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Anxiety and self-esteem before surgery in patients suffering from cancer. Implicit self-esteem compensation in ego-threatening conditions

Abstract The assumption was verified that for patients suffering from cancer levels of anxiety and self-esteem differ compared to other patients before surgery. 120 patients of urology were assigned to subgroups according to diagnosis (cancer vs. non-cancer) and the duration of hospitalization (5 days vs. 1 day). Patients suffering from cancer declared higher anxiety than other patients. Longer hospitalization was connected to higher anxiety. A threat-congruent difference in explicit self-esteem was revealed only between two groups: 1. cancer and long hospitalization and 2. non-cancer and short hospitalization. For implicit self-esteem the phenomenon of implicit compensation of self-esteem was predicted and confirmed: among cancer-sufferers the Name Letter Effect was greater than among other patients. Also, in the cancer-patients group, the result of Rudman et al. (2007) was replicated: increasing anxiety was connected with increasing implicit self-esteem.

Keywords: anxiety, implicit self-esteem, self-esteem compensation, cancer, hospitalization

Cancer, hospitalization and anxiety

No illness - except maybe AIDS – causes as much anxiety as cancer. The reason being, the huge number of deaths caused by the disease (half a million annually in the U.S. and four million in the whole world – Bishop, 2001, 2007). Fear of cancer is compounded by the fact that the disease is in general perceived to be insidious, leading to degeneration of the body and a painful, slow death (Little & Sayers 2004; Stark & House, 2000). Despite the development of medicine and progress in research on cancer treatment and removal, many people still see cancer diagnosis a death sentence. The word cancer actually encompasses hundreds of different diseases. Its main distinguishing feature is the uncontrolled growth and spread of the affected tissues. One of the most severe and frightening symptoms, for the patients, is the pain, which is present especially in the later stages of the disease (Härter et al., 2001; Mellon et al., 2007). In fact, two thirds of patients dying of cancer feel severe pain in the

last months or weeks of life. Studies have shown (Bishop, 2001, 2007) that 35-55% of patients with symptoms of cancer delay treatment for three or more months. One of the reasons for the delay is fear of the disease. People diagnosed with the cancer live, in all likelihood, with elevated levels of anxiety until proven cured (Bellizzi et al., 2008; Skaali et al., 2009).

For many people cancer diagnosis comes as a terrible shock. They are then faced with a completely new challenge – not only must they grapple with the physical aspects of the disease, but they also must deal with its psychological and social consequences. In some cases it may occur as a result of the impairment of organs due to the disease. The characteristics of cancer define the physical situation of an afflicted person, but the disease also affects the psyche and social functioning (Härter et al., 2001; Stark et al., 2002). The diagnosis of cancer may contribute to the occurrence of serious emotional disturbances. Studies on the effects of cancer have shown that such a diagnosis causes strong

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emotional reaction, consisting of: anxiety, impaired self-worth, and anger (Bishop, 2001, 2007; Stark et al., 2002). In addition, patients may experience insomnia, impaired concentration and suicidal thoughts (Bishop, 2001, 2007; Taylor, Lichtman & Wood, 1984). Furthermore, patients with a cancer diagnosis often have a disrupted self-image, even though, given their condition, it is especially important for them to maintain a positive perception of themselves (Kemans, 2007; Ramsay, Ramsay & Main, 2007).

The depressed condition of people suffering from cancer may extend the amount of time that they stay in hospital. Although the staff tries to make the hospital as friendly as possible, patients often sense an aura of institutionalized callousness. They may feel the dehumanised customers of an indifferent institution, deprived of control over what happens to them (Bjelland et al., 2002). The stay in the hospital is forced upon them by unhappy circumstances, and the environment itself is strange and overwhelming. The patient is obliged to comply with the designated schedule, eating and sleeping at specified times, and to implement procedures imposed on him by others - sharing his body for treatments and medical examination on demand. Often patients are perceived and treated as objects. It happens that specialists during testing are so heavily focused on the medical problem that they pay only limited attention to the patient. Limitation of personal contact is sometimes convenient for doctors, but often such depersonalisation causes frustration or anger in the patient. Another related, very important, psychological aspect of hospitalization is the patient's fear that the doctor did not tell the whole "truth" about the disease, or will use confusing medical jargon to conceal information (Bishop, 2007; Ibbotson et al., 1994).

Hospitalization is an ego-threat, not only due to illness, but also because of depersonalization in the healthcare system. This feeling of loss of self-importance and uniqueness, as well as of control over one's life may result in declining self-esteem as a state.

Compensatory self-esteem in ego-threat conditions

Self-esteem can be defined as an attitude toward the self. Attitudes may be perceived as associations in long-term memory between objects and (positive or negative) valence. Well routinized attitudes are automatically accessed (Fazio, 1990; Fazio & Olson, 2003). At the beginning of a contact (real or symbolic) with an attitude's object, the best accessible associations become active in an involuntary, and mostly uncontrollable, way (compare association process, Gawronski & Bodenhausen, 2006, 2007). These are called implicit attitudes and are thought to be automatic, because they act quickly and are able to operate without intention and conscious awareness (Bargh, 1996; Rudman, Dohn & Fairchild, 2007).

Implicit attitudes are estimated based on the behaviour (acting of subjects), some of whose characteristics are difficult to control (such as response latency in IAT test, Greenwald, McGhee & Schwartz, 1998). This measurement is sometimes performed without the respondent's knowledge of what exactly is under investigation (as when measuring self-esteem through the Name Letter Effect - Nuttin, 1987). People can fully control only their explicit responses and estimate attitudes in the "upstream" of the process (further from the source) - these are known as explicit attitudes. "That is, even when people are truthful, self-reports can reflect only what they believe about their attitudes" (Rudman et al., 2007, p. 800).

Some researchers believe that implicit and explicit attitudes stem from different sources (eg., Smith & DeCoster, 2000; Strack & Deutsch, 2004). The former, coming from an associative learning system (called impulsive), are more influenced by emotions. The latter, from a rule-based learning system (called reflective), are more influenced by need for correctness. However, even assuming that the two systems are independent and have a different neural representation in memory (McClelland, McNaughton, & O'Reilly, 1995), it is clear that they interact with each other. Because of this, they can provide either competing or supportive influences on behaviour - operating either in tandem or apart (Greenwald et al., 2002; Rudman et al., 2007). Therefore, correlations between implicit and explicit measures are often not significant (Blair, 2002; Fazio & Olson, 2003) and are moderated by self-presentation (which is present in explicit attitudes - Nosek, 2005). Also, the impact of emotions on both measures of attitude can be different - including measures of self-esteem.

There is ample evidence that ego-threat negatively affects explicit, that is self-reported, self-esteem (e.g., Leary & Baumeister, 2000; Rudman & Fairchild, 2004; Williams, Cheung, & Choi, 2000). On the other hand, some evidence suggests that ego-threat can lead to explicit self-esteem compensation (ESEC - Baumeister, 1982; Baumeister & Jones, 1978; Brown & Smart, 1991; Rudman et al. 2007; Greenberg & Pyszczynski, 1985; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). In other words direct self-esteem measures often show threat-congruent effects, but they have also shown defensive reactions to threat, indicating increase in self-esteem.

The studies also revealed a defence process that automatically buffers the self from threats or protects self-esteem from any blows it might suffer. This process has been named 'implicit self-esteem compensation' (ISEC - Rudman et al., 2007). The phenomenon was observed when participants, under self-concept threat (i.e., asked to write about a personal flaw), preferred strangers whose arbitrary numbers (e.g., 11-05) resembled participants' birthdays (Jones, Pelham, Carvalho & Mirenberg, 2004) or Japanese teas whose brand names resembled participants' own first names (Brendl, Chattopadhyay, Pelham, & Carvalho,

2005). Self-concept threat led also to ISEC, manifested by an increase in name-letter effect (NLE; Nuttin, 1987) - participants unaware of the basis of their choices were favouring their initials as stimuli associated with the self (Brendl et al., 2005; Jones et al., 2002). Rudman and colleagues (2004, 2007) found a general tendency for threat to evoke ISEC in implicit self-esteem, measured with IAT (Greenwald et al., 1998): 1) under gender identity threat, 2) after a threat of being a racist and 3) after peer rejection. The last result was replicated, using the signature effect as a measure of implicit self-esteem (method introduced by Zweigenhaft & Marlowe, 1973).

The research problem

Incidence of cancer and referral for surgery - particularly associated with a longer stay in hospital - seem to be a potent source of anxiety for the patient. These events also become threats to the self and a reason to lower self-esteem (Ramsay et al., 2007). However, just as previously discussed, a paradoxical compensation of self-esteem may be the result of the ego-threat as well (Ying-Ching, Chien-Huang, & Raghubir, 2003).

We predict that patients suffering from cancer experience more anxiety before surgery than other patients. We also expect, that patients referred for a longer stay in hospital experience more anxiety than those referred for a shorter stay (shorter stay means that the patient could leave the hospital the same day as the surgery). However, for self-esteem the picture is not so clear. Based on the results of Rudman and colleagues (2007) we anticipate the threat-congruent effect in explicit self-esteem (especially self-esteem as a state) and the threat-contrary effect (ISEC) in implicit self-esteem. In particular, for the group experiencing the strongest blow in self-esteem - that is patients suffering from cancer and referred for a longer stay in hospital - we expect lower explicit state self-esteem and higher implicit self-esteem, than for the group, where the threat is the weakest - that is for patients not suffering from cancer and referred for a short stay in hospital.

In Rudman and colleagues studies (2007), a positive relationship between anxiety and implicit self-esteem was evident only for participants who did not use self-affirmations as a buffer against the ego-threat. In this context ISEC appears to be an automatic response to increased anxiety in the absence (or weakening) of the explicit buffering or defences. Our final goal was to test whether the correlation between anxiety and implicit self-esteem is positive in patients experiencing ego-threat at a special moment - namely when awareness of the impending surgery preoccupies attention resources and thereby limits conscious defences. As explained earlier - the (higher) ego-threat may occur in two groups of patients - the group of cancer-sufferers and, separately, the group of patients targeted for a longer stay in hospital.

Method

Participants

120 patients (including 60 women and 60 men), aged 20 to 88 years ($SD=14,84$), residing at the Department of Urology and Department of Surgery in a specialist hospital in northern Poland, voluntarily participated in the research before surgery. They were divided into four equal groups, balanced by gender, according to the diagnosis and mode of hospitalization. The first group consisted of patients diagnosed with cancer and hospitalized for one day; the second - patients hospitalized for one day, but with a non-cancer diagnosis; the third - patients with a cancer diagnosis and qualified for the longer hospitalization (a total of 5 days); the fourth - patients with non-cancer diagnosis and qualified for the longer (5 days) hospitalization. No one patient had a previous surgery and all of them had only brief contact with a hospital. The cancer and non-cancer patients were subjected to a similar surgery. In the first case it was a transurethral removal of a tumor from the bladder, kidneys, or ureters. The operation took place in the first or second month after tumor detection and patients not previously suffered from cancer. In the second case it was a transurethral removal of stones from the same organs.

Materials

State of anxiety. Participants responded to the 20 items of State-Anxiety Inventory (STAI, Spielberger, Gorsuch & Lushene, 1970, Polish adaptation: Wrześniewski, Sosnowski, Jaworowska, & Fenec, 2006). Sample items include: "I am tense at this moment", "I am worried" or "I feel calm" (reverse coded). Responses ranged from 1 (*strongly disagree*) to 4 (*strongly agree*). After appropriate recoding, items were averaged to form the state-anxiety indicator ($\alpha = 0.92$), on which high scores reflected a greater state of anxiety.

Explicit self-esteem

- *as a trait.* Participants responded to the 10 items of Self-Esteem Scale (Rosenberg, 1965, Polish adaptation: Łaguna, Lachowicz-Tabaczek, & Dzwonkowska, 2007). Sample items include: "I am able to do things as well as most other people" or "At times I think I am no good at all". Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). After recoding, items were averaged to form the RSES indicator ($\alpha = .84$), on which high scores reflected a greater trait of self-esteem.

- *as a state.* Participants responded to the 7 representative items from the State Self-Esteem Scale (Heatherton & Polivy, 1991, Polish translation: Róża Bazińska). Sample items include "Now I feel confident about my abilities," or "I feel displeased with myself at this moment". Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). After appropriate recoding, items were averaged to form the SSES indicator ($\alpha = .74$), on which high scores reflected greater state of self-esteem.

Implicit self-esteem.

Name Letter Effect. Nuttin, (1987) showed, that people tend to like both letters belonging to their names and their initials more than other letters. The extent to which individuals demonstrate this preference reflects the extent to which they perceive themselves favourably. This preference is conceptualized as an implicit measure of self-esteem. Participants assessed how much they liked each letter of the alphabet (on a scale 1 – 7). Using the initials of each person the index of NLE was calculated (Kitajama & Karasawa, 1997).

Procedure

The study took place under control and in consultation with a guiding doctor. The subjects were familiarized with the goal of the study, presented as being about ‘understanding the way hospitalized people perceive themselves’. They were also informed about the completely voluntary nature of participation and the fact that the study was anonymous. Patients were interviewed on the day of surgery in the case of short hospitalization (a gap of several hours) and the day before surgery in the case of long hospitalization. The surgery took place in the middle of a long stay in hospital (that is, on the third day). Measuring instruments were reduced to the minimum possible so as not to tire the patients.

First the patients provided general information about themselves (age, gender, marital status, education, residence, monthly income). Then they completed the Spielberger State-Anxiety Inventory (STAI). Next – participants completed the measures of explicit (Rosenberg’s SES and SSES by Heatherton & Polivy) and implicit self-esteem (Nuttin’s test) in counterbalanced order.

Results

Preliminary analyses ruled out reliable effects of procedural and demographic variables such as counterbalancing the order of explicit and implicit SE tests, education, marital status and monthly income. We therefore collapsed across these variables for the main analyses.

Table 1. Means, standard deviations, correlations and Cronbach’s alpha (on the diagonal) for the study variables.

measure	<i>M</i>	<i>SD</i>	Anxiety	RSES	SSES	NLE
Anxiety (state)	2.19	.50	(.92)	-.39**	-.42**	.13
RSES (explicit, trait)	3.88	.69		(.84)	.71**	-.09
SSES (explicit, state)	3.72	.66			(.74)	-.03
NLE (implicit SES)	1.04	.98				

** $p < .01$

Correlations between measured variables are shown in Table 1.

The explicit self-esteem measures correlate with each other significantly and highly, whilst not correlating with the implicit measure of self-esteem. A state-anxiety is negatively and significantly associated with explicit self-esteem (repeating a generally known effect) and not significantly related to implicit self-esteem.

Anxiety in relation to the diagnosis and duration of hospitalization

The anxiety scores were submitted to a 2 (*diagnosis*: cancer, non-cancer) x 2 (*duration of hospitalization*: long, short) x 2 (*gender*) analysis of covariance (ANCOVA) with a covariate *age*, which revealed a (significant) main effect for diagnosis: $F(1, 110) = 8.81, p < .005, \eta^2 = .08$, a main effect for duration of hospitalization: $F(1, 110) = 4.51, p < .05, \eta^2 = .04$ and main effect of gender: $F(1, 110) = 13.05, p < 0.001, \eta^2 = .11$. As we supposed, people suffering from cancer declared a higher anxiety ($M = 2.34$ on a scale 1 - 4, $SD = .46$) before surgery than those not suffering from cancer ($M = 2.04, SD = .51$). Also - in accordance with the assumption - patients, who required long hospitalization declared a higher anxiety ($M = 2.28, SD = .53$) than those who required short hospitalization ($M = 2.11, SD = .47$). The strongest anxiety occurred in group of patients suffering from cancer, while requiring a longer hospital stay ($M = 2.44, SD = .52$), and the weakest anxiety in group of patients not suffering cancer, hospitalized for only a short time after surgery ($M = 1.97, SD = .51$). A significant effect of gender shows, that women ($M = 2.35, SD = 0.52$) declared a higher level of anxiety, than men ($M = 2.05, SD = 0.45$).

Explicit self-esteem in relation to the diagnosis and duration of hospitalization.

Submitting the SES (self-esteem as a trait) indicator to a 2 (*diagnosis*: cancer, non-cancer) x 2 (*duration of hospitalization*: long, short) x 2 (*gender*) ANCOVA with a covariate *age* showed unreliable results, all F s (1, 111) $< 2.51, ps > .12$. Finding no difference in global (trait) self-esteem is not surprising – possibly it is stable as defined and is not quickly affected even in the considered circumstances. The lack of differences cannot be explained by the fact that all subjects - as ill people - may have reduced the global self-esteem, because in each group it is higher than 3.74 (on a scale of 1-5), that is, much above the average.

Comparable ANCOVA for the SSES (self-esteem as a state) indicator showed unreliable results as well: all F s (1, 111) $< 2.35, ps > .13$. But the planned comparison revealed - as expected - that patients suffering from cancer and referred for a longer stay in hospital after surgery reported lower state of self-esteem ($M = 3.54, SD = .66$) than patients not suffering cancer and referred for a short stay ($M = 3.90, SD = .69, t(58) = 2.03, p < .05$).

Implicit self-esteem in relation to the diagnosis and duration of hospitalization.

Submitting the NLE effect (as an implicit SE indicator) to a 2 (*diagnosis*: cancer, non-cancer) x 2 (*duration of hospitalization*: long, short) x 2 (*gender*) ANCOVA with a covariate *age* revealed a main effect for *diagnosis*: $F(1,111) = 8.73, p < .005, \eta^2 = .07$ (without main effects for the *duration of hospitalization* and *gender*) and interaction of *diagnosis* and *duration of hospitalization*: $F(1,111) = 7.55, p < .01, \eta^2 = .06$. As expected, patients suffering from cancer had higher implicit self-esteem (as a Name Letter Effect) than patients not suffering from cancer ($M = 1.31, SD = 1.04$ vs. $M = 0.78, SD = 0.84$). And contrary to expectations – the length of hospitalization as a factor was not strong enough to induce ISEC regardless of diagnosis. But interaction between diagnosis and duration of hospitalization – presented in Figure 1 - revealed that the group of patients suffering from cancer and referred for a longer stay in hospital had a higher implicit self-esteem ($M = 1.64, SD = 1.0$) not only (as assumed in planned comparison) than the group not suffering from cancer and staying in hospital for a short time ($M = .91, SD = .87$), $t(58) = 3.01, p < 0,005$, but also (as shown in simple effects) - than the group suffering from cancer and referred for a short stay ($M = 0.99, p < 0,05$) and the group not suffering from cancer and staying for longer in hospital ($M = 0.64, p < 0,005$).

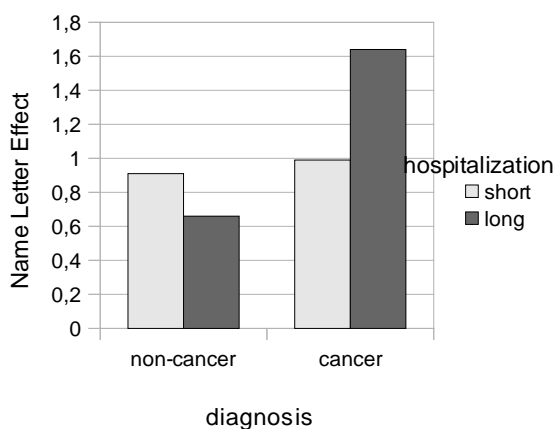


Figure 1. Dependence of implicit self-esteem on diagnosis and duration of hospitalization

Table 2. Correlations between anxiety as a state and measures of self-esteem as a function of threat

measure	RSES	SSES	NLE (implicit SES)
Lower threat: non-cancer	-.44**	-.47**	-.17
Higher threat: cancer	-.30*	-0.32*	.27*
Lower threat: short hospitalization	-.40**	-0.52**	-0.03
Higher threat: long hospitalization	-.39**	-.32*	.23#

** $p < .01$, * $p < 0,05$, # $p < 0.1$ (two-sided test)

Diagnosis and hospitalization as moderators of the relation between anxiety and implicit SE.

Table 2 presents the correlations between anxiety and implicit SE separately for groups of distinct diagnoses and separately for groups of distinct duration of hospitalization.

As expected – only in higher-threat conditions is there positive correlation between state-anxiety and implicit self-esteem. The relation is significant in the case of cancer-threat and remains on the border of significance when the ego-threat is a result of long hospitalization. In both cases of low (or more precisely - lower) threat the correlation between anxiety and implicit self-esteem is not significant. With higher ego-threat, in turn, correlation between the state-anxiety and explicit self-esteem (SES and SSES) are weaker than with lower threat.

Also examined was whether the interaction of state-anxiety and diagnosis (symmetrically: state-anxiety and hospitalization) explains the variance of implicit self-esteem over and above the state-anxiety and diagnosis individually (respectively: state-anxiety and hospitalization). We tested this by conducting two hierarchical regression analyses, predicting implicit self-esteem. The continuous predictor (state-anxiety) was standardized and interaction terms were generated by creating cross-product vectors (Aiken & West, 1991).

In the first regression analysis age and gender were entered at Step 1, state-anxiety and diagnosis at Step 2, and the interaction of diagnosis and state-anxiety at Step 3. The model was significant: $F(5,113) = 3.22, p < .01$. The first two groups of predictors explained together 8% of implicit self-esteem variance (corrected $R^2 = 0,05$). The interaction of state-anxiety and diagnosis revealed 5% of NLE variance over and above the effects of the previous variables. The details of this analysis are summarized in Table 3, and the interaction is illustrated in Figure 2.

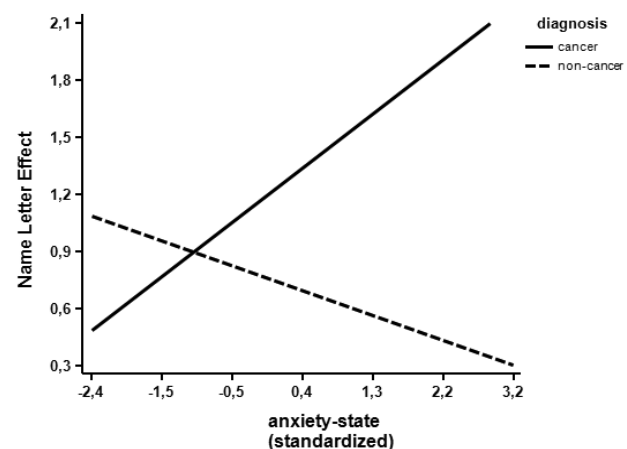


Figure 2. Diagnosis as moderator of the correspondence between anxiety as a state and implicit SE.

Table 3. Summary for two hierarchical regression analyses, predicting implicit self-esteem.

Predictors	Regression analysis I			Regression analysis II		
	Step 1 β	Step 2 β	Step 3 β	Step 1 β	Step 2 β	Step 3 β
Step 1						
Control variables						
Age	.14	.03	.03	.14	.13	.14
Gender	.06	.04	.03	.06	.03	.03
Step 2						
Independent variables						
diagnosis		.24*	.23*	hospitalization	.08	.07
anxiety		.05	.08	anxiety	.09	.08
Step 3						
Interaction						
diagnosis x anxiety			22*	hospitalization x anxiety		.15
adjusted R^2	.01	.05*	.09*	.01	.01	.02
ΔR^2	.02	.06*	.05*	.02	.02	.02

N=173. * $p < 0,05$. ** $p < 0,01$. *** $p < 0,001$. Diagnosis: -1 – non-cancer, 1 – cancer. Hospitalization: -1 – short, 1- long

For the group of patients suffering from cancer the simple slope was significant: $B = .30$, $t(113) = 2.14$, $p < .05$. This means that for cancer-patients a stronger anxiety is associated with higher self-esteem. For the group of non-cancer patients the simple slope was not significant.

In the second regression analysis age and gender were entered at Step 1, state-anxiety and duration of hospitalization were entered at Step 2, and the interaction of hospitalization and diagnosis at Step 3. The model was not significant: $F(5,113) = 1.46$, $p = .21$ (for details see Table 3), hence the duration of hospitalization did not moderate the relationship of anxiety and implicit self-esteem.

Discussion

As expected, before surgery more anxiety is felt by patients suffering from cancer, than those not. This result confirms the fact that cancer is still a frightening disease, due to the mortality and pain which it causes. On the other hand, the obtained difference was not large (strength of the association between diagnosis and anxiety was only $\eta^2 = .08$), and the anxiety in the most frightened group of patients (that is suffering from cancer and undergoing a long hospital stay) did not exceed 2.5 on a scale of 1 to 4.

Also in line with expectations, the duration of hospitalization was a factor, significantly related to the level of anxiety regardless of diagnosis. Patients directed for a long stay in hospital declared a higher anxiety than those directed for a short stay. Long hospitalization is usually related to the severity of the medical case, so the difference seems obvious and the assumption trivial. However, the strength

of association between duration of hospitalization and anxiety was low: $\eta^2 = .04$, and the difference between respective groups – small (.17 on scale 1- 4). Results confirmed that what are supposed to be threatening conditions (even life-threatening, like cancer or any illness requiring serious surgery), are associated with higher levels of anxiety, but a not high mean of this anxiety also demonstrate that people are reluctant to admit to being frightened.

The obtained effect of higher anxiety in women than in men is typical - the standardization tests of STAI inventory revealed higher levels of both trait-anxiety and state-anxiety in women than in men (Wrześniewski et al., 2006). Women tend to experience a stronger anxiety, or rather admit to a stronger anxiety than men. It may be due to a greater social acceptance for women (than for men) to experience, or to talk about their anxiety (Feldman Barrett, Robin, Pietromonaco, & Eysell, 1998; Fila-Jankowska & Szczygieł, 2004).

We also presented the reasons why cancer and long hospitalization are threats to self-worth and why these factors may lower self-esteem (which usually correlates negatively with anxiety - as in this study). We supposed that explicit self-esteem (especially as a state) would be lower among cancer-patients than others and, in parallel, lower between longer hospitalized patients than shorter hospitalized. This turned out to be untrue - there were no main effects of diagnosis or duration of hospitalization in the analysis of variance. Only the planned comparison revealed the expected difference between (higher) SES as a state in the group of patients suffering from cancer and hospitalized for a longer duration and (lower) SES in the group not suffering from cancer and hospitalized for a shorter duration. Lack

of differences in self-esteem, defined and measured as a trait, may indicate, that even life-threatening conditions (which are also a blow to self-worth) do not change this kind of self-assessment if they are not permanent. A difference in SES as a state, revealed only between the two extreme groups (in terms of diagnosis and length of hospitalization), may show that the presence of this type of threat either does not affect the explicit self-esteem as a state strongly, or people's need to maintain their self-esteem prevents the observed result from falling.

The compensation of self-esteem was predicted for its implicit component. And indeed, the ISEC phenomenon was observed: among patients suffering from cancer the Name Letter Effect was greater than among non-cancer patients. But the duration of hospitalization did not divide patients between those with the higher and the lower implicit self-esteem. On the other hand, the interaction of both factors was significant: the cancer-patients remaining longer in hospital demonstrated higher implicit self-esteem than all other groups. So the people experiencing the biggest blow to self-worth at the same time had the highest implicit self-esteem (and – as shown previously – the highest level of anxiety, but not the highest explicit self-esteem as a state). Rudman and colleagues (2007) showed that increasing anxiety is connected with increasing implicit self-esteem – but only in groups not using self-affirmations as a defence against an ego-threat. Authors suggest that ISEC may be an automatic defence reaction to anxiety in ego-threat conditions in the absence of explicit buffering (they also see it as a mechanism for reducing the anxiety, but this conclusion only begs more questions). In our research the group of patients suffering from cancer (in contrast to other patients) or the group of patients hospitalized for longer (in contrast to those hospitalized for a shorter period of time) are assumed to experience ego-threat. From our point of view, the specific context of the study - the interview as shortly as possible before surgery - makes those patients deprived of their conscious defences (due to preoccupation of attention resources with a highly emotionally stressful near future). Actually the correlation between anxiety and implicit self-esteem was positive in patients experiencing the ego-threat – and significant in the group of cancer-patients (in contrast to non-cancer patients). The same correlation was marginally significant in the group of longer hospitalized patients (in contrast to those hospitalized for less time). In addition, the hierarchical regression analysis showed that the interaction of state-anxiety and diagnosis (entered in Step 3), explains the variance of implicit self-esteem over and above the state-anxiety and diagnosis (entered in Step 2). The simple-slope of the regression line was positive and significant only for cancer patients. Diagnosis was thus the moderator of the relationship between anxiety and implicit self-esteem.

When we changed the predictors in the regression analysis to state-anxiety and duration of hospitalization, the

interaction of these factors did not reach the level of significance. An increase in hospitalization duration apparently caused much weaker ego-threat compared to the cancer diagnosis, and a connection between the former and the implicit self-esteem was not fully revealed. But the marginally significant correlation between anxiety and implicit self-esteem among patients hospitalized for longer, presented the same direction of dependence as for cancer diagnosis (Table 2). This suggests that the relation between anxiety and implicit self-esteem is predictable and repeatable.

According to the conclusions of Rudman's & colleagues (2007) - an increase in implicit self-esteem may be a response to an anxiety increase, and a kind of automatic defence mechanism. It might actually reduce anxiety, however, this is difficult to prove experimentally. The authors assumed (cit. op., Experiment 4) that the ISEC measurement occurred simultaneously with the initiation of its mechanism, but it is unknown whether this is a valid assumption.

Because the implicit self-esteem reflects the link between self-structure and representation of affect/emotions in memory, the increase in implicit self-esteem may also reflect the activation of associations with positive records in memory, thereby weakening the access to negative self-images, and thus preventing the decline in motivation to "fight for life" at a critical time. Support for such thinking could be found in studies of patients suffering from depression - another group which appears to have weak conscious defences. Gemar, Seger, Sagrati and Kennedy (2011) - have shown that implicit self-esteem of patients in remission of depression is higher than in those who remain depressed and those who have never experienced depression. In the first two groups the explicit self-esteem was low. Patients in remission of depression (and, since suffering from this disease, having weak explicit defences – as opposed to healthy people) may be in the phase of reconstruction of automatic defence mechanisms. Such mechanisms are probably collapsed at the time of recurrence of depression.

Limitations

In the interpretation of the results concerned with self-esteem, the way in which we have understood the 'duration of hospitalization' variable could be called into question. We tried to explain that the stay in hospital by itself could cause a threat to self-worth. But in the obtained results the duration of hospitalization proved to be connected in a direct way only with the declared anxiety. This is clear, because anxiety is associated with the seriousness of the surgery, and this in turn results from the extent of damage to the body (damage existing already and also anticipated). A longer stay in hospital is merely an effect of previous factors.

On the other hand, although duration of hospitalization appears to be more related to a physical threat than a

threat to the self, there are reasons (listed in the introduction) to expect its influence on self-esteem. Results have shown that the level of implicit self-esteem is positively related to anxiety among cancer-patients. Perhaps the threat to self-worth (due to hospitalization) explains only part of the self-esteem variance, while another part is explained by the threat to the physical body, associated with the severity of (potential) damage. This is obviously a limitation of the presented study, but the separation of these two factors seems to be difficult.

One might ask: Why were patients before surgery chosen as subjects at all? Firstly, because surgery is a moment of challenge common to all participants - patients surveyed in the clinics are undergoing or have undergone various different treatments, and these conditions are not conducive to comparing anxiety and self-esteem. Secondly, in the time just before surgery people seem to have little chance for conscious buffering (defence) of self-worth (indeed – there was no compensation of explicit self-esteem in the most vulnerable groups, although SSES decline was also not spectacular). Because of the surgery factor the control group could not be healthy people.

One aspect of the research that could be considered a weakness is the fact that the group of patients with shorter hospitalization duration was interviewed only some hours before surgery, whereas the group of longer hospitalized patients was interviewed the day before surgery. This resulted from the requirement of longer preparation before major surgery – patients had to prepare from the morning of the same day, and had to undergo a so-called premedication. Therefore, the only way to interview them in full consciousness was to do it the previous day.

To validate the conclusions it is necessary to replicate the study – as well as to perform similar studies with other forms of ego-threats and use other methods to measure implicit self-esteem.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. London: Sage Publications.
- Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 169–183). New York: Guilford Press.
- Baumeister, R. F. (1982). Self-esteem, self-presentation, and future interaction: A dilemma of reputation. *Journal of Personality*, 50, 29–45.
- Baumeister, R. F., & Jones, E. E. (1978). When self-presentation is constrained by the target's knowledge: Consistency and compensation. *Journal of Personality and Social Psychology*, 36, 608–618.
- Bellizzi, K.M., Latini, D.M., Cowan, J.E., DuChane, J., & Carroll, P.R. Fear of recurrence, symptom burden, and health-related quality of life in men with prostate cancer. *Urology*, 2008;72(6), 1269–1273.
- Bishop, G.D. (2001). Emotions and health. In N.J. Smelser & P.B. Baltes (eds.), *International encyclopedia of the social and behavioral sciences*, Vol. 7. (pp. 4454–4459). New York: Pergamon.
- Bishop, G. (2007). *Psychologia Zdrowia*. Wrocław: Wydawnictwo Astrum.
- Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann D. (2002). The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *Journal of Psychosomatic Research*, 52, 69–77.
- Blair, I. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review*, 6, 242–261.
- Brendl, M., Chattopadhyay, A., Pelham, B. W., & Carvallo, M. (2005). Name letter branding: Valence transfers when product specific needs are active. *Journal of Consumer Research*, 32, 405–415.
- Brown, J. D. & Smart, S. A. (1991). The self and social conduct: Linking self-representations to prosocial behavior. *Journal of Personality and Social Psychology*, 60, 368–375.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75–109). New York: Academic Press.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition: Their meaning and use. *Annual Review of Psychology*, 54, 297–327.
- Fila-Jankowska, A., Szczygieł, D. (2004). Wpływ pomiaru pobudzenia fizjologicznego na deklarowaną intensywność emocji – różnice między płciami. [The Impact of the measurement of a physiological arousal on the declared intensity of emotions - the differences between the sexes. *Psychologia Jakości Życia* [Psychology of Quality of Life], 3(2), 165–182.
- Feldman Barrett, L., Robin, L., Pietromonaco, P., Eysell, K. (1998). Are women the „more emotional” sex? Evidence from emotional experiences in social context. *Cognition and Emotion*, 12 (4), 555–578.
- Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin*, 132, 692–731.
- Gawronski, B., & Bodenhausen, G. V. (2007). Unraveling the processes underlying evaluation: Attitudes from the perspective of the APE Model. *Social Cognition*, 25, 687–717.
- Gemar, M. C., Segal, Z. V., Sagrati, S., & Kennedy, S. J. (2001). Mood-induced changes on the implicit association test in recovered depressed patients. *Journal of Abnormal Psychology*, 110, 282–289.
- Greenberg, J., & Pyszczynski, T. (1985). Compensatory self-inflation: A response to the threat to self-regard of public failure. *Journal of Personality and Social Psychology*, 49, 273–280.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464–1480.
- Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review*, 109, 3–25.
- Härter, M., Reuter, K., Aschenbrenner, A., Schretzmann, B., Marschner, N., Hasenburger, A., & Weis, J. (2001). Psychiatric disorders and associated factors in cancer: results of an interview study with patients in inpatient, rehabilitation and outpatient treatment. *European Journal of Cancer*, 37(11), 1385–1393.
- Heatherton, T. F. i Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60, 895–910.
- Ibbotson, T., Maguire P, Selby P, Priestman T, Wallace L. (1994). Screening for anxiety and depression in cancer patients: the effect of disease and treatment. *European Journal of Cancer*, 30A(1), 37–40.
- Jones, J. T., Pelham, B. W., Carvallo, M., & Mirenberg, M. C. (2004). How do I love thee? Let me count the Js: Implicit egotism and interpersonal attraction. *Journal of Personality and Social Psychology*, 87, 665–683.
- Jones, J. T., Pelham, B. W., Mirenberg, M. C., & Hetts, J. J. (2002). Name letter preferences are not merely mere exposure: Implicit egotism as self-regulation. *Journal of Experimental Social Psychology*, 38, 170–177.
- Kenemans, P (2007). Quality of life in breast cancer patients. *Gynecological Endocrinology*, 23(7), 366–367.
- Kitajama, S. i Karasawa, M. (1997). Implicit self-esteem In Japan: Name letters and birthday numbers. *Personality and Social Psychology Bulletin*, 23, 737–742.

- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1–62). New York: Academic Press.
- Little, M. & Sayers, E. (2004). The skull beneath the skin: Cancer survival and awareness of death. *Psycho-Oncology*, 13(3), 190–198.
- Laguna, M., Lachowicz-Tabaczek, K., Dzwonkowska, I. (2007). Skala samooceny SES Morrisa Rosenberga – polska adaptacja metody. *Psychologia Społeczna*, 2, 164–176.
- McClelland, J. L., McNaughton, B. L., & O'Reilly, R. C. (1995). Why there are complementary learning systems in the hippocampus and neocortex: Insights from the successes and failures of connectionist models of learning and memory. *Psychological Review*, 102, 419–457.
- Mellon, S., Kershaw, T.S., Northouse, L.L. & Freeman-Gibb (2007). A family - based model to predict fear of recurrence for cancer survivors and their caregivers. *Psycho-Oncology*, 16, 214–223.
- Nuttin, J. M. (1987). Affective consequences of mere ownership: The name letter effect in twelve European languages. *European Journal of Social Psychology*, 17, 381–402.
- Nosek, B. A. (2005). Moderators of the relationship between implicit and explicit evaluation. *Journal of Experimental Psychology: General*, 134, 565–584.
- Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin*, 130, 435–468.
- Ramsay, K., Ramsay, J., Main, D. (2007). Both group peer consuelling and individual consuelling reduce anxiety and depression, and increase self-esteem and overall life satisfaction in palliative cancer care. *Counselling Psychology Quarterly*, 20(2), 157–167.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rudman, L. A. & Fairchild, K. (2004). Reactions to counterstereotypic behavior: The role of backlash in cultural stereotype maintenance. *Journal of Personality and Social Psychology*, 87, 157–176.
- Rudman, L. A., Dohn, M. C., Fairchild, K. (2007). Implicit Self-Esteem Compensation: Automatic Threat Defense. *Journal of Personality and Social Psychology*, 93 (5), 798–813.
- Skaali, T., Fossá, S.D., Bremnes, R., Dahl, O., Haaland, C. F.; Hauge, E. R., Klepp, O., Oldenburg, J., Wist, E.; Dahl, A. (2009). Fear of recurrence in long-term testicular cancer survivors. *Psycho-Oncology*, 18(6), 580–588.
- Smith, E. R., & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality and Social Psychology Review*, 4, 108–131.
- Spielberger, C. D., Gorsuch, R.L., & Lushene, R.E. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Stark, D.P.H. & House, A. (2000). Anxiety in Cancer Patients. *British Journal of Cancer*: 83(10), 1261–1267.
- Stark, D., Kiely, M., Smith, A., Velikova, G., House, A., & Selby, P. (2002). Anxiety disorders in cancer patients: their nature, associations, and relation to quality of life. *Journal of Clinical Oncology*, 20, 3137–3148.
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review*, 8, 220–247.
- Taylor, S.E., Lichtman, R.R., & Wood, J.V. (1984). Attributions, beliefs about control, and adjustment to breast cancer. *Journal of Personality and Social Psychology*, 46, 489–502.
- Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79, 748–762.
- Wrześniewski, K., Sosnowski, T., Jaworowska, A., Fecenec, D. (2006). *Inwentarz Stanu i Cechy lęku. Polska adaptacja STAI. Podręcznik*. [Inventory of State and Trait anxiety. Polish adaptation of the STAI. Handbook]. Warszawa: Pracownia Testów Psychologicznych.
- Ying-Ching, L., Chien-Huang, L., & Raghurir, P. (2003). Avoiding Anxiety, Being in Denial, or Simply Stroking Self-Esteem: Why Self-Positivity?. *Journal of Consumer Psychology*, 13(4), 464–477.
- Zweigenhaft, R. L. i Marlowe, D. (1973). Signature size: Studies in expressive movement. *Journal of Consulting and Clinical Psychology*, 40, 469–473.