*Agnieszka Czerw\**

# Many faces of optimism. Proposal of five profiles of optimistic attitudes in research on Polish sample.

**Abstract**: *Optimism is one human characteristic which for many years has been of central interest to psychology. This variable is usually treated as a one-dimensional human trait. This text presents a different view of optimism. It includes a discussion of a multidimensional questionnaire for the measurement of optimism: the Optimistic Attitude Questionnaire (OAQ). The OAQ measures four dimensions of optimism: achievement orientation, incaution, positive thinking, and openness. The results of a k-means clustering procedure that was conducted on a group of 766 adults are presented as well. The results of the analysis reveal five different profiles: global optimists, pessimists, cautious optimists, moderate optimists, and risk-takers. The obtained profiles are significantly different from each other - for example, with respect to the age of the participants and their evaluations of life satisfaction.*

**Key words:** *optimism as an attitude, optimism dimensions, profiles of optimistic attitudes*

## Introduction

Addressing issues concerning optimism has been very popular in scientific studies for some time. Considering the prevalence of the concept of positive psychology, this phenomenon is not surprising at all. After all, optimism itself is not a recently discovered phenomenon. Analyzing literature on this topic, one may come across many definitions of this human characteristic, formulated over many years. One encounters concepts of unrealistic optimism (Weinstein, 1980), dispositional optimism (Scheier & Carver, 1985; Carver & Scheier, 2003), generalized expectation of self-efficacy (Schwarzer, 1993; Bandura, 1988) and optimistic explanatory style (Seligman, 1998; Peterson & Steen, 2002; Reivich & Gillham, 2003). The multitude of concepts does not mean that they are radically different from one another. Nevertheless, considering their existence, it may be stated that optimism is not homogeneous. There are several theories which assume more than one type of optimism, but their authors tend to apportion it between only two separate categories. For example, optimism can be labelled as a trait or a state (Burke, Joyner, Czech, & Wilson, 1999), as cautious or cockeyed (Wallston, 1994), or as defensive or functional (Schwarzer, 1993).

The studies described here were based on the most widespread scientific theory of optimism today, dispositional optimism as defined by Scheier and Carver (1985; 1993). According to these authors, dispositional optimism is a personality trait that is relatively constant in time and independent of circumstances. It consists in general of the expectation that good things, instead of bad ones, will predominantly happen to us. It is of crucial importance that Carver and Scheier emphasize the motivational role of optimism. This motivation is understood in a very basic way. Optimism is seen as a primary motivator of human activity, assisting people to accomplish the goals they set for themselves. In turn, the choice of those goals depends on how optimistically each person evaluates the possibility of achieving them.

However, it should be noted that Carver and Scheier's theory is very general and one-dimensional. It does not show, for instance, whether expecting positive occurrences is in any way connected with a subject's actions. If optimism is in fact motivational, it is difficult to ignore the question of what actions are taken under its influence and whether they are aimed at the goals that motivated them in the first place (Scheier & Carver, 1985).

Thus, Carver and Scheier's theory may be considered a starting point, but, incorporating the concept of self-efficacy into the definition of optimism, it may be assumed that optimism is a multidimensional variable.

\* University of Social Sciences and Humanities, Faculty in Poznań; agnieszka.czerw@swps.edu.pl

These dimensions may include the general tendency to feel positive emotions about the future (Matlin & Stang, 1979), but also certain beliefs that are reflected in characteristic behaviors. On the one hand, optimism could be connected with expecting a positive development of a given situation even if nothing indicates it, and on the other hand, it could be connected with convictions of self-efficacy. Optimism is assumed to be responsible for making constant attempts to solve one's problems and believing that the effort will not go to waste (Carver & Scheier, 2003). For this reason, optimists do not fear changes in their lives, are full of hope for success, think positively, see good sides of every situation (Weinstein, 1980), and are strongly motivated to accomplish their goals. Optimism may thus be perceived as a rather constant, functional feature determining a subject's attitude to the world and his or her position in this world (Czerw, 2010). It is also linked with self-efficacy, so that it not only triggers optimistic images of the future, but also specific behaviors aimed at a goal. Of course, optimists take the possibility of failure into consideration. They see it, however, as a kind of cost resulting from the risk-taking involved in their actions.

Belief in a high probability of success, and the resulting conviction that taking actions makes sense even in quite difficult circumstances, dominate in optimistic thinking. It is important to emphasize that optimism is connected not only with positive beliefs, but also with positive emotionality. Many studies show optimists declaring that they frequently feel positive emotions, have a high level of satisfaction with life and work, and experience happiness intensely (Argyle, 2002; Czerw, 2010; Daukantaite & Zukauskiene, 2012; Duffy, Bott, Allan, & Torrey, 2013). To sum up, optimism may be said to play a motivational-emotional role.

## Study 1: Optimistic Attitude Questionnaire construction research

For the construction of the scale it was assumed that optimism is an attitude. It should be manifested therefore in its three components: emotional, cognitive and behavioral. Such assumptions lay the foundations for constructing items in optimism questionnaire in which cognitive, behavioral and emotional indices are all represented (Czerw, 2001).

The goal of this constructional research was to examine the internal structure of questionnaire developed to measure various dimensions of optimism. In order to accomplish this, a multidimensional statistical method was used: a factor analysis with Oblimin rotation, which enables differentiation of relatively independent groups of items within a questionnaire—in this case, the basic dimensions of optimism. The analysis was carried out on a group of 266 adults: 153 women and 113 men (age $M = 27, 31$; $SD = 5, 45$) (Czerw, 2001; 2010). To determine the final number of factors, four criteria were applied: graphic interpretation of factor analysis, variation of eigenvalues between the factors, differences in the percentage of the total explained variance, and the content of the factors (Tabachnick & Fidell, 1996). Four factors, which are considered to be the dimensions of optimism, were distinguished as a result of conducted analyses. Thus, a tool, the Optimistic Attitude Questionnaire (OAQ) (Czerw, 2001) was eventually created, enabling the diagnosis of optimism both at the general level and in its four dimensions, which are described below.

**Achievement orientation** is an inner conviction that a person will act effectively and that fate will help him or her to achieve his or her goals. This factor may be described as a dimension of motivational nature, encouraging people to take actions as well as maintain them. A high score on this scale indicates a tendency to pursue goals despite possible difficulties. An example: "*If I really want something I can achieve this thing regardless of the circumstances*" (Cronbach's α = 0.89; 10 items).

**Incaution** is a factor of behavioral nature. Related items refer to performed or rejected behavior which may increase the chances of success and decrease the emotional consequences of a possible failure. Such an arrangement of items may suggest caution, but all the statements are so-called reversed items, meaning that the more subjects agree with them, the less cautious they are. An example: "*I prefer to prepare for the worst*". People who score high are thus incautious in their actions and do not take many precautions to protect themselves from possible mistakes (Cronbach's α = 0.87; 8 items).

**Positive thinking** refers to expecting positive occurrences regardless of our own actions or lack of them. It may be stated that this factor refers to the hope that fate, other people, or the world favor us. Such hope does not have to be based on any objective premises. An example: "*I start each day with the hope of some pleasant event*". A high score stems from generally positive thinking about one's own future (Cronbach's α = 0.80; 11 items).

**Openness**, in a cognitive sense (as in the Big Five theory), is a proclivity for new, untypical behavior and

**Table 1. The correlation (Pearson's r) of optimism dimensions**

| | Achievement orientation | Incaution | Positive thinking | Openness | General optimism OAQ |
|---|---|---|---|---|---|
| Achievement orientation | 1 | 0.42** | 0.68** | 0.62** | 0.91** |
| Incaution | | 1 | 0.19** | 0.30** | 0.59** |
| Positive thinking | | | 1 | 0.52** | 0.79** |
| Openness | | | | 1 | 0.78** |

*Note*: ** Correlation is significant at the level of 0.01 (two-tailed).

www.czasopisma.pan.pl     PAN     www.journals.pan.pl
POLSKA AKADEMIA NAUK

*Many faces of optimism. Proposal of five profiles of optimistic attitudes in research on Polish sample.*     241

experience, and partly also for risky behavior. An example: "*Fear of the unknown is not understandable for me*". People who score high are not afraid of novelty and facing challenges (Cronbach's $\alpha = 0.79$; 8 items).

The OAQ is a self-descriptive instrument in which subjects voice their opinion about the given statements (37 items) on a five point Likert scale that ranged from 1: "I completely disagree" to 5: "I completely agree". Since all dimensions in the questionnaire are positively correlated with one another (Table 1), it is possible to determine the general, pooled level of optimism from these responses.

As you can see the assumption of three dimensions representing the basic aspects of attitudes was confirmed. However, the factor analysis shows yet another dimension - motivational. It was decided to accept such structure of optimism due to the fact that, in Carver's and Scheier's theory (Scheier & Carver, 1985) this motivational role is much stressed.

To check the validity of measurement using this measure, two methods were used (Czerw, 2001). Firstly, a group of 120 students (age $M = 22, 73$; $SD = 2, 03$) filled out the OAQ, as well as the LOT-R (Scheier, Carver, & Bridges, 2001) in Polish adaptation (Juczyński, 2001). Additionally, a criterion group was identified and used. Since one of the best-examined variables to be negatively correlated with levels of optimism is depression (which Seligman considers a synonym for pessimism), 50 adults recently diagnosed with depression were surveyed.

The results of a Pearson's correlation between the OAQ and the LOT confirmed a positive relation between these measurements. For the LOT and the level of general optimism in the OAQ, the correlation amounted to $r = 0.716$; $p = 0.001$. There were similar findings for other dimensions of the OAQ: achievement orientation $r = 0.594$; $p = 0.001$; incaution $r = 0.390$; $p = 0.001$; positive thinking $r = 0.760$; $p = 0.001$; and openness $r = 0.367$; $p = 0.001$.

In the case of the research based on diagnoses of depression, two groups of participants were compared (using a student's *t*-test). One group consisted of adults suffering from depression and the other consisted of healthy adults. Research based on people with depression was conducted in mental health clinics among those who had been under the permanent care of a psychologist and a psychiatrist for no longer than two months (50 persons). Healthy subjects consisted of 130 students participating in extramural studies. Both groups were of similar age: the mean was 34 years for depressive individuals and for healthy individuals 32.14 years.

Differences between the groups transpired to be statistically relevant. For the general level of the OAQ, $t(178) = 17.558$; $p = 0.001$, and for particular dimensions the results were as follows: achievement orientation $t(178) = 17.221$; $p = 0.001$; incaution $t(178) = 5.012$; $p = 0.001$; positive thinking $t(178) = 14.938$; $p = 0.001$; and openness $t(178) = 8.972$; $p = 0.001$.

As the results of this accuracy analysis show, the questionnaire correctly diagnoses levels of optimism.

## Study 2: Profiles of optimistic attitudes

The Optimistic Attitudes Questionnaire was used many times, over a period of years, in studies conducted on various groups of adults (Czerw, 2010). In this way, data concerning 766 adults, 495 women and 271 men, between the ages of 18 and 87 ($M = 31.29$; $SD = 15.82$), was successfully collected. It should be noted, however, that the distribution is right-skewed and leptocurtic. This means that there is a high concentration of results around relatively low values. In this case, a value of 25 (the dominant feature). Examined subjects were mostly full-time and part-time students of a few universities, parents of these students (they were asked to assist in the transfer of the questionnaire to their parents) and active members of associations of pensioners (the oldest group of respondents: 14.8% of the sample - all after 60 years age).
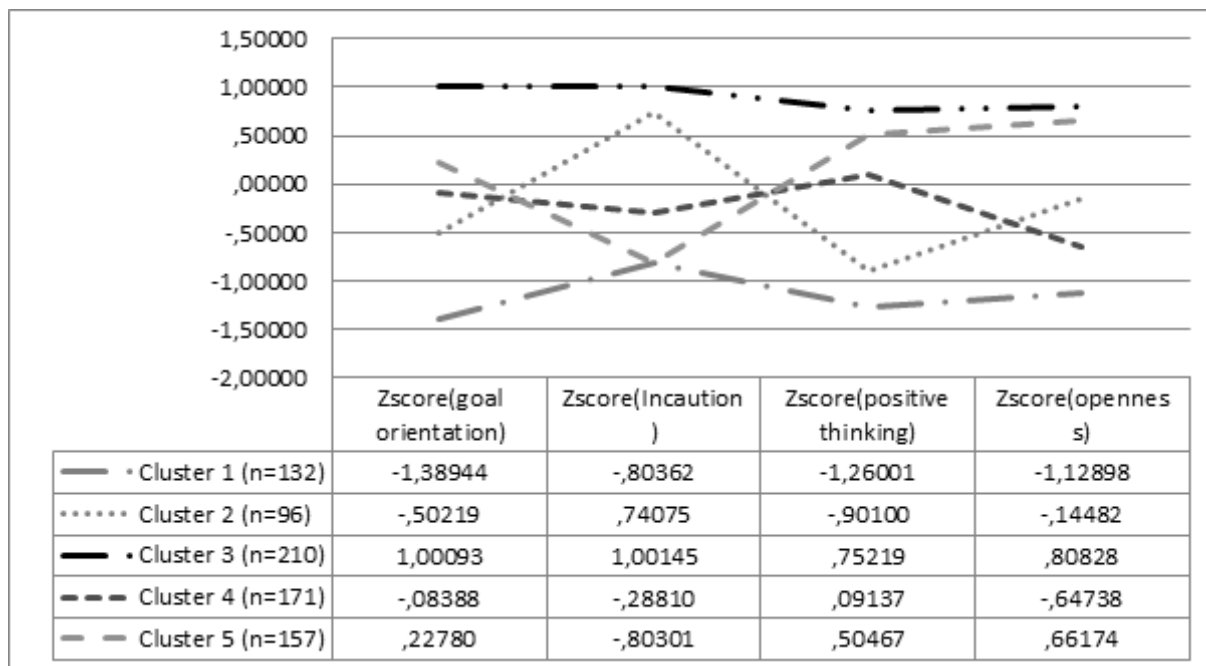
All research procedures were unfortunately different. Students always filled a questionnaire in the classroom and under the control of the investigator. However, their parents and pensioners received a questionnaire for a few days to be completed at home. So there was no control over their fulfillment. In each case, the study also focused on another variable than just optimism, but every time OAQ was the first questionnaire to fill out. This relatively huge number facilitated planning the next analyses, the goal of which would be to check whether the subjects could be divided into smaller groups according to similar results received along all four dimensions of optimism.

In order to distinguish the specific profiles of optimism, the results obtained in various studies underwent the procedure of k-means data clustering (Jain, 2010; Steinley & Brusco, 2011). At the first step this procedure requires to convert the results into standardized "z" coefficients. Because the researcher may assume any number of clusters, so some criteria for selecting an appropriate solution must be adopted. Firstly, cluster analysis was performed based on the intergroup average analysis illustrated in the dendrogram. Secondly, series of k-means analysis was performed assuming solutions of: 2, 3, 4, 5, 6, 7, and 8 profiles. Both, the dendrogram shape and all solutions of profile graphs have become the starting point for a final decision. Eventually, from among a few solutions, a 5-cluster solution was chosen, which is shown in Figure 1 (see next page).

As one can see the clusters are sufficiently large and varied in their graphic representation. Each of the distinguished profiles was given a name, drawn from the quantitative and qualitative analysis of results obtained for all values along all dimensions.

**Cluster 1**: pessimists. Persons in this profile are not optimistic according to any measured aspects of optimism. Results for all the dimensions of the OAQ are well below the average for the whole group. It may be stated, then, that they do not expect anything good in the future (positive thinking) and do not see a possibility of personal influence on a better course of events; therefore, they do not make any efforts to achieve it (achievement orientation). They also avoid risk (incaution), fear changes, and do not appreciate

**Figure 1. The clusters distinguished in the dimensions of optimism (OAQ)**



| | Zscore(goal orientation) | Zscore(Incaution) | Zscore(positive thinking) | Zscore(openness) |
|---|---|---|---|---|
| Cluster 1 (n=132) | -1,38944 | -,80362 | -1,26001 | -1,12898 |
| Cluster 2 (n=96) | -,50219 | ,74075 | -,90100 | -,14482 |
| Cluster 3 (n=210) | 1,00093 | 1,00145 | ,75219 | ,80828 |
| Cluster 4 (n=171) | -,08388 | -,28810 | ,09137 | -,64738 |
| Cluster 5 (n=157) | ,22780 | -,80301 | ,50467 | ,66174 |

variety of experience (openness). This profile has the lowest level of general optimism as well ($M = 98.70$; $SD = 7.81$).

**Cluster 2**: risk-takers. This is a group of participants with a very varied profile of results. The highest score, and at the same time the only one clearly above the average, is the one concerning incaution. All the other scores are clearly below the average. It may be stated, then, that people in this profile are characterized by a lighthearted and even reckless attitude towards reality. The representatives of this group declare frequent incautious actions and dislike taking precautions against bad consequences of excessive risk taking. Interestingly, this tendency towards risk taking is not accompanied by cognitive openness. Therefore, it cannot be said that a cognitive predilection for untypical and unstructured situations is a basic motive for such actions. It may rather be about pure emotions and the excitement felt while performing the behavior. A low score on the dimension of positive thinking may support this interpretation, as it indicates a lack of particular hopes for the future; the risk is not taken instrumentally in order to achieve something, but for the sake of the risk itself. This profile is characterized by a rather average level of general optimism ($M = 120.11$; $SD = 9.08$).

**Cluster 3**: global optimists. People in this cluster score high on all the dimensions of optimism. They may be described as global, complete optimists. Their optimism is based both on the hope that things will go well regardless of their actions (positive thinking) and on their seeing in themselves an ability to take effective actions in order to realize their plans (achievement orientation). These beliefs are supported by the ease with which they perform incautious, risky behavior: they perform it without fear (incaution), probably taking a lot of pleasure in it (openness). The general level of optimism is high in this case ($M = 146.87$; $SD = 9.21$).

**Cluster 4**: moderate optimists. Adults in this group are characterized by a moderate level of almost all the dimensions of optimism. Only the result for the dimension of openness is clearly lower than the average for the whole group of subjects. It may be stated, then, that what is very characteristic of this type of optimist is a reluctant attitude towards novelty. This profile displays a medium level of general optimism ($M = 121.11$; $SD = 6.62$).

**Cluster 5**: cautious optimists. This group of participants scores high for general optimism. However, a characteristic feature is a lowered result in the dimension of incaution. Therefore, these people have an optimistic attitude towards the future, but they avoid risky actions. In this case, general optimism is on a medium level ($M = 129.89$; $SD = 9.01$).

As can be seen from the descriptions of the profiles, they are quite clear and varied. Naturally, at this stage a question appears: do these profiles differ from one another in a significant way in other senses as well? The next step was therefore checking the distribution of gender, age (Table 2), and scores for the optimism dimensions and general level of optimism within each distinguished profile (Table 3).

The data in the table show that in almost all cases there are significant differences between the distinguished profiles. The only variable whose distribution is quite similar in all of the profiles, achieving the level of a trend, is gender. Women dominate in each profile. Of course, it may be said that this results from the gender characteristics of the whole group of subjects. On the other hand, the lack of gender differences may be understood in conjunction with other results obtained to date, which indicate a lack of differences between genders with respect to levels of optimism (Czerw, 2010). Therefore, not only is the general level of optimism similar in both women and men, but no profile may be described as more female or more male.

**Table 2. Distribution of gender and descriptive statistics for age within profiles and significance statistics of the differences between profiles**

| | | Pessimists | Risk takers | Global optimists | Moderate optimists | Cautious optimists | differences significance |
|---|---|---|---|---|---|---|---|
| Gender | woman(N) | 92 | 55 | 141 | 117 | 90 | $\chi^2(4,766) = 9.06$; |
| | man(N) | 40 | 41 | 69 | 54 | 67 | $p = 0.06$ |
| Age | mean | 37.39 | 30.9 | 29.57 | 29.08 | 31.11 | $F(4,762) = 6.571$; |
| | SD | 20.09 | 17.45 | 12.64 | 14.99 | 14.25 | $p = 0.001$ |

**Table 3. Descriptive statistics and differences for optimism (dimensions and global level) within profiles**

| | | Achievement orientation | Incaution | Positive thinking | Openness | General optimism OAQ |
|---|---|---|---|---|---|---|
| Pessimists (N=132) | M | 24,60 | 17,78 | 36,49 | 19,83 | 98,70 |
| | SD | 4,26 | 3,37 | 4,62 | 3,94 | 7,81 |
| Risk-takers (N=96) | M | 30,95 | 25,66 | 38,60 | 24,91 | 120,11 |
| | SD | 4,71 | 3,25 | 4,29 | 3,61 | 9,08 |
| Global optimists (N=210) | M | 41,70 | 26,99 | 48,33 | 29,82 | 146,84 |
| | SD | 4,04 | 3,43 | 3,41 | 3,41 | 9,20 |
| Moderate optimists (N=171) | M | 33,94 | 20,41 | 44,44 | 22,32 | 121,11 |
| | SD | 3,71 | 3,06 | 3,16 | 2,62 | 6,62 |
| Cautious optimists (N=157) | M | 36,17 | 17,78 | 46,87 | 29,06 | 129,89 |
| | SD | 4,66 | 2,85 | 3,84 | 3,16 | 9,01 |
| Differences and significance | F | 356,45 | 293,22 | 268,48 | 268,68 | 706,87 |
| | p | 0,001 | 0,001 | 0,001 | 0,001 | 0,001 |

As for differences between profiles when correlated with age, it turned out that profile 1 (pessimists) clearly diverges from the other profiles here. The average age for this profile is significantly higher in comparison with that of all other profiles (Table 4). Pessimists turned out to be the oldest group. In light of other data, which points to a negative correlation between age and levels of optimism, it is certainly not a surprising conclusion. Nevertheless, the analysis of age distribution in this profile shows that many young adults were there too (48.5% of adults between 19 and 25 years old). This means that, despite everything, this profile is not only designated for older adults.

Other profiles are not different from each other in terms of participating people's ages.

## Study 3: Variation of the profiles of optimism regarding life satisfaction

Apart from demographic variables, it was also decided to check how representatives of various profiles evaluate their lives. To achieve this goal, a questionnaire for evaluation of quality of life was used—the SWLS (Diener, Emmons, Larsen, & Griffin, 1985) in Polish adaptation

(Juczyński, 2001). The analysis was carried out in a group of 106 adults, including 57 women and 49 men. The average age was 24.55 ($SD = 5.294$).

As shown in Table 5, the indices for evaluation of life satisfaction vary substantially across the profiles of optimism. The highest scores are obtained by global and cautious optimists, while the lowest are obtained by pessimists. Analysis of the Scheffe's post-hoc test revealed a characteristic pattern of differences between particular groups. Namely, it turned out that global optimists differ substantially not only from pessimists (mean difference = 10.15; $p = 0.001$) but also from moderate optimists (mean difference = 5.92; $p = 0.006$). Additionally, a marginally significant difference was revealed when they were compared with risk-takers (mean difference = 5.41; $p = 0.059$). It may be stated, then, that two types of optimism—global and cautious—are characterized by a similar, very high level of life satisfaction. As for the other types of optimism, they are connected with a much lower level of life satisfaction. Typical pessimists, in turn, are the least satisfied with their lives.

**Table 4. Multiple comparisons of age between profiles (Scheffe test), N=766**

| (I) The name of cluster | (J) The name of cluster | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| pessimists | risk-takers | 6.498 | 2.092 | 0.048 | 0.04 | 12.96 |
| | global optimists | 7.823 | 1.732 | 0.001 | 2.47 | 13.17 |
| | moderate optimists | 8.312 | 1.807 | 0.001 | 2.73 | 13.89 |
| | cautious optimists | 6.279 | 1.842 | 0.021 | 0.59 | 11.97 |

**Table 5. Descriptive statistics for life satisfaction (SWLS) within profiles and significance statistics of the differences between profiles (N=106)**

| | | Pessimists (N=19) | Risk takers (N=14) | Global optimists (N=24) | Moderate optimists (N=24) | Cautious optimists (N=25) | Differences significance |
|---|---|---|---|---|---|---|---|
| SWLS | Mean | 15.47 | 20.21 | 25.63 | 19.71 | 22.52 | $F(4,101) = 10.924$; |
| | *SD* | 5.85 | 5.52 | 4.44 | 5.67 | 4.87 | $p = 0.001$ |

## Discussion

The results presented in this article show an interesting aspect of optimism. It turns out that optimism may be perceived as a multidimensional variable; moreover, differing internal configurations of these dimensions may constitute a significant factor which makes people different from one another. Since the distinguished profiles differ not only quantitatively (that is, in the average level of optimism) but also qualitatively, people representing their respective profiles should exhibit different behaviors.

It is worth refer again to the age difference occurring between pessymists profile and other profiles. Accepting the concept of optimism types one might expect that they will not differ in terms of age. In this case, significant differences may seem problematic. However, considering optimism relationship with age, described in many publications, it seems that these results should be interpreted a bit different. Because the level of optimism decreases with age (Czerw, 2010), so the obvious superiority of the oldest in pessimists profile does not seem to be surprising. You could even say that the age distribution in the profiles confirms this relationship. In addition, I see the value in the absence of a result of differences between the other profiles, which can be considered as actually different types of optimism.

As known from many studies, optimism is associated with a positive evaluation of life (Daukantaite & Zukauskiene, 2012; Duffy et al., 2013). However, in the research presented here, it turned out that the differing profiles of optimism may also play a significant role in forming life satisfaction. Results of the analysis of differences in perception of one's quality of life provide an initial confirmation of the thesis proposing the importance of optimism profiles. However, there should probably be more of these differences. It may be presumed that they should concern behavior in difficult situations, e.g., perception of stressful situations and reacting to them (coping styles), dealing with disease and other traumatic events, post-traumatic growth, etc. Behavior in situations connected with work or sport could also be a field worth exploring. It is known, for example, that optimism could be one of the personal resources from which a person derives support in difficult situations at work. Therefore, it can protect against burnout (Gallavan & Newman, 2013). Seligman and Schulman (1986) argue that optimism helps one effectively perform the work of insurance sellers. But perhaps not all profiles of optimism will play such roles. It is worth asking what the results would have been if the measurements had taken into account the various types of optimism.

It could also be an interesting idea to check whether the differing profiles of optimism are linked with subjects' permanent traits, such as personality and temperament, in a different way than has been heretofore revealed. Many studies indicate a relationship between optimism and traits such as extraversion, neuroticism, or cognitive openness (Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Sharpe, Martin, & Roth, 2011). However, these analyses have been based on a one-dimensional perception of optimism. If future studies took into account the existence of differing optimism profiles, the results of such more nuanced analyses might be surprising.

## References

Argyle, M. (2002). *Psychology of happiness.* East Sussex: Routledge.

Bandura, A. (1988). Self-regulation of motivation and action through goal systems. In V. Ham-ilton, G. H. Bower & N. H. Frijda (Eds.), *Cognitive perspectives on emotion and motivation*, (p. 37-61). Dordrecht: Kluwer Academic.

Burke, K. L., Joyner, A. B., Czech, D. R., & Wilson, M. J. (1999). An investigation of current validity between two optimism/pessimism questionnaires: The Life Orientation Test-Revised and the Optimism/Pessimism Scale. *Current Psychology, 2*, 129-136.

Carver, C. S., Scheier, M. F. (2003). Optimism. In S. J. Lopez & C. S. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp.75-89). Washington: American Psychological Association.

Czerw, A. (2001). Analiza struktury optymizmu [Optimism structure analysis]. *Czasopismo Psychologiczne, 7*, 25-31.

Czerw, A. (2010). *Optymizm: Perspektywa psychologiczna* [Optimism: psychological perspective]. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Daukantaite, D., & Zukauskiene, R. (2012). Optimism and subjective well-being: Affectivity plays a secondary role in the relationship between optimism and global life satisfaction in the middle-aged women. Longitudinal and cross-cultural findings. *Journal Of Happiness Studies, 13(1)*, 1-16. doi:10.1007/s10902-010-9246-2

Diener, E., Emmons, R. A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49(1)*, 71.

Duffy, R. D., Bott, E. M., Allan, B. A., & Torrey, C. L. (2013). Examining a model of life satis-faction among unemployed adults. *Journal of Counseling Psychology, 60(1),* 53-63.

Furnham, A. (2008). *Personality and intelligence at work: Exploring and explaining individual differences at work.* East Sussex: Routledge.

Gallavan, D. B., & Newman, J. L. (2013). Predictors of burnout among correctional mental health professionals. *Psychological Services, 10(1),* 115-122. doi: 10.1037/a0031341

Jain, A. K. (2010). Data clustering: 50 years beyond k-means. *Pattern Recognition Letters, 31(8)*, 651-666.

Juczyński, Z. (2001) . *Narzędzia pomiaru w promocji i psychologii zdrowia* [Measurement tools in the promotion and health psychology]. Warszawa: Pracownia Testów Psychologicznych

Marshall, G. N., Wortman, C. B., Kusulas, J., Hervig, L. K., & Vickers, R. R., Jr. (1992). Dis-tinguishing optimism from pessimism: Relations to fundamental dimensions of mood and per-sonality. *Journal of Personality & Social Psychology, 62(6),* 1067-1074.

Matlin, M. W., & Stang, D. J. (1979). *The Pollyanna principle*. Cambridge, MA: Shenkman.

Peterson, C. (2000). The future of optimism. *American Psychologist, 55,* 44-55.

Peterson, C., & Steen, T. A. (2002). Optimistic explanatory style. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 244-256). New York: Oxford University Press.

Reivich, K., & Gillham, J. (2003). Learned optimism: The measurement of explanatory style. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 57-74). Washington: American Psychological Association

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping and health: Assessment and implications of generalized outcome expectancies. *Health Psychology, 4,* 219-247.

Scheier, M. F., & Carver, C. S. (1993). On the power of positive thinking: the benefits of being optimistic. *Current Directions in Psychological Science, 2*, 26-30.

Scheier, M. F., Carver, C. S. & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a re-evaluation of the Life Orientation Test. *Journal of Personality & Social Psychology, 67(6),* 1063-1078

Schwarzer, R. (1993). Optimism, vulnerability, and self-beliefs as health-related cognitions: A theoretical analysis. *Psychology and Health, 9(3),* 161-180, 193-204.

Seligman, M. E. P. (1998). *Learned optimism: How to change your mind and your life.* New York: Pocket Books

Seligman, M. E. P., & Schulman, P. (1986). Explanatory style as a predictor of productivity and quitting among life insurance sales agents. *Journal of Personality & Social Psychology, 50*, 832-838.

Sharpe, J., Martin, N. R., & Roth, K. A. (2011). Optimism and the Big Five factors of person-ality: Beyond neuroticism and extraversion. *Personality and Individual Differences, 51(8)*, 946-951. doi: 10.1016/j.paid.2011.07.033

Steinley, D., & Brusco, M. J. (2011). Choosing the number of clusters in k-means clustering. *Psychological Methods.* Advance online publication. doi: 10.1037/a0023346

Tabachnick, B., & Fidell, L. (1996). *Using multivariate statistics.* New York: Harper Collins Publishers.

Wallston, K. A. (1994). Cautious optimism vs. cockeyed optimism. *Psychology of Health, 9(3),* 201-303.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality & Social Psychology, 39*, 806-820.

## Appendix

English version of questionnaire (items are translated for this article, but psychometric properties of the questionnaire are not checked)

1.  I prefer to prepare for the worst
2.  I like start over again.
3.  I reflect long before I make a decision, for fear of unexpected consequences.
4.  I think that people are friendly.
5.  I'm not afraid of the future.
6.  Entering into new situations are not difficult for me.
7.  I think I have more bad luck than other people.
8.  I do not like uncertainty.
9.  Even after several attempts I did not stop trying to achieve the goal.
10. Unfortunately, the world is unfriendly.
11. I am not afraid of improvisation.
12. I start each day with the hope of some pleasant event.
13. I believe that the changes in my life are bringing improvement in my situation.
14. I'm afraid of failure.
15. I think my kindness induces the same reaction in people.
16. In every bad situation, you can find some good sides.
17. I am looking forward to the next day.
18. I risk to gain something.
19. Dreams rarely come true.
20. I do not like unexpected changes, because they can cause trouble.
21. I smile and I am cheerful.
22. In any case, we can hope for a successful solution.
23. Fear of the unknown is not understandable for me.
24. I am trying to solve any problem, even the one that seems to be impossible to solve.
25. New experiences enrich my life.
26. I believe that fate favors me.
27. Failure depresses me much and exhausts my energy to act.
28. I plan my day, week, year.
29. I contemplate about my failures.
30. I derive a lot of joy from playing with fate.
31. I strive to realize my dreams.
32. If I really want something I can achieve this thing regardless of the circumstances.
33. I am afraid that one failure will lead to series of disasters.
34. I anticipate all the possible negative consequences before I will deal with a new problem.
35. I'm looking for bright side in every difficulty.
36. I behave carefully in order not to lose anything.
37. I can handle any challenge.