

**Positive Illusions from the Perspective of Anthropology
and Evolutionary Psychology**

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Abstract Positive illusions have been explained either through the limited functions of the cognitive system or through the egocentric construction of memory and attention. We argue that the function of positive illusions can be better understood by integrating them in the process responsible for forming the cognitive anthropological architecture and some specific problems to which we have had to find solutions throughout our evolution. The purpose of this study is to offer some original explanations to the question “for what reason and in which way positive illusions occurred” and to analyze illusions from a theoretical perspective in which the anthropological, biological, psychological and social models could be possibly integrated.

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Introduction

Rediscovered evolutionary theories have opened new perspectives in cognitive psychology and anthropology. It is hoped that this paradigm will offer a possible explanation for the origins of positive illusions and will build a bridge between biological, psychological and anthropological research, leading to coherent and complex descriptive models about the human nature.¹ Cognitive evolutionary psychology has a huge potential in understanding the evolutionary process of cognitive structures, and of health or illness. The focus on positive illusions from an evolutionary perspective is only a recent attempt,² the field of biases, or social errors in general, being less explored from this point of view.

¹ Bereczkei Tamás, “Evolúciós pszichológia: új szemlélet a viselkedéstudományokban” (Evolutionary Psychology: A New Perspective in Behavioural Science) *Magyar Tudomány* 1 (2002): 8.

² Anna E. Vincze, “Pozitív illúziók vagy illuzórikus egészség? Az irracionális pozitív kogníciók szerepe a mentális egészség fenntartásában” (Positive Illusion or Illusory Mental Health? The Role of Positive Irrational Beliefs in Mental Health), *Erdélyi Pszichológia Szemle* 3 (2005): 209–246, 240.

The purpose of the present paper is to introduce certain research methods on positive illusions that have already materialized in the real world and also in conclusions regarding the adaptive function of positive illusions. Another objective is the presentation of some hypotheses yet to be validated, referring to the evolutionary origin of positive illusions.

In this study we shall follow the steps indicated in the evolutionary research.¹ In order that a cognitive structure could be evaluated as an *evolutionary adjustment*, it must respect the following criteria: (1) the low probability to be the result of chance. (2) The cognitive structure should ensure solution to some adaptive issues in the evolutionary environment correlated with improved body fitness. (3) To have the features of an evolutionary design: (a) represents a feature of the species; (b) develops without conscious effort, in the absence of a prior formal instruction; (c) is used without conscious effort and without being aware of the way it works; (d) does not identify with or reduce itself to the application of general structures of the standard social model to specific contents.

Exploring the evolutionary origin of positive illusions is an important subject because it offers original explanations to the existence (occurrence) of the positive illusions as cognitive structures and it can thus offer a basis for the reintegration of different contradictory conceptions regarding the function of positive illusions.

Cognitive and social biases from a heuristic perspective

The study of biases was outlined by cognitive psychologists Kahneman and Tversky.² They defined a series of *cognitive deviations*, such as *erratic decisions*, *illusory correlations*, *anchoring biases* and *short circuits* regarding the collection of information, which they described as funny and invincible.³ The general result of these investigations was that people rely on a limited number of heuristics that in certain conditions functions well whereas in others they simply make mistakes.⁴ As Tversky and Kahneman note: “people rely on a limited number of heuristic principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations.”⁵

In order to discover how the human mind works, cognitive psychologists have often used the *computer* metaphor, which helped in understanding certain cognitive processes. However, sometimes confusing conclusions resulted from this

¹ Daniel David, Oana Benga and Alina S. Rusu, *Fundamente de psihologie evoluționistă și consiliere genetică. Integrări ale psihologiei și biologiei*. (Fundamentals of Evolutionary Psychology. An Integrative Approach of Psychology and Biology) (Cluj Napoca: Polirom, 2007).

² Daniel Kahneman and Amos Tversky, “On the Psychology of Prediction,” *Psychological Review* 80 (1973): 237–251.

³ Amos Tversky and Daniel Kahneman, “Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment,” *Psychological Review* 90 (1983): 293–315.

⁴ For an overview, see the meta-analytic review by Eldar Shafir and Robyn A. LeBoeuf, “Rationality,” *Annual Review of Psychology* 53 (2002): 491–517.

⁵ Amos Tversky, and Daniel Kahneman, “Judgment under Uncertainty: Heuristics and Biases,” *Science* 185 (1974): 1121–1131, 1124.

comparison.¹ From this perspective the human mind was interpreted as deficient compared to that of a computer which would defeat human intelligence with reference to problems that implied logics or required enhanced memory and attention.² The most spectacular results regarding the deficiency of human reasoning probably occurred following the studies that applied the *Wason Selection Task* (WST)³. The general result of these studies was that people do not tend to make logical reasoning, they are not inclined to identify the accuracy of the hypothetical rules, and they fail in estimating the probabilities defined by simple algorithms.⁴ The conclusion was that human agents make systematic errors even in simple deductive judgements, as are those that imply the use of certain conditional statements, such as “if p, then q”.

In parallel, social-cognitive research indicated that in the causal analysis from day to day life, the individual does not process the information in a normative way, according to the principles of logics and reasoning. Due to the limited resources, people more often resort to simple inference procedures, ignoring certain information, relying on stereotypes and generalizations. The social-cognitive perspective used different approaches of the human thinking in order to offer valid explanations for the results of the observations that outlined a man prone to errors and biases.⁵ The most well-known amongst these approaches are: *the naive scientist*, the “cognitive miser”, “the flawed perceiver”, or the *motivated tactician*. Some of the many identified biases were: *the fundamental attribution error*; *the actor-observer effect*; *the egocentric bias*, *the hedonic bias*, *the negative/positive bias effect*; *the self-enhancement bias*; *the Barnum effect*; *the false consensus bias*; *the illusion of transparency*; *the Lake Woebegone effect*.⁶ A common feature of these biases is their egocentric, self-enhancing nature.

¹ Michel W. Eysenck and Mark T. Keane, *Kognitív Pszichológia* (Cognitive Psychology), (Budapest: Nemzeti Tankönyvkiadó, 1997), 20.

² Ibid, 22.

³ In the Wason Selection Task, the subjects are presented numbers 2, 4, 6 and are told to respect a certain rule. Then they are asked to discover the rule by generating their own triplets based on the feedback received from their guide. Each time when the subject generates a triplet, the instructor confirms whether he/she respected the rule or not. The subjects are told that once they are convinced of the accuracy of the hypothetical rule, they can present it. What the subjects do not generally do is try to invalidate the hypothesis by testing the triplets they think do not confirm the rule. Watson called this phenomenon subjective confirmation.

⁴ Peter C. Wason, “Realism and Rationality in the Selection Task,” in *Thinking and Reasoning: Psychological Approaches*, ed. J. Evans (London: Routledge and Kegan Paul, 1983), 44–75.

⁵ In the context of social cognitive psychology, cognitive error refers to a deviation from the hypothetically normal cognitive processes. Whilst an error is a failure, a distortion caused by arbitrary (accidental) negligence, the term “bias” is used when the error becomes systematic. For a review of the literature see Eliot R. Smith and Diane M. Mackie, *Szociálpszichológia* (Social Psychology) (Budapest: Osiris, 2004), 190–234.

⁶ For a survey on these investigations see Susan T. Fiske and Shelley E. Taylor, *Social Cognition* (New York: McGraw Hill, 1991 – 2nd ed.) (review).

Positive illusion. Cognitive adaptation theory

Taylor and Brown¹ reviewed the current social psychological literature and synthesized social biases in an integrative model called the *cognitive adaptation theory*.

Taylor and Brown asserted that the mild distortion of reality in favour of the self is normal and characteristic for the majority of the population, while accurate perceptions are more characteristic to those who suffer from depression and low self-esteem. The tendency to perceive ourselves and the world through *rose coloured glasses* was labelled in the literature *positive illusions*, while the lack of these illusions *depressive realism*.

The authors defined three types of adaptive biases: (1) *positive illusions about the self* (refer to the individual's self perception and systematic conviction that s/he is above the average with respect to different characteristics and abilities); (2) *illusory control* (refers to the individual's biased perception according to which s/he would have control over situations which in reality are not controllable); (3) *unrealistic optimism about the future* (refers to people's systematic perception and belief that in comparison with other persons, in the future they are more likely to encounter positive events than negative ones).

Research regarding the prevalence of social biases and positive illusions as well as their relation to mental health is inexhaustible and to discuss it is beyond the objectives of the present study. Nevertheless, we are going to attempt to present some major characteristics of the positive illusions research.

Prevalence and proximal adaptive function of positive illusion

A series of studies prove the fact that normal and mentally healthy subjects process the information faster and more thoroughly if this is relevant and positive for the self and more slowly if the information is negative or irrelevant for the ego. Similarly, healthy persons recall in general more positive, than negative information on themselves, as compared to slightly depressed persons, whose memories are balanced in their valences. The majority of normal and mentally healthy persons remember with more difficulty their failures, than their successes, and they tend to evaluate their past performances more positively than as these really happened.²

A series of studies show that approximately 90% of the interviewed persons consider themselves to be above the average with regard to positive characteristics and abilities, the result being quite the opposite in the case of negative traits.³ Study results show that, in general, people see the future "in rose-colour" with regard to

¹ Shelly Taylor and Johnaton D. Brown, "Illusion and Well-being: A Social Psychological Perspective on Mental Health," *Psychological Bulletin*, 103 (1988): 193–210.

² For an overview of these studies see: Shelly Taylor, *Positive Illusions: Creative Self Deception and the Healthy Mind* (New York: Basic Books, 1989).

³ Jonathon D. Brown, "Evaluations of Self and Others: Self-enhancement Biases in Social Judgments," *Social Cognition* 4 (1986): 353–376, 373.

other people, and especially to themselves.¹ Both laboratory and field studies specify the fact that people believe that they have more control over the events of their lives, than is proved by reality. Moreover, they believe that they can control their lives better than other people.²

In the social cognitive perspective it is assumed that the positive illusions about the self are determined by the particularities of memory and attention. Evidently, we cannot record, store, and recall other persons' interpretations, thoughts, or emotions, we can do this only for ourselves. Taking into consideration that memories are often completed by interpretations, emotions, or sensations, it is natural that self perception is more nuanced and detailed than the perception of another person. On the other hand, people usually expect their performance to improve as the time passes, and this optimism increases proportionally with one's interest, motivation, and the effort made to accomplish those tasks. We mistake "what is happening to us" for what "we wish to happen" or with what we "have made efforts for", and when the desired event takes place, we conclude that it is due to the efforts made or to our abilities.³

The most important contribution of Taylor and her associates (1988–2005) was the realization that biases are not just cognitive errors due to limitations of the human cognitive systems, but rather a basic ground for mental health. Taylor and her associates studied the relation of positive illusions to mental health, gathering evidence for the many beneficial effects of self-enhancement on mental functioning and repeatedly reaching the conclusion that unrealistically optimistic beliefs are protective of health.⁴

The domain most investigated by Taylor and her associates was the role of positive illusions in coping with chronic illness. The general result of these studies⁵ was that unrealistic positive expectations (unsupported by medical data) provide a considerable resource in the process of recovery and coping with illness. For example patients who believed they have better chances of recovery than others, or those who believed they keep their illness under control, engaged in more health promoting behaviours (following treatment schedule, adopting a healthier life

¹ Neil D. Weinstein and William M. Klein, "Unrealistic Optimism: Present and Future" *Journal of Health Psychology* 4 (1996): 219–247.

² Julie E. Nelson and James K. Beggan, "Self-Serving Judgments about Winning the Lottery," *The Journal of Psychology* 138, 3 (2004): 253–264, 262.

³ Taylor, *Positive Illusions*, 37, 39.

⁴ David G. Myers, Ed Diener, "Who Is Happy?" *Psychological Science* 6, (1995): 10–19.

⁵ Shelley E. Taylor and David A. Armor, "Positive Illusion and Coping", *Journal of Personality* 86 (1996): 873–898; Thomas V. Merluzzi and Martinez A. Sanchez, "Perceptions of Coping Behaviors by Persons with Cancer and Health Care Providers", *Psycho-Oncology* 3 (1998): 197–203; Geoffrey M. Reed, Margaret E. Kemeny, Shelley, E. Taylor, and Barbara R. Visscher, "Negative HIV-Specific Expectancies and AIDS-Related Bereavement as Predictors of Symptom Onset in Asymptomatic HIV-Positive Gay Men," *Health Psychology* 18 (1999): 354–363.

style), reported less negative symptoms and lived longer than their more realistic peers.¹

Other studies shows that positive illusions proved to be key elements in coping with traumatic life events (e.g. in wartime) supporting psychological rehabilitation.

Moreover Taylor et al. found that high self-enhancers manifest lower physiological reactivity to stress (blood pressure, cortisone level, and electrodermal responses) in comparison with low self-enhancers. The authors presumed that positive illusions have an effect on physiological reaction through three paths: positive emotions, facilitating constructive behaviours and through social support.²

Another line of studies pointed out that positive illusions not only serve protection, but promote happiness and contentment,³ creative and productive work,⁴ higher motivation persistence and performance,⁵ and the capacity to care for others.⁶ The conclusion of these studies was that positive illusions protect the self from harmful stimuli; help restore self esteem in difficult times; provide an adaptive mechanism and enable individuals facing critical situations to adjust and cope better with and confront the challenges of daily life.

Being largely spread amongst the population and associated with normality (individuals with no positive illusions are depressive), positive illusions seem to be a possible evolutionary construct. The most important function of positive illusions is mediating the development of self-esteem and maintaining the convictions in personal effectiveness and hope.

Universal versus cultural self-enhancement

Despite the fact that the need for positive self-esteem has deep roots in the intellectual and scientific thinking of the West,⁷ following the *individualistic-collectivistic* cultural axis,⁸ influential theories and researches have emerged¹ which

¹ Shelley E. Taylor, Margaret E. Kemeny, Lisa G. Aspinwall, Susan C. Schneider, Rodriguez and M. Herbert, "Optimism, Coping, Psychological Distress, and High-Risk Sexual Behavior among Men at Risk for AIDS," *Journal of Personality and Social Psychology* 63 (1992): 460–473.

² Shelley Taylor et al., "Are Self-Enhancing Cognitions Associated with Healthy or Unhealthy Biological Profiles?" *Journal of Personality and Social Psychology* 85, no. 4 (2003): 605–615, 613.

³ Shelly Taylor, Margaret Kemeny, Geoffrey Reed, Julianne Bower, and Tara Gruenewald, "Psychological Resources, Positive Illusions, and Health," *American Psychologist* 55 (2000), 99–109.

⁴ Taylor, *Positive Illusions*, 69.

⁵ C. Peter, Seppo E Iso-Ahola, "Positive Illusion and Athletic Success," *International Sports Journal* 8 (2004): 2.

⁶ Sandra L. Murray, John G. Holmes, "A Leap of Faith? Positive Illusions in Romantic Relationships," *Personality and Social Psychology Bulletin* 23/6 (1997): 586.

⁷ In intercultural research the notion of self-enhancement is used which is operationalised through positive illusions.

⁸ The individualistic-collectivistic axis managed to capture deep structural cultural discrepancies and with its help psychologists managed to understand the individual

were considered an extraordinary challenge to the theories focused on the universality of the positively enhanced self-esteem.

Their opposition was sharp and precise: positive illusions – seen as a *strategy of self-enhancement* – are a strong motivational factor exclusively within the independent or individualistic cultural system while sub-motivation with positive illusions was associated especially with the *collectivistic cultural values*.² Markus and Kitayama,³ respectively Heine et al.⁴ sustain that the people belonging to collectivistic cultures do not only lack positive illusions but they also have *negative illusions* considering themselves to be less valuable than the other person involved in the comparison.⁵ These assertions invoke the first principle which is that in order that a cognitive construct may be considered evolutionary it needs to be a feature of the species.

It seems that the cross-cultural studies which concluded that the need for positive self-esteem is a cultural product ignored exactly the core of their own theory and that the values prescribed by the collectivistic culture differ substantially from those prescribed by the individualistic one.⁶ These studies committed the error of using the same instruments despite the different cultural backgrounds elaborated for the individualistic/independent cultures.⁷ The idea that individuals show positive illusions with respect to those attributes, features, aptitudes which are important to them and which are thought to be attractive by the society they live in – appears in Taylor's study.⁸ The attributes believed to be attractive and appreciated in the

psychology (ex. self, social motivational behaviours, thinking patterns, etc.) not only as an isolated entity but also as an integrated element of a cultural system. The two cultural systems, the individualistic and the collectivistic one have significantly different implications at the level of self development, of emotions, cognitions and social motivations.

¹ For an overview of these studies see: Alan T. Fiske et al., "A szociálpszichológia kulturális mátrixa" (The Cultural Matrix of Social Psychology), in *Kultúra és pszichológia* (Culture and Psychology), ed. L. L. N. Lanh and M. Fülöp (Osiris: Budapest, 2003), 173.

² See for example: S. J. Heine, D. R. Lehman, H. R. Markus, and S. Kitayama, "Is There a Universal Need for Positive Self-Regard?" *Psychological Review* 106, (1999): 766–794; Steven, J. Heine, "Self as Cultural Product: An Examination of East Asian and North American Selves," *Journal of Personality* 69 (2001): 881–906; Steven J. Heine and Darrin R. Lehman, "Cultural Variation in Unrealistic Optimism: Does the West Feel More Invulnerable than the East?," *Journal of Personality and Social Psychology* 68 (1995): 595–607;

³ Hazel Markus and Shinobu Kitayama, "Cultural Variation in the Self Concept. Multidisciplinary Perspectives on the Self", *Journal of Personality and Social Psychology*, 54 (1991): 18–48.

⁴ Heine et al., "Is There a Universal Need...", 766.

⁵ Steven Heine, Shinobu J. Kitayama, and Darril R. Lehman, "Cultural Differences in Self-Evaluation: Japanese Readily Accept Negative Self-Relevant Information", *Journal of Cross-Cultural Psychology* 32 (2001): 434–443, 441.

⁶ Constantine Sedikides, L. Gaertner, and Y. Toguchi, "Pancultural Self Enhancement," *Journal of Personality and Social Psychology*, 84 (2003), 60–79.

⁷ Ibid., 70, 71, 73.

⁸ Taylor, *Positive Illusions*, 24.

independent cultural context are not necessarily as desired as in the interdependent culture. On the contrary, some independent attributes are underestimated by the persons belonging to an interdependent culture. In order to demonstrate the above mentioned arguments, Sedikides et al.¹ performed a meta-analytic study including all the relevant inter-cultural studies realised to that point. Overall, the result of the study indicated that both people belonging to individualistic cultures and those from collectivistic ones manifested the need to self-enhance their image when attributes appreciated in that socio-cultural background were taken into consideration. Individuals with a collectivistic cultural background demonstrated positive illusions based on collectivistic features, such as: “cooperative”, “respectful”, “polite”, “dependent”; altogether, they asserted that they were equal to the reference person or less “good” when they had to evaluate themselves with respect to individualistic features such as: “intelligent”, “rebel”, “authentic”, “independent.”

The model elaborated by Sedikides and Straub² called *the Self-Enhancement Tactician Model (SCENT)* can integrate these apparent contradictions. The model conceptualizes the self-enhancement as being an intelligent and flexible process which modifies according to requirements the socio-cultural rules and which anticipates the consequences of certain behaviour according to the social position the individual occupies. For example, in a certain culture, a factor that enhances a positive illusion is hunting, whilst in another one, this is replaced by being successful in a career or respected in society. The same way as positive illusions vary from one person to another according to the relevance the features have for the individual, they modify from one culture to another, only that these changes are wider.

The statement that the need of self-esteem is something exclusive for individualistic cultures does not agree with the multiple empirical evolutionary analyses either. Having a positive self-esteem has multiple advantages in body adjustment. Self-esteem responds very quickly even to the subtle changes of the social environment such as domination/submission or acceptance/rejection in social relationships, warning the organism and adjusting the behaviour according to these signals. The correct evaluation of the social position within the group is essential both in survival and in reproduction.³ This argument is also supported by the studies that indicated that positive self-esteem has a strong genetic component.⁴ Considering the relevance of self-esteem for individuals we believe that a strategy

¹ Constantine Sedikides, Lowell Gartner and Jack L. Vevea, “Pancultural Self-Enhancement Reloaded: A Meta-Analytic Reply to Heine”, *Journal of Personality and Social Psychology* 89 (2005): 539–551.

² Constantine Sedikides and M. J. Strube, “Self-Evaluation: To Thine Own Self Be Good, to Thine Own Self Be Sure, to Thine Own Self Be True, and to Thine Own Self Be Better,” in *Advances in Experimental Social Psychology*, 29, ed. M. P. Zanna (New York: Academic Press, 1997), 209–269.

³ M. R. Leary, C. A. Cottrell, and M. Phillips, “Deconfounding the Effects of Dominance and Social Acceptance on Self-Esteem”, *Journal of Personality and Social Psychology* 81 (2001): 898–909.

⁴ Michelle B. Neiss, Constantine Sedikides, and Jeffrey Stevenson, “Self-Esteem: A Behavioral Genetic Perspective”, *European Journal of Personality* 16 (2002b): 1–17.

to enhance self-esteem, such as social biases represented by positive illusions, are universal and appear unconsciously and naturally, being part of the deep structure of the human cognitive design.

In conclusion, independently from the cultural background and from the type of self-construct the individuals use, they need positive illusions for those features, aptitudes and abilities which are relevant to them from the individual and the social point of view and for those dimensions that imply succession in the roles prescribed by the culture they live in.

Innate versus acquired self-enhancement

Another criterion for a cognitive construct to be considered an evolutionary product involves its development without conscious effort and in the absence of a formal instruction.¹ These criteria are supported by some investigations which prove that positive illusions occur in early childhood.² Studies performed with children indicate that some forms of positive illusions appear to be more obvious, more developed in childhood than at any other age.³ And this time, it cannot be only self-deceit, because this is a complex process of which only mature individuals are capable.

One should neither ignore the fact that by the age of 6–7 years illusions seem to be more insensitive to and unchangeable by the information received from the environment,⁴ as if their meaning would be to guarantee the optimum development of the child's delicate and frail self-esteem and to preserve his natural curiosity. The high motivation of children to discover starting from the age of 2 can be explained by several factors; however deep, and unconscious beliefs, such as "I am capable", "I hold the control", "I am safe and my exploring behaviours will be successful" stand at the basis of exploring behaviour.

From the evolutionary point of view, ages younger than 6 years are a critical period because this is when the basis of the personality is laid down, and if this fundament is weak and unstable then what is built upon it afterwards is also unstable. From an evolutionary perspective it is important that a child should be endowed with a positive image of the self, effectiveness and optimism that facilitate and optimize the development but also protect his delicate personality from the negative occurrences which are more likely to be destructive than constructive.⁵

¹ Ibid., 46.

² S. McGuire, B. Manke, A. Eftekhari, J. Dunn, "Children's Perceptions of Sibling Conflict during Middle Childhood: Issues and Sibling Dissimilarities," *Social Development* 9 (2000): 173–190; A. E. Wilson, M. D. Smith, H. Ross, M. Ross, "Young Children's Personal Accounts of Their Sibling Disputes," *Merrill-Palmer Quarterly* 50 (2004): 39–60.

³ Elizabeth Mazur, Sharlene A. Wolchik, and Irwin N. Sandler, "Negative Cognitive Errors and Positive Illusions for Negative Divorce Events: Predictors of Children's Psychological Adjustment," *Journal of Abnormal Child Psychology* 16 (1999): 601–615.

⁴ Taylor, *Positive Illusions*, 124.

⁵ Ibid., 125.

The cognitive system: defective or optimal adjustment?

If we are irrational and incapable of reasonable judgements, how is it that we manage to resolve so effectively our day to day problems? At least, much better than a computer. The most advanced form of artificial intelligence up to now has not yet managed to reach the performance of a 3 year-old in resolving issues from the natural environment with which the human agent is faced on a daily basis.



Irina Dumitrașcu, *Untitled Landscape 37*
Photography – Cprint, ø 40cm, 2010
Website: www.bavardestudio.ro

The major critique to the cognitive perspective is that the human intelligence was tested by resolving some issues for which it was not created. Cosmides and Tobby¹ suggestively illustrate this problem through the lancet

¹ Leda Cosmides and John Tooby, “Beyond Intuition and Instinct Blindness: Toward an Evolutionary Rigorous Cognitive Science,” *Cognition* 50 (1994): 41–77.

analogy: although the lancet can chop woods, nobody tries to chop woods with a knife because it was not created for this purpose; it was created to operate on the cataract, for example. Consequently we cannot blame the lancet for chopping the wood with difficulty. Similarly, the cognitive system was not created either so that we could solve formal and abstract problems such as the Necker cube, the Hanoi tower, or the Bayes' probability theorem, or that we could play chess.¹ On the other hand, we often had to solve simple problems of survival: to find food, to protect ourselves from predators and enemies, but also more complex tasks such as the social ones: to conquer the chosen partner, to identify social cheaters, or slight domination changes in a relationship. Real life is unpredictable, full of surprises and situations lacking information. In such a world, solving the problems based on heuristic and slow reasoning is impossible. In order to solve such complex problems often lacking information, the individual makes a fascinating performance.

Based on this reasoning several studies generated by the evolutionary-ecologic theories have emerged. The general result of these studies was that the performance of the participants has improved when the artificial and the ecologic tasks of the human condition as well as logical rules are respected (for example Wason's).²

Then, Cosmides et al.³ changed this conclusion through a series of studies which proved that good results depend on the nature of the situation one is in, if these appeal or not to a logical thinking of the social contract type. The logic of the social contract is: if someone benefits of something, s/he must have paid a price, otherwise s/he is a cheater and s/he needs to be removed.⁴ Thus, an erroneous system probably was the one encouraged across evolution. In what follows we shall analyse the possible distal function of positive illusions in reflection of the above mentioned hypothesis.

¹ Cognitive tasks largely used by cognitive psychologists in the study of mind functioning.

² Leda Cosmides, "The Logic of Social Exchange: Has Natural Selection Shaped How Humans Reason? Studies with the Wason Selection Task", *Cognition* 31 (1989): 187–276; Laurence Fiddick, Leda Cosmides and John Tooby, "No Interpretation without Representation: The Role of Domain Specific Representations and Inferences in the Wason Selection Task", *Cognition* 77 (2000): 1–79; Patricia W. Cheng and Keith J. Holyoak, "Pragmatic versus Syntactic Approaches to Training Deductive Reasoning", *Cognitive Psychology*, 17 (1985): 391–416.

³ Cosmides, "The Logic of Social Exchange...", 274.

⁴ See Leda Cosmides and John Tooby, "Are Humans Good Intuitive Statisticians After All? Rethinking Some Conclusions from the Literature on Judgment under Uncertainty" *Cognition* 58 (1996): 1–73 for further elaboration of arguments suggesting that a calculus of probability should be expected in human judgment if the relevant adaptive problems recurred over the human evolutionary history.

Distal adaptive function of positive illusions. The paranoid optimist

Baumaister, Finkenauer, and de'Vohs¹ underline the fact that informational errors are not only arbitrary and occasional but they stand for an important characteristic of the cognitive system. Their meta-analytical study synthesises hundreds of studies from different fields such as attention, memory, learning, emotions, development of children and the quality of the interpersonal relationships, demonstrating that human perception and informational processing is hypersensitive to negative information (unpleasant, destructive, painful stimuli) and this type of information is absolutely primary in detecting and processing; it has a more consistent and enduring effect on the brain and the organism than the positive information does (desirable, pleasant stimuli).

For example the research on attention indicates that: a negative stimulus draws the attention faster and for a longer while than a positive stimulus² and the same rule applies in the case of detecting olfactory or kinaesthetic stimuli;³ the cognitive performance is more affected by the presence of the negative stimuli than of the positive ones, even when the processing is unconscious;⁴ the facial expressions that express negative emotions (especially those associated with danger) capture the subjects' attention faster and for a longer time⁵ and also have a stronger impact on the physiological parameters.⁶ The studies on attention using Dot-probe or Stoop type tasks show that: the cognitive inference (the name of the colour) is greater when the coloured words indicate a threat.

From the studies on learning and memory it is well known that: negative conditioning through punishment has a faster impact and a more lasting effect on behaviour and on the personality than reward conditioning;⁷ those experiences that once provoked fear reactions leave deeper and more enduring marks in the memory than the positive ones. Even if the subjective feeling of fear is diminished, a very sensitive neuronal circuit persists to that type of stimuli that first generated the

¹ Roy F. Baumaister et al., "Bad Is Stronger than Good", *Review of General Psychology* 5, no. 4 (2001): 323–370, 323–360 (meta-analysis).

² Susan T. Fiske, "Attention and Weight in Person Perception: The Impact of Negative and Extreme Behavior," *Journal of Personality and Social Psychology* 38, no. 6 (1980): 889–906.

³ Nelson Gilbert, Alan J. Fridlund, and John Sabini, "Hedonic and Social Determinants of Facial Displays," *Chemical Senses* 12 (1987): 355–363.

⁴ J. M. G. Williams, A. Mathews, and C. MacLeod, "The Emotional Stroop Task and Psychopathology," *Psychological Bulletin* 120 (1996): 3–24.

⁵ Felicia Pratto and Oliver P. John, "Automatic Vigilance: The Attention-Grabbing Power of Negative Social Information," *Journal of Personality and Social Psychology* 61 (1991): 380–391.

⁶ Vincze Anna, "Self Enhancing Believes Relationship to Psychological Distress Examined by Anxiety Related Attentional Biases," *Journal of Cognitive and Behavioral Psychotherapies*, 10 (2010): 59–76.

⁷ J. T. Spence and L. L. Segner, "Verbal vs. Nonverbal Reinforcement Combinations in the Discrimination Learning of Middle and Lower Class Children," *Child Development* 38 (1967): 29–38, 36.

fear.¹ Also memory seems to be affected by the negative stimuli: usually the individuals are more inclined to maintain, store and evoke negative stimuli, be they words, images or events,² and the effect is more intense if the content is associated with threats.³ The neuro-imagistic studies support these data indicating that the neuronal circuits which respond to the negative stimuli are shorter and develop faster persisting for a longer period than the positive ones; the brain's response is more powerful to negative stimuli (manifesting itself through a wider activation respectively a higher amplitude EEG and ERP). The brain seems to have a different sensitivity for identifying errors⁴ and inconsistent stimuli (a bad person behaving positively).⁵

The rule also applies in the case of emotional experiences: the negative ones are felt faster and affect the organism for a longer while and in a deeper way. For example: more spontaneous individuals can name more negative emotions,⁶ probably not by mistake, negative emotions are better represented linguistically;⁷ the euphoric state of those who win the lottery decreases rapidly after the happy event and levels itself to the prior value in a short while; on the other hand, recovering the emotional balance after a similarly intense loss lasts for a longer period of time;⁸ those individuals who suffer a loss, be it even an insignificant one, report a more unpleasant emotional state than the joy reported by those who have an equivalent gain;⁹ critiques generate more frustration, dissatisfaction than praise,

¹ Joseph LeDoux, Greg Quirk, and Chris Repa, "Fear Conditioning Enhances Short-Latency Auditory Responses of Lateral Amygdala Neurons: Parallel Recordings in the Freely Behaving Rat," *Neuron* 15 (1995): 1029–1039.

² Felicia Pratto and Oliver P. John, "Automatic Vigilance: The Attention-Grabbing Power of Negative Social Information," *Journal of Personality and Social Psychology* 61 (1991): 380–391, 389.

³ Mogg Karin and Bradley Brendan, "A Cognitive-Motivational Analysis of Anxiety," *Behavior Research and Therapy* 36 (1998): 809–848.

⁴ Phan Luu, Paul Collins, Don M. Tucker, "Mood, Personality, and Self-Monitoring: Negative Affect and Emotionality in Relation to Frontal Lobe Mechanisms of Error Monitoring," *Journal of Experimental Psychology: General* 129, (2000): 43–60.

⁵ Bruce D. Bartholow, Gabriele Gratton, Monica Fabiani, and Ann B. Bettencourt, "A Psychophysiological Examination of Cognitive Processing of and Affective Responses to Social Expectancy Violations," *Psychological Science* 12 (2001): 197–204, 202.

⁶ Stephanie Van Goozen and Nico H. Frijda, "Emotion Words Used in Six European Countries," *European Journal of Social Psychology* 23, no. 1 (1993): 89–95.

⁷ R. Averill James, "On the Paucity of Positive Emotions," in *Advances in the Study of Communication and Affect*, ed. K. Blankstein, P. Pliner, and J. Polivy (New York: Plenum, 1985), 745.

⁸ Philip Brickman, Dan Coates, and Ronnie Janoff-Bulman, "Lottery Winners and Accident Victims: Is Happiness Relative?" *Journal of Personality and Social Psychology* 35 (1978): 917–927, 925.

⁹ Daniel Kahneman and Amos Tversky, "Choices, Values and Frames," *American Psychologist* 39 (1984): 341–350, 346, 347.

satisfaction and joy do;¹ the consequences of an intense negative experience (abuse) are devastating and often lead to changes in the structure of the personality; recovery following the abuse is slow, difficult and unsure; even if time helps removing the open marks the individual often remains scarred. On the other hand the positive experiences similarly intense do not cause major changes, do not produce structural changes and do not last in time.²

The disequilibrium in favour of negative information was demonstrated as tied to more complex circumstances in life such as fulfilling the goals or intimate relationships: individuals invest more psychological effort in blocked, unfinished, failed projects than in those which are successful; in the same way people invest more psychological effort in maintaining failed relationships than in the prosperous ones.³

The priority of processing negative information is adaptive especially because a negative stimulus can hurt or destroy the organism. If an individual fails to notice a positive signal which could bring him/her pleasure (for example the sound of leaves, in the case of a hunter who wishes to eat), the cost of his/her negligence is that s/he remains unsatisfied. However, if s/he ignores a negative signal (the sound of leaves in the case that the person is not armed and the woods are full of dangerous animals) this small negligence can have a great cost (he himself becoming the dinner). In this regard, the developments of such neuronal circuits that are hypersensitive to negative stimuli of danger become justified. From an evolutionary point of view those organisms that were more reactive to negative information and avoided threats, had in the end higher chances of survival and of passing on their genes to their descendants. Even though sometimes this type of processing leads to errors (false alarms, wasted effort) the costs are minimal compared to the case when the stimulus would have proved real.

If we only act based on the principle: “protect yourself, and you shall survive”, we would constantly live in alert, always prepared to run or fight, we would always feel threatened, we would not risk to discover, explore, try something new, because that which is new is also unpredictable. The high arousal is beneficial on a short term because it maintains body effectiveness at the optimum level. However such an arousal in the long term would lead to the body over-loading and to loss of flexibility. If disequilibrium occurs in favour of a negative bias, its pathologic form manifests itself through various psychological diseases such as the

¹ William Graziano, Thomas Brothen, and Ellen Berscheid, “Attention, Attraction, and Individual Differences in Reaction to Criticism,” *Journal of Personality and Social Psychology* 38 (1980): 193–206, 204.

² Jilian Fleming, Paul E. Mullen, Beverly Sibthorpe, and Gabriele Bammer, “The Long-Term Impact of Childhood Sexual Abuse in Australian Women,” *Child Abuse and Neglect* 23 (1999), 145–159. Roxanne L. Silver, Cheryl Boon, and Mary H. Stones, “Long-Term Effects of Incestuous Abuse in Childhood,” *American Journal of Psychiatry* 143 (1983): 1293–1296.

³ Eric Klinger, Steven G. Barta, and Madeline E. Maxeiner, “Motivational Correlates of Thought Content Frequency and Commitment,” *Journal of Personality and Social Psychology* 39 (1980): 1222–1237, 1233, 1234; Roy F. Baumeister, *Meanings of Life*, (New York: Guilford Press, 1991), 167–170.

anxiogenic diseases: general anxiety, social anxiety, phobias, paranoia, post traumatic stress (PTSD). It is well known that one of the symptoms of anxiety disorders is a permanent state of alertness, a high vigilance for the anxiogenic stimuli which the brain interprets as threats, thus leading to a vicious circle and contributing to maintaining the disease.

The human condition implies not only the self-preservation instinct but also the knowledge and the exploration one. In order to explore and discover things, certain risks must be assumed. Usually we take risks when we estimate that our actions will be successful or we have at least one chance to reach the desired goal; this result is more precious than the loss in case of failure.

One of the few exceptions from the general rule is being hypersensitive to negative information that refers to the self. In this case the process seems to be reversed: we tend to ignore or at least minimize the negative information while we over-estimate the positive one. In this information category Baumaister points out the studies that refer to the encouraging self-favouring biases and positive illusions (see p. 4-8),¹ being the same as the phenomenon indicated by Taylor and Brown: positive illusions.²

Janoff-Bulman, a specialist in the psychological consequences of traumas, uses the experience of victimization to illustrate the fact that the disappearance of positive illusions can have serious consequences.³ Based on case studies, the author reaches the conclusion that one of the principles of change at the perception level following trauma is the disappearance of the positive biases which often become completely erased and irretrievable. "For some victims the illusion of lack of vulnerability is often completely erased, covered in despair, depression and despondency. The therapeutic process with these patients becomes very difficult and often ending in fail because they can no longer believe in good and they give up. On the other hand those who succeed to surpass the victimizing trauma and use the appropriate coping mechanisms are those who manage to re-establish their positive perceptions about themselves, about others and about the world, admitting at the same time the limitations, the boundaries of these beliefs."⁴

The two *wisdoms* of the human psyche are contradictory but altogether complementary: while the negative disposition inclines us towards defence and retreat behaviours, the positive disposition inclines us towards exploration and knowledge; while the *negative setting* makes us alert and careful, the positive setting tends to make us more relaxed and optimistic and even risk-taking; while the one reflects prudence, the other one reminds us that with no risks taken there is no winning. Both illusions of the self capture the deep psychology of man and the individual characterized at the same time by both "postulates" is the *paranoid optimist*.

¹ Baumaister et al., "Bad Is Stronger than Good," 4-6.

² Taylor and Brown, "Illusion and Well-being...", 194.

³ Ronnie Janoff-Bulman, "The Benefits of Illusions, the Threat of Disillusionment, and the Limitations of Inaccuracy," *Journal of Social and Clinical Psychology* 8 (1989): 158-175, 174.

⁴ Janoff-Bulman, "The Benefits of Illusion...", 164.

Thus, the *paranoid optimist*¹ is a person who takes risks in order to reach the targeted goals but at the same time is extremely cautious. The essence of the paranoid optimist is the paranoia with reference to his/her environment and the optimism regarding his/her own competencies. Haselton and Nettle,² respectively Vincze³ argue that the cognitive system of the paranoid optimist type was the one that encouraged the natural selection during the phylogenetic evolution and in this approach the contrasting explanations can be reconciled.

The function of the positive setting is not only one of completion but it counter balances and offers protection against the negative flooding through the conviction of the unconscious lack of vulnerability “even though the world is a dangerous place I am a special person above the others (the illusion of the self), and I make efforts and have the course of my life under control (the illusion of control), thus I have good chances to avoid displeasures and for desired things to happen to me (the optimistic illusion)”. The double standard type data, highlighted during the national investigations on life satisfaction, illustrate this paradox. People systematically report that the world is becoming more and more unsafe, the economic, political and educational situation of the country becomes worse; people are becoming more superficial; families are breaking apart, etc. When questioned about their own life these same people say that: in the future they will have a better job, better life conditions, their child will go to a better school; they will afford to go on vacation and they will change their house or car – according to a meta-analytical study comprising 70 studies from 9 different countries.⁴

The positive bias in its emphasized or even pathological form can lead to an exaggerated lack of vulnerability to risks: looking for hard sensations, mania and narcissism,⁵ megalomania, the misinterpretation of reality. The exaggerated illusory image of the self is associated with the subjective presumption of the probability of success, which can encourage the individual to take on projects very difficult to realise with inappropriate resources and with insufficient safety measures. Consequently, self-esteem leads to frequent failures which then become a source of threat to self-perception. In bi-polar depression the manic phase is characterized by exaggerated views of power, personal effectiveness and exalted future plans. The manic periods are followed by depressive periods. Janoff-Bulman says that the under-estimation of vulnerability to negative events that can occur is a gift, an adaptive mechanism, which mediates the real interactions with the environment in such a way that these illusory beliefs establish and enhance themselves in our cognitive reality. Taylor argues that functional positive illusions are separated from

¹ The metaphoric designation “the paranoid optimist” was used by Martie G. Haselton and Daniel Nettle, “The Paranoid Optimist: An Integrative Evolutionary Model of Cognitive Biases,” *Journal of Personality and Social Psychology Review* 10 (2006): 47–66.

² *Ibid.*, 64.

³ Vincze, “Positive Illusion...,” 214.

⁴ M. R. Hagerty, “Was Life Better in the ‘Good Old Days?’” *Journal of Happiness Studies*, 4 (2003): 115–139, in Haselton and Nettle, “The Paranoid Optimist”: 49.

⁵ Randall C. Colvin and Jack Block, “Positive Illusions and Well-being Revisited: Separating Fiction from Fact,” *Psychological Bulletin* 116 (1994): 28.

pathological illusions such as hallucinations or megalomania, not only through their quantity but also because of their flexibility. While delirium, hallucinations or manias are false beliefs which persist despite the facts, positive illusions, if they become contrary to the reality, will change, adapt and keep on contributing to the preservation of a positive self image.¹

Error management theory

The observations made about the cognitive and social biases have recently been integrated in an evolutionary theory called *Error Management Theory*, (EMT) elaborated by Haselton and Buss.²

EMT proposed the following equation: if the cost of failure is relatively lower than the benefits of success, it is beneficial to take some risks. The estimation of the probability that the cost of failure is relatively lower than the benefits of success sometimes is not only more profitable than the underestimation (the negative illusion) but it is more profitable than the accurate evaluation.

It is more profitable to be convinced that we are capable even if the reality does not exactly reflect this conviction. Sometimes the objective and accurate reasoning based on already held information hinders the fulfilling of the dream. A slightly illusory conviction encourages us to make more trials that increase the possibility of success. The conviction that we are capable, that we have the control and that we shall be successful helps us take steps towards that goal. Even if sometimes these steps can seem unfounded (being based on an error) they can open new perspectives and push the individual towards the desired objective. Positive illusions motivate people towards goals; they integrate positively the self confidence by facilitating motivation and hope.

Conclusions

While the social cognitive approaches of psychology and of neuro-sciences identify the closest causes of the human behaviour such as the computational or the algorithmic-implementation level, the evolutionary approach starts from the idea that a cognitive structure exists because it had to solve a coping problem – the explanation of that behaviour thus becoming a distal one.

The studies that managed to highlight the adaptive aspect of the biases indicate an important element connected to the debate on the rational-irrational human thinking: (1) they suggest that the criteria for processing the information were established in error by the heuristic perspective based on which the human decisional informational processing was set; (2) they offer a solid basis to distinguish the ecological reasoning from the cognitive one by virtue of the types of relational variables.

The evolutionary perspective offers a theoretical perspective on positive illusions in which their biological, psychological and social models can be

¹ Taylor, *Positive Illusion*, 36

² Martie G. Haselton and David M. Buss, "Error Management Theory: A New Perspective on Biases in Cross-Sex Mind Reading," *Journal of Personality and Social Psychology* 78 (2000): 81–91.

integrated. The evolutionary perspective clarifies the pros and cons of the adaptive function of positive illusions, explaining and re-interpreting their adaptive role. In this perspective positive illusions are perceived as features necessary to the human cognitive system which was built not with the purpose of being rational, but with the purpose of working effectively even with the inclusion of some errors in order to reduce the costs of a few but possibly fatal errors.

Positive illusions prove to be an evolutionary anthropological, psychological and social product due to the fact that:

(1) Positive illusions ensured the solving of some adaptive issues in the evolutionary environment being correlated with the improved fitness of the body by counterbalancing the negative setting, by protecting the body from negative flooding, by supporting curiosity and taking on some risks for knowledge and exploration, and by preserving the motivation in reaching one's goals.

(2) The high prevalence of positive illusions in the population associated with normality are a solid sign that positive illusions have the characteristics of an evolutionary design representing a feature of the species.

(3) The positive illusions are anthropological universal. Even though the social and cultural environment in which we live has a moderating effect on the content of the positive illusions, their presence is a constant feature of the human subject, a deep human need that manifests itself despite the cultural background in which it exists.

(4) The positive illusions occur without special instruction, they are used without conscious effort and without being aware of the way they work.

(5) Positive illusions cannot be identified when applying the general structures of the standard social model at specific contents. The adaptive function of positive illusions is to protect the self-esteem and to contribute to the preservation of health. It is included in the explanations offered by the evolutionary perspective; it becomes more stable and profound.

In this new reflection positive illusions occur as complex cultural and social representations that offer a way of cognition and reconstruction. They establish the connection between the subject and the socio-cultural environment, they fulfil cognitive functions, mediate communication, guide the social behaviour and allow coping with the immediate context. Positive illusions are based on cognitive, cultural, social and motivational causes. Positive illusions comply with cognitive, social and emotional logic and thus they integrate both the rational and the irrational thinking.