-related differences in the qualities and properties of the personality in the manifestations of indicators of psychological readiness of winterers to extreme living conditions at the Ukrainian Antarctic "Aka-

Address for correspondence, e-mail: kpnu_lab_ps@ukr.net

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demik Vernadsky" Station. The wintering of Ukrainian polar explorers conducting scientific research on the coast of Antarctica is associated with a long stay in a limited area in difficult climatic conditions, which can lead to strong emotional and physical stress. It has been proved that stress resistance, adaptability, and psychological readiness for life activities, which are determined by the presence of relevant qualities and personality traits, are important factors in such extreme working conditions.

The aim of the article is to present the theoretical foundations and practical results of research on age-related differences in qualities and personality traits regarding the psychological readiness of Ukrainian winterers for life in Antarctic conditions using the example of 10 expeditions to the Ukrainian Antarctic "Aka-demik Vernadskyi" Station.

Methods. A set of methods of psychological research on the qualities and personality traits of winterers of different age groups was used. 71 winterers took part in the experiment, they are participants of Ukrainian Antarctic expeditions during the year from 2011 to 2021.

The results of the research. There were 3 age groups of winterers – mature, middle and young. The components of the professional profile of a winter worker are clarified. As the result of the questionnaire, the qualities and attributes of the personality that contribute to or hinder the performance of professional activities of winter workers are determined. The results of empirical research on the presence of personality qualities and attributes in winterers of different age groups, which are defined as those that ensure the effectiveness of professional activities during wintering, are presented.

Conclusion. It is proved that the greatest number of positive qualities and personality traits, according to the defined professional profile of a winter worker, are demonstrated by representatives of mature age – winter workers aged 46-64 years. It is recommended to include winterers of a certain age in the Ukrainian Antarctic expeditions in a sufficient number (not less than 30% of the total composition of the expedition members), which will ensure the appropriate level of psychological stability of the teams of winterers.

Key words: psychological readiness, life activities in Antarctic conditions, professional profile of a winterer, age groups of adulthood, the focus on activities in extreme conditions.

Introduction

The problem of a specialist's psychological readiness to perform activities effectively and safely carried out in extreme con-

ditions has always attracted the special attention of scientists and practitioners, including the question of the readiness of Ukrainian winter workers to perform professional duties in the Antarctic. The research carried out at the station by Ukrainian winter workers is very important in terms of the global problems of the Earth's climate change. In turn, the effectiveness of the scientific work of specialists largely depends on the level of training of Ukrainian winter workers to fulfill the high scientific mission of conducting Antarctic research. The study on the psychological characteristics of winterers who conduct the researching at the polar station is relevant and important, because the work of specialists in the Antarctic in conditions of long isolation, a limited team and difficult climatic conditions is considered analogous to the work of submariners and astronauts.

Since 2011, we have been researching the psychological features of the readiness of Ukrainian winterers to live in Antarctic conditions, conducting diagnostics of psychological qualities and personality traits, studying interpersonal relationships within a closed team, carrying out psychological preparation for a long expedition, as well as readaptation measures after the return of winterers to Ukraine (Мірошниченко, 2023).

The researching of the problem of readiness for the conditions of staying in the Antarctic is carried out by Ukrainian scientists from the point of view of various aspects. For example, researchers Ye. Moiseyenko and G. Pyshnov studied the physiological features of adaptation of wintering animals (Moiseyenko, Sukhorukov, Pyshnov, Mankovska, Rozova, Miroschnichenko, & et al., 2016; ПИШНОВ, 2012). They established that the participants of Ukrainian Antarctic expeditions, as well as representatives of such professions as air traffic controllers, electronic engineers, firefighters observed a pattern of transformation of chronic fatigue depending on the level of work intensity. A. Hordeev is engaged in the development of information technologies for the professional selection of winterers taking into account the psychophysiological state of the body (Гордєєв, 2016). To

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carry out the professional selection, the author created a computer system program and accumulated a specialized database. O. Kokun and L. Bakhmutova investigated the psychological features of the interaction of members of Ukrainian expeditions in the conditions of a closed team (Kokun, & Bakhmutova, 2021). The authors highlighted three spheres of communication between winterers during wintering (professional, personal, leisure time) and provided psychological recommendations for optimizing interpersonal relations in a limited team.

The researching, which conducted at Antarctic stations in other countries demonstrate that as a result of living in Antarctic conditions, winterers experience deterioration in well-being, mood, sleep disorders, and reduced work capacity (Chen, Wu, Li, Zhang, & Xu, 2016). Extreme working and living conditions at Antarctic stations are caused by the region's low temperatures, increased solar radiation, stormy winds, and the duration of the polar night (Belkin, Dyurgerov, Finaev, & Soroko, 2016; Węśławski, 2020).

The research by Ukrainian and foreign authors testifies that work in extreme conditions involves an increased risk factor, high responsibility for task performance, the presence of unexpected obstacles in the performance of technical and psychological tasks (Смирнов, & Долгополова, 2008; Afanasieva, Svitlychna, Bosniuk, & et al., 2019; Kokun, Agayev, Pischko, & Stasiuk, 2020; Nicolas, Suedfeld, Weiss, & Gaudino, 2016). All the factors named by the authors are also observed in the activities of Ukrainian winterers at the "Akademik Vernadsky" Station and, accordingly, such activities place increased demands on the state of mental health of polar explorers (Moiseyenko, Sukhorukov, Pyshnov, Mankovska, Rozova, Miroshnichenko, & et al., 2016). Strong emotional and physical stress create prerequisites for the occurrence of mental and somatic disorders, as well as suicidal behavior in representatives of risky professions. In such extreme working conditions, important factors are stress resistance, adaptability of the individual, psychological readiness for

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life in extreme conditions, which is due to the presence of the appropriate qualities and properties of the individual.

The aim of the article

The aim of the article is to present the theoretical foundations and practical results of research on age-related differences in qualities and personality traits regarding the psychological readiness of Ukrainian winterers for life in Antarctic conditions using the example of 10 expeditions to the Ukrainian Antarctic “Akademik Vernadsky” Station.

The problems of the study

The problems of the study are: to clarify the structure of psychological qualities and personality qualities in accordance with the defined professional profile of the Ukrainian winter worker, determine the age limits of the studied groups of Ukrainian winterers, to present a methodological tools for the study of personality qualities and properties regarding the success of activities in extreme conditions, to demonstrate the results of the study of age differences in personality qualities and attributes regarding the psychological readiness of Ukrainian winterers for life in Antarctic conditions using the example of 10 expeditions to the Ukrainian Antarctic “Akademik Vernadsky” Station.

Methods of the research

We use the test “Non-existent animal” in the interpretation of M. Dukarevich to study the defined goal and set tasks (Дмитрієва, Максимець, & Бугузова, 2017: 94–99). It was used as an indicator of the development of such a cognitive process as imagination, and it is based on the results of this test, we investigated the levels of creativity, self-esteem, general energy of winterers, aggression and characterological features of winterers. The processing of these methods was carried out using mathematical methods (calculation of average values, percentages).

The obtained results of the methods were confirmed through the use of psychological observation and an auxiliary method – interviews, which were conducted with the subjects. The appli-

cation of these methods ensured the reliability and validity of our research.

Characteristics of the research sample. Research was conducted among members of ten Ukrainian Antarctic expeditions (11-12 people) during 2011-2021. The sample consisted of 71 winterers of the Ukrainian Antarctic expeditions, 69 of them were men and 2 women, the age of the subjects – from 22 to 64 years. In the course of the research, it was found that psychological readiness for life in Antarctic conditions depends in a certain way on the age characteristics of the wintering participants. Therefore, the subjects were conditionally divided into age groups: 22-34 years old (29 winterers) – young winterers, 35-45 years old (30 people) – middle-aged winterers, 46-64 years old (12 people) – mature winterers.

The methodological justification for the selection of age groups of winterers in terms of readiness for life in Antarctic conditions became the works of Ukrainian scientists: B. Hrytsuliak and V. Hrytsuliak distinguish the following periods in the age of an adult: mature age, I period – 22-35 years; mature age, II period – 36-60 years old men; elderly age – 61-74 years (Грицуляк, & Грицуляк, 2021: 8–9).

K. Krutiy and L. Zdanevich offer a different (social-psychological) basis for distinguishing age periods in the life of an adult of our time (Крутий, & Зданевич, 2017: 58–59).

This periodization is based on the theory of generations, according to which modern adults are divided into age groups depending on the years of birth: born in 1947-1967 – born after the Second World War (in our study, these are winterers of older mature age 46–64); born in 1968-1987 – generation “X” (in our study, these are middle-aged winterers 35-45 years old); born in 1988-2000 – generation “Y” (in our study, these are young winterers aged 22-34).

Results and their discussion

Researchers who deal with psychological features of human activity in polar conditions note that some winterers develop

long-term mood disorders with signs of depression, especially during the final phase of the Antarctic expedition (Khandelwal, Bhatia, & Mishra, 2017). At the same time, as scientists emphasize, the results of successful adaptation to adverse environmental conditions are observed in people who work for a long time at Antarctic stations thanks to positive personal qualities, manifested in high enthusiasm, optimistic orientation to the future, the need for achievements, which contribute to the personal growth of the winterer (Blight, & Norris, 2018). Scientists have established that an important role in adaptation to extreme conditions is played by the following features from the social sphere of the individual, which help to adapt to unusual life activities, namely: responsibility for one's own actions, cheerfulness, courage, patience, benevolent attitude towards friends (Kokun, & Bakhmutova, 2021).

Our preliminary studies concern the role of age and individual-typological characteristics of Ukrainian winterers in the process of readiness for life in Antarctic conditions. In the process of a long natural experiment, it was proved that the highest levels of adaptation to extreme conditions of activity at the Antarctic station are demonstrated by older and middle-aged winterers with signs of a phlegmatic or sanguine temperament and a predominant social or professional-resultative motivation (Мірошніченко, 2023).

Our definition of *a person's psychological readiness* for life in extreme conditions (which includes the conditions of the Antarctic) is based on a personal-activity approach. We interpret it as *an integral formation of the personality, which consists in a focus on activities in extreme conditions, arising on the basis of a positive attitude towards such activities, it is determined by personal needs and sustainable motives, awareness of the social significance of work, as well as the presence of professionally important and socially significant qualities that ensure the proper performance of professional duties in extreme conditions.*

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In the course of the study of age and psychological-typological features of readiness for life in Antarctic conditions, we modeled the professional profile of a Ukrainian winterer. We consider a professional profile as a descriptive, technical and psychological characteristic of the type of activity that is inherent in a certain type of profession, and also includes the psychological qualities of a person engaged in this type of activity. Representatives of Ukrainian psychological science in the field of work psychology and management hold a similar opinion (Баклицький, 2008; Рибалка, 2023).

The authors believe that the professional profile includes a list of knowledge about a specific profession and is the basis of the professional approach to the organization of professional training of a specialist. As for knowledge about the specific activities of the Ukrainian winterer, our personal experience of visiting the Antarctic "Akademik Vernadsky" Station as a member of the seasonal detachment, as well as the opinions of experienced winterers and the management of the Antarctic Center, play a significant role here. We believe that in the selection of candidates for wintering, it is necessary to connect the psychological service in order to correlate the candidate's knowledge about the conditions of life in Antarctica with reality and to create a psychological portrait of the specialist, which correlates with the psychological functions inherent in a specific profession.

Having analyzed the professional profiles of other groups of specialists and studied the peculiarities of life activities at the "Akademik Vernadskyi" Station, we modeled the professional profile of the Ukrainian winterer, in which we highlighted several main clusters of concepts: functional duties (performed functions) of winterers during life at the Antarctic station; dominant types of activities related to them, areas of their application; a list of the correspondingly grouped components of the professional profile, highlighted by us, personal qualities and properties inherent in winterers of different age groups.

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We separate outline the qualities and attributes of the individual that ensure the success of professional activity, and those that prevent it (undesirable and incompatible). They were determined by conducting a questionnaire with the participants and leaders of Ukrainian Antarctic expeditions for 10 years of research (see Table 1).

Table 1

**Qualities and properties of the personality
of the Ukrainian winter worker in relation to the success of
professional activities**

Components of a professional profile (personal qualities and attributes)	Qualities and properties of the personality that ensure successful performance of professional activities	Interfering qualities and personality traits successful professional activity
General professional	Professionalism, skill, perseverance, responsibility, diligence, education, ingenuity, inquisitiveness, enthusiasm	Unwanted – inability to switch to another type of activity, narrow professionalism; Incompatible – inability and unwillingness to work in a team, laziness
Moral and strong-willed	Honesty, reliability, discipline, willpower, loyalty, openness, courage, restraint, modesty	Unwanted – envy, overestimated self-esteem, familiarity; Incompatible – greed, cowardice
Social and humanistic	Justice, collectivism, decency, kindness, patriotism, altruism, sensitivity, tact, benevolence, humanism, sociability, tolerance	Unwanted – temper, mistrust, gossip, secretiveness; Incompatible – individualism, vindictiveness, rudeness
Intellectual and cognitive	Intelligence, creativity, intelligence, knowledge of languages, analytical skills, sense of humor	Unwanted – slowness of reasoning; Incompatible – lack of own opinion

Psychophysiologically-adaptive	Good health, energy, endurance, cheerfulness, strength, activity, psychological and emotional stability, balance, sportsmanship, mobility, cheerfulness, youth	Unwanted – vulnerability, indecision; incompatible – intolerance to low temperatures, fear of heights, closed spaces, “seasickness”
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We investigated the availability of winterers of different age groups of those qualities and personality traits of the winterer, which were determined by means of a questionnaire, with the help of the technique of M. Dukarevich “Non-existent animal”. The features of the images, their interpretation and the quantitative indicator of expressiveness of the studied features are presented by us in Table 2.

Table 2

Interpretation of images of the “Non-existent animal” test and the representation of its indicators in representatives of different age groups

Drawing details	Image	Interpretation	Representation in age groups		
			Senior (9 people)	Middle (17 people)	Junior (21 people)
1	2	3	4	5	6
Head	Turned to the right	Activity trend, implementation of plans	22.2 %	29.4 %	23.8 %
	Turned to the left	Tendency to reflexivity, reflection	33.3 %	47.1 %	33.3 %
	Full face	Egocentricity	33.3 %	17.6 %	42.9 %
	Increased head size	Rationalism	33.3 %	-	14.3 %
Supporting part of the figure, body	Strong, large supporting part	Thoroughness, reliance on the essence of phenomena	33.3 %	41.2 %	42.9 %
	Medium-sized support part	Medium expression of thoroughness of judgments	-	29.4 %	19.0 %

	Small, unstable support part	Superficiality of judgments, frivolity	33.3 %	23.5 %	33.3 %
Connection of the legs to the torso	Strong	Control over their own judgments is high	-	35.3 %	19.0 %
	Medium	Control over their own judgments is medium	22.2 %	29.4 %	28.6 %
	Weak	Control over their own judgments is weak	-	35.3 %	47.6 %
Legs (paws)	Diverse	Variety of attitudes, judgments; independence, creativity	33.3 %	17.6 %	28.6 %
	Same type	Conformity of judgments, attitudes; their standard, banality	44.4 %	70.6 %	57.1 %
Details above the body, the head	Wings, feathers, hair, tentacles, etc.	Confidence, curiosity, passion for their activities	22.2 %	70.6 %	76.2 %
	Decorations	Demonstrativeness	22.2 %	35.3 %	23.8 %
Tail	Turned right up	Positive assessment of their own actions	44.4 %	17.6 %	19.0 %
	Turned right down	Negative assessment of their own actions	-	29.4 %	19.0 %
	Turned left up	Positive assessment of their thoughts and decisions	-	-	4.8 %
	Turned left down	Negative assessment of their thoughts and decisions	-	23.5 %	9.5 %
Drawing contours and number of details	The contours are clear and there are a lot of details	High energy level	44.4 %	41.2 %	33.3 %
	Medium-pressure contours, enough details	Medium energy level	33.3 %	23.5 %	33.3 %

	Weak or too bold outline, small number of details	Low energy level	22.2 %	35.5 %	33.3 %
Overall impression of the animal	Threatening (similar to a predatory beast)	Aggressiveness	11.1 %	35.3 %	9.5 %
	The one who is threatened	Defenselessness	11.1 %	5.9 %	19.0 %
	Neutral	Tolerance	77.8 %	58.9 %	71.4 %
Likeness to a person	Walking upright, clothing, face, hands	Lack of emotions	33.3 %	17.6 %	19.0 %
Sexual signs	Udder, breast, genitals	Fixing on sex problems	11.1 %	17.6 %	9.5 %
Number of elements	One animal with a detail from another one	Low level of imagination, banality	22.2 %	29.4 %	28.6 %
	An animal with elements of several other animals	Medium level of imagination, the presence of creative imagination	22.2 %	23.5 %	38.1 %
	A completely new creature	High level of imagination, originality	55.6 %	41.2 %	14.3 %
	A figure in the shape of a circle	Secrecy, isolation, unwillingness to give information about themselves	-	5.9 %	19.0 %
Horns, canines, claws, needles, sharp protrusions, etc.	Located on top	Signs of an aggressive attitude towards elders by age and position	22.2 %	23.5 %	9.5 %
	Located at the bottom	Signs of an aggressive attitude towards the younger ones by age and position	-	-	9.5 %

Name of the animal	Rational combination of semantic parts	Rationality, specifics	77.8 %	70.6 %	66.7 %
	A word similar to scientific	Demonstration of intelligence, erudition, demonstrative behavior	22.2 %	23.5 %	3 %
	Surface-sound name	Frivolous attitude to reality	-	5.9 %	19.0 %

Let us analyze the obtained data on the scales of the methodology.

The tendency to activity, implementation of plans, as well as the tendency to reflexivity, reflection is most pronounced among winter residents of the middle age group (29.4% and 47.1% of the subjects, respectively). The same group showed the least degree of egocentricity (17.6 %), which positively characterizes it. However, the largest percentage of the researched (42.9 %) have manifestations of egocentricity in the younger age group. Rationalism in relation to the realities of life is also most represented among winter residents of the younger age group (14.3 %).

It is also connected with rationalism among representatives of the younger group that they have the highest percentage (42.9 %) of the indicator that characterizes the thoroughness, resistance to the essence of phenomena.

Representatives of the middle age group (35.3%) have high control over their own judgments, while representatives of the younger group (47.6%) have weak control.

Representatives of the older group have a greater variety of attitudes, independence, and creativity than winter residents of other groups (33.3 %). And the conformity of judgments, attitudes, their standard, banality is most pronounced in representatives of the middle age group (70.6 %).

Confidence, curiosity, and passion for their activities are represented, according to the methodology, in winter residents of the younger age group (76.2 %), and to the least extent they

are represented among representatives of the older age group (22.2 %), which, in general, corresponds to the psychological characteristics of age. Demonstrative behavior is most pronounced among middle-aged people (35.3 %).

A positive assessment of their actions is most typical for representatives of the older age group (44.4 %). Negative assessment of their thoughts and decisions of actions is most pronounced among winter residents of the middle group (29.4 %).

A high level of energy, oddly enough, is most observed among representatives of the older age group (44.4 %), and a low level is most observed among representatives of the middle group.

Signs of aggressiveness and fixation on sex problems are most pronounced among winter residents of the middle age group (35.3% and 17.6%, respectively), signs of defenselessness are most pronounced in the younger age group. The most tolerant were representatives of the older age group (77.8 %). Also, representatives of the older age group showed the highest percentage of a high level of imagination development (55.6 %), creating a completely new creature – a non-existent animal. Representatives of the older group do not have indicators that demonstrate secrecy, isolation, or unwillingness to give information about themselves. Also, winter residents of the older group do not have indicators of a frivolous attitude to reality, and the rationality and specifics presented in the name of the animal have the highest percentage (77.8 %). As for the indicators of a frivolous attitude to reality, the largest percentage is observed in the younger age group.

Conclusions

After analyzing the indicators of the presence of psychological qualities and properties of wintering grounds of different age groups based on the results of the "Non-existent animal" methodology, we draw the following conclusions. Representatives of the older age group have to the greatest extent (among winter residents of other age groups) such desirable qualities and per-

sonality traits for winter residents as rationalism, a variety of attitudes, judgments; independence, creativity, positive assessment of their own actions, tolerance, a high level of imagination, originality, lack of secrecy and isolation, specifics in cases and plans, lack of frivolous attitude to reality.

Representatives of the middle age group are most represented among other age groups by such positive qualities and personality traits as a tendency to activity, implementation of plans.

Winter residents of the younger age group have the following positive qualities and properties: thoroughness, reliance on the essence of phenomena, confidence, curiosity, passion for their activities; they have the lowest level of aggressiveness (both to older and younger comrades) compared to representatives of other age groups.

So, the greatest number of positive qualities and personality traits, according to a certain professionogram of the winter resident, are demonstrated by representatives of mature age – winter residents of 46-64 years. We can recommend people of this age to the Ukrainian Antarctic expeditions in sufficient numbers (at least 30% of the total membership of the expedition).

Human behavior in extreme conditions, their impact on the individual, as well as the consequences that are caused by such conditions – all this belongs to the range of promising issues of psychology. Research, diagnosis, and correction of mental disorders of a person who has been or is constantly in extreme conditions of existence should become relevant. We think that recent events in our country related to the conduct of military operations, the occupation of Ukrainian territories, and the transfer of tragic events by our fellow citizens as a result of the war with the Russian occupiers will bring a lot of bitter experience about the impact of a person's staying in extreme situations. Therefore, the issues of psychological readiness for life in extreme conditions of life, as well as the issues of rehabilitation after leaving the zone of extreme conditions, are extremely important.

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Мірошниченко Олена. Вікові відмінності якостей та властивостей особистості щодо готовності українських зимівників до життєдіяльності в умовах Антарктики.

У статті проаналізовано вікові відмінності якостей та властивостей особистості у проявах показників психологічної готовності зимівників до екстремальних умов життєдіяльності на українській антарктичній станції «Академік Вернадський». Зимівля українських полярників, які проводять наукові дослідження на узбережжі Антарктиди, пов'язана з тривалим перебуванням на обмеженій території в складних кліматичних умовах, що може призвести до сильних емоційних і фізичних навантажень. Доведено, що в таких екстремальних умовах роботи важливими чинниками є стресостійкість, адаптивність, психологічна готовність до життєдіяльності, яка обумовлена наявністю відповідних якостей і властивостей особистості.

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Мета статті: представити теоретичні основи та практичні результати досліджень вікових відмінностей якостей і властивостей особистості щодо психологічної готовності українських зимівників до життєдіяльності в умовах Антарктики на прикладі 10-ти експедицій до Української антарктичної станції «Академік Вернадський».

Методи. Використано комплекс методів психологічних досліджень якостей і властивостей особистості зимівників різних вікових груп. В експерименті взяв участь 71 зимівник – це учасники Українських антарктичних експедицій упродовж року в період з 2011 по 2021 роки.

Результати дослідження. Виділено три вікові групи зимівників – зрілого, середнього та молодого віку. З'ясовано компоненти професіограми зимівника. В результаті анкетування визначено якості та властивості особистості, що сприяють або заважають виконанню професійної діяльності зимівників. Надано результати емпіричних досліджень щодо наявності якостей і властивостей особистості у зимівників різних вікових груп, що визначені як такі, що забезпечують ефективність виконання професійної діяльності під час зимівлі.

Висновки. Доведено, що згідно визначеної професіограми зимівника найбільшу кількість позитивних якостей і властивостей особистості демонструють представники зрілого віку – зимівники віком 46-64 років. Рекомендовано при формуванні команд включати зимівників означеного віку до складу Українських антарктичних експедицій у достатній кількості (не менш, ніж 30% від загального складу членів експедиції), що забезпечить належний рівень психологічної стабільності колективу.

Ключові слова: психологічна готовність, життєдіяльність в умовах Антарктики, професіограма зимівника, вікові групи дорослості, спрямованість на діяльність в екстремальних умовах.

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