So-called delusions in daily life can be broken down and described more accurately with the help of a 7x4-field.

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Abstract

It was not until the end of the 20th century that a phenomenon known as delusiveness in the daily actions of people attracted significant scientific interest. It is difficult to classify as a mental illness. Nevertheless, it is a collection of skews, and a burden, hindrance, peeve, etc. A tool called 7x4-field has been developed in order to break down the causes of disturbance in mental wellbeing (e.g. divorce), mental disturbance (e.g. obsession), and deviant behavior (e.g. cheating). It contains seven factors: lonelinesses, models, stresses, punishment experiences, losses, avoidances, and life changes, which affect the cornerstones of a good life: social relations, physical exercise, rational functions and irrational functions. This study examined 136 studies, the results of which were placed into the 7x4-field, which in turn confirmed the thesis that the 7x4-field is an effective tool in preemptive mental health work.

Introduction

Delusions in daily life emerge in the individuals' free time, work places, politics, discussions, use of authority, media, and different forms of planning. For instance, it is a well- known fact that the majority of people with a driving license consider themselves to be better drivers in average, although such an observation is a result of delusive reasoning. Such reasoning alleviates processing the overflow of information, but at the same time it is a human sin, which was referred to as hamartia, meaning "missing the mark", even by the ancient Greeks. Additionally, it is notable that these delusions are only rarely regarded as a mental disturbance or deviant behavior. These delusions have been known in literature and art for an extensive period of time. There has been scientific research on them ever since the 17th century. However, the scientific research on them started to increase only in the 1950s. Possibly the most notable initial release of such work was Fred Attenave's article "Psychological probability as a function of experienced frequency" (Attenave 1953).

Taking into consideration the fact that delusions in daily life may result in severe processes of disturbance, it becomes an important goal to analyze these effectively. This is when the 7x4- field comes into play, which is a type of a tool (Heiska 2016). It reveals the causes for disturbance in mental wellbeing, mental disturbance and deviant behavior. On the other hand, it contains seven factors: **lonelinesses, models, stresses, punishing and disappointing experiences, avoidance possibilities, and life changes** as well as four cornerstones of mental well-being: **social relations, bodily functions, rational functions, and functions pertaining to outlook on life.** These form a field of 7x4, that is, 28 squares, which are the main categories when classifying the causes related to disturbances in mental wellbeing, mental disturbances and deviant behavior.

Method

Firstly, as many scientific studies regarding delusions in daily life as possible were gathered. 136 of these were found, and many of them included delusions that did not have an official name. Then the delusions were placed into the 7x4-field.

Results

The research results formed the following classification on the 7x4-field:

LONELINESSES: Situations, which primarily involve subjectively experienced isolation, alienation, sociological anomia, separation angst, etc.

Loneliness in social relations: **Confirmation bias** refers to interpreting information in a way that is beneficial to the person itself and in accordance with one's prior beliefs. This delusion is especially common in political decision making and it resembles conformity bias, which is one model in rational functions. **Primacy effect**, in which the first items in a list are recalled better than the later ones, is similar to this delusion. These delusions brought up by Peter Watson in the 1960s have been heavily studied by Raymond Nickerson's work group (Nickerson 1998).

Loneliness in bodily functions: **Dunning-Kruger effect** refers to individuals overestimating their strengths (physical and mental) as well as their skills. Additionally, the worse the skills that an individual possesses in a certain field are, the more this individual will overestimate these abilities. For instance, people who have just recently obtained their driving license generally consider their driving skills way better than they are in reality. This is caused by a metacognitive deficiency, in which a lack of feedback is a leading cause to such erroneous beliefs (Kruger et al. 1999 and DeAngelis 2003).

Loneliness in rational functions: **False consensus effect** refers to individuals to adapting their personal views into one standard collective opinion, in which the individual has a tendency to project their beliefs into other individuals (Janis 1973). In other words, the individual assumes that everyone else thinks the same way, even if statistics show that the said assumption is incorrect. This delusion commonly occurs in groups, which causes the individual to think that the collective opinion of one's peers will also represent the general opinion. When the individual realizes that there is no consensus, he may easily assume that those who disagree are wrong. No single explanatory factor has been discovered for the effect (Dean 2007).

Loneliness in irrational functions: When rare and unlikely events are still possible, an individual encountering them will face loneliness. In such cases, it is easy to rely on available yet still incomplete searching. This **availability heuristic** refers to a phenomenon, in which the easier it is to recall a mental image, the more correct and likely it is considered. This

recollection is affected by, for example, how vibrant and emotionally charged the mental image is during the event in which the mental image was stored into the memory. For instance, in one of the studies conducted by J. Don Read's work group, parents were more concerned about their children being kidnapped than dying in a car accident, despite the fact that dying in a car accident is approximately one hundred times more likely (Read 1995).

Moreover, availability heuristic has a sub-category called **availability cascade**: The tendency to overestimate the likelihood of events with greater "availability" in memory, which can be influenced by how recent the memories are or how unusual or emotionally charged they may be. It is a self-reinforcing process in which a collective beliefs more and more plausibility through it increasing repetition in public discourse (or "repeat something long enough and it will become true") (Kuran et al. 1999).

MODELS: Situations, which primarily involve the possibility of social learning.

Models in social relationships: **Halo effect** refers to a delusion, in which individuals, who have one notable positive trait, are associated with other positive traits. This includes, for example, following the beliefs of people in authority, usually in a delusive manner. Other common examples of the halo effect are regarding people wearing eyeglasses as intelligent or physically attractive pupils as smarter than others. In marketing, the halo effect is used to associate positive impressions to a larger brand. The halo effect has been first reported in a scientific publication by Edward Thorndike's work group (Thorndike 1920).

Models in bodily functions and movement: One of the delusions related to bodily functions and movement is **taking action, even if it would be more beneficial to wait**. Many such delusion in daily life, among 300 others, have been studied by Bo Bennet's work group (Bennet 2013).

Models in rational functions: **Conformity bias** refers to the following phenomenon: An argument can still be incorrect, even if millions claim it to be true (Asch 1956). Solomon Asch's work group conducted the following experiment: The participants were first made to estimate the length of several lines by themselves, and almost everyone answered correctly. Then they proceeded to make estimations in groups, but this time the first people to answer were actors who claimed to be experts and told others their own incorrect answers. It was then examined how this behavior later affected the correct answers of other participants. According to the results, a third of the participants agreed with the incorrect answers proposed by the actors, although the task was as simple as described above.

This delusion occurs when listening to **real experts** as well. Philip Tetlock's work group (Tetlock & Gardner 2016) compared the developments of solutions to societal issues predicted by experts and laymen, and the conformity bias became statistically notable among scientific circles afterwards.

Models in irrational functions: In the 18th century, Immanuel Kant wrote about **an everyday life bubble** in the lives of people in his book "Critique of Pure Reason" (Kant 1781). In this book, he steps outside of the everyday experiences by claiming: "There is a bubble between

me and the world, and knowing this is most essential."

Turning separate events into a **fascinating story** may also delude people. For instance, beautiful stories are easily associated with other positive traits in a delusive manner. Ernesto Reubern's work group uncovered such results when studying the generational gap and "bubbles" related to it (Reuben et. al. 2015).

ACTUAL STRESS SITUATIONS: Situations, which primarily involve all the following factors: 1) Something unpleasant has occurred. 2) Unpleasantness is known to persist without certain actions. 3) The aforementioned actions are met with difficulties.

Stresses in social relations: During successes, people are more likely to spend more money. This is an example of **money illusion** or **price illusion**. This phenomenon was brought up to the scientific circles of Irving Fisher during the massive market crash in the United States in the late-1920s (Fisher 1928). **Money illusion**, or **price illusion**, is the tendency of people to think of currency in nominal, rather than real terms. In other words, the face value (nominal value) of money is mistaken for its purchasing power (real value) at a previous point in time. Eldar Sharif's work group has presented details and additional examples for this phenomenon in the 21th century (Sharif et. al. 2000).

The following delusion in daily life is usually brought up especially during psychotherapy for depression: Two people face a journey of one hundred kilometers before them, and while one has progressed 100 meters, the other has only 50 meters. The slower individual thus deducts the following: "He is twice as far as I am, so I must be only half as good as he is." However, both individuals are at the same starting point, and the same situation also figuratively applies to real life surprisingly often (Heiska 2016).

Stresses in bodily functions: For millennia, it has been known that the biological perception mechanism of humans may produce optical illusions, during which the brain interprets the information gained through eyes either as impossible or contradictory to reality (Seckel 2006). Seckel's work group has presented a classification for these illusions.

Additionally, the so-called **blind spot** in the eye, discovered by French Edmé Mariotte in the 17th century (Mariotte 1665), is a significant illusion, which is related to the optical illusions and is presently also used figuratively.

Another noteworthy stress situation occurs when an individual has acted delusively and assigned something important to it, making the delusion go unnoticed. For instance, a consumer places too much value on a product **that they have built using their own hands**. The phenomenon can also be perceived when companies approve of ideas that originated within the company rather than the ideas proposed by those outside of it. These are results provided by Harvard Business School, Yale University, and Duke University (Norton et al. 2012).

Stresses in rational functions: We have less control over things than we believe. **Survivorship bias** refers to individuals concentrating more on the people who have "survived" a process and overlooking those who did not due to their lack of visibility. The survivors can be humans, such as in medical cases. They can also be companies, research

topics, job applicants, or any event that contains a screening process. Survivorship bias may lead to overly positive beliefs because failures are ignored. For instance, if forfeited companies are excluded when analyzing the financial situations of companies, the key to success can be delusively thought to be some unique property. Moreover, if three out of five best university students have graduated from the same high school, it may lead to a belief that the high school in question provides excellent education. This may be true, but a realistic image of the quality of education in said high school requires a disclosure on the grades of other students as well (Elton et. al. 1996).

Stress is also notably present in **planning fallacies**, in which the individual overestimates the benefits and underestimate the expenses. This has been studied by Roger Scruton's work group, which has presented a thesis that, for example, in the EU there are many utopian, freely hanging solutions, which in reality are worse than older rejected solutions (Scruton 2010).

Stresses in irrational functions: When a fact does not match with a system of beliefs, it is delusively rejected. Even in our decision making, we subconsciously look for support and points of comparison for our decisions, to which we stick like a bee to honey – this phenomenon is called **anchoring effect**. While the anchor stands in its place, the decisions we later make means that we are moving within the close proximity of this mental "anchor". This phenomenon can be best described by using an advertisement trick studied by Daniel Kahneman's work group as an example: When an advertisement declares that a product costs 399 euros, the consumers anchor themselves on the price of 300 euros while ignoring the remaining 99 euros. Another delusion similar to the anchoring effect is **availability heuristic**. For instance, participants who has been actively following the latest news were asked to compare causes of death in an experiment. As a result, the participants estimated that tornadoes would cause as many deaths as asthma, although the latter causes 20 times more deaths (Kahneman & Tversky 1972).

PUNISHMENT / DISAPPOINTMENT EXPERIENCES: Situations, in which certain behavior has caused something unpleasant to the individual.

Punishment experiences in social relations: The negative version of the halo effect has been called **stigma effect** ever since the 19th century (Durkheim 1895). Even during the early psychological experiments, it was stated that people commonly form their opinions of other people quickly and hold onto this opinion for a long time. Moreover, if an individual has formed a negative or positive impression of another person based on certain traits, these individuals also have a tendency to regard other traits of the same person as good or bad (Goffman 2009). **Fundamental attribution error** is a notable delusion when scolding another person. In this phenomenon, the causes for one's own failures are easily seen as if they were caused by the people around rather than the person himself, while the causes for other people's failures are easily seen as caused by the person himself, not by the people around – this is a claim based upon several analyses in studies (Fiske & Taylor 1991).

Punishment experiences in bodily functions and movement: Although a failure is not automatically caused by a poor decision, it is common to evaluate this decision solely based

on the end result. On the other hand, in the event of great luck, it is easy to become too impressed of one's own abilities. Moreover, when talking about successes more than failures, it is possible to overestimate the likelihood of success. **Hot-hand fallacy** causes an individual making decisions to erroneously believe that recent successes in events dictated by random chance, e.g. in coin flipping, will lead to more success in further attempts. For instance, if an individual has guessed heads correctly three times in a row, they may believe to be on a streak, i.e. having *hot hands*, to guess the fourth coin flip correctly as well. Researchers T. Gilovich, R. Vallone and A. Tversky (1985) studied the hot-hand fallacy among basketball players. According to them, basketball players perceived events dictated by random chance slightly erroneously, since the players thought that the likelihood of "heads" or "tails" increased due to the streak.

On the other hand, Gilovich, Vallone and Tversky (1985) also stated that recent success in sports tasks that require precision and skill, such as jump shot in basketball, may alter the player's external behavior, thus improving their self-esteem and temporarily alleviating physical exhaustion. Examples of hot-hand fallacy can also be found outside of the sports world: The last three shares have racked up quite a bit of profit over the last week! Now I have hot hands for choosing the next shares as well! I did an amazing job on the last two exams. I'm on a streak now, so the following exams must go great as well!

Punishment / disappointment experiences in rational functions: When evaluating the chances of success for people, it is common to underestimate the impact of external factors. This phenomenon is called **actor-observer bias** (Jones 1976).

Pessimism bias is a phenomenon, in which individuals overestimate the likelihood of unfortunate events. Moreover, even if the contents of different options were identical, negative wording may skew decision making (Fiske 1980).

Punishment / disappointment experiences in irrational functions: **Naïve realism** refers to the world being perceived the way it is seen through common sense. For instance, all the perceived creatures consist of matter, and they have qualities such as size, shape, composition, color, smell, taste, etc. This leads to delusively judging those who disagree. Lee Ross' work group started studying this phenomenon further in the 1990s under its current name. It was later presented with further details (Ross et. al. 2010).

LOSSES: Situations, in which an individual experiences significant losses.

Losses in social relations: **Mobilization-minimization effect** refers to an individual being afraid of rejection, which leads him to thinking and acting in such manner that the likelihood of getting rejected increases. This phenomenon was studied by Shelley Taylor's work group in the 1980s. The term refers to a situation, in which an individual hears about a separate negative event and delusively considers it a common occurrence (Taylor 1991).

Losses in bodily functions and movement: The arrow of causality in our actions may in reality point towards losses or successes, or in some cases it might not even exist. However, it is

common to delusively think that "**if I act in this manner, it will lead to that**". This delusion was addressed by David Hume at the beginning of the 18th century, although it received the approval of the scientific communities only later in the 19th century (Hume & Selby-Bigge 1896).

Losses in rational functions: When examining groups of stimuli, which contain a high number of missing parts or ambiguity, it is easy draw general truths based on individual observations or amend the missing parts delusively (Reed 1988). An example of this is **pareidolia**, which refers to our wishes and fears erroneously appearing in our perception. This bias has been commonly related to, for example, interpreting the UFO sightings, witnessing the Loch Ness monster, or undergoing spiritual experiences (Zusne & Warren 1990, and Guthrie 1995). This phenomenon can also be utilized in Rorschach tests and other projective tests. This is due to the fact that the answers to those tests may provide information regarding the rejected and subconscious parts in people's personalities.

Losses in irrational functions: When an option or item goes missing, it will be **regarded as more valuable than it was in reality**. This kind of delusion emerges when ignoring the scarce amount of information of a prior solution (Sagan 1995, and Schick & Lewis 1995).

AVOIDANCE OR ESCAPE POSSIBILITIES: Possibilities to avoid anxiety in such manner that will increase anxiety in long term.

Avoidances in social relations: For example, when hearing new but slightly vague information, an individual may regard it as something that matches with his prior theories or beliefs. This is called **Forer effect** or **Barnum effect**. It refers to a phenomenon, in which people accept vague explanations and consider them to be accurate descriptions of their personalities if the descriptions are claimed to be tailored specifically for them. It was first studied by Bertram Forer as he was examining showman P.T. Barnum's tricks. In 1948 Forer conducted a personality test to his students and provided test results. The students could then judge how accurately the test results reflected their personalities on the scale 0-5. The average was close to five: 4.26. Finally, Forer revealed that every student had received the same test result, which was taken from a horoscope. In further research, it was discovered that participants will believe an analysis better, if it is told to apply to them only, if they consider the examiner a figure of authority, and if the analysis mostly lists positive traits (Dickson & Kelly 1985).

Forer effect is present especially in astrology, graphology, chiromancy, and any other method that describes personality in a vague manner.

Avoidances in bodily functions and movement: It is possible to alter the assumptions of individuals into delusive ones by an erroneous juxtaposition of actions. When an individual wants to be a part of the majority, utilizing the next phenomenon may be a good way to alter assumptions. This is called bandwagon effect (Asch 1955), because it was used in the president Z. Taylor's election campaign at the beginning of the 19th century. During this campaign, bystanders were called to jump on the "bandwagon", on which a fancy orchestra

was playing. This "jump on the bandwagon" turned out to be a success (Cloutier & Guay 1993).

Avoidances in rational functions: Extreme phenomena occur among more common ones. Avoiding this would be an erroneous conclusion of causality. So-called **information overload and the issue of drawing attention elsewhere** in media communication has been studied employing the following method: A secret experiment was conducted on Facebook groups, with over 700 000 participants. The researchers hid posts with a certain tone from the participants, which were created by their friends. The tone was determined based on the words appearing in the posts, so that a computer would detect these words. It was then observed whether these omissions would have any effect. The significant observation was the following: When the attention of the users was drawn to less positive Facebook content, their own posts also became more negative than usual. The results are in contrast with the following theory: Seeing positive posts created by Facebook friends has a negative effect due to the fact that people compare themselves to their friends, and thus easily feel envy (Kramer et. al. 2014).

Avoidances in irrational functions: Gamblers, for instance, are prone to delusively believing in the power of destiny, which does not exist. The following formula is present in **gambler's fallacy**: 1) X has happened. 2) X is a different result than what would in average be expected or after a long time period. 3) Thus, X must end soon. The following are further examples: *Winning streak:* An unlikely event is expected to have a certain result because it happened just recently. *The laws of probability* or *My turn must be next*: A certain result is to be expected because it has not happened recently. *I have run out of my luck*: A good result is not expected because it has happened recently. *The continuum of bad luck:* A certain result is not expected because it has not happened recently (Shefrin 2002).

EXPERIENCING CHANGES WITHOUT IMMEDIATE UNPLEASANTNESS, for instance, moving to another place or marriage.

Changes in social relations: A popular phrase "appetite comes with eating" is related to the findings of Hers Sherfin's work group "**greed and fear**" as well as the observations of Wall Street investors regarding how it is common to delusively trust advice by an assistant which has remained unchanged for a long time. For example, prices tagged with "long unchanged" when selling used cars may easily lead to a delusive norm on the subsequent prices (Shefrin 2002).

Hindsight bias is also related to social relations. It refers to a tendency for people to recall their prior beliefs in the light of new information as if it was their belief all along, even if the belief had changed. Thomas Gilovich's work group was the first to study it in relation to gambling with the following results: In an experiment, which aimed to investigate how sports betters kept using strategies that made them lose, it was discovered that their interpretations of their successes and failures affected their subsequent betting behavior. Even when a

football match was settled by luck, e.g. due to an erroneous judgment by a referee that had a significant impact on the results, both winning and losing betters still considered their bets to be great. Those who had lost explained that the reason for their loss was caused by a random factor, whereas those who had won did not regard the role of luck as an important factor, as only the results had significance (Gilovich & Belsky 2010).

Changes in bodily functions and movement: Richard Thaler explains the concept of so-called **future trap** (Thaler 2015) in his studies about how the brains of people have developed weaknesses, which affect financial decision making. People living during the Stone Age were completely reliant on hunting, and since there was no way to preserve food, they ate their prey with good appetite as soon as they could. They could not rely on food being available every day. This has led to how, for example, most people would take 50 euros now rather than 55 euros in a week. However, if the options were 500 euros to your bank account in four weeks or 550 euros in five weeks, most people choose the latter option. This leads to short-term oriented and delusive behavior.

This kind of tendency is similar to a fallacy, in which an individual will be equally scared of both high and low risk factors during a reaction of fear.

Changes in rational functions: Perception in percentage growth is commonly difficult to understand and causes delusions when changing the percentage into a percentage point. Moreover, it is surprisingly difficult for most people to understand the scale of a billion. This is related to the term **innumeracy**, for which John Paulos' work group has presented many examples (Paulos 1989).

A phenomenon, in which a message is spread and repeated over and over unchanged, is called **truth bias**. It makes familiarity turn delusively into truth. It is hard to find an answer to the question of when authoritarian institutions and marketers had figured out and utilized this bias for the first time in history, but Daniel Kahneman's work group mentioned it as one of the main points in his research (Kahneman 2012). In 2019, this phenomenon has also been studied in relation to statements by the president Trump (Paschal 2019).

Changes in irrational behavior: A delusion called **framing effect** occurs when an individual perceives things in relation to his environment, which has possibly been studied the most by Daniel Kahneman's work group (Kahneman et. al. 1990, and Kahneman 2012). It causes the same message in a different framework to be interpreted differently. This is present in daily life, for example, how restaurants or electronic stores place a very expensive or bad product on their menu or shelf. Other products will look better in comparison to these products and have more sales.

Kahneman's work group has also reported a phenomenon called **mental accounting**. It refers to a tendency to estimate amounts of money in relation to the surrounding framework, while ignoring the absolute sum of money. For example, if a product costs 50 euros and the buyer hears that the same product costs only 10 euros in a fifteen-minute drive, the person is likely to take the drive. However, if a product costs 3 000 euros and the buyer hears that the same product costs 2 960 euros in a fifteen-minute drive, the drive is likely not considered worthwhile, even if the money saved is 40 euros in both cases.

Moreover, when selling an item or product, it is common to subconsciously ask for more money than what the person would himself be willing to pay for the same item or product (Kahneman 2012).

Conclusion

While it is known that people very rarely desire to lead a delusive life, it begs a question of how common or widespread delusive behavior is in our daily lives. To expand on this question, how many delusions exist in daily life? This question deemed to be almost impossible to answer. The examples mentioned in the study have had various nuances, for which researchers have not assigned any official names, but which still fit into the squares of the 7x4-field. Additionally, there are so many optical illusions that they form their own category, even if they would fit into the sub-category of *Stresses in bodily functions* in the 7x4-field. Moreover, the definitions of concepts in the theses concerning delusions involve classification difficulties in a manner of the following example: The thesis "love is blind" may contain a significant everyday truth related to the choice of partner, which belongs to the category of *Stresses in social relations*. However, upon further analyzing the concepts of love and blindness in the thesis, the information of such thesis must be deemed inadequate.

In any case, the delusions mentioned in this study are related to the 7x4-field. They are presented below, X referring to one delusion, with the following results:

CORNERSTONES OF MENTAL HEALTH / WELFARE

FACTORS	A Human relations	B Bodily functions/ physical exercise & movement	C Rational functions	D Functions pertaining to view of life	**Total**
1. Lonelinesses	XX	X	X	XX	6
2. Models	X	X	XX	XX	6
3. Stresses	XX	XXX	XX	XX	9
4. Punishments	XX	XX	XX	X	7
5. Losses	X	X	X	X	4
6. Avoidances	X	X	X	X	4
7. Changes	XX	X	XX	XX	7
Total:	11	10	11	11	**43**

The delusions seem to be spread relatively evenly in the areas of the cornerstones of mental health, and the stresses are a majority in the area of causality. While in previous studies B. Bennet's work group had examined, for example, over 300 different names and nuances, the numbers have been brought down to 43 in this study.

Previously this 7x4-tool has worked well for the following categorization problems: How can the scientific research results for the causes of disturbances in mental health, mental disturbances and deviant behavior be broken down? How can the complete overview of depression be broken down?

How can the threshold for seeking help and the reasons for staying in treatment be broken down? How can artworks by well-known artists who have described the causes of disturbed behavior be broken down? (Heiska 2016 and 2017). The 7x4-field also works when pondering the definition of happiness (Heiska 2018).

The conclusion is that the following delusions are spread well in the 7x4-field for developing functioning preemptive mental health work. However, this raises a question of whether they are real delusions. A better name for these would possibly be a skew or distortion or, to quote the definition of hamartia by the ancient Greeks, a missed mark.

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