

Psychological Predictors of Human Hardiness Formation

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ABSTRACT

The relevance of the researched problem is conditioned by the growing social and psychological tension in the ever-changing post-industrial society and psychoemotional disorders affecting the human lifespan, developing on this background. The goal of the article is to disclose and analyse psychological predictors of hardiness formation, stipulating self-preservation and longevity of human. Identification of personal and reactive anxiety of young people, as well as assessment of their adaptive capacity are the leading methods in the study of this problem, allowing for complex consideration of the factors influencing the hardiness formation. The article discloses and justifies psychological indicators, serving as predictors of contemporary human hardiness, needed to overcome the difficulties of life arising in the course of personality ontogenesis. Article data may be useful for psychologists, psycho-physiologists, teachers and other professionals concerned with support and assistance to people experiencing problems in difficult situations.

KEYWORDS

Hardiness, positive education, predictors, self-regulation, self-preservation.

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Introduction

Hardiness is a human quality detected in difficult situations, challenges, hardships that require mobilization of one's vitality, personal resources to overcome adverse circumstances of life. In the study of psychological processes of confrontation to stress and problematic situations, American scientists S. Maddi & D. Khoshaba (1994) introduced the concept of hardiness (strength, endurance) that D.A. Leontiev & E.A. Rasskazova (2006) proposed to designate as "hardiness".

The term "hardiness" has been actively used in recent years by the Russian psychologists in the study of problems of emotional stability, stress resistance,

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overcoming life's difficulties, crisis and emergency situations, deterioration of health, personal development in difficult circumstances, disability, etc. (Davydova et al., 2016; Ashmarina et al., 2016). It should also be borne in mind that hardiness is also manifested at psycho-physiological, socio-psychological, personal and semantic levels and is studied in various sectors of human study: psychophysiology, psychotherapy, occupational psychology, gerontology, etc.

S. Maddi & D. Khoshaba (1994) define hardiness as an integral feature of personality responsible for the success of overcoming the difficulties of life. Hardiness allows resisting the negative influences of the environment, increases person's ability to handle stress, and enables predicting the desired future (Nagy & Nix, 1989). Hardiness is a system of human beliefs of self, the world and human relations with it, which consists of three components (involvement, control and risk taking). It allows for assessing events as the least traumatic and enables coping with stressful situations. According to his theory, a person is constantly making choices: "choice of the past" (the usual and familiar) or "choice of the future" (new, uncertain and unpredictable). Permanent choice of the past leads to alienation in the form of vegetativeness (a combination of meaninglessness and powerlessness), impotence, nihilism (denial of the meaning) and adventurism. Changing the pattern of the choice of the past lies at the heart of "program of life improvement", developed by S. Maddi & D. Khoshaba (1994). Hardiness in this process is an essential resource that a person can rely on when choosing the future. In the future, there is always uncertainty. Hardiness allows for coping with future uncertainty, overcoming anxiety that arises and personal helplessness, transforming them into the situation development (Sukhov, 2002).

As a manifestation of hardiness, there can be distinguished: active longevity, stress resistance, adaptability, self-control, self-actualization, self-management, self-organisation, overcoming existential and professional crises (Zeer, 2015; Zeer & Streltsov, 2016; Dorozhkin et al., 2016).

Materials and Methods

Research methods

In the course of the research, the following methods were used: theoretical (theoretical analysis and specification); diagnostic (assessment of adaptive capacity in terms of indicators of the cardiovascular system, which is the most sensitive to stresses (Baevsky, 1988); empirical (measuring anxiety levels both as a personal property and as a state (Spielberger, 1995), methods of graphic representation of the results.

Experimental research base

Russian State Vocational Pedagogical University was an experimental research base. 124 respondents participated in measuring anxiety levels, (average age of 17 ± 1.5 years), 237 students of the 1, 2, 3 years of study at the Russian State Professional Pedagogical University (average age of 19 ± 0.5 years) took part in assessing the adaptive capacity in terms of the cardiovascular system.

Stages of research

The study of the problem was conducted in three stages.

The first stage involved analysis of the Russian and foreign literature on the investigated problem.

The second stage was devoted to determining the basis for the experiment; measurements of the psychological predictors of human hardiness formation were carried out.

At the third stage, processing of the results, drawing conclusions and recommendations was performed.

Results

Among the factors that determine the ability to predict hardiness, there are psychological indicators (Nagy & Nix, 1989; Zeer, 2015), in particular the levels of human anxiety. It should be noted that anxiety is not a negative feature. A certain level of anxiety is a natural and mandatory feature of human activity. In addition to that, each of us has our own optimal level of "useful anxiety", which allows us to better adapt to the environment, while the high level of anxiety is prognostically unfavourable concerning the state of health and forming the body hardiness.

The scale of self-evaluation of the anxiety level is a reliable and informative way of self-evaluation of anxiety level at the moment (reactive anxiety as a state) and personal anxiety (as a stable characteristic of a person). The self-evaluation scale consists of two parts, separately evaluating reactive (RA) and personal (PA) anxiety.

Studies indicate that 62% of first-year students have high reactive (situational) anxiety, 38% of the students have the average level of anxiety (Figure 1).

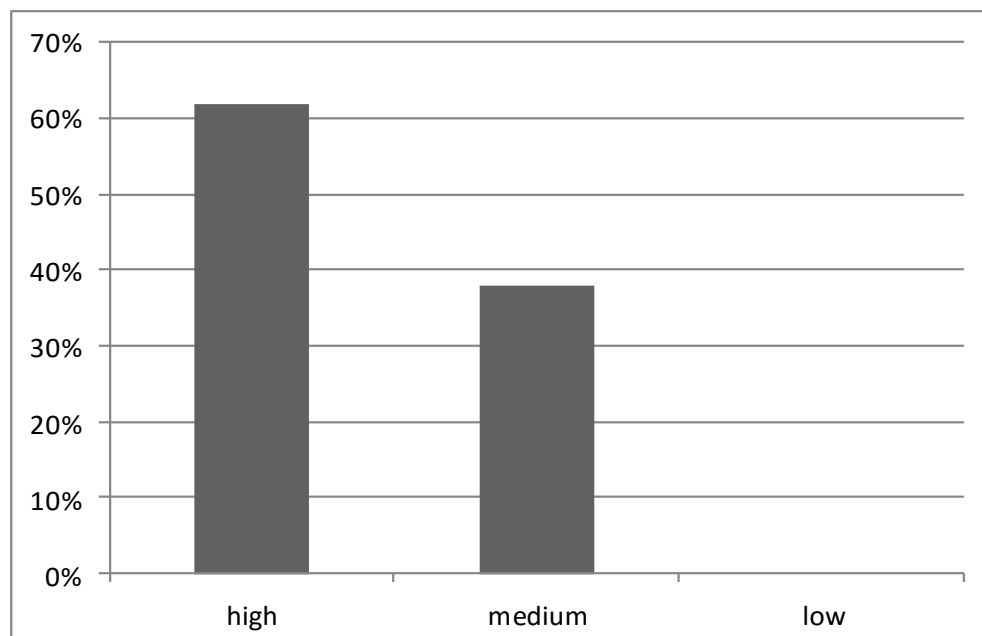


Figure 1. Indicators of reactive anxiety

Higher rates are registered in the evaluation of personal anxiety: 3/4 of the students had high level, the rest had the average level (Figure 2).

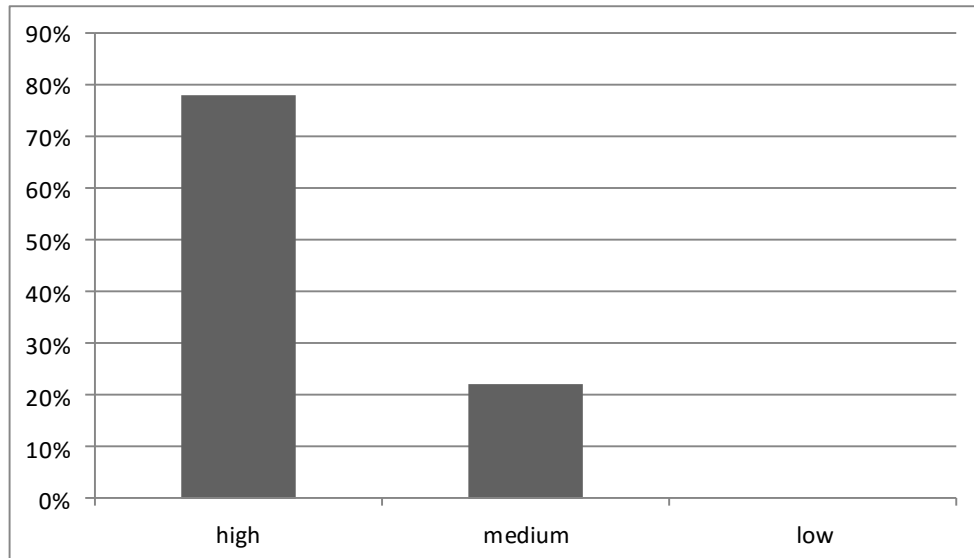


Figure 2. Indicators of personal anxiety

These data indicate that the majority of students experience a state of almost constant anxiety. High level of anxiety disorganizes educational activity, which leads to missing classes, reduced performance, withdrawal into themselves (lack of contact with peers and parents). Bad habits can develop in order to relieve psychoemotional stress, a person can escape from reality into the virtual world (uncontrolled use of a computer). All this, taken together, does not contribute to the further development of hardiness and longevity. Difficulties and hardships are experienced in more severe form there.

It is possible that high levels of situational and personal anxiety indicate the period of psychological adjustment of freshmen to studying at a higher education institution. There is a situation of conflict of important needs and goals (Kurus, 2016). In this case, it is necessary teach students in addition to methods of diagnostics of psychophysiological indicators of body, the methods of self-control, which allow removing psychoemotional stress (relaxation method, composition of optimal time budget, the ability to set priorities in life). Personal conversations with students also help freshmen to adapt to the new university system: benevolence of the teacher and desire to help decrease the student's psychoemotional stress.

Cardiovascular system is the main indicator of adaptive reactions of the body. Regulation of functions in the body is carried out by the central and autonomous mechanisms. Engaging of these mechanisms depends on the level of functional reserves of physiological systems. The higher functional reserves are, the lower the degree of tension of the regulatory mechanisms becomes, and regulation is carried out by autonomous mechanisms. If autonomous mechanisms do not provide the required level of functioning of the body systems, the central regulatory mechanisms are engaged, which mobilize strategic reserves and indicate the tension of mechanisms of the body functions

regulation. From this moment, transition from healthy state to disease begins, which is considered as a process of gradual decline in the body's adaptation to environmental conditions. As a result, a variety of borderline states are developed, which are called prenosological or preclinical, which are diagnosed by the adaptive capacities of the blood circulatory system. They are characterized by the strain of the regulation mechanisms and the reduction of reserves. They are observed in cases when the body has to apply more effort than usual to allow adaptation and balancing of the organism and its environment. If the impact of unfavourable factors continues for a long time, excessive strain of regulatory systems may lead to depletion of reserve capacity and overtension of the regulatory mechanisms, and as a consequence, reduction of hardiness of the entire organism.

In order to assess the organism's adaptation potential (AP), R.M. Baevsky (1988) proposed an algorithm, which includes weight, height, age, value of blood pressure, and pulse rate:

$$AP = 0.011HRR + 0.014SBP + 0.008DBP + 0.014A + 0.009BW - (0.009H + 0.27),$$

where A — age (years);

SBP — systolic blood pressure (mm Hg);

DBP — diastolic blood pressure (mm Hg);

HRR — heart rate at rest (beats/min);

BW — body weight (kg);

H — height (cm).

Four gradations of the AP status are established, which correspond to four adaptation groups and states of health, which are defined based on an assessment scale depending on the quantification value.

<2.6 — adaptation is satisfactory, the respondent is healthy;

from 2.6 to 3.09 — tension of adaptation mechanisms, it is necessary to comply with the regime of work and rest;

from 3.1 to 3.49 — unsatisfactory adaptation, significant reduction in reserves, there is influence of environment;

> 3.5 — overtension, failure of adaptation, depletion of the reserves of the regulation mechanisms, the respondent is sick.

As a result of this method, the level of adaptation of the cardiovascular system to the effects of environmental factors on the human body was estimated, in this case, on the students of higher educational institutions.

The higher is the adaptive potential (AP), the higher the tension of the adaptation mechanisms becomes, the more unhealthy the subject feels. As a result of our study, it was revealed that the average value of AP increases from course to course (Figure 3). This fact indicates the tension of adaptation mechanisms. At critical values it can lead to the disruption of adaptation processes and development of diseases of the cardiovascular system.

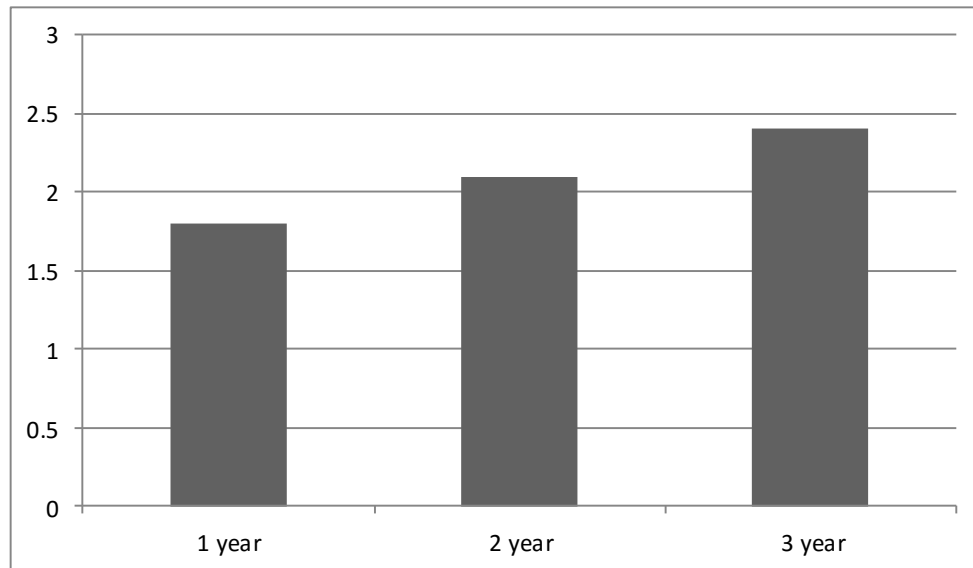


Figure 3. Dynamics of adaptive potential by years of study

Studies show that the expected adaptation of students (in terms of the cardiovascular system) does not occur. Moreover, many students start to work outside the university (especially those studying on a paid basis), some create families. The rising level of social responsibility leads to an even more intense disturbance of adaptation processes. At the same time, critical values, indicating the failure of adaptation mechanisms, were not revealed, but the tendency to the adaptation decline indicates also the reduction of stress resistance and, consequently, possible difficulties in the formation of the hardiness of the organism.

Discussions

The issue considered in previous studies concerning the conceptual apparatus, describing such phenomenon as hardiness, allowed establishing the main predictors that contribute to its formation. We attributed individual and physiological characteristics of human, psycho-physiological characteristics, socio-psychological characteristics, life experience and personal orientation to the factors of vitality development and hardiness (Maddi & Khoshaba, 2004). Their structural characteristics were summarized in previous studies (Zeer, 2015). While hardiness formation is considered in psychological literature, basic sense-making moments are distinguished. A specific resource, potential (which may include a variety of psychological properties) is a core, which can be needed in some situation. It is an integral psychological personality trait, developing on the basis of sets of active interaction with life situations and integrated capacity for social and psychological adaptation based on the dynamics of sense self-regulation (Fominova, 2012).

The study, affecting denomination of hardiness in relation to the orientation of personality (Stetsishin, 2008) is interesting. It emphasises the nature of the individual adaptation resources. R.I. Stetsishin (2008) raises the problem, which is complemented by a high practical demand, analysis of psychological hardiness predictors to optimize the processes of personal, professional and personalized

adaptation, coping with life and professional stresses. Works of the Russian and foreign researchers (Bogomaz & Balanev, 2009; Evan et al., 1993) also reflect the researches of the relationship of hardiness and human innovation capacity. They note that hardiness is indeed related to the innovative potential. Their data showed that young people who are involved in the innovation activities, are more resilient and tend to feel their own importance and value, as well as experience a higher motivation to implementation, leadership, healthy thoughts and behaviour. They are characterized by a high motivation to seek ways to influence new life events, they are open to the outside world and are able to perceive new situations as a challenge, in response to which they can learn something new and better understand themselves. There are also works examining the relationship of psychological safety of people and the manifestation of hardiness (Bogomaz & Gladkikh, 2009; Duganova, 2010). The authors point out that people with high and low psychological safety also manifest differences in levels of hardiness. The studies found the correlation between the indicators of general hardiness and psychological safety. Qualitative analysis of the results led to the conclusion that people with low psychological safety have mainly medium and low hardiness, which makes it possible to characterize them as insecure in their abilities and capability to cope with stress. In the usual situations, such people are not prone to stress; however, when entering any unfamiliar stressful situations, they are prone to rapid fatigue. People with high psychological safety have high hardiness that characterizes them as people who are active, self-confident, able to cope with stress, while continuing to work efficiently and without losing composure. Developments of E.I. Kuzmina & O.S. Moroz (2010) on the studied problem show that hardiness, in turn, also contributes to overcoming frustration. Its development prevents formation of internal stress in stressful situations due to persistent coping with them, and accordingly, their perception as less important. It turns out that resilient people do not bring themselves to frustration and affectus, and if they appear in a frustrating situation, they seek to find a constructive way out of it as soon as possible, getting things done with minimal losses. Resilient individuals in a situation of frustration, as a rule, do not show confusion or aggression, do not blame anyone, do not expend energy in protecting themselves or others; they tend to seek and find a rational way out of a difficult situation, to achieve their goals. Accordingly, for people with a high level of hardiness, it is characteristic to search for a constructive way out of frustration; and the following patterns appear: 1. For people with a high level of hardiness impulsive type of exit from a situation of frustration is typical. 2. The higher is the level of hardiness, the higher becomes the level of social adaptation.

Hardiness is a necessary quality for persons with disabilities. Requirements to modern education, according to the Federal Law "On education of persons with disabilities" oblige teachers to involve these students in the educational environment, which creates some difficulties both for the teacher and for the students themselves. Given that these children and adolescents have different mental or physical deviations, which cause violations of the overall development, not allowing children to enjoy a full life, the law also requires development of skills to build hardiness. But the complexity and uniqueness of the psyche of these students requires careful methodological approach to the process of psycho-physiological and psychological assistance.

We should note the problem of increasing the need to develop hardiness in elderly and senile age. It is known that the effectiveness of the biological life support mechanisms, working smoothly under the genetic programs during life, is reduced progressively. Older people have less stamina and energy, they are not able to withstand long term physical and nervous loads. Formation of hardiness during this period helps to solve the problem of adaptation to the new requirements of life, age and social changes.

All of the above allows us to note the significance of our results for the hardiness formation at various stages of human life. The sooner an individual becomes aware of his/her individual psychological and psycho-physiological features, the sooner he/she will be able to develop his/her own trajectory of body hardiness formation by mastering the specific means and methods of self-regulation. The presented research allows identifying and assessing the psychological predictors of hardiness with a view of its possible forecasting and formation in later life, taking into account the individual characteristics of the personality. It will be possible if young people already in the period of youth, knowing their psychological and physiological indicators, gradually become able to master the techniques of increasing stress resistance and relieving psychological stress, as well as maintaining the levels of anxiety within the limits of psycho-physiological standards.

Conclusion

Studies show that such psychological predictors of hardiness as the anxiety levels and adaptive potential based on indicators of the cardiovascular system of current youth are alarming in relation to building hardiness, increasingly causing its destruction.

Accordingly, to enhance internal resources in terms of building the organism hardiness, there is a growing demand for learning the methods of psychological and psycho-physiological self-regulation, the need for psychological support, mastering the skills of a healthy lifestyle.

A variety of such techniques may be training on hardiness for adolescents and young people, the result of which will be a decrease in the level of depression and anxiety, and in some cases, post-traumatic stress disorders (Seligman, 2013). It is very important in the process of personality development to provide professionally competent assistance for the removal of "mental traps", namely deep-rooted beliefs, which often lead to inappropriate emotional reactions and undermine the hope for help and the desire to rely on others. In addition, in the learning process, taking into account the rapidly increasing intensification of training programs, it is necessary to professionally address minimization of catastrophic thinking of students, based on the facts and optimism.

By focusing on high levels of personal and reactive anxiety of students, identified in our research, as well as the negative trend to an increase in adaptive capacity in based on the cardiovascular system, there is an emerging need for establishing a "Centre for confidence and well-being development" at the higher education institutions. Their main purpose would be to counteract the helplessness, depression, pessimism, apathetic life position of participants of the educational process, which would allow within the higher education institution

to organize positive education, which is already rather successfully implemented in the UK education system.

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No potential conflict of interest was reported by the authors

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References

- Ashmarina, S.I., Streltsov, A.V., Dorozhkin, E.M., Vochozka, M. & Izmailov, A.M. (2016). Organizational and Economic Directions of Competitive Recovery of Russian Pharmaceutical Enterprises. *IEJME-Mathematics Education*, 11(7), 2581-2591.
- Baevsky, R. M. (1988). *Measure your health*. Moscow: Soviet Russia, 96 p.
- Bogomaz, S. A. & Balanov, D. Yu. (2009). Hardiness as a component of human innovative capacity. *Siberian Psychological Journal*, 32, 23-28.
- Bogomaz, S. A. & Gladkikh, A. G. (2009). Psychological safety and its measurement using the scales of basic beliefs. *Bulletin of the Tomsk State University*, 318, 191-195.
- Davydova, N.N., Dorozhkin, E.M., Fedorov, V.A. & Konovalova, M.E. (2016). Research and Educational Network: Development Management. *IEJME - Mathematics Education*, 11(7), 2651-2665.
- Dorozhkin, E.M., Leontyeva, T.V., Scherbina, Y.Y., Shchetynina, A.V. & Pecherskaya, E.P. (2016). Teacher's Labour as a Tool of Forming Human Capital of Higher School Graduates. *IEJME-Mathematics Education*, 11(7), 2773-2787.
- Duganova, Yu. K. (2010). Hardiness of people with different psychological safety. *Science of Human: Humanitarian Research*, 5, 130-133.
- Evan, D. R., Pellizari, J. R., Culbert, B. J. & Metzen, M. E. (1993). Personality, marital and occupational factors associated with quality of life. *Journal of Clinical Psychology*, 4, 477-485.
- Fominova, A. N. (2012). *The hardiness of a person*. Moscow: Prometheus 125 p.
- Kurus, I. A. (2016). Relationship of crises, crisis experiences and orientation of time perspective of students at an early stage of studying at the university. *The Education and science journal*, 2, 68-79.
- Kuzmina, E. I. & Moroz, O. S. (2010). Freedom from frustration and hardiness. *Bulletin of Moscow State Regional University*, 2, 5-8.
- Leontiev, D. A. & Rasskazova, E. A. (2006). *Test of hardiness*. Moscow: Smysl, 63 p.
- Maddi, S. & Khoshaba, D. (1994). Hardiness and Mental. *Journal of Personality Assessment*, 2, 63, 265-274.

- Maddi, S. & Khoshaba, D. (2004). *Hardy training. Managing stress for performance and health enhancement*. Irvine: Hardiness Institute, 301 p.
- Nagy, St. & Nix Ch., L. (1989). Relation between preventive health behaviour and hardiness. *Psychological Reports, 1*, 339-345.
- Seligman, M. (2013). *The path to prosperity*. Moscow: Mann, Ivanov and Ferber, 402 p.
- Spielberger, Ch. D. (1995) *Test Anxiety: theory, assessment, and treatment*. Hemisphere: Taylor and Francis, 142 p.
- Stetsishin, R. I. (2008). The focus of the personality and hardiness: a psychological study. *Bulletin of the Adygeya State University, 7*, 186-190.
- Sukhov, A. N. (2002). *Social psychology of safety*. Moscow: Academy, 256 p.
- Zeer, E. F & Streltsov, A. V. (2016). Technological Platform for Realization of Students' Individual Educational Trajectories in a Vocational School. *IEJME — Mathematics education, 11(7)*, 2639-2650.
- Zeer, E. F. (2015). Social psychological aspects of hardiness development and hardiness formation of human. *Pedagogical education in Russia, 8*, 69-76.