RRI 2016
International Conference «Responsible Research and Innovation»

INFORMATION OVERLOADS EFFECT ON SOCIAL-PSYCHOLOGICAL HEALTH OF MODERN MAN

N. Frolova (a), A. Morozova (b), V. Branitsky (c)*

* Corresponding author

(a) Turgenev State University of Orel,92, Komsomolskaya Str, Orel, Russia, E-mail:NAfrolova@inbox.ru, 89107477477
(b) "Bryansk State Technical University",7, 50 Let Oktyabrya Avenue, Bryansk, Russia, E-mail:niotiostu@gmail.com, 89192027007
(c) Orel State Institute of Culture, 15, Leskov Str, Orel, Russia, E-mail:v.caravan@yandex.ru. 89208086619

Abstract

Health is not only an absolute and invariable life value, but also one of the most significant fundamental problems of mankind which acquired at present a wide inter-subject pattern. The societal and socio-cultural factors make an impact upon the state of social-psychological health, that is, upon a stable functioning of psyche ensuring a social-psychological adaptation and a communicative effectiveness of a person. The latter ones include the peculiarities of a present-day information space. The entropy of the information space, a growing number of information sources caused a negative consequence for a human being – information overloads. The purpose of theoretical and empirical researches consists in the analysis of information overloading impact upon the social-psychological health of a contemporary man.
Findings of the investigation. The information is used actively by people in professional and private spheres of vital activity; at the same time, the absence or a shortage of essential information in the majority of population causes an anxiety and concern. Information overloads caused an intellectual and emotional bankruptcy, fatigue and communicative stress, result in breaches of immediate contacts among people, make difficulties for the process of a critical comprehension of information, they result in a moral relativism.
Conclusions. The decrease of negative effects of information loads is possible by means of the formation in contemporary man of information culture, a capacity to define clearly aims and methods for their achievement, ability to organize labor activity and rest in a correct way.

© 2017 Published by Future Academy www.FutureAcademy.org.uk

Keywords: Person; social-psychological health; information overloads; information stress.

1. Introduction

The existence of a connection between social and psychological at the analysis of human health found its reflection in different scientific approaches including normo-centric, phenomenological, holistic, cross-cultural, discursive and axiomatic ones (Shapira et al., 2003).

Now, the researchers of problems of social-psychological health of man speak about two groups of factors which exert profound influence upon a state of health: the first group is societal factors (sex, age, financial position, family status, presence of children in a family); the second one includes socio-cultural factors which comprise the peculiarities of a current information space along with social and individual standards of the attitude towards health.

A rapid growth of an information flow which began from the second half of the XX century actualized the necessity of human adaptation to it. World experience shows that an information space (as a modern social-cultural phenomenon) is able to exert influence both positive and negative upon man. The number of the latter includes also information overloads the essence of which consists in that the amount of useful information received does not correspond to human objective potentialities to apprehend it (Korytnikova, 2010; Anderson, & De Palma, 2012). The acceleration of technological changes paces all over the world is accompanied with the emergence of information overloads in people. The statistics shows that for the processing of the information received from mobile communication facilities (e-mail, a mobile phone), man has to interrupt his activities on average every three minutes (Bawden, & Robinson, 2009; Hemp, 2009; Klingberg, 2009).

The researchers note a paradoxical fact – an information surplus causing an information overload is one of the reasons of shortage of information essential for the fulfillment of long-term plans (Yelyakov, 2005).

Under conditions of global information "abundance" for man, the assessment of his adequacy, correctness and expediency for the further use both in his own life (Kovach, & Rosenstiel, 2011; Paul, & Nazareth, 2010; Soucek, & Moser, 2010), and in professional occupation becomes problematical (Oldroyd, & Morris, 2012; Smith, 2010; Levitin, 2014). Current empiric researches are evidence of the fact that not only persons but the whole companies face the problem of information overloads (Öhgren, & Sandkuhl, 2008; Shanker, & Richtel, 2011).

The analysis of activities in scientific researches shows that information overloads at present are analyzed with the aid of a complex of different methods (monitoring, interview, methods of a situation identification, discursive analysis and so on), (Dean, & Webb, 2011; Frolova, Morozova, & Pushkov, 2015; Savolainen, 2007; Morozova, 2015), and an emergence of scientific discussions and publications about the influence of information overloads upon psychological, general medical health of people and people's social behavior (Farina, 2010; Misra, & Stokol, 2011; Overload, 2010), according to authors, emphasizes a high theoretical and practical significance of researches of the problem mentioned.

1.1. Research methods

To solve a research problem, the authors have used an integrative approach according to which any explaining principles, models, and conceptual schemes are considered as adequate methods for the analysis of human health at different levels of the organization of human vital activity. The following

methods were used: a method of a semi-formalized expert questionnaire design (N=5), a method of interrogation (N=400, quarter sampling, in 2015-2016), a method of a profound interview, methods of multivariate statistical analysis.

1.2. Research objective

The research objective consists in the analysis of information overloads influence upon social-psychological health of modern man. Social-psychological health is understood by the authors as a stable functioning of psyche ensuring a social-psychological adaptation and communicative effectiveness of a person.

2. Results of researches

2.1. Information overloads (theoretical aspect)

For the first time, the concept of "information overload" was used by an American sociologist, E. Toffler, but the scientific definition was given by David Bawden and Lyn Robinson in the investigation of 2009, "The dark side of information: overload, anxiety and other paradoxes and pathologies" (City University of London). The authors determined an information overload as "a state of civilization, at which the content of potentially useful and actual information exceeds a possibility of its processing by an average man (that is to say, cognitive capacities) and becomes a hindrance, but not a support" (Bawden, & Robinson, 2009).

The opinion of James J. Miller, the director of the Institute of Psychological Health Researches of the University of Michigan, implies that an information overload, and, in particular, a content of information exceeding human ability for its comprehension can cause various forms of mental diseases. Information overloads can be considered as a sign of a current controversy between society as an aggregate manufacturer of a huge collection of information and a separate man as its user having limited biological-physiological and social potentialities for its comprehension and mastering. The signs of information overloads are manifested at the physiological (nausea, heartburn, dry mouth, increased pressure), psychological (tiredness, low concentration of attention, non-adaptation) and behavioural (inability for decision-making, non-sociability) levels (Bawden, & Robinson, 2009).

The researchers refer a rapid growth of an information content, information reduplication broadcast by different channels (TV, radio, internet), the increase of accessible channels of incoming information (phone, e-mail, SMS and so on), a large quantity of historical, scientific and other data, contradictory and/or imprecise information to the basic reasons of information overloads.

Factors causing information overloads according to the authors' opinion can be classified in the following way:

a) Subjective-personal factors (psychological, physiological, professional peculiarities of man).

b) Notional factors (high responsibility in problem solution, subjective complexity of a problem, information inconsistency, large content of information, shortage or surplus of information).

c) Time factors (time shortage, multitasking).

Information overloads are manifested as an information dependence of man: on the Internet, TV, mobile gadgets; on multitasking – simultaneous carrying out of some actions requiring a quick transition

from one to another; on getting facts (situations when for obtaining useful and valuable information, it is necessary to look through a huge quantity of information). The state of information overloading may cause an information anxiety – a state caused by the fact that man does not know where to find the essential information in a large information space, and what sort of information is needed. Wurman, the author of the "information anxiety" term, wrote that an information anxiety "is caused by a gap constantly increasing between the things that we comprehend and that, how we think we must comprehend. This is a black hole between data and knowledge" (Wurman, 1989).

Man being in the state of information overloads misses (or does not apprehend) a part of information, or misapprehends information, or apprehends and processes the whole information in accordance with the purpose set, but later than it was necessary (Yelyakov, 2005). As a result, inaccurate fragmentary knowledge, formed in man, often causes difficulties for a decision-making process and misinforms in social environment, which in its turn results in an information stress which exerts negative influence upon psyche (Klingberg, 2009).

2.2. Empirical researches

In the present-day world, information not only unites and connects people but results in changes in the style of thought, methods of perception, estimation and comprehension of reality. Associativity, openness, simplicity, privacy are no doubt positive characteristics of modern mass media. But a possibility to use information for socially dangerous purposes (for example, terrorism, criminal transplantation), for the people manipulation (political technologies, reference books, in which the information of people private life is available and so on) are negative consequences of the activities of both foreign and domestic mass media.

According to the experts of the staff of "Orel" state TV Co, "computer, mobile technologies are a completely new information reality. Social networks already show that people sitting at home or in an office write and transmit information to the whole world. The Internet will present many surprises both for man and for authorities." "Every year, the role of information increases, mass media no doubt exert influence upon people both negative and positive one … . And now the role of the Internet, in its turn, has increased. A psychoneurologist with 26 years of service record notices that "today, information is like oxygen. Advantages of information consist in that it gives the development for both, man and the society as a whole. Shortcomings are a threat of trashing with useless and low-quality data. Manipulating techniques used in mass media and mass communications exert bad influence upon psychological health of man". During sociological researches carried out by the authors, it has been established that Orel inhabitants as the population of Russia draw information from TV – 78.8% and from the Internet – 64.5%; other channels of information are represented by friends and acquaintances (56.0%), newspapers and magazines (52.8% and 37.0%, accordingly), special literature (22.8%), consultations with experts (17.8%).

Most often, the information obtained is used by population in the professional (69.7%) and private (65.4%) fields of vital activity. But namely in the professional sphere, 20.5% of respondents constantly 62.3% — sometimes experience lack of qualitative and useful information.

"It happens quite often that during looking for something necessary, one has to look through a great amount of rubbish in the Internet; at that, the time is getting lost and the head is getting filled with

rubbish" (Manager, 29).

The investigation has shown that only 8.5% of respondents master 100% of information, 34.9% of them master 75% of information; 28.6% of respondents learn 50.0% of information; 9.0% of respondents learn 25.0% of information; 19% of respondents are at a loss for an answer.

A factor analysis has shown that respondents working in private companies and students possess the highest percentage of information comprehensibility (75.0%), which is, in our opinion, mainly determined by the degree of individual responsibility for activity results. Pensioners have shown the lowest level of information mastering (25.0%).

Men and women equally learn information obtained. Within the limits of an age group of 20-29, the amount of information mastered by respondents fluctuates from 50.0% to 75.0%; within the limits of 30-39 and 40-49 age groups - from 50.0% to 100.0% .

Respondents with higher education master information better than those with secondary education or secondary vocational training.

In the course of researches, it was revealed that in case of shortage of essential information, 60.6% of respondents feel anxiety and nervousness.

The third of respondents emphasized that they do not have enough time to process and to learn essential information, and that is why, they feel diffidence and irritation which are signs of information stress. The people, who according to their job, are engaged in decision-making, have a dread of errors.

One of the respondents confessed that when he did not have a complete situation in the head because of the lack of important information, and, at the same time, he had no time to rummage in information fields of the Internet, then an anxiety conquers him about what to do in a correct way in a certain situation and his colleagues can notice his diffidence and incompetence.

Mary, a third-year student confesses: "when I look for something interesting and serious for my term papers and reports, and the Internet throw out odds and ends, I become nervous and irritable, and in this case, it is better not to disturb me as my reaction to those around me becomes inadequate".

According to the results of interrogation, 84.3% of respondents of the Orel population are users of the Internet, in which connection the most active are the respondents of 20-29 and 30-39 age groups. As we can see from Table 1, namely the representatives of these groups are in the information field of the Internet for the longest period of time (from 3 to 8 hours a day).

The danger is that, for example, in the opinion of a psychoneurologist of the Orel psychoneurological hospital (dispensary), information-dependent people like people with other types of dependence (whether it is alcohol, drugs, or work) "feel euphoria caused by different information obtained from the Internet, and long hours of surfing the Internet, at the same time, cultivate in them an unbalanced state, slovenliness, absentmindedness, self-isolation, the loss of all common values, the loss of internal guiding lines, a devil-may-care attitude towards relatives". In the opinion of another expert, a psychoneurologist and a psychotherapeutist working in the Orel regional clinical hospital, "a computer may become a reason of long-term disturbances in the field of psychical and intellectual human development. The so-called computer generation has some types of memory functioning worse; emotional immaturity and irresponsibility are observed".

Table 1. Table of age and time contingency when working at a computer

Age	Answers to question "How much time do you spend at a computer per day (hours)?" %										Total, %
	0	1	2	3	4	5	6	7	8	More than 8	
20-29	1.8	5.5	12.0	21.1	14.7	12.8	5.5	4.6	6.4	15.6	100
30-39	10.5	7.4	13.0	24.2	13.7	1.0	8.4	-	6.3	15.8	100
40-49	14.3	9.9	26.0	8.8	12.1	7.7	4.4	-	9.9	6.6	100
50-59	52.4	10.0	7.6	9.5	-	2.9	8.6	1.9	5.7	1.0	100

To the question: " What are social consequences in the development of information technologies, in your opinion?", 45.3% of respondents emphasized "the improvement in the state of education and science"; 29.3% - "an increase of communication potentialities between people", "growth of economic prosperity"; 12.3% - "cultural decrease (dissolution of morals)"; 5.5% - "indirect interaction (impersonal communication)"; 2.3% - "susceptibility to manipulating impact"; 1.8% - "loss of independent thinking". That is to say, the respondents marked in the development of information technologies more advantages than shortcomings. Few think about pernicious influence of an information flow upon the physical and socio-psychological health that is evidently determined by a latent character of its impact upon man. Nevertheless, the respondents, in their interviews emphasized that information overloads:

- cause a rejection of not simply information, but information sources ("advertisement information, many times repeated with sameness causes a back reaction – rejection of those products which are advertized by this advertisement; at the same time, a reaction of aversion to these information sources is formed using such method of information presentation…", a woman, College Pro-rector, 57);

- form an inferiority complex ("feel retarded, muddle-headed, incapable of learning new techniques and information constantly renewed", a man, lecturer, 54);

- cause the intellectual fatigue and spiritual bankruptcy (when I have to work much with information, at a certain moment, I begin to feel that I do not comprehend anything and I need nothing", a woman, manager, 42);

- result in a contact loss among people ("in the Internet I can find everything what I need and in social nets I can communicate with those to whom I want to; that is why, there is no need to find friends in a group", a student, 20);

- cause an embarrassment and uncertainty in assessments, what is good or bad (freedom of information, on the one hand, is good – so many positions and points of view regarding everything, but sometimes, the abundance of points of view leads to confusion, and I do not already know how to think of this or that, and what is right or wrong", a man, publicity agent, 25);

- prevent a comprehension of information critically ("at present, an information flow grows like a snow ball. Hardly can one comprehend and analyse the particulars of information; the main thing is to avoid its pressure", a manager-woman, 30);

- cause a communicative stress ("I am in a bad mood and even aggressiveness appears, when I must listen to a lot of useless information unnecessary for me", a woman, 36).

In such a way, the investigation has shown that information has gained now an uncontrolled, avalanche-like character; thus, it is able to exert pernicious influence upon the socio-psychological health of modern man. Therefore, there appears a need in the formation of information culture as a significant

condition to achieve a social, psychological and physical well-being of man in information society.

3. Conclusions

A current information space supposes a priori an increasing intellectual activity of man; information overloads become a standard of life. Therefore, the phenomenon of information overloads is now a subject of scientific investigations. More than this, the analysis of information overloads impact on the human socio-psychological health obtains a practical significance. A great amount of information circulating in the world, the enhancement of potentialities and methods to obtain information cause in modern man information overloads followed quite often by an information stress. It should be taken into account that a certain part of information may appear to be uninteresting, useless, inauthentic and simply deceitful, which weakens the degree of comprehension, filtration and understanding of information by man.

Practice shows that a large number of working people devote even leisure time to social nets increasing in such a way an information load. Nervous tension, tiredness, disadaptation (falling out from a real world), impossibility to be concentrated on significant problems, absentmindedness, communicative and professional stress – all these things are signs of social-psychological trouble of man. Therefore, as the authors consider, the information culture including the knowledge of psychological, biological-physiological peculiarities of the human perception of information, the ability to organize work and leisure in a correct way, the formation of independent thinking and ability to determine clearly one's own purposes and tasks is a keystone of the fact that man will not "be lost" in the present information field, but will take care of his health and will be an active subject of social reality for a long period of time.

References

Anderson, S. P.& De Palma, A. (2012).Competition for attention in the information (overload) age. *The RAND Journal of Economics*, 43(1), 1-25.

Bawden, D. & Robinson, L. (2009).The dark side of information: overload, anxiety and other paradoxes and pathologies. *Journal of Information Science*, 35(2), 180-191.

Dean, D. & Webb, C. (2011). Recovering from information overload. *McKinsey Quarterly*, 1, 80-88.

Farina, C. R. (2010). False Comfort & Impossible Promises: Uncertainty, Information Overload & the Unitary Executive. *University of Pennsylvania, Journal of Constitutional Law*, 12, 2.

Frolova, N., Morozova, A. & Pushkov, A. (2015). Use of discourse analysis method to study current political practice. *SHS Web of Conferences*, 28, 20162801039.

Hemp, P. (2009). Death by information overload. *Harvard business review*, 87(9), 83-89.

Klingberg, T. (2009).The overflowing brain: Information overload and the limits of working memory. *Oxford University Press*.

Korytnikova, N. (2010). Internet-dependence and deprivation as a result of virtual interactions. *Sociological Researches,* 6, 70-79.

Kovach, B. & Rosenstiel, T. (2011). Blur: How to know what's true in the age of information overload. *Bloomsbury Publishing USA*, 240.

Levitin, D. J. (2014).Thinking straight in the age of information overload. *The organized mind*, 19.

Misra, S. & Stokol, D. (2011). Psychological and health outcomes of perceived information overload. *Environment and behavior*, 17, 0013916511404408.

Morozova, A. (2015). Formation of the system indicators analytic dependence during bisubject qualimetric evaluation of arbitrary objects. *IOP Conference Series: Materials Science and*

Engineering, 124.

Öhgren, A. & Sandkuhl, K. (2008). Information overload in industrial enterprises-results of an empirical investigation. *Prog. 2ⁿᵈ ECIME*, 343-350.

Oldroyd, J.B. & Morris, S.S. (2012). Catching falling stars: A human resource response to social capital's detrimental effect of information overload on star employees. *Academy of Management Review*, 37(3), 396-418.

Overload, C. (2010). Growing pains with information overload. *The Profession*, 6, 93-95.

Paul, S. & Nazareth, D. L. (2010). Input information complexity, perceived time pressure, and information processing in GSS-based work groups: An experimental investigation using a decision schema to alleviate information overload conditions. *Decision Support Systems*, 49(1), 31-40.

Savolainen, R. (2007). Filtering and withdrawing: strategies for coping with information overload in everyday contexts. *Journal of Information Science*, 33(5), 611-621.

Shanker, T. & Richtel, M. (2011). In new military, data overload can be deadly. *The New York Times*, 16, 2011.

Shapira, N.A., Lessig, M.C., Goldsmith, T.D., Szabo, S.T., Lazoritz, M., Gold, M. & Stein, D.J. (2003). Problematic internet use: proposed classification and diagnostic criteria. *Depression & Anxiety*, 17, 207 - 216.

Smith, R. (2010). Strategies for coping with information overload. *Bmj*, 341, 7126.

Soucek, R. & Moser, K. (2010). Coping with information overload in email communication: Evaluation of a training intervention. *Computers in Human Behavior*, 6, 1458-1466.

Wurman, R. (1989). Information Anxiety. *New York: Doubleday*, 356.

Yelyakov, A. (2005). Information overload of people. *Sociological Researches*, 5, 114 - 121.