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The role of mechanisms of buffering anxiety in HIV carriers. A study within the terror management theory paradigm

Rola mechanizmów buforowania lęku u nosicieli wirusa HIV. Badanie w paradygmacie Teorii Opanowywania Trwogi

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Summary

Introduction: The paper concerns definition of the level of posttraumatic growth (PTG), the psychological adaptation mechanism occurring after extreme experiences in life, such as being informed of having HIV infection.

Aim: The study is experimental, aiming to assess whether correlations between exposure to thoughts of stressful experiences and their psychological consequences are mediated by an efficient mechanism of buffering anxiety.

Material/Methods: Fifty-four men and 26 women infected with HIV who underwent manipulated exposure to mortality according to the hypotheses of the terror management theory (TMT) were included. Subjects were randomly assigned to the control group (dental anxiety) or the experimental group (fear of dying).

Results: The results confirmed the assumptions of the terror management theory. The subjects had an efficient mechanism of alleviating the fear of dying, the so-called "anxiety buffer." The analysis revealed a high level of posttraumatic growth and advantages derived from the disease. The paper additionally characterizes the specific group of HIV-positive people, their functioning in society and the family. It touches on such issues as professional work, relations with relatives and friends, social life, and adherence.

Conclusions: The study has shown that the specific group of people infected with HIV managed very well to adapt to the circumstances. One may say that as a consequence of acquiring the infection, the subjects have experienced significant changes of personality, which have ultimately led to an improvement of their lives and offered new possibilities for personal and social development to them. All the recorded changes fit into the TMT paradigm.

Key words: **HIV • anxiety • stress • depression • posttraumatic growth**

Streszczenie

Wprowadzenie: Praca dotyczy problemu określenia poziomu wzrostu posttraumatycznego (posttraumatic growth – PTG), czyli psychologicznego mechanizmu adaptacyjnego występującego po doświadczeniu skrajnych przeżyć życiowych, takich jak uzyskanie informacji osobistej o zakażeniu wirusem HIV.

Cel: Badanie ma charakter eksperymentalny. Eksperyment służył ocenie tego, czy zależności między ekspozycją na myśli o stresujących wydarzeniach życiowych, a ich konsekwencjami psychologicznymi są mediowane przez sprawnie działający mechanizm buforowania lęku.

Materiał/metody: Przebadano 54 mężczyzn i 26 kobiet, zakażonych wirusem HIV, którzy zostali poddani manipulacji eksponowania śmiertelności zgodnie z hipotezami Teorii Opanowywania Trwogi. Badani zostali losowo przydzieleni do grupy kontrolnej (lęk dentystyczny) oraz eksperymentalnej (lęk przed śmiercią).

Wyniki badań: Wyniki potwierdziły założenia Teorii Opanowywania Trwogi, badani mają sprawnie działający mechanizm uśmierzania lęku przed śmiercią, tak zwany „bufor lęku". Analiza wykazała duży wzrost posttraumatyczny i duże korzyści czerpane z choroby. Praca dodatkowo charakteryzuje specyficzną grupę osób zakażonych wirusem HIV, ich sposób funkcjonowania w społeczeństwie i rodzinie. Porusza takie zagadnienia jak praca zawodowa, relacje z bliskimi, życie towarzyskie, adherencja.

Wnioski: Z badania wynika, że tak specyficzna grupa jaką są nosiciele HIV zgodnie z założeniami teorii poradziła sobie z adaptacją do zaistniałych warunków. Można stwierdzić, że w konsekwencji zakażenia HIV badani doświadczyli dużych zmian osobowościowych, które w następstwie zmieniły ich życie i dały nowe możliwości rozwoju osobistego i społecznego. Wszystkie zaistniałe zmiany wpisują się w paradygmat założeń TMT.

Słowa kluczowe: **HIV • lęk • stres • depresja • wzrost posttraumatyczny**

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Introduction

HIV carriers are a specific and closed social group existing under pressure, stigmatized and in fear. It was this interesting and difficult to access social group that inspired us to verify empirically the assumption that some time after obtaining the traumatic news and coping with the effects of the trauma, infected persons function exceptionally well, even much better than before hearing the diagnosis. Unfortunately, this fact does not result in better perception of the group by society, as this group is closed and few persons apart from their families and close friends have an opportunity to observe these changes in their everyday life. Multiple studies (Polish Epidemiological Association) show unequivocally that Polish society is strongly prejudiced against HIV-positive people. As the carriers themselves say, this is caused by the stereotype of the infection route, generated years ago by the media and press. This situation brought a reactive problem of intolerance and paralyzing terror of non-acceptance by society – this is why the news of infection is usually hidden and confined within the household.

It is a paradox that people who have learnt about the infection and decide to start therapy, unless their condition requires treatment, very often introduce positive changes into their lives [11,17] – as if suddenly they realized how short life is and that it should be used for the best. Even the news of the infection is a huge psychological shock and the beginning of therapy is frequently another step to normal life. Some patients at the first stage of the infection undergo psychological therapy to overcome the effects of the trauma and, very often, the symptoms of the coexisting posttraumatic stress disorder (PTSD), but most people cope with it by themselves – a phenomenon which may be attributed to individual characteristics [5,6,8,15,17]. Regardless of social status and the cause of infection, each patient starts a "new path" in his or her life, involving overcoming of fears and frequently a return to normal life. And this does not depend on whether the possibility of infection was suspected before or the news was a complete surprise.

Many persons infected by intravenous use of drugs start therapy upon seeing the positive result and one can even say that they are "encouraged" to attempt to confront the surro-

unding reality and to return to society. They start to learn, graduate from studies, their emotions develop. People of higher social status, who are employed and have families, also undertake a struggle, to keep what they have achieved in their lives: their social status, job or family, who often suffer the most in this situation. Knowing this, one may hypothesize that carriers of the HIV virus have stronger extrinsic motivation which determines socially desired behaviors. And yet all of them have to struggle with the fear of death, following them like a shadow. One may ask whether a person haunted by fear of rejection and fear of death is able to build such defense mechanisms of the psyche which will allow him or her to achieve in their lives more than average? Is anxiety so powerful as to make an individual achieve his or her actual best? Can a will to "catch up" with society and to "make up" for their otherness encourage people to reach further and, paradoxically, help them achieve their goals?

Living with HIV...

Interviews show that an HIV carrier who has begun therapy lives in society just like anyone else, accepting or continuing their employment, establishing a family, striving to develop and achieve their goals. But their psyche is different: they live with the thought of "proximity of death." The very fact that this person cannot hope for the support of their community makes living with HIV a life of constant fear. It is a double fear, because they also fear that their secret will be disclosed, that they will be excluded from social groups, rejected by society, and they fear that they will die if they discontinue pharmacotherapy. The realization of complete dependence on the medications involves great stress and psychological discomfort, too. Considering all these factors, it may be assumed that HIV carriers are different from the rest of society, that their contact with various stimuli is more frequent – thinking about mortality raises fear.

Posttraumatic stress disorder (PTSD)

Posttraumatic stress disorder is a syndrome of specific symptoms which may or may not occur in people who have suffered extreme trauma. To learn that one is infected with HIV is doubtlessly such a trauma. The first six months after the trauma – access or no access to support and its quality, therapeutic actions in this time, correct attitude of the broader social and cultural environment – all this is decisive from the point of view of recovery or persistence of posttraumatic symptoms (e.g. PTSD) [22,25].

An especially important event from the point of view of research on psychological effects of extremely traumatic experiences was the publication of the third issue of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association, 1980). This is a system of classification and diagnosis of psychiatric disorders developed by the American Psychiatric Association. It introduced a new category described as posttraumatic stress disorder (PTSD) to the system of classifying psychiatric disorders applied in the USA at that time. This was a result of the gathered clinical observations and research results concerning possibilities to adapt to normal life after a traumatic experience [5,7,8,10,12,15,22].

Current studies on the course and spread of PTSD focus on more detailed issues, including adaptive posttraumatic growth reported in persons in later stages of life after PTSD. Another question asked concerns determinants of successful posttraumatic adaptation as opposed to occurrence and persistence of PTSD. Definition of factors which affect the passage from health to the disorder and the process of recovery is essential for understanding the long-term course of PTSD, as well as psychopathological consequences of trauma. This process can be divided into three stages: acute posttraumatic reaction, chronic reaction to the traumatic event, and finally individual adaptation to the necessity of suffering chronic PTSD [5,17].

Posttraumatic stress disorder does not develop as a direct consequence of the traumatic event. This syndrome arises/evolves from the pattern of acute distress and strong posttraumatic reaction triggered by the event. The state of distress is a normal reaction to horror, powerlessness and fear which are critical elements of a traumatic experience. However, McFarlane and Yehuda in 1995 argue that a typical pattern – even for the most disastrous events – consists in remission of symptoms and not development of PTSD [21]. Chronic PTSD which develops many years after the trauma is not basically a direct consequence of the traumatic event. Its causes may be different from the determinants of suffering experienced during the six months following exposure to a trauma. Three epidemiological studies on large groups of women revealed that alcohol abuse was 1.4 to 3.1 times more frequent in women with PTSD (as defined by DSM-III-R) than in women without such a diagnosis [8]. The further course of posttraumatic adaptation towards recovery or psychological disorder (chronic PTSD) is related to the following factors: family history, personality, style of coping with issues, reaction of the social environment, other life circumstances. Ability to tolerate suffering is the essential indicator of long-term adaptation. Studies reveal higher rates of PTSD among patients with disorders related to abuse of psychoactive agents, which is the case of many HIV carriers.

Stressing events and their role in depression

It seems that stress is important for episodes of the disease at least as a release factor. Applying various measurement methods, researchers showed clearly that depressed patients experienced more numerous and serious events in the year before occurrence of the disease [6,7,10,16]. Most researchers of life stress prefer "vulnerability – stress" models, according to which stress factors release a depressive reaction as a result of individual interpretation of negative events. This means that the event itself is not decisive; it is the assessment of this event by the given person and his or her convention that determine whether he or she will suffer from depression [3,9,15,16,17].

The research of the last decade suggests a high rate of history of traumatic experience among people suffering from depression.

Terror management theory (TMT)

The terror management theory (TMT) originates from the mid-1970s, when works by Ernest Becker were published

on the American market. Becker was an anthropologist passionately striving to construct a universalizing concept of human behavior without referring to a narrow domain of issues, which would allow one to capture personal psyche and motivation as referred to the broadly-defined culture. In his book *The Denial of Death* (1973) Becker touched on the issue of death, arguing that fear of death is the foundation of human consciousness and that it is revealed in complex circumstances by way of symbolic thinking and anticipation of future events [4,21].

At the time when Becker's concepts were published, Jeff Greenberg, Sheldon Solomon and Tom Pyszczyński were studying human psychology and behavior. Their research and analyses brought the development of their terror management theory [13,14,23]. They were inspired by Ernest Becker's works and especially by his reflections on coping with extreme terror of death – fear which, if uncontrolled, may shake completely the very construction of Me, and control over which may cause many social consequences for the individual concerned [4].

Terror management theory is almost entirely based on Becker's vision of man. TMT assumes that people are equipped with mechanisms that allow for adaptation and survival, which in turn enable growth and expansion [4,24]. Culture and philosophy of life cure our fears, providing recipes and scenarios how to live to have "something" to outlive us. Escaping into religions, decalogues, moral systems, philosophy of life and explanation of human being renders us "calm" and allows for undisturbed striving for selected goals. The culture we live and function in, philosophies of life we adhere to, ideas and the way we understand man are a means to make our lives meaningful and to set ourselves in a structure of sense of life that we prefer. This structure shows the right way and direction to be taken to become a significant and valuable person for ourselves and others. As an example of a collection of such convictions one may present religious systems that ensure life after death in return for abiding by commandments or – more symbolically – provide us with visions that underline the existence of something eternal that people have a share in despite their mortality [4,24].

Culture and philosophy "allow people to control fear of death by assuring that they are significant creatures that reside in a reality full of meaning" [12]. Meanwhile, the sheer consciousness of belonging to culture is not enough, because people must believe that they fulfill the requirements of the philosophy they choose and they have to rely somehow on these symbolic structures. We must be sure that what we believe is true and good because only then will we achieve psychological peace that will protect us from the impermanence of life. The need for acceptance and a sense of security will not be satisfied by culture and philosophy themselves either, if it turns out that other people do not share our values and do not accept our behavior. Therefore, we have to experience a feeling that we are socially accepted and that the community confirms our value. For this, we use kind a buffer that **protects us from the deadly horror of mortality.** The buffer may be self-confidence strengthening the individual and reassuring them that if one follows standards accepted in the given cultural system, one is safe and appreciated. A worldview and living in accordance with the chosen ideology gives us an opportunity to be "someone" – a hope to survive. Meanwhile, the will to sustain the feeling of self-confidence drives us to take actions aimed at achieving goals offered by our worldview and culture.

The TMT assumes that people have special mechanisms making adaptation and survival easier and thus enabling growth and expansion [1,2,5].

The central concept of the terror management theory is the hypothesis of a buffer protecting us from an insufficient sense of security [4,5,12,14,18]. Another hypothesis functioning within TMT studies is the hypothesis of effects of mortality salience [15,20]. Researchers assume that exposing mortality at some specific moments may make people realize their own mortality. Contact with a dying person, information about terrorist attacks, the sight of a dead body, news of natural disasters and car accidents, or even thinking of mortal diseases (e.g. HIV infection) makes people reflect on the fact that human life is not eternal. Such situations activate anxiety and make people subconsciously reflect on their own mortality. These are moments when people activate the mechanism responsible for soothing anxiety and defending the sense of one's value. Terror management theorists argue that a person in whom the fear of death has arisen acts according to a scheme providing that the thoughts about death are suppressed and the buffer which protects against anxiety is activated, pushing the individual towards their own culture and defense of their own sense of value.

Posttraumatic growth (PTG) theory

Actual threat to life is a source of extremely strong emotions; even as a one-time experience it can have a lasting impact on the person's personality. In such a situation it is probable that disorders or other negative changes will occur, but the second type of consequences – positive ones – is not so obvious [5,13]. The study's goal is to present the direction of personality changes in HIV carriers which can be described as personal development due to the infection. A threat to life happens in various situations. It is experienced by people suffering from diseases that involve direct risk of death (life-threatening experiences), victims of extreme stress (e.g. as a result of war, catastrophe, natural disasters and other extremely difficult events), those undergoing developmental crises (e.g. at life turning points, retirement, etc.), or finally by people who have survived near-death experiences. These types of situations are studied by stress psychology. Initially, studies on stress focused on negative changes, considering alienation, fear, burn-out, depression, and decreased self-esteem [6,10]. A special term was applied to describe symptoms in war veterans: posttraumatic stress disorder (PTSD) [25].

Actual threat to life, which is a source of extremely strong emotions, may have a lasting effect on a person's personality, even if it is a single event. In such a case, it is probable that disorders or other negative changes will occur, but there is another, less obvious set of consequences of a positive nature [5,14].

Somewhat analogically to PTSD, the term posttraumatic growth (PTG) was suggested. PTG involves positive

changes in personality that happen after traumatic events. Among them are changes related to an actual direct threat to life. The concept of posttraumatic growth is probably not the only stream of reflection on positive changes occurring after traumatic events. There are additionally such concepts as positive psychological changes and stress-related growth [26]. Posttraumatic growth (PTG) is not a simple opposite of posttraumatic stress disorder (PTSD). It is described rather as a major positive change in the cognitive, emotional and sometimes even behavioral spheres [17,20,23]. It concerns both the process and its effects due to coping with traumatic events involving extreme cognitive and emotional costs. This is not exactly a change of personality seen from the outside, but rather the feeling of that change. Some time after the experience of trauma, improvement can be noticed exactly in those aspects of life which have been ruined by the event.

The idea of positive changes is included in stress management strategies as well, such as positive reinterpretation [5,26]. However, the PTG concept seems the most promising and correct in the context of my studies and of the terror management theory. The Posttraumatic Growth Inventory (PTGi) includes such expressions as: 5. I have more understanding of spiritual issues; 8. I feel closer to others; 13. I am more able to appreciate every day. 19. I have discovered that I am stronger than I thought. The adaptation process usually takes place about 6 months after the trauma. Studies and interviews with people who have suffered traumatic events or life crises known as near-death experiences (NDE) reveal that after such events people report huge positive changes in their lives. Researchers taking active part in PTG analysis have isolated traumatic events after which respondents report significant positive changes in their lives – cancer illness, divorce, HIV infection, sexual harassment [3,20,23,24,26].

We have found no studies applying the concepts and methods of the TMT focused on the specific group of HIV carriers. This was the source of the idea to carry out an experiment to reveal whether the theory would work in this case, too.

The study concerns definition of the level of posttraumatic growth or a psychological adaptation mechanism observed after extreme experiences – such as learning that one is infected with HIV. The goal of the experiment was to assess whether correlations between exposure to thoughts of stressful events in life and its psychological consequences are mediated by an efficient anxiety-buffer mechanism. The study was based on the paradigm of the terror management theory and therefore it applies the central hypotheses of the TMT as its assumptions:

- *Anxiety buffer protecting the individual from an insufficient sense of security.*
- *Effects of mortality salience (MS).*

The goal of the study was to answer the following questions:

1. *Is the anxiety-buffer mechanism efficient in the population of HIV carriers?*
2. *Does the reported level of depression affect proper functioning of the anxiety-buffer mechanism?*
3. *Considering their life experiences (many persons previously addicted to psychoactive substances), do carriers of HIV value activation of a buffer protecting against anxiety after mortality salience?*

One may expect that in the case of mortality salience the subjects should strive to maintain cohesion of their sense of value and they should report a higher than actual level of posttraumatic growth in the PTGi questionnaire and *Benefit finding* (finding benefits in the disorder).

It was assumed that because of the traumatic experience of HIV infection the overall result of the respondents, as measured by PTGI and *Benefit finding* questionnaires, would be high due to the suffered trauma [26,27].

It is also known that contrary to other aversion themes, manipulations with mortality salience do not lead to an increase in anxiety and negative emotions (see e.g. Greenberg et al., 1997). The study will verify this hypothesis with the PANAS questionnaire – a tool constructed by the outstanding researchers Watson and Clark. In other words, although there are very many aversion thoughts and emotional conditions which trigger psychological defense mechanisms, the effects of thinking about death are exceptionally motivating. One may conclude based on study reports that the expected results should be significantly different between the group exposed to mortality salience and the control group (dental anxiety). I assume that because of the traumatic event of HIV infection, general results of the subjects measured by PTGI and *Benefit finding* questionnaires will be characteristically high due to the experienced trauma [23,24].

Material

The study group included a total of 80 persons: 28 women and 52 men aged 26 to 64. The subjects were selected by convenience: each person who reported to the outpatient clinic in the given period and gave consent was included in the study. The study was individual. In the study group, there were persons from the whole of Poland and this high demographic variation was due to the specific distribution of epidemiology centers specializing in HIV/AIDS. This variation may also be due to the fact that about 30 subjects live in the Monar Anti-Addiction Therapy Center, and one of the center's principles is that a person who decides to start the therapy must live far from their usual place of residence. All the subjects are carriers of the HIV virus and have made a conscious decision to commence the antiretroviral drug therapy – this was one of the sample selection criteria. The persons who took part in the study have been taking anti-retroviral drugs for at least 1 year. Two of them did not commence therapy as there were no indications to do so.

Methods

We managed to find the research method applied by the founders of the TMT and we have used it in the present study. We have also applied the symbolic set of questionnaires used in research on terror theory to assess the fear buffering mechanism. There have been studies with these methods focused on various social groups (e.g. patients with cancer), but we have found no report of such a study on a group of HIV carriers.

The study applied a standard set of questionnaires used in research on the theory of terror to assess the anxiety-buffer mechanism. This was a questionnaire study performed with paper and pencil.

Tool no. 1

Questionnaire on fear of death (10 questions) or respectively Questionnaire on dental anxiety (10 questions) in the control group, created by Greenberg, Solomon and Pyszczynski in 1997

Both questionnaires were developed for studies within the terror management theory and they serve exclusively for manipulation, i.e. results on their scales are not considered. Respondents fill in the first one (without knowing it, of course – secret information) so that it causes a mortality salience effect and evokes fear of death in them. The other questionnaire was developed for the control group to enable comparisons of results of the manipulation.

Tool no. 2

PANAS emotion measurement questionnaire, tool developed by Watson and Clark in 1992 [27]

The questionnaire includes a 5-degree scale of answers from 1 (very weakly) to 5 (very strongly). Respondents are supposed to read a list of 20 words and expressions describing various feelings and emotions and to assign an appropriate answer (number) next to the word. Their task is to define to what extent they feel as described at the moment of filling in the questionnaire. This tool serves to verify whether the manipulation with prior questions (concerning the fear of death) actually causes anxiety or a buffer protecting the individual is efficient enough not to allow the manipulation to affect the subjects' mood.

Tool no. 3

Crossword – to push thoughts into the sub-consciousness [26]

The crossword was developed by the creators of the TMT to draw subjects' attention to another topic and to involve them cognitively in a medium-difficult task in order to push the previously evoked thoughts about death into the sub-consciousness. Respondents are supposed to attempt to find some of the words written in a box. The words may be hidden in the crossword vertically, horizontally, diagonally, in a normal way or backwards. This tool was developed specifically for TMT studies.

Tool no. 4

PTGi posttraumatic growth questionnaire [26]

It includes 21 test items. The subject is supposed to react to them on a 5-degree scale from 0 (I haven't experienced such a change) to 5 (I have experienced this change to a large extent). The creators of the questionnaire focused on 5 areas in which posttraumatic growth occurs:

Creating relations with others
Perception of new possibilities in life
Personal/intrinsic strength
Spiritual changes, enhancement of faith
Perception of one's own life

Within the defined areas, items have been developed dealing with changes that occur in the subject's perception of these areas of his or her life. The responses are added up to give the total result of the test, reflecting the reported level of posttraumatic growth in the respondents.

Tool no. 5

Questionnaire on finding benefits in the disease – Benefit Finding Scale, created by Antoni MH et al. in 2001

Subjects are supposed to react to 17 statements on changes that happened in their lives since they learned they were infected with HIV. They could use a 3-degree scale from 0 (I strongly disagree) to 3 (I strongly agree). The questionnaire was developed to study growth and development after trauma related to life-threatening disease (e.g. breast cancer in women).

Tool no. 6

CES-D questionnaire measuring the level of reported depression developed by Radloff in 1977 [19]

The CES-D depression scale was developed for epidemiological studies aimed at determining the prevalence of depression in a population. The scale includes 20 statements concerning occurrence of symptoms of depression (sense of guilt, lack of self-value, disorders of sleep and nutrition). The answer scale for this questionnaire ranges from 0 (rarely or never; shorter than one day) to 3 (most of the time or all the time; 5-7 days). Respondents' task consists in marking reactions and underlining statements which best describe their feelings and behaviors in the last week. The aim of this study was to determine whether the studied group may be described as depressive or not.

Impressum – adapted to the needs of medical studies, developed for studies of people infected with HIV, including questions on the form of infection and side effects of the anti-retroviral therapy.

Tool no. 7

Questionnaire concerning reported adherence – *Self-Reported Questionnaire Assessing Adherence to Antiretroviral Medication*, developed by Godin, Gagne and Naccache in 2002

The questionnaire includes questions developed in relation to application of antiretroviral drugs. Its aim is to determine whether the patient adheres to the recommended therapy. In the questionnaire, there are questions concerning activities which may prevent application of drugs and the number of missed pills. Answers to particular questions offer a picture of the subjects' adherence or their knowledge on potential non-adherence and factors which may compromise the therapy.

The subjects were randomly divided into two groups (mixed questionnaires). The questionnaires were given to the

Table 1. Presentation of statistical results of the independent variable's effects on the dependent variables

	PANAS	PTGI	Benefit finding	Depression
Mann-Whitney U-test	712.500	651.500	544.500	772.500
Wilcoxon W-test	1415.500	1512.500	1405.500	1633.500
Z	–.461	–1.425	–2.457	–.064
Asymptotic (bilateral) correlation	**.645**	**.154**	**.014**	**.949**

respondents and completed in the above sequence to prevent disturbance of the manipulation. The first group received a questionnaire including expressed thoughts on fear of death (41 respondents) which directed them to think about dying and to the fear of death. Meanwhile, the other group (39 respondents), instead of the questionnaire on the fear of death, received the dental anxiety questionnaire, which enables comparison of effects of the defense mechanism in the two groups and offers a possibility to verify the thesis that a manipulation with fear would affect answers in the remaining tests. The next stage involved filling in the PANAS scale questionnaire aimed at determining whether the experimental effects were mediated by changes of mood caused directly by the manipulation – which would undermine the study's hypotheses. The next stage for both the control and experimental groups involved filling in the crossword in order to push thoughts about death into the sub-consciousness in order to verify whether the anxiety-buffer mechanism has worked. The next task was to fill in the posttraumatic growth questionnaire and the questionnaire on finding benefits in the disease immediately after it. The expected results should confirm the assumption that, affected by mortality salience, respondents in the experimental group would report more "benefits of the disease" and higher growth according to the PTGi. The set was completed by the test measuring the level of depression in the study group. It was designed at the end not to disturb the manipulation in the study. The impressum was placed last, too, considering its form: it includes questions which may have an adverse effect on respondents and thus it may also disturb the manipulation. Finally (i.e. in 8th place) subjects completed the questionnaire concerning adherence: how the patient observes his or her doctor's recommendations.

Statistical analysis

In the statistical analysis we applied two non-parametric tests: Mann-Whitney U test and Wilcoxon test to compare specific groups of answers on scales of the tests. Furthermore, a test was performed to confirm asymptotic (bilateral) relevance to determine whether the assumptions (hypotheses).

Results

The group of HIV carriers is very specific and variable. A lot depends on the way the subjects acquired infection, because this enables some conclusions on their characteristics. Many of them had previously been addicted to psychoactive substances – as many as 57.5% of respondents became infected though injected drugs (syringe) – and the next most frequent route of infection involved transmission by heterosexual intercourse.

The analysis shows that 37.5% of respondents have secondary education and only 13.8% have academic education. As many as 43.8% of the subjects lived in cities of up to 50 thousand inhabitants and 61.3% of them have not fallen sick with AIDS since the beginning of the antiretroviral therapy. The studied group has been using the antiretroviral therapy for 9 years, adhering very strictly to their doctors' recommendations: 97.5% of persons did not miss a single pill in the week before the experiment. The participants of the study seem to be a group of very determined persons who observed the principles of treatment and forgot to take a pill only occasionally because of social activities (a visit to friends or relations, participation at a meeting). Hence, they may be described as a high-adherence group. They are involved in activities related to family life much more frequently – 72.5% declared that they had been visited by family, 63.8% that they had gone to see family or friends.

In both the experimental and control groups conformity of the dependent variables with the normal distribution was found. Variations of particular indicators are equal for all dependent variables beside the PTGi test, in which the non-uniformity may be due to the specific nature of the group.

The preliminary analyses showed the effects of the MS manipulation. The benefit finding test revealed a **statistically significant (p=0.014) difference** between the experimental and control groups, as shown in Table 1. There is no reason to reject the null hypothesis. Persons in the mortality salience group reported more benefits of the disease than the control group (dental anxiety).

The general result obtained in the PTGi test does not reveal a difference between the experimental group with MS (mortality salience) and the control group (dental anxiety) (Table 2).

The analysis shows that in subjects after the mortality salience effect, the level of negative emotions measured by the PANAS questionnaire is the same as in the control group in whom dental anxiety was evoked. This confirms the assumptions of the TMT researchers that mortality salience activates defense mechanisms which "remove thoughts of death from consciousness" immediately and initiate anxiety buffering in the form of the subtlest defense mechanisms.

There was no confirmation of a correlation between the level of depression and reported posttraumatic growth in the PTGi questionnaire (the lack of correlation between the tests can be seen in Table 1).

However, there was found a correlation between the reported level of depression and strength of felt negative

Table 2. Presentation of correlations between dependent variables

		Benefit finding	Depression	PTGi	PANAS[1]
Benefit finding	Pearson's correlation	1	.030	.743(**)	–.144
	Significance (bilateral)		.792	.000	.208
	N	80	79	80	78
Depression	Pearson's correlation	.030	1	.054	.659(**)
	Significance (bilateral)	.792		.639	.000
	N	79	79	79	77
PTGi	Pearson's correlation	.743(**)	.054	1	–.220
	Significance (bilateral)	.000	.639		.053
	N	80	79	80	78
PANAS	Pearson's correlation	-.144	.659(**)	–.220	1
	Significance (bilateral)	.208	.000	.053	
	N	78	77	78	78

[1] strength of negative emotions felt.

Table 3. Presentation of differences between men and women in the PANAS and CES-D (depression) tests

	Impressum – sex	N	Average weight	Total rank
PANAS (strength of negative emotions)	woman	26	46.60	1211.50
	man	52	35.95	1869.50
	total	78		
Depression	woman	27	48.17	1300.50
	man	52	35.76	1859.50
	total	79		

emotions (as shown in Table 2). The analysis also revealed significant differences between the strength of reported negative emotions between men and women (as presented in Table 3), regardless of the type of manipulation applied. Women reported less negative emotions and a lower level of depression than men.

Discussion

The performed study has confirmed a pattern of action assumed by the creators of the TMT and its central hypotheses [14]. The subjects after mortality salience (MS) rejected thoughts about death in their subconsciousness immediately, which is explained by the results in the PANAS test, verifying whether a mortality salience manipulation actually evokes negative emotions or not. Our studies have confirmed the assumption that it does not. The lack of differences between the groups shows that HIV carriers have completely efficient defense mechanisms, regardless of their disease. The research demonstrates that thinking about aversion events (dental anxiety, being paralyzed, failure in a major exam, etc.) does not have a result similar to that of mortality awareness, which did not cause negative emotions in this case either. One may suppose that HIV carriers have an efficient buffer protecting them from the terror of their mortality. The study has confirmed the supposition that since the protective buffer is the philosophy of life and sense of self-worth, the experimental group affected by mortality salience should report more "improvements," show a higher level of empathy, and present more spirituality to uphold their sense of value. The hypothesis has been confirmed, but only by one of the performed tests. Surprisingly, in spite of the significant correlation between the PTGi questionnaire and the tool for verification of benefits from the disease (Benefit finding), no statistically significant difference was found between the reported post-traumatic growth in PTGi by the MS group and the control group. One may suppose that this situation was caused by the fact that respondents achieved generally high results in the PTGi test and the MS manipulation thus was unable to affect the results (high level of growth) significantly [26].

Another reason why the manipulation did not affect the PTGi scale could be that a majority of subjects (57.5%) had been addicted to psychoactive substances in the past. During a study in an anti-addiction center (Monar) I was informed by the therapeutic "leader" of a group of treated persons that usually people who use psychoactive substan-

ces are characteristically prone to extrinsic steering, i.e. they do not attribute a power to cause to themselves and they do not achieve changes of their psyche and personality "by themselves." In the PTGi questionnaires items were constructed so that they included direct references to an "I". Verbs in this test are used in the first person singular, with the effect that the items are perceived by the subjects more subjectively, in relation to the power to cause of the person who fills in the questionnaire. Examples of statements:

As a result of being infected with HIV:
– ***I have changed*** *my attitudes,*
– ***I have developed*** *my interests,*
– ***I am*** *more confident, I may rely on myself.*

Meanwhile, in the benefit finding test the respondents answered questions in the third person singular, giving an impression that the changes had been caused by the disease (the trauma) and the persons themselves. Examples of statements:

The HIV infection:
– ***has made*** *it easier for me to accept various events,*
– ***has taught*** *me to adapt to situations I cannot change,*
– ***has brought*** *members of my family closer,*
– ***has taught*** *me that every person has a goal in his/her life.*

However, these are only suppositions and their verification requires further studies of effects of mortality salience of persons intrinsically and extrinsically steered. The results may also be affected by the sense of self-value. Its maintenance did not depend on the reported growth according to the PTGi scale in any way.

The main purpose of the study was to verify whether mortality salience would activate the anxiety buffer in such a specific group as HIV carriers. The results have confirmed this hypothesis.

The results presented in the paper were also supposed to help determine whether there is a correlation between the level of depression and the reported posttraumatic growth and benefits found in the disease. There is no such correlation, which is surprising because the literature suggests that within about 6 months after the trauma the person who suffered it either starts gradually to notice its positive consequences or is unable to cope with it, which causes depression or chronic posttraumatic stress disorder. However, considering sex as the categorizing variable, among women the reported rate of depression is much lower than among men. It is commonly known that one of the most noticeable features of this disorder is its marked predominance in women as compared to men, which has not been confirmed in this study either. "Regardless of the applied research method and of the country of research, the same regularity is repeated in all studies: depression rates are approximately twice as high in women as compared to men" [17].

Conclusions

The study has shown that this specific group – people infected with HIV – has managed very well to adapt to the circumstances. One may say that as a consequence of acquiring the infection, the subjects experienced significant changes of personality, which have ultimately led to an improvement of their lives and offered new possibilities for personal and social development to them. All the recorded changes fit into the TMT paradigm.

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