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EDITOR'S PREFACE

In establishing the journal we were inspired by the work of the e-methodology research team. We have conducted three research projects. The results of two of those were published in scientific monographs. Papers based on the most recent project were published in the first issue of this journal, which was entirely dedicated to experimental research carried out by means of the Internet.

e-methodology is a scientific yearly dedicated to the difficulties connected with research in social sciences and humanities conducted by means of the Internet, as well as the opportunities that it provides. We accept theoretical papers on this subject and papers presenting the results of research conducted on or by means of the Internet (understood as a research environment and/or a research tool). We would like the authors to pay special attention to the specificity of "Internet methodology".

The paper is divided into three permanent sections:

1) "About the Internet" – Theory

2) "On the Internet" – Research

3) "With the Internet" – Projects

Theoretical papers on the difficulties and the opportunities created by using the Internet in scientific research are published in section one.

The results of research conducted by means of the Internet are published in section two.

Section three includes project reports and research/educational projects presenting the opportunities provided by using the Internet.

Our main goal is to search for effective solutions in Internet research. On behalf of the Editorial Board and myself allow me to invite you to read and publish in our journal.

Chief editor Luba Jakubowska

About the internet - Theory

Basic principles of conducting psychological experiments through the Internet

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Abstract

The Internet has become an inherent part of its users lives. More and more activities are performed through it and that is why conducting research in this subject is increasingly common. This article discusses issues related to conducting experimental psychological researches through the Internet. The first part of the article shows the dynamics of the Internet's growth as a research area. Next, you will be introduced to the basic rules of conducting methodologically correct experiments using the Internet. The article ends with a description of several psychological experiments conducted in a virtual environment and is followed by an analysis of advantages and disadvantages of the method.

Keywords: experiment, Internet, psychology, methodology.

Introduction

The Internet, like no other device before, has undergone a very intense transformation throughout last two decades. Out of numerous devices designed for mankind, the Internet has evolved from being a minor help in a work place to being one of the most essential tools, inherently built into the functioning of its users lives. Nowadays it is very hard to imagine (or rather recall) times in which people lived without access to the Internet. With its help, we search through a variety of information, perform our work through it and nurture our relationships.

Wojciech Orliński (2013) emphasizes that the Internet has become a kind of a public benefit - the same as electricity, gas or water. The Internet also affects our - broadly defined - social environment. Due to the fact that people often do shopping over the Internet, and more and more music CDs and books are distributed electronically, bookstores and music stores are gradually vanishing. It has not been long since the Internet's inception, yet we have already started to look at the world around us through "Internet glasses". Google actually marketed authentic glasses - known as "Google Glasses" - by which we can connect to the Internet ubiquitously even without picking up our phones. The latest news and alerts from social networking sites will be automatically displayed right before our eyes. This invention may seem controversial, but we cannot deny Google the fact that once again, they breached another barrier of human- technology interaction.

Manuel Castells (2011) argues that the digital revolution that spreads all over the globe will have even more significant influence on our lives, than was the industrial revolution in the 19th century. The ability to quickly verify a topic in the online encyclopedia or instant write-off for an e-mail are so comfortable that we are allowing the Web to encroach into our lives almost without any rational control.

The Internet as an environment of constant change

In the analysis of an intellectual climate in the social sciences and humanities in relation to the Internet, we can distinguish three eras. The first era lasted from early nineties to about the year of 2002, and was a time in which the perception of the newly formed Internet was quite pessimistic (Bargh, & McKenna, 2000). The Internet was regarded as one of the tools (concerned as equal to other media) which - mainly by the impact of anonymity - would have a destructive influence on social relationships and overall would decrease the quality of the Internet users lives. Robert Robert Kraut, Michael Patterson, Vicki Lundmark, Sara Kiesler, Tridas Mukopadhyay and William Scherlis (1998) found that Internet use is associated with mental well-being of its users. The more time novice users spend on the Web, the stronger become symptoms of depression, stress and sense of social isolation they feel. This research also showed that the main factors causing such negative effects was the failure to use this tool effectively and also – its technical specifics.

Already in 1996, Kimberly Young developed the first test for diagnosing Internet addiction and in 2011 a Polish adaptation was created by Ryszard Poprawa. Fifteen years ago, psychological research on the subject was focused mainly on its clinical aspects (Childress, & Asamen, 1998). The second period highlighted in the history of the Internet, refers to the social networking sites (Levinson, 2010). Since the inception of sites like MySpace (2003) , Facebook (2004) or YouTube (2005) the specificity of the relationship in the Internet has dramatically changed. More or less since then we can talk about the emergence of a phenomenon that researchers call the Internet "Web 2.0" (Levinson, 2010).

Today we are dealing with another wave of pessimism, related to what the Internet really gives us and what it takes in return. A journalist, Nicholas Carr (2012), draws our attention to the fact that the various facilities that we have in our possession thanks to the Internet, have a destructive impact on the whole cognitive system - above all on the ability to focus attention and memory. If we can store data "in the cloud" and at the same time be aware of its continuous availability, we are not forced and challenged to use and exercise our memory. Manfred Spitzer (2013) calls it "digital dementia", emphasizing the particularly bad role that the Internet and new media can have on the youngest children, growing up with new devices without adequate knowledge. A new era of the Internet development is also closely bound up with the dynamic development of the mobile Internet, accessible via smartphones and tablets practically anywhere on Earth. This has an important psychological effect, because at any point we can pick up an e-mail from work or find out the latest news on our Facebook friends. We are never alone with our thoughts and we can be reached by incoming information from all around the world at any time,

Nevertheless, the Internet is a great tool, which allows us to conduct valuable experimental studies. Along with the technical capabilities that the Internet brings with itself, it becomes a challenge for modern humanities, including psychology. A team of psychologists in the first years of XXI century, noted that the examination of the impact that the Internet has on its users will be one of the most important tasks for modern psychology (Sassenberg, Boos, Postmes, & Reips, 2003). Some researchers point to the phenomenon of "digital change" in the humanities, "which introduces new methods, tools, and ways of scientific work for efficient use of the world of digital data, interfaces, software and visualization" (Celiński, 2013, p 13)[1]. The Internet gives scientists previously non-existent methods and possibilities in terms of conducting research. John Shaughnessy, Eugene Zechmeister and Jeanne Zechmeister (2002) note that "access to the Internet has become an indispensable tool for those who conduct research in the field of psychology" (p. 496). The number of researches investigating the Internet effects grows (such as: Aboujaoude, 2012; Carr, 2012; Spitzer, 2013).

The main focus of this article concentrates on the presentation of methods used by psychologists to conduct experimental research via the Internet. Due to the fact that the environment of the Internet is in very rapid change, I focus only on the most recent texts, presenting the use of the Internet in its current form.

Psychological experiments on the Internet

Before moving on to the experimental studies, we should begin with a brief description of a correlative study, that has been conducted via the Internet for a much longer period of time - almost since the very beginning of the Internet mass dissemination. Experiments conducted over the Internet are often based on the same or similar technical solutions. Quantitative methods seek to identify specific numerical parameters characterizing the phenomenon or object of study. In psychology, they are frequently implemented using a variety of questionnaires, surveys or scales. Psychologists also distribute psychological questionnaires via the Internet. However, we cannot forget that not every existing questionnaire can be used in this manner. When we are filling the questionnaire via the Internet it could be a different situation than when we are doing it with a use of pen and a piece of paper. This factor may be an important disturbance variable. There are special websites for constructing surveys or questionnaires on a wide scale. There are both free services (such as Google Drive) as well as charged (eg. Survey Monkey or Survey Gizmo). By creating an account on one of these sites, we can prepare a list of questions that we want our respondents to answer. The type of questions can be freely modified - from open-ended questions, through the various types of closed questions, to the so-called "sliders" or "thermometer of emotions", on which subjects mark their emotional attitude towards a phenomenon. Participation in a survey conducted by the Internet also provides a much greater anonymity than in a study carried out in the psychological laboratory.

The tools for conducting quantitative research can also be used with great success for the construction of psychological experiments. Jerzy Brzeziński (2008) says

1 All citations from Polish articles and books were made by author of this chapter.

that experiment is a "test that allows the manipulation of the principal independent variable, controlling independent variables and measurement of the variation of the dependent variable due to (...) the action on the main independent variable" (p. 51). As J. Shaughnessy, E. Zechmeister and J. Zechmeister note, "the researchers conducted experiments to test hypotheses about the causes of behavior. The experiments allow researchers to make decisions about what influence or program effectively changes the behavior" (2002, p. 226). But in order to do this, we have to remember the key factor, which is a basic requirement in experimental randomization, defined as "the random assignment of individuals to comparison groups (...), in other words, the random determination of the main independent variable for each of the subjects" (Brzeziński, 2008, p. 48). In order to check whether some factor (independent variable) affects the phenomenon or problem (the dependent variable), we have to have a comparison between the group in which there has been the introduction of the independent variable and the group in which the independent variable is not introduced. One of the key conditions is also a criterion of randomness allocation - failing that we are dealing with a quasi-experiment (Shaughnessy et al., 2002).

Some of the services available over the Internet to conduct research (including the already mentioned Survey Gizmo and Survey Monkey, but also many others) make it possible to program an appropriate randomization procedure. Thanks to this, somebody who enters the web page to take part in the experiment is automatically and randomly assigned to one of the research groups. It will appear to him in slightly different content from another person, assigned to the next equivalent group. It is also important that the procedure of randomization should work in such a way as to ensure equal probability assignment to one of the groups. If the test consists, for example, of three experimental groups (each one with a different manipulation) and one control group, the probability of each test assignment to one of four groups should be 25 percent. Configuration options for experimental conditions are now quite large and allow us to prepare a number of variants of the same study, differing on several levels, which corresponds to several experimental groups. The inclusion of this condition is the basic requirement of methodological correctness of experimental tests carried out via the Internet.

One of the biggest advantages of conducting research via the Internet is its global reach. It is an invaluable feature for the conduct of cross-cultural or simply large--scale research, where the goal is to collect data from thousands of people from many countries. Yolanda Suarez-Balcazar, Fabricio Balcazar and Tina Taylor-Ritzer (2009) pay attention to this aspect, mentioning the opportunities created by the Internet in conducting research on populations culturally divided. The Internet is also helpful in gathering information from persons who are an ethnic minority in a country or region (Suarez-Balcazar, Balcazar, & Taylor-Ritzler, 2009). Most respondents coming from such groups may have difficulties in an adequate expression of their opinions through traditional research methods, such as in-depth interviews or participation in a paper survey. An opportunity to join in a psychological research via the Internet gives them a chance to openly express their minds.

Thanks to conducting an experiment on the Internet, we have a chance to eliminate the fear of judgment and other confounding variables that may arise in the

research conducted in traditional circumstances. John Bailey, Michael Wallace and Bradley Wright (2013) conducted an experiment – via an online survey – where they checked the level of discrimination of homosexuals among hypothetical employers for those people. The survey was sent to employers in four major U.S. cities. It turned out that there is no empirical evidence to support the appearance of discrimination towards homosexual people by the employers during a job interview. The authors emphasize that the conduct of such a study, for this type of intimate topic, could be much more difficult or even impossible in a route other than via the Internet. It is worth noting that this type of study conducted in countries with a lower level of tolerance towards gay people than in the United States, could provide even more interesting data.

Accusations which can be made against all experiments conducted by the Internet is the inability to control the interfering independent variables, that is – in some cases - the conditions in which a person is involved in the experiment. Although the experimental procedure will be identical, passing through it, for example, at home will mean leaving the individual in an uncontrolled situation (much less than in the psychological laboratory where the test is usually performance of tasks in relative peace and quiet). Participation in the experiment via the Internet is also an important obstacle in the context of the requirement of standardization, which provides for all tests under identical initial conditions for participation in the study.

Being aware of all these drawbacks and risks, Robert Ryan, Mara Wilde and Samantha Crist (2013) compared two experiments - one conducted in the laboratory and the other one through the website. The experiments had identical procedures: individuals were presented images of insects and then measured the level of fear and loathing of the respondents. The base study (without the use of Internet) involved 180 people, and the study conducted via the Internet had 1301 respondents. The results were very similar to each other, but in the online survey additional, statistically significant interaction was obtained between sex and fear and disgust. R. Ryan, M. Wilde and S. Crist (2013) conclude in a summary of their research, that the benefits which can be achieved with a research study on the Internet (for example: much larger and more representative sample of respondents) outweighs the potential costs and troubles.

The Internet can also serve as a re-verification tool for previously obtained results of research and be a way to verify an already tested experimental hypothesis. Michael Rosander and Oskar Eriksson (2012) conducted a study in which they wanted to verify the level of conformity of behavior of Internet users. They assumed that with an increase in difficulty of the tasks, the individuals answers would be more dependent on another participants responses. For this purpose, they designed a quasi- experimental manipulation in which they skipped the condition of randomization, due to the process of recruitment. The study involved 926 people, associated with online communities, such as thematic pages on a healthy lifestyle, computer games and other discussion forums, where discussion revolves around a precise topic. That way of recruiting for the research provided a number of people demonstrating the feeling of belonging to the their group – these groups (Internet communities) are often governed by the same laws that

apply in the non-virtual world (for example: McKenna, & Green, 2002; Amichai--Hamburger, 2005).

M. Rosander and O. Eriksson (2012) created a survey distributed via the Internet, in which subjects were assigned to one of two groups - experimental (conformist) and control. The difference was that in the conformist group the questions (eg, "In which city is Hollywood?" and five options to choose from) had an additional, previously prepared by researchers diagram showing the supposed answer to the same question by other people of their community. The results show that in the conformist group (N = 477), more than half of recipients (52.6 %) in some tasks chose their answer on the basis of the responses of other members of the group, which was imaged in a false diagram. 13 % of respondents in this group choose conformist answers to all questions, considering that most of the other respondents in their communities must be right. What is important is that 60% of the answers given in the diagrams (supposedly by the majority of the community) was false and wrong. This study illustrates how to use the Internet even to study phenomena such as group conformity and submission to the dominant opinion of the group (even if it only can be seen in the diagram!). Experiment also showed once again that virtual communities are governed by practically the same rules, which the group operates outside of the Internet.

Another example of the Internet use for experimental studies is to prepare a modified replication of another, earlier experiment. Amy Gonzales and Jeffrey Hancock (2011) in their study decided to carry out an online verification of objective self-awareness theory by Robert Wicklund and Shelley Duval (1972, in: Gonzales, & Hancock, 2011). This theory suggests that "autobiographical stimuli" is a certain stimuli significantly affecting the way that people think about themselves. R. Wicklund and S. Duval (1972) classed as this stimuli for example listening to recordings of your own voice or seeing yourself in the mirror. According to the assumption, the contact with such a stimulus, will lead to a comparison between two constructs: the "real self" and "ideal self", which - in most cases - will lead to a reduction in the self-esteem, due to the adverse outcome of such a comparison. A. Gonzales and J. Hancock (2011) concluded that such a stimulus can also be input to your own profile on the social networking site Facebook, which contains many details about yourself, your photo or status updates of own authorship.

The results were contrary to the underlying theory. Respondents who stepped up their Facebook profile, marked by an increase in self-esteem, not its decline, as in the original studies of the authors of the theory of objective self-awareness. Interestingly, the largest increase in self-esteem was observed in those subjects who visit their personal profile and not only browsed it, but also made some modifications to it (for example, updated their status). The subjects in the control group were placed in situations with the traditional autobiographical impulse according to the theory R. Wicklund and S. Duval (1972) like mirror. Replication by A. Gonzales and J. Hancock (2011) allowed us to capture an additional aspect of the phenomenon of self--awareness and at the same time to extend one of the most important classic and contemporary theories of social psychology.

Summation

These results of several studies clearly show that the Internet as a research tool provides opportunities that were previously unachievable. It allows us to reach out to many people, which would be impossible or very difficult to achieve in research conducted by traditional methods. In designing the study via the Internet, we are also able to provide audited completely different situation tests – you can take part in it even in your own home. Conducting psychological research on the Internet also allows us to make a modified replication of other experiments in the field of psychology. Often it turns out that some of the mechanisms that govern human behavior operate slightly differently when they are tested in a virtual environment. On the contrary, other psychological theories, confirmed by tests on the Internet, appear to be even more accurate matches and externally verified. Conducting experiments on the Internet is a great opportunity for the development of psychology, which cannot be missed if we want to take care of it and put this science at the highest level.

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Online experiment in pedagogy – possibilities and limitations of the method

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Abstract

The aim of this article is to show possibilities which are given to a researcher by placing experimental research in the Internet. The use of the Internet in scientific research has become very popular nowadays. However, in case of the method of an experiment, it is still not a form which is often used by Polish scientists. Although the use of this method of experiment may bring science undeniable advantages in pedagogy, it is used seldom even in a "classical" form – *offline*. In the article basic difficulties related to the metod of an experiment and the possibilities of eliminating them with the help of the Internet were discussed. Also discussed were problematic issues which are especially worth drawing attention to while designing and carrying out scientific research *online*.

Keywords: experiment, pedagogical experiment, online experiment, online research.

Introduction

Experimantal research is not often used in pedagogy – a questionnaire is the most frequently used scientific method. According to Wincenty Okoń, the definition used in *Nowy słownik pedagogiczny* "an experiment is a scientific method typical of induction sciences. It allows for an accurate examination of a certain phenomenon or proces by regulating conditions which influence it or their intentional triggering or modifying" (Okoń, 2004, p. 96). Pedagogy as a science directed mainly to form recommendations for practise undoubtedly requires strong, empirical conclusions. An experimental method could be a source of this evidence. Why, therefore, is this method so rarely used in pedagogy? The ever rising role of the Internet, also as a tool used in education, gives a lot of new possibilities, also for scientisits. In many academic environments, it is becoming more and more popular to use the Internet in experimental research, though this form is not so popular among educators. Could the use of the Internet in experimental research soften or solve some problematic characteristics of an experiment?

As I said before, pedagogy is an empirical study so its base should be contact with *empiria* – experience. The claims about facts (empirical) are fundamental to sceince. Information about the facts may be provided by different methods, those quantitative and qualitative ones, which could be a complement to the raw, numerical results – they could be the icing on the cake. What should be additionally emphasi-

sed is the fact that scientific knowledge differs from unscientific that its rightness can be seen by almost everyone. The criterion differentiating scientific and non-scientific knowledge according to Kazimierz Ajdukiewicz is intersubjectivity (Ajdukiewicz, 1983). Indeed, it is significant that research which is the base to form scientific claims was based on „strong" rules so that another scientist could repeat and modify that research again.

Literature on methodology shows a wide range of methods and scientific techniques which successfully and in an effective way can contribute to the development of science– pedagogy in this case. Certainly, each of the methods (and techniques) is adjusted to certain conditions – subject of research, size of research sample, accessibility of examined objects, etc.

The method described as the source of humanistic science is an observation. Its basic advantage, according to Chava Frankfort-Nachmias and David Nachmias (2001, p. 223), is directness. It allows for obtaining direct data and guards against distortion, which in case of other methods may result from, for instance, unconscious and unintentional scientist activity. The method of observation helps in better understanding of data by putting it in a context. Why am I raising the issue of observation? It is a starting point to an experiment. It is based on an observation which is its way of measuring. As Mieczysław Łobocki claims – each experiment is connected with an observation (Łobocki, 1982). The most important element of observation is manipulation. Władysław Zaczyński defines an experiment as „a method of scientific research of a certain part of reality (methodological), depending on triggering or changing the course of processes by introducing some new factor and observing changes which have appeared under its influence" (Zaczyński, 1968, p. 87). Manipulation is also underlined by Antoni Sułek's definition: "experiment is a continous process depending on a change of certain factors planned by a scientist in an examined situation with the simultaneous control of other factors used with the aim of obtaining an answer to the question, during an observation, about the results of this change" (Sułek, 1979, p. 15).

Jerzy Brzeziński strongly emphasises the empirical value of an experiment for which the next feature - control, plays an important role (apart from those mentioned before). An experiment allows for "the best control of all independent variables, which influence each dependent variable a scientist wants to determine" (Brzeziński, 2008, p. 9). The author, recapitulating the available definitions of an experiment distinguished its three main, basic features differentating this method from other scientific models – manipulation, control and measurement/ observation (Brzeziński, 2004).

Despite different opinions, as Tadeusz Pilch writes, an experiment should be referred as a method of pedagogical research. It is a method which allows us to examine a particular part of reality by its simultaneous stimulation to change. Changes involve methodological processes and are made under the influence of factors introduced into this reality by a scientist. Research is based on observation of these changes. The aim of an experiment is to determine reasons for certain phenomena, situations or behaviour. This method may provide researhcers with some knowledge about the efficiency of research, results of undertaken methodological

or pedagogical initatives or about the value of new teaching methods, or methodological work (Pilch, & Bauman, 1993, p. 44). Experimental method seems to be particularly useful in the case of examining the efficiency of methodological methods or curricula (Jakubowska, 2012). M. Łobocki defines this method of experiment as the most promising in pedagogical research. This form of research realization certainly can contribute to credibility of pedagogical research, it allows for a connection of theory with practice, and facilitates an introduction of pedagogical innovations (Łobocki, 2006).

J. Brzeziński even claims that: „the maturity of a certain epmirical field is up to what extent the hypotheses formed within the field are checked by the use of experiments" (Brzeziński, 2004, p. 282). Therefore, why despite the undeniable scientific value of experimental method does it not enjoy popularity in pedagogy? M. Łobocki says the reasons for that situation are often time-consuming, difficult and expensive experimental research which may be effectively replaced by other, easier and cheaper methods of pedagogical research. Another barrier which discourages scientists from doing experiments is a belief that if a complete isolation and control of variables are not possible, then in accordance with the methodological requirements used in natural science, it is recommended to refrain from using this method. M. Łobocki states that the awareness of limitations of a method does not shatter the possibilities of its use (Łobocki, 2006).

Pedagogy as a study about upbringing, is mainly focused on the work with a child. Therefore, it becomes the most important "object of an examintaion". And the connection of words "experiment" and "child" is a reason for negative feelings reminiscent of the cruel experiments. Research with children's participation arouses many emotions – maybe this is one of the reasons why for some people pedagogy as a study rarely uses the method of an experiment. However, there are numerous possibilities of experiments with children's participation, as for instance while testing educational programmes.

Certainly, still visible reluctance to the use of experimental method in pedagogical studies stems from the lack of appropriate knowledge regarding this method, knowledge and experience in working with it (and the possibility of obtaining it), which is actually a subject for more profound discussion. This study focuses on possibilities of the use of the Internet in experimantal research from the perspective of eliminating difficulties connected with it. Moreover, I will present some constraints resulting from placing the experimental research in cyberspace as well.

"Technical" limitations of an experiment

Firstly, the basic reason for such a narrow usage of such a "perfect" research method as regards pedagogy, are social sciences, and so pedagogy, which often touch upon areas, which cannot be embraced by an experimental study. It means that the method of an experiment has its limitations, e.g. technical – as A. Sułek (1979) classified them. According to Ajdukiewicz (1975, p. 229) an experiment may only be used for the phenomena, which a scientist is able to trigger or change himself. For historians of education, this method is absolutely useless. But also for

scientists of current phenomena, an experiment cannot always provide an answer. However, not every phenomenon can be embraced by this method. According to A. Sułek it stems from so called structural context. Mutual connections between the social phenomena may be so complex and rely on such highly organised structures, that a a scientist's manipulation, so natural in the method of an experiment, may turn out to be inefficient or unmeasurable. Another problem is the limited power of a scientist who not always has enough knowledge about a certain phenomenon to manilpulate it (Sułek, 1979).

A. Sułek describes the limitations of an experiment, on the scientist's side, stemming from limited power of motivation– a classical experiment allows only for the manipulation of small social structures. Morover, these manipulations have some artificial factor in them because they are created especially for research by a scientist (Sułek, 1979).

The Internet opens new possibilities for a scientist. However, can placing of experimental research in cyberspace or the use of the Internet in the realisation of an experiment solve mentioned problems? For instance, as a long list of the psychologists' online experiments shows (part of subjects touched upon regarding the pedagogical field), posted on the website of *Department of Psychology of Hanower College* (http://psych.hanover.edu/research/exponnet.html), this form of realisation of research is getting more and more popular all over the world.

Advantages of *online experiment*

Since the Internet became a medium available to scientists they tried to determine, if the research carried out by its use is as accurate as classical – *offline*. Numerous analyses checking credibility, accuracy and profitability of research automatisation have been made. Thirty years of scientific experience shows that the Internet brings science more advantages than it creates problems (Epstein, & Klikenberg, 2001).

What are the advantages of placing an experiment in cyberspace?

Firstly, an experiment realised through the Internet has a possibility to get to a bigger group of respondents, so a group of participants of an experiment may be much bigger. This way of realisation of the experimental research allows for doing manipulation with much bigger groups – the range of the Internet does literally not have boundaries. The enlistment of participants in this case is much easier. It is possible to post advertisements on many websites, chats, discussion rooms or by email which would encourage people to participate in research. Thanks to modern possibilities, such as search engine optimisation, which professional IT companies deal with, the service created by a scientist may be indexed by the most popular search engines and may be highly placed in the search results.

Additionally, a virtual network does not have geographical boundaries – therefore we have access to the respondents from all over the world at the same time. The Internet has become an ideal medium for crosscultural research.

Thanks to the use of the Internet a scientist saves his time, which in case of complicated analyses is not only the facilitation, but also it sometimes decides the success of the whole project.

Nevertheless, most importantly, the realization of research by the Internet, thanks to much wider possibilities of selection of participants, raises the representativeness of research and the possibility of creating statistical analyses. "Classical" experiments, which are often criticised are mostly carried out on "students" because this is the easiest and often the only possible group of respondents to enlist. In this case, generalization of results to other groups than students becomes a problematic issue. The solution for these difficulties connected with enlistment of participants in research (access and costs) is a global virtual network (Siuda, 2009).

The use of this form of realization of experimental research helps not only to gain access to the wide population – but also it is especially effective in case of examining people or phenomena, which can be defined as specific or narrow (Szpunar, 2010). Thanks to the possibilities of the Internet, some communities of people with similar specific traits or hobbies are being created online – forums for people who suffer from rare diseases, or people who are interested in unusual sports. It gives scientists new possibilities, very limited so far – e.g. getting to know people (or phenomena), which would be difficult or impossible to reach with the use of classical scientific methods.

Classical experiment is as stated before somehow artificial which may distort the achieved results. The participants of such research may not behave naturally because they face new situations, constructed by a scientist (because of a particular research), in a similarly artificial reality (Sułek, 1979).

Realization of *online* research helps to limit the distortions – participants are in a comfortable situation which they are familiar with; they take part in the research in a familiar and often friendly environment – in front of a computer at home, or at work. There are no difficulties and limitations resulting from a respondent's place of living who in case of a classical experiment would be forced to visit a particular place (which may be costly) at a particular and maybe difficult time, for him (and also for a scientist), e.g. clash with working hours.

This almost unlimited access to research, which the Internet gives, could be a source of criticism of *online* experiments, which could lack in control over respondents. However, leaving this issue aside, modern IT possibilities are emphasised. It is possible to limit the access by admitting to the reasearch only people who log in through a special domain, e.g. educational domains (.edu) or from a particular country (.pl,. de, etc..). It may be also determined if a participant should be left or right handed – by defining the way of the cursor movement (Siuda, 2009).

Research carried out in a "classical" way – in reality, as I mentioned, frequently relies on results of the experiments carried out on students whose participation in research may be determined by different motivations, e.g. the desire to pass the classes. For this reason, the reliability of "classically" achieved results may be doubtful. Online research prevents from these distortions. The participants of the online experiment are not under pressure – they take part in it because they want to. What is important about *online research* is that each participant can resign any time by only one click. Thanks to it, the results will not be distorted, even if the motivation descreases, and the one, as in case of classical research, will not give up being afraid of social sanctions or feeling pressured by a scientist (Siuda, 2009). In case of online research, distortions resulting from the influence of the same

scientist (so called Hawthorne effect (see E. Babbie, as cited in Siuda, 2009) is also significantly limited.

Enumerating the advantages coming from the use of the Internet by the realization of experimental research, an issue of costs cannot be missed. *Online* research allow for significant cost reduction – they do not require to rent labolatories, do the shopping or buy equipment and they do not need another documentation of a whole project. In case of research realised by the Internet, their documentation is available to other scientists interested in research, who can freely analyse the whole procedure of research, experience it from the prespective of a respondent, and even analyse its popularity, comparing the number of people taking part in the research with the number of WWW visits (Siuda, 2009).

Disadvantages of *online* experiment

Each research method is burdened with inherent difficulties Experiment is a method often criticised not only because of the ethic dillemmas connected with it but also because of different difficulties connected with the realization of experiment. Placing the experiment research online is connected with many previously described advantages and is also an answer for some difficulties resulting from the specificity of the experiment method. However, there are additional difficulties resulting from putting the method of research online.

Firstly, mentioned before as an advantage the representative character of online experiments. Because of the fact that the Internet is still not available to all people from all over the world (but only to 34,3% of population – as Internet World Stats shows [http://www.internetworldstats.com/stats.htm]), generalization of results is frequently not possible to whole population, but only to the part which uses the Internet. Moreover, there are people, social and environmental groups, for which examining by the Internet is still impossible – they are people of so-called digital exclusion (Siuda, 2006) and people who are not computer and internet literate.

With this problem an issue of accuracy of manipulation by the scientist is connected. The users of the Internet use different operational systems, search engines and technical equipment – Internet connection, monitor. The differences resulting from these divergences may significantly influence the reception of research stimuli and therefore distort the achieved results.

Secondly, being simultaneously its advantage - anonimity. However, a control of how many times a particular person takes part in a research is also difficult. One person may participate in an experiment a few times using a computer of a different IP address or using many different computers (Szpunar, 2010) and even if we can eliminate these errors by deleting results of participants of the same IP address, we should remember that there is a possibility that several different people could be logged in on one computer – in this situation a scientist would lose precious data. P. Siuda shows possibilities of solving this problem - a request to fill in personal data, which could be difficult to forge, e.g. ID number, the number of bank account, mail address of people who could confirm the identity of a participant (Siuda, 2009, p. 163). However, these ways seem to clash with the anonimity of a participant.

Certainly, in the case of using the proposed solutions a number of people interested in participating in the research will give up being afraid of losing personal data. A request to give ID number or the number of bank account with certainty would effectively scare away many potential respondents, because it could be read as an attempt to obtain personal data under false pretences.

One more problem connected with conducting *online* research, to which we should draw our attention while planning it, is freedom of choice. As research of Jochen Musch and Ulf-Dietrich Reips shows, about 34% of participants give up in the course of research (1-87% according to the subject and character of research) (U.D.. Reips, as cited in Siuda, 2009, p. 164). There is another problem connected with that issue, to which Joel Epstein and W. Dean Klinkenberg draw attention. Authors underline that in *online* research undesirable pressure of participation which changes results does not exist, but it is difficult to say how many people refuse to take part in research (Epstein, & Klinkenebrg, 2001).

Considering this problem, a sicentist planning realization of online research should initially start up with much bigger research group than is needed, and analyse systematically during research, the number of people who refused. A problem to which J. Epstein and W. D. Klinkenberg pay attention to can be eliminated with the help of a visit counter of a given website.

Research realised by the Internet carries some risk of losing data – also on the advantage of other, dishonest scientists – e.g. as a result of computer virus activity. Research may be distorted by the breakdown of a server, on which it was located, which may lead to an end of experiment and significantly influence the achieved results. The enumerated advantages of the *online* experiments, financial savings is also an issue to discuss – in case of some scientific problems, designing and realization of research online may turn out to be much more expensive than the realization of "classical" experiment, or the use of a different method. Online research may be burdened with the necessity of paying for server, creating a website, or its positioning.

Ethical dilemmas conntected with the experimental method

From a point of view of a young scientist, I think that often beside the technical boundaries of conducting an experiment ethical issues play a significant role. Pedagogy, as a science about humans, focused on their development and improvement cannot build its diagnosis on procedures affecting values such as autonomy, dignity and privacy. And the very question of manipulation leaves a lot to be desired.

Ethics forbids making of hypotheses which relate to the phenomena ethically negative in their consequences coming from their verification. The experiment would involve the use of manipulation by the stimuli. This category includes the theory of rewards and punishments, the theory of frustration and aggression, or motivational conflicts (Sułek, 1979). Experimental verification of hypotheses relating to the effects of the negative consequences is also forbidden - the study, which could result in any adverse consequences for its participants or even more. In addition, you should always have in mind the possibility of causing negative consequ-

ences albeit accidentally - the researcher is not always able to predict what are the effects of their manipulations used during the experiment. A. Sułek writes: "on this type of danger many experiments in the field of behavioral science border" (Sułek, 1979, p. 223). Here, John Watson's experiment involving eleven-month Albert B. - an orphan, raised in a hospital ward, may be an example. The boy was shown a white rat while hitting a metal rod - so that the loud sound scared the child. Because of that, the child became conditioned with the fear of a rat and, as it turned out later, also of other animals (Hock, 2003).

The use of the Internet for experimental research does not make it easier for the researcher, allowing him to make hypotheses which give rise to ethical concerns. Moreover, online research requires the researcher to further analyze the possible consequences - as the researcher does not have direct contact with the people participating in the study and cannot keep an eye on and analyze their responses to the stimuli used in the experiment. Great caution should be exercised during the planning stage of the research to predict any possible negative consequences of the researcher's activity, arising out of conducting the online experiment.

Another issue regarding the ethics is the hoax, masking instructions, which undoubtedly allow for expanding the repertoire of experiments. Often the disclosure of the actual purpose of the experiment would prevent its successful conduct. A perfect example of the use of hoax is Stanley Milgram's famous experiment regarding obedience against the authority. There was not any reason (other than keeping the sincerity of the participants in the study) for the actual treating of participants with electric shocks. The author, for the purposes of the experiment, designed a menacing-looking generator of electric shocks. Participants were asked to "punish" a student (Milgram's collaborator) for the incorrect answers to the questions asked by the generator of electric shocks who allegedly had to be connected to the device. And although the study itself may be controversial because there was a legitimate concern that at least some participants would experience mental side effects because of what they experienced, the procedure involved the final explanation of the true purpose of the study and its all procedures (called debrifing), which caused the alleviation of the resulting anxiety. In addition, there was also a discussion concerning the feelings of the participants and symbolic reconciliation with the student (Hock, 2003).

Internet research capabilities in case of masking instructions are greatly reduced because the researcher does not have a real opportunity to inform research participants about its actual purpose - as happens in case of such offline experimental research, shortly after their completion. It must be remembered that in the case of online research its every participant can with one click resign from the participation in the experiment and thus break off the contact with the researcher. The dissemination of information via e-mailing is possible, but you can never be sure that the information reaches all people interested. In terms of information, there is another important ethical issue resulting from the online research. The researcher cannot be certain when it comes to informing the participants about the aims and objectives of the experiment (Siuda, 2009). Despite the placement of this information and the requirement to confirm that you have familiarized with it before the start of the

study, it cannot be assumed that each of the participants carefully read the information presented by the researcher - as it is case of various regulations posted on the forums or auction sites.

This is what from the point of view of pedagogy seems to be the most important. The main subject of pedagogical research is a child - the consent of its participation in the study becomes a problematic issue. And in case of experiments carried out in the classic form - offline, it is possible to obtain consent from a parent or guardian of the child, yet in case of online research a researcher can never be sure whether the parent of an under-age participant even knows about the experiment. Therefore, experimental researches are not really possible online if the respondents are to be under-age. Importantly, online experiment does not give the posibility (while maintaining anonymity) to verify the age of the participants. Thus, in case of online research, in which a participant is to be an adult, the researcher cannot be sure whether the actual participant is not a child.

Placing an experiment in cyberspace regarding some ethical issues is even more difficult - for example, in a situation when someone from the participants of the online experiment could suffer in any way because of this, the researcher is never going to find out. And even though you could suggest providing participants with the possibility of contact with the researcher - by phone or e-mail (Siuda, 2009), it certainly is not an ideal solution.

Yet another problem is the issue of anonymity of research participants. Determining even detailed information about the individuals participating in the experiment is no longer impossible - modern methods allow for a precise determination of an IP address and cookies files of a place from which a person logged in, the time of logging in and thus picking a particular person. Anonymity is also at risk because of the availability of the test procedure. Furthermore, the research project is exposed to being copied by some dishonest researchers (Siuda, 2009).

Conclusion

An experiment in pedagogical science is not a popular method, although it undoubtedly entails many undeniable advantages and opportunities. At the same time, this method is burdened, as is every research method, with some disadvantages. Online experiment allows for solving many of these problems but, firstly, not all of them. Secondly, using the Internet for experimental studies also involves new problems - not involving (or not so much) the classical form (offline) of realisation of the research. These are important issues with which the researcher, especially young and inexperienced should be familiar and ought to take into account during planning and designing of the research.

Certainly, the Internet which has become a dominant medium gives researchers a number of new, previously unattainable possibilities. First of all, it allows for the study of a broad population, not limiting participants to students of a given university, as it is often the case with the research conducted in the classical form, and even the study of other cultures "without leaving home." This modern form of the realization of an experiment gives the researcher the current preview of the results,

and thanks to it great flexibility - in the course of the research, the researcher has the possibility of its modification (Szpunar, 2010).

However, even this form of experiment entails the disadvantages described above. The largest of these is the lack of control over the data collection - starting from the self-selection of respondents, through the possibility of multiple participation in the research of the same people, the lack of complete generalization of the results due to the lack of representativeness of the group (the participants of online experiment are in fact only people using the Internet, computer literate).

This study is only a theoretical discussion of a young researcher. Undoubtedly, the online experiment also involves the issues which have not been mentioned here but may be significant for the preservation of the clarity of results.

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Ethical aspects of experimental research on the internet

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Abstract

The article is a theoretical reflection on an extremely important and crucial aspect of any type of research – the ethical aspect. This paper contains the basic assumptions contained in the most commonly cited ethical codes used by different research environments. Particular emphasis was placed on the ethics of research preparation such as the technical and substantive readiness of the experimenter to cope with the undertaken tasks.

Keywords*:* social studies, ethics of research, experiment, research through the internet.

When considering experimental studies it is impossible not to mention ethical issues. The Internet as a medium of particular specificity requires even more careful analysis over the ethical aspects conducted through its actions.

Conversely, the fact of public and open research seems to provide better control of ethical standards. However, an apparent easiness and general accessibility, as well as provided tools create the temptation of fast and convenient data collection, particularly for less experienced researchers. This situation may result in an increased risk of fraud or omissions in the sphere of ethics. It is not about blatant misconduct as in the case of Philip Zimbardo's prison experiment or research on obedience to Stanley Milgram's authorities, known from textbooks of psychology or sociology (Strelau, 2007; Zimbardo, & Gerrig, 2012). Ethical issues mentioned in this report are certainly much more subtle, and thus in many cases ignored.

Various individual researchers own environmental documents regulating the conduct of research, such as the *Code of professional ethics for the psychologist* (1992), the *International Code of Market Research and Social Studies* (1994). However, in most cases matters of studies using the new media, are cited only occasionally, or not at all. For this reason, among experts in the field there are ongoing discussions on the suitability of transferring research principles of "real" life onto "online" conditions. Regardless of the outcome of these disputes, it is worth considering ethical issues in both "traditional" as well as more general terms, taking into account the specific nature of the Internet.

The issue of research ethics can be viewed in two ways. The first, classic and standard, focuses primarily on respect of the rights of participants in the experiment. Its basic principle is contained in the letter "Do not harm the respondents" (Babbie, 2006, p.516). This approach is found primarily in the codes of various communities of researchers: PTP, OFBOR, etc. (*Code of professional ethics for the psychologist*, 1992; *International Code on Market an Social Research*, 1994).

The other method, however, must constantly recognize the importance of responsibility for the whole experimental process. From this point of view the only experiment that can be approved as ethical is one that apart from ensuring a proper relationship with the person tested combined with respect for their rights, also meets the criteria for a reliable, well-developed scientific study. A scientist, especially in the social sciences, has to consistently realize the importance of actions undertaken, as well as the results obtained and their conclusions. It is a basic matter and yet by some scholars far too rarely respected. Therefore, ethical research is a study conducted with diligence - otherwise the results would be unreliable, which questions the sense of time and work done by the people examined in part in the experiment.

The question that arises here is what precautions must be taken in order to fulfill such broadly defined ethical recommendations. The experimenter must, first of all, accept and implement a set of rules designed to care for the person tested. The main aim is to make every effort to ensure that the participant in the experiment remains in at least comparable mental health before and after the test. The recommendations refer here to a few key areas: the consent to the test, the test procedure, and the use of the information gathered.

Earl Babbie, writing about ethics in social research (Babbie, 2006), as a first principle classified voluntary participation. In case of experimental procedures, this rule becomes even more important due to the fact that after all the participant responds under experimental impacts, which by definition do not leave the subject without influence on his responses. Participation in the study requires an entity to engage, time, labour, energy, and often also involves the revelation of information, which in other circumstances would not be disclosed by that person. Hence, there is a need to inform the participant about the fact of conducting the study and to obtain consent for such actions - this is reflected in the term "informed consent."

This rule does not diminish even in case of a natural experiment or observational studies when, as it might seem, only the researcher analyzes the data collected. Furthermore, as marked by Robert V. Kozinets (2012) it is necessary to obtain the consent to the inclusion of such information in the research process. "(…) The fact that people are aware of the public appearance of the published content has not yet lead to the automatic conclusion that scientists and other researchers can freely use the data", argued the author (Kozinets, 2012, s.197). This is of particular importance in, for instance, a situation where the researcher intends to use the parts of postings found on the Internet or in reaction to those induced by the investigator and discussed publicly. Risk of identification of the identity of the author by using a pseudonym, jointly with the quote pasted into Google is so large that everybody should agree through informed consent to its use.

Another recommendation, talking about the prohibition of abuse of respondents from the research group, is perhaps the most striking aspect of ethics of experimental research. This raises the need for a thorough examination by the investigator of any possible side effects of the research. Psychology especially is a field in which subjects may be exposed to particular discomfort resulting from participation in some procedures. Incentives such as questions about sensitive, difficult, embarrassing rarely disclosed topics, as well as the impact that can cause dissonance between representation of themselves and the actual reactions under experimental conditions should therefore be used only in justified cases, after a precise analysis of all the possible consequences of psychological and development methods for their minimization. In extreme cases, it may even be necessary to interrupt the experiment due to the bad mental state of a participant.

However, in practice in the case of internet research it is difficult to guarantee the last component of this postulate. The lack of direct relationship with the subject, under experimental distance interactions, prevents accurate understanding of this condition. It is not hard to imagine a situation in which the deficiency of a quick reaction of a researcher at the poor state of a participant triggered by badly designed experimental stimulus could lead to serious negative emotional consequences and stress.

The care for the person tested is also expressed in the recommendation on the anonymity and confidentiality of research results (Babbie, 2006; *Code of professional ethics for the psychologist*, 1992). It does not require extensive explanations. Anonymity aims to provide the assurance that the results are impossible to link with the identity of the subject, even by the implementers of the study. The exception to this rule is, of course, is the individual and group interview. For the purpose of online research, this principle involves, for instance, the necessity to design the software in such a way that the test would be giving the opportunity to send e-mail pooled results (which also follows the recommendations of codes of ethics, but that will be mentioned further in the paper) to prevent the possibility of identification of the people. Therefore, to maintain the great respect to ethics, data on the e-mail addresses should be stored in a different location from the other data from the survey form. In practice, this procedure is extremely rare. In such cases, the more essential becomes the principle of confidentiality. This rule is a guarantee that the researcher will not disclose test results despite the possibility to determine the identity of the participant, as for instance in the case of individual interviews. Earl Babbie (2006) clearly pointed out, however, the need to distinguish between the two terms - is reprehensible to use them interchangeably in the context of the procedure for obtaining informed consent of the participant.

Another type of ethical concern arises from the manner of experimental research on the Internet. There is the risk of depersonalization of the subject. No direct, personal relationship with a participant, usually present in so-called "traditional" experiments, can lead to abuse by the researcher or reduced sensitivity to the needs of the subject, as well as skewing conclusions of the study. It is therefore necessary to design and develop the design of an experimental plan with such care and sensitivity that would provide comfort of the subject examined and give the researchers an opportunity to obtain complete, unrestricted information by the "remote" form of participation.

Another aspect is mentioned in the previous paragraph, the right of a subject to inspect the results sheet. This condition is associated with difficulties that have already been described in the case of internet research. It is common practice to inform participants about the results of the project through e-mail, although the acquisition of their addresses requires additional security preventing the identification of their identity on that basis.

A matter of much controversy is also a concern of betraying the participants. In fact, very often for the benefit of the study at the beginning of it, the experimenter cannot tell the respondents about its purpose. Due to this reason researchers often use the so-called masking instructions (Brzeziński, 1996). This issue appears often in the case of studies of social influence in which the disclosure of the main theme of the experiment stimulates a range of psychological reactions that distort test results. Such misinformation appears also in the research on obedience to authority leading to a possibility of obtaining a negative information about themselves by the participants, which may expose them to serious psychological consequences. Therefore, this type of procedure requires special delicacy and experience to provide a maximum comfort of the subject. Feedback at the end of the experiment must therefore include the explanation of the true purpose of the study and the need of such, and no other disinformation (Brzeziński, 1996).

Another form of hiding the real meaning of the research from the subject group is misleading them about the end of the experiment, while the research continues. This example may be required to provide false feedback as part of an experimental manipulation and observation of the test reaction.

All such activities must be explained and elucidated in the post-experimental procedure, and their application in each case should result from a careful analysis of profit and loss – this is the solution of the here described dilemma of the researcher (Frankfort-Nachmias, & Nachmias, 2001). If the psychological costs of the test are too high, or exceed academic gains, it is not recommended to apply similar methods. It is also clear that the researcher has a responsibility to neutralize any potentially negative effects of both disguise and alias of the truth, as well as the whole experimental procedure. The researcher must therefore make every effort to ensure that the endeavor and perceived stress or discomfort would not affect the mental state of the participant of the experiment (Brzeziński, 2000).

Another example of disguising the truth is the lack of information in accordance with the reality on the form and length of the study. Even adepts with little experience know very well how difficult it is to persuade the participant to participate in a long, tedious task. Therefore, the most common deficiencies in this regard must be concealing or fabricating the information in the initial recruitment call.

The duties of the investigator should also include the dissemination of the information of the possibility of resignation from participation in the experiment at any time, with no reason and without any negative consequences. Due to organizational issues, as well as the convenience of the experimenter, this element is also very often overlooked.

Also the results including their analysis and presentation are itself a subject of ethical reflection. The *Code of Ethics and Professional* Conduct states that: "in imple-

mentation of the social research the psychologist carefully considers the ethical side, especially the possible positive and negative consequences of the available research results and their use in social practice" (*Code of professional ethics for the psychologist*, 1992, p. 5). The researcher is therefore required to ensure the correct interpretation of the results of the study, and to prevent the misuse of it. This can be done by, for instance, taking into account the conclusions about their concerns and the possible existence of alternative hypotheses and interpretations.

However, the wealth, anonymity, confidentiality and the similarities, are not everything. One should also pay attention to the concept of the preparation of research procedures and even earlier, to prepare substantive researchers (Brzeziński, & Toeplitz-Winiewska, 2000). Hastily prepared researches, assembled without knowledge and skills, are getting to the Internet more and more often. Seemingly easy access to the desired group of respondents sometimes leads to - quite accidental or deliberate - ignorance, expressed in haphazardly prepared procedures. Improperly collected data, analyzed without proper grounding, leads to erroneous results and lack of coverage in reality. Detailed criteria for the so-called good of the experimental plan described in more detail by Jerzy Brzeziński (2000) should be a credo of every researcher that takes action in this regard. The experimenter is obliged to maintain correctness in methodological (in the dimension of compliance with the theory, the relevance of the procedures and the adequacy of the statistical model) and psychological (expressed in psychological realism and regular relations between the investigator and subject).

Therefore, the following ethical postulate should be a personal sense of responsibility of the author's research for each stage - so they can confidently admit: "Yes, I have made every effort to ensure that my research has expanded the current state of knowledge in my field".

The abovementioned, however only briefly discussed rules are only a starting point for further reflection and self-analysis of the literature. These regulations determine, or at least should try to prove, standards of research around the world. None of the experiments should see the light of day, unless they meet at least these basic ethical criteria. Particularly experimental studies, specifically those carried out on the Internet, most likely require exceptionally rigorous approach and discipline that might not be as strict when compared with other studies. The specificity of the web means that rules are slightly more difficult to meet than under "traditional" instances. Furthermore, at the same time the web-network as a public medium creates a temptation to evade, especially for young investigators. The illusion of quickly obtaining results on numerous attempts, without having to leave home, contributes to a reduction of scientific value of many promising Master theses or even Doctoral dissertations. Therefore, the demand for an ethical approach that takes into account also the substantive aspect of investigator's preparation is particularly important in this case.

To conclude the above considerations, it is necessary to raise the question of the ethical limits of the research - or rather the limits of the reflection about it. As indicated earlier, the need for applying ethical standards does not end with the provision of respect of the rights of the subject examined - the right to anonymity, informed

consent and its withdrawal, etc. Research ethics is also a responsibility for the entirety of conducted experiments – starting from designing procedures, through its implementation to the dissemination of the results and conclusions. Ethics means to make every effort to implement the best and therefore most reliable execution of the planned experiment. This approach generates the need for strict discipline research that consists of solid scientific expertise and technical skills of the researcher, as well as an ability to resist temptations that might facilitate the work.

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On the internet - Research

Doors are better than windows. Social influence on the Internet – "Window-In-The-Face Technique

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Abstract

The following article is about social influence on the Internet. Researchers are interested in social influence techniques applied on the Internet - particularly the case of the door-in--the-face technique. It seems that there are hardly any studies about this technique. The researchers conducted two experiments to test the effectiveness of the technique on the Internet. The technique has proved to be ineffective on online conditions. Researchers attempt to explain this phenomenon in the article.

Keywords: social influence, social influence on the Internet, door-in-the-face technique.

Evolution of the World Wide Web has a real impact on people's behavior and their daily lives. Currently, through the internet people can satisfy almost all their needs: do shopping, talk with friends, earn money, meet new people and even have sex. Our lives are becoming more and more virtual. Some researchers are beginning to use new terms to identify people e. g. *Robo – sapiens* (Guadagno, Okdie, & Muscanell, 2013). There is nothing surprising in this because, as some sources show more than 78% of people in North America use the Internet. In Europe more than 63% (*Internet World Stats*, 2012). This means that well over half of people use the Internet and do so almost every day for several hours. Previously, people spent their time mostly in the company of other people - at home, at work, in public places. The Internet has changed that. Now people can spend their time in the net, and do not meet up with others but it does not mean that they are socially excluded. Computer-mediated communication (CMC) such as instant messaging, texting or e-mail prevents alienation. What is interesting is that it has even been discovered that Internet users actually have larger social networks than nonusers. They visit and call friends on the phone as often as people who do not use Internet (DiMaggio, Hargittai, Neuman, & Robinson, 2001). What is also interesting is that relationships formed

on the web develop in the same way as traditional relationships, and - which is also worth attention - their quality is the same as the quality of traditional relationships. Very often relationships that are created on the Internet are transferred into "real life". In some cases, these relationships become so strong that they result in engagement and marriage (Parks, & Floyd, 1995; McKenna, Green, & Gleason, 2002).

The question then arises: do people on the internet function just as in real life? Do phenomena observed in reality happen on the web? These questions are very wide therefore in this article we check only one option: does social influence work the same in reality as on the net?

Social influence - differences between the real world and the Internet

One of the leading authorities on social influence Robert Cialdini (vide: 2009; 2003) assumed that the behavior may change as a result of real or imagined pressure. However, as a result of researches it was found that not all of the six principles of influence - authority, social validation, reciprocity, likability, scarcity, and commitment and consistency -are effective on the web. For example commitment and consistency are effective in CMC but authority is not (Guadagno, & Cialdini, 2005). Similar results are shown by Rosanna E. Guadagno and others (2013) – not all social influence principles are effective online. These six principles are the basis of social impact. Why? Because they explain a very high percentage of submission while social influence is in use. For instance the likelihood that fulfillment of the request of a friend is much higher than the fulfillment of the request of a foreign person. In this case, the best explanation is the principle of likability. We are happy to fulfill requests of people we like. This upholds social bonds and makes us happy. Do you want people to fulfill your requests? Do something that they'll like you. Do you want the people like you? Do them a favor (Doliński, 2005).

So how it possible that not all principles are effective on the Internet? What is the difference between the real and the Internet world? As mentioned earlier a lot of human behavior on the web is the same as in real life! Where is the difference? Researchers have shown that there are four main differences between interaction on the Internet and the real world: anonymity, time and place, physical appearance and physical distance (McKenna, & Bargh, 2000). A perfect example of the differences between standard communication and the CMC is the lack of non-verbal communication. It definitely makes interpretation more difficult and at the same time can reduce the impact of a message (Derks, Bos, & von Grumbkow, 2008). CMC eliminates physical contact and connected with this impact of physical attractiveness whose role in social influence is large (Edinger, & Patterson, 1983). Attractive people are more liked by others, better assessed, more efficient in social life etc. People are more willing to help others who are physically attractive than those who are not beautiful. The stereotype *what is beautiful is good* is common (Wojciszke, 2006; Eagly, Ashmore, Makhijani, & Longo, 1991; Dion, Berscheid, & Walster, 1972). So if you think of the Internet as a place where it is worth using techniques based on the principle of liking it might be not the best choice. Similarity and physical attractiveness

are two drivers that are strongly associated with liking. On the Internet it is difficult to observe - certainly harder than in real life - that is why this rule is not as effective as usual (Guadagno et al., 2013).

Thus, CNC takes place in a different way, and people have more time to rethink their behavior. So they have more attentional resources to generate behavior - no need to hurry with their reactions. Moreover, thanks to anonymity interlocutors do not have to show their true personality. They can create their alter ego or self-presence more strongly than under normal conditions. Thanks to this ability, users can exhibit behavior more or less normative than usual (Postmes, Spears, Sakhel, & De Groot, 2001). A very good example of this phenomenon is the replication the classic Asch experiment on social conformism carried out on the Internet (vide: Wallace, 2001). The researchers created an environment that resembled the internet. On a screen they were shown a section of a line and participants had to indicate from among four others which had exactly the same length as that presented earlier. Answers of the participants were preceded by the replies generated by the computer (this has always been a bad answer). The results showed that participants were not undergoing conformism as much as in the original experiment of Asch. They more often gave correct answers. Patricia Wallace believes that such behavior was caused by lack of physical presence of other people. As a result, the subjects did not have to behave according to the norms and self- presence and consequently they could formulate independent opinions. Anonymity makes that volume of anti -normative behavior increase (Mendels, 1999). But these results are not unequivocal. Other researchers suggest that anonymity can, in some cases, escalate a group identity leading to increased group conformity (e.g. Postmes et al., 2001). As you can see there is no accordance to the behavior of users and these issues require further research. Particular interest seems to move this issue in Poland – Poland still lacks research of social influence on the Internet. It is worth considering do the findings of American researchers also refer to our culture. For this reason, this article refers to is the issue of social influence on the internet with nothing more than the tests designed to check whether the results obtained by American researchers will be the same in Poland.

How is the effectiveness of social influence when we think about sequential techniques? Researchers confirm that the foot-in-the-door technique is effective online (Petrova, Cialdini, & Sills, 2007; Guéguen, 2002). This technique involves the sequential formulation of requests. First formulated is a small, easy to fulfill request and then the request is bigger – the target request. R. Cialdini (2009) proves that the technique is based on the mechanism of perception of myself as a helping person. The technique is effective even if there is a time gap between the requests and when requests are formulated by two different people. Most of the research on this technique used a method of face-to-face or telephone. However, research on the internet also confirmed the effectiveness of the method.

Foot-in-the-door technique has been relatively well studied on the Internet but still has not been exhausted. A completely different situation is associated with the door-in-the-face technique. On the EBSCO data base you can find just a few studies on this technique carried out on the web! Although this is one of the most studied

techniques of social influence researchers do not rush to check its effectiveness on the web!

The door-in-the-face technique looks like the inverse of foot-in-the-door technique. Initially, a request is big. Large enough that no one wants fulfill it. After a large request followed a smaller request. Usually people agree to fulfill this request. For this technique to be effective both requests must be sent by the same person, preferably in a short period of time (Doliński, 2005). Researchers point to various reasons why the technique is effective. Robert Cialdini et al (Cialdini et al., 1975 in: Dolinski, 2005) believe that for the effectiveness of this technique the following are responsible: the effect of contrast (a second request comparison with first, difficult request does not seem be as difficult to fulfill) and the norm of reciprocation based on the rule of reciprocity (we are lowering our expectations so others also should agree to a concession and fulfill lower request). In turn, Daniel O'Keefe and Marianne Figge (1997) indicate guilt as a reason for the effectiveness of the technique. They argue that people fulfill the second request because they feel guilty that they did not perform the first (too difficult, time-consuming, requiring a lot of resources). They also believe that the entity does not fulfill the second request if the first one does not cause the guiltiness. Another explanation refers to the self-presentation. People afraid that they will be perceived badly if they will always refuse help. For this reason they fulfill second request (Pendleton, & Batson, 1979).

Nicolas Guéguen (2003) checked the effectiveness of the technique on the Internet. He sent e-mails to random people and solicited them to visit a humanitarian organization web site. Results show that the technique increased compliance to the last request. But these studies are one of the few that can be found in the databases. Checking the effectiveness of the door-in-the-face technique on the internet is not popular. For this reason, Bartosz Ogonowski and Magdalena Gawrecka decided to carry out studies about this technique in Poland. It was a small and simple experiment, which was to check whether also among Polish Internet users the technique would be effective.

First research

The study included 80 participants (40 in the experimental group and 40 in the control group) users from mIRC (instant messaging). People for the study were randomly selected - a request was sent to every 10 people in the most popular chat. Researchers to the needs of the situation in which the technique is used on the Internet accepted the name window-in-the-face technique - the name is more associated with Windows, which are used by almost every computer user.

The study used a fictitious survey which was posted on the website. The survey consisted of three questions about the European Union and the question about the nickname from the chat. The questionnaire was used in both experimental conditions. The survey was written in the PHP programming language.

This study introduces two groups: control and experimental. In the experimental group, the researcher asked the respondent to send by post a completed questionnaire, which contained 100 questions (big request). The researcher asked to write

"yes" if you agree or "no" if you do not want to fill out the survey. After receiving a negative answer, the researcher put forward a desired request - complete a short questionnaire, which was located on the website. In the control group, the researcher asked respondent only fill in a short questionnaire on the website.

Counting people took place in two ways. Firstly, how many people answered "yes" or "no" to the request of the investigator. Secondly, check the number of people who filled in the survey. Also checked was the person who filled the survey, those that had been requested by the investigator. For this purpose we compared nicknames included in the survey with those used in the chat.

All participants who agreed to fill a questionnaire, filled it. In the control group it was 37% of respondents. In the experimental group, 47% of the respondents. Unfortunately, the results turned out to be not statistically significant!

The results were the basis for the following reflections relating to the effectiveness of the window-in-the-face technique. It was noted that the subjects did not want to open the web page containing the survey because they were afraid that it might contain a virus. Perhaps if researchers confirm participants that this is not a virus the submission would be higher. This can be done through the use of websites of known and respected scientific units (e.g. universities). This problem has not been explained and may be the subject of more research.

The second explanation is that online contact is burdened with a certain distrust of people who ask us about anything. Lack of direct interaction weakens the submission of the respondents and reduces their involvement. This demonstrates the significant role of personal contact over subjects by using a social influence researcher. Katelyn Y.A. McKenna and John Bargh (2000) wrote about this problem. It is also worth thinking about the subjects. Are there any specific features that distinguish this group? What is the difference between the people we meet on the streets and those who spend most of their time on the web. Internet users are so often bombarded by various types requests and ads that they undergo intensive training in assertiveness. They learn to refuse much easier and faster than in real life. All of these doubts are questions for further research.

At the end it is worth asking the most important question: is this technique effective on the internet at all? Perhaps the lack of publications on the subject is not due to lack of interest in the technique, but the lack of evidence for its effectiveness in Internet? Is this technique ineffective while foot-in-the-door technique is effective? For this reason, Bartosz Ogonowski and Maria Kierach decided to carry out further research of technique and check is it effective in other conditions?

Second research

In the second study researchers decided to diminish fear of viruses that can be sent via a web site. For this reason, the researcher presented the subjects that he works with, for a company conducting a research on road traffic. The company has its own website and provides numerous services for drivers. Researchers have made every effort to reduce manipulation and the distrust of the respondents. Respondents could check whether the company actually exists. At the same time,

researchers have tried to eliminate the influence of authority – the brand of the company is not recognized as a leader. The subjects did not have to fear that the sent link contains any virus and could easily see what is on the page proposed by the researcher.

The study was conducted on the two biggest polish chat rooms (czat.onet.pl and czateria.interia.pl). The study was run during three days. The researcher sent private messages to people that were present in a chat room. In experimental group people were first asked to take part in a survey that contained 15 open questions (big request). They were also told that it usually took 45 minutes to complete a survey. They were asked to write whether they agreed or not to complete the survey. After they declined the researcher immediately asked them to enter the site about traffic congestion and to sign up for a newsletter about it (proper request). Researchers measured how many people entered and how many of them signed up for a newsletter. Site entrance was measured through the Google Analytics tool which allows identification of the number of unique entrances. In the control group participants were only asked a proper request and in addition they were also asked to write if they agree to do it or not. This step was necessary because there was a possibility that on the other side of screen there was nobody at that time.

Results

Researchers asked 120 different people in the experimental group and 120 people in a control group. In the experimental group 35 people answered the big request and only those 35 people were considered for the experiment. The rest of them either banned the researcher from further contact (27 people) or did not answer at all (57 people). In control group out of 120 people only 38 people answered others did not reply or banned the researcher.

First measurement involved how many people signed up for a newsletter. In the experimental and control group only one person fulfilled that request. The results turned out to be not statistically significant (X^2 (df=1) = 0,003 p=0,95).

Second the number of entries to web site were counted. In the control group 6 people entered web site and in the experimental group only 3 people. These results also are not statistically significant (X^2 (df=1) = 0,87 p>0,34).

Discussion

The result of the second study confirmed the results of the first study. The technique proved to be ineffective. Individuals did not agree on the first and second request of researchers, and also prohibited the researchers further contact.

In the first study it was observed that subjects were suspicious of requests because they feared that researchers sent viruses. In the second study, this effect was eliminated by changing the experimental manipulation. Unfortunately, the results have not changed. It was observed that subjects even to a lesser extent than in the first study responded positively for the researchers request.

The second study confirmed that the lack of physical presence of others makes

the technique ineffective. So far, only one study confirms the efficacy of techniques (Guéguen, 2003). The study, however, was widely- tested more; than 1,600 people. This large sample of respondents may explain why the effect does not exist in other studies – it is too weak. An attempt to replicate this effect proved to be impossible on a smaller research sample. Perhaps it is also a fact for which there are no other studies about door-in-the-face technique in databases. Journals do not print studies that show statistically insignificant results. The only published studies are not enough to confirm the effectiveness of technique.

The second important factor is the subjects. We do not have any knowledge about the subjects taking part in the research. People involved in the online research can be registered under more than one nickname. This can disrupt of results. Some of them may not be real persons (e.g. corporate account, the bots), parts of them could be underage. All these factors disrupt results. This issue requires further research. One of the basic researches should be a comparison of the subjects involved on the internet study and beyond the internet. Part of this research has already been done. Nicolas Guéguen and Cèline Jacob (2002) showed that subjects lacking the presence of the investigator are not as compliant as those who see the researcher. Men were more compliant than woman. The results show that results can change if researchers create an environment more similar to "real life". The same group of subjects as always gives a different response in changed conditions. But there is still not enough information about the subjects on the internet studies and in the normal studies. The next step in research should be to trace the reactions associated with the refusal. Probably the people in the online study do not feel the discomfort associated with the refusal to the same extent as the people participating in traditional research. They often do not agree on the various requests and thus are not as compliant when someone uses door-in-the-face technique.

Research on the Internet posed a lot of interesting challenges. The development of technology ensures a change in human behavior. It is worth to observe these changes and follow them. Many classic studies can be carried out online. The results can be compared with those that were obtained in the traditional way. This gives the possibility to extend the theory and is extremely interesting from the research point of view.

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The link between social value orientations and the interaction partner's emotional facial expression as regards the perception of other individuals' traits and a change in the observer's social value orientation

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Abstract

The paper fits into the trend in the research into the link between social value orientations and the perception of a facial emotional expression. The issues addressed in this paper relate to two topic areas: the link between social value orientations and the assessment of the characteristics of another individual displaying various emotions on their face, and a possible change in the observer's social value orientation under the influence of a specific emotional expression being perceived on another individual's face.

An "*omnibus*" type representative survey was carried out according the the experimental scheme, entirely via the Internet (N = 972). The following tools were used: for the measurement of social value orientations, a modified version of the Ring Measure of Social Values (Liebrand, 1984); for the experimental manipulation, photographs of facial expressions (happiness, anger, neutrality); a scale for the assessment of the perception of the individuals presented on the photographs.

As expected, a link was demonstrated between the cooperative orientation and a high level of trust in, and positive assessments of a person displaying a facial expression of happiness. What was also revealed was the diversity of the perception of a person displaying various facial expressions (especially neutrality and happiness) depending on the type of (general and specific) indicators of social value orientations. In general, a person with a smiling and neutral facial expression was assessed significantly more positively (and more trust was put in that person) by prosocials (those with a high degree of the *orientation on the others*; cooperators and altruists) than by those oriented proself (those with a high degree of the *orientation on oneself*; competitors and individualists).

In the light of the data obtained, one may, for the very first time, speak of social value orientations as of a dimension being susceptible to a change under the influence of a facial expression. A diversity of the indicators of the *orientation on the others* was shown, as well as of the distribution of the groups of the dominant social value orientations before and after the experimental manipulation, depending on the type of a basic facial emotional expression being presented (happiness vs anger). Directional predictions were confirmed with regard to the negative manipulation which was followed by a reduction in the *orientation on the others* and a reduction in the total number of altruists, while the positive manipulation resulted in

a general increase being observed in the number of altruists, which remains in line with the trend in predictions that observation of a positive facial expression triggers prosocial tendencies, while observation of a negative facial expression undermines prosocial tendencies.

The results were given an interpretation, and areas were suggested in which it was worth planning additional researches that might provide the knowledge required to draw final conclusions. The fact was highlighted that specific methodological solutions which might have influenced the structure of results were applied.

Keywords*:* social value orientations, prosociality, perception of people, variability of social value orientations, Ring Measure of Social Values, facial emotional expressions.

INTRODUCTION

Since the development of the first concept of social value orientations (Messick, & McClintock, 1968) which are currently defined by a significant proportion of researchers as fixed patterns of the inter-situational variability of preferences as to how to allocate resources between the self and another person (Grzelak, 1982, 2003), numerous researches have been carried out in this field. It has been proven, *inter alia,* that the orientations are a very important factor modifying the perception and evaluation of a situation and a partner (Kelley, & Stahelski, 1970; Liebrand, Jansen, Rijken, & Suhre, 1986; Sattler, & Kerr, 1991), as well as affecting human behaviour (Kuhlman, & Marshello, 1975; McClintock, & Liebrand, 1988). On the other hand, factors influencing a change in the preference was discovered (Abric, & Kahan, 1972; Swingle, & Santi, 1972; Hamburger, Guyer, & Fox, 1975; Latane, & Nida, 1981; Grzelak, Ossewska, Wyszogrodzki, & Bobrowski, 1994).

Among the empirical reports, researches have occurred which linked social value orientations with facial expression, and concerned the coding and decoding of orientations at the level of facial nonverbal behaviour, as well as the decoding of orientations on the basis of static images of facial emotional expressions (Kuhlman, & Carnevale, 1984; Kuhlman, Fasolo, Kiotas, & Pomare, 1989; Shelley, Page, Rives, Yeagley, & Kuhlman, 2009). The results as obtained so far indicate that emotions being displayed on the face of a stranger allow accurate determination of that person's social value orientation, particularly when he/she is adopting an expression of happiness or anger, while the observation of an emotionally neutral face does not provide such an opportunity (Shelley, Page, Rives, Yeagley, & Kuhlman, 2009). In addition to the nonverbal indications of social value orientations, factors affecting the attractiveness of an interaction with a person being observed, such as *inter alia* the traits of a potential interaction partner, have also been analysed (Grzelak, Kuhlman, Yeagley, & Joireman, 2009); moreover, an opportunity to infer the characteristics of a stranger from his/her nonverbal, facial emotional expressions.

The aim of this paper is to present the results of an experimental research focused on research questions about the link between social value orientations and inference from facial emotional expressions. Detailed inquiries concern the specificity of perceiving the traits of individuals' (including trust being put in them) who display contradictory expressions (happiness, anger) on the face, and a possible change in the social value orientation under the influence of the type of a facial expression being

worn by an interaction partner. Social value orientations have thus been treated as an independent and dependent variable. Focusing on the facial expression arises from the fact that it is considered, on the basis of numerous researchers (conducted by, *inter alia,* Bahrick, Bahrick, & Wittlinger, 1975; Field, Woodson, Greenberg, & Cohen, 1982; Hirshberg, & Svejda, 1990; Johnson, Dziurawiec, Ellis, & Morton, 1991; cf. also: Doliński, 2003; Ohme, 2003; Biele, 2002), to be the most important channel of nonverbal communication, which operates most autonomously and, most often, is sufficient by itself for the information being provided to be accurately interpreted. The use of expressions of happiness and anger in own research for the experimental manipulation arises from the fact that those modalities of emotion have received, in the cross-cultural studies (Ekman, Sorenson, & Friesen, 1969; Ekman, & Friesen, 1971; Friedman, 1979), the highest indicators of recognition accuracy, and is also due to the great accuracy in determining the social value orientation of a person who is displaying those particular modalities of emotion on his/her face (Shelley, Page, Rives, Yeagley, & Kuhlman, 2009).

Definition of social value orientations

The authors of the earliest classifications of social value orientations (Messick, & McClintock, 1968) initially introduced four basic motifs (orientations) for which a definition was developed, namely the fixed preferences about how to allocate outcomes (resources) between the self and a partner. Those preferences may take a form of efforts to maximise: own gains (individualism), the partner's gains (altruism), own advantage over the partner (competition), and the combined own and partner's gains (cooperation). The Charles Graham McClintock's model as extended (Griesinger, & Levingstone, 1973) to include a total of eight social value orientations still emphasised the fixed nature of the preferences. The subsequent years of interest in the issue of orientations have resulted in a major theoretical postulate being proposed, which dealt with the interactive nature of the resource allocation preferences. The existence of a number of situational factors affecting the orientations was indicated (Grzelak, 1982), while emphasizing at the same time that the individual orientation pattern in different situations was stable and typical of a given individual. For example, where person A exhibits less competitive behaviour while being in a confrontation with a partner enjoying considerable prestige than while being in a situation where he/she is facing up to a partner of a similar status, the difference will occur in each situation where person A is in an interaction with partners having different levels of social prestige. Hence, the individual's preferences are determined by both the orientations (configuration of orientations) and the situational factors (Grzelak, 2003).

Therefore, a proportion of researchers are currently inclined to define the social value orientations as fixed patterns of the inter-situational variability of preferences as to how to allocate resources between the self and other persons (Grzelak, 1982, 2003). In the light of this definition, the assessment of social value orientations is, therefore, not universal: individuals being cooperative in certain spheres (e.g. in social relationships) may be competitive in other spheres (e.g. in their professional life). Social value orientations are thus dependent on the situation (Grzelak, 1982,

2003), and the main factors resulting in the same person being able to change his/her outcome allocation preferences include, *inter alia*: the number of persons, the mode of representing results, the effect of instructions, the effect of information on the other person's strategy, and the opportunity for communication (Mazur, 2002). In the light of the above data, it is difficult to divide people into "pure" individualists, altruists, cooperators etc.; actually, it is assumed that each person's orientation is characterized by the adopted indicators determining the intensity of particular orientations. Therefore, each person exhibits a certain, most pronounced orientation being supplemented by a set of several others. Depending on the situation, the person starts exhibiting either behaviour associated with the dominant orientation or behaviour typical of the other ones. Therefore, in certain extreme situations an individualist (an individual with the proself orientation being dominant) may exhibit altruist behaviour, while in other situations e.g. competitive ones. However, in most situations this individual will behave in accordance with his/her dominant proself orientation.

Models of social value orientations differ in the number and type of orientations. Quite often, one may find in the literature on the subject an empirically and theoretically justified division of orientations into *prosocial* (referred to by van Lange as *cooperative*) which include cooperative, altruistic and maximin orientations (the latter being a preference for maximizing the lowest outcome regardless of whose the outcome is (Schulz, 1968, quoted from: Grzelak, 2003), and *proself* (referred to by van Lange as *egoistic*) being represented by individualistic and competitive orientations (van Lange, 2000; cf. also: Rutkowska, & Szuster, 2008). The nature of the division of social value orientations into *prosocial* and *proself* has already been emphasized by John Thibaut and Harold H. Kelley, who argued that individuals transform the representation of a specific situation of social interdependence in accordance with their own social motives (Kelley, & Thibaut, 1978) by either adopting the *egoistic motivation* i.e. pursuing maximum own outcomes while ignoring the partner's outcomes, or being guided by the *prosocial motivation* i.e. searching for good outcomes for both oneself and the partner(s).

In summary, social value orientations may be treated as either individual, generalized inclinations to exercise particular types of control, or states of needs evoked on an *ad hoc* basis in a particular situation (Grzelak, 2002). The author of this paper is inclined to favour the latter definition, and has been examining, *inter alia*, the variability of orientations under the influence of various facial expressions being displayed by an interaction partner.

Orientations and the perception and assessment of the others (orientations as an independent variable)

Researches into social value orientations indicate an evident influence thereof on the processing of information on the social world, and on the assessment of interaction partners (Kelley, & Stahelski, 1970; Grzelak, 1982, 2003). Depending on the social value orientations, people pay attention to various elements of the social world, and use those elements in order to form a specific assessment of the surrounding reality.

Results of classical studies ("the triangle hypothesis") indicate that competitive persons perceive the others as being competitive as well, while persons with the cooperative orientation consider other people to be more flexible i.e. either cooperative or competitive (Kelley, & Stahelski, 1970); on the other hand, a "diagonal hypothesis" also exists, being opposed to the above one and empirically confirmed, which indicates the egocentric bias; according to the latter hypothesis, everybody perceives the others as being similar to oneself (Codol, 1976; quoted from: Grzelak, 2001; Kuhlman, & Wimberley, 1976; Liebrand, 1984; Schulz, 1986). The results supporting the "diagonal hypothesis" indicate that persons with prosocial orientations (cooperation, altruism) attribute the possession of prosocial orientations to the others to a greater extent than persons with proself orientations (individualism, competition) tend to do. A link was also demonstrated between the social value orientations and the accuracy of the judgement on the others: cooperators and individualists guess their partners' intentions more accurately than competitors do (Maki, & McClintock, 1983). The differences also concern the criteria applied for the assessment of the others: individualists and competitors perceive the social world in terms of power and strength, while persons with the cooperative orientation perceive it in terms of moral categories i.e. good and evil (Liebrand, Jansen, Rijken, & Suhre, 1986; Sattler, & Kerr, 1991). Paul van Lange and Wim Liebrand (1989) concluded that cooperators perceived other cooperators to be intelligent, while non-cooperators were perceived by them as unintelligent and weak. The perception of persons with non-cooperative orientations is opposite (Kopelman, Weber, & Messick, 2002).

So far, it has not been directly examined as to whether social value orientations diversify the assessment of the same person displaying various facial expressions. The very fact of the influence of the identification of a sender's emotions on the type of the judgement on the sender being generated is obvious – identification of a facial expression, just like every categorization, simplifies and reduces the stimuli getting through; it selectively channels the attentions, which allows grouping and predicting the traits of any category item; it also allows constructing of a consistent system of general knowledge of other people, while specifying the expectations concerning the patterns of either typical behaviour or possible deviations therefrom. On the other hand, the expectations associated with the facial expression being observed affect the judgements on the sender of the message (Cantor, & Mischel, 1993).

As regards the link between the social value orientations and generating different judgements on other persons on the basis of facial emotional expressions being observed, there are reasons to argue that at least the cooperative orientation is conducive to putting trust in persons displaying positive expressions on the face. Generally, a happy facial expression is interpreted by people as an indicator of the cooperative orientation (Carnevale, 1977; Kuhlman, & Carnevale, 1984; Kuhlman, Fasolo, Kiotas, & Pomare, 1989; Frank, 1988; Frank, Gilowich, & Regan, 1993), and assessing a person on the basis of the facial expression as being happy correlates with perceiving that person as being "trustworthy" (Shelley, Page, Rives, Yeagley, & Kuhlman, 2009). On the other hand, it only occurs in the group of cooperators that attributing the cooperative orientation (which often involves a positive emotional state being expressed on the face) to a person correlates with assessing that person to be "trustworthy"

(Shelley, Page, Rives, Yeagley, & Kuhlman, 2009). Possibly, the facial expression of a positive emotional state not only inspires cooperative observers to feel trust and expect cooperation, but also to make positive assessments in other dimensions. Józef Kozielecki (1975), while referring to the tradition of studies on social perception, and examining the assessments concerning both cooperators and competitors, indicated that in accordance with the concept of stereotypes, the cooperators have been attributed many other positive traits, e.g. the absence of greed or empathy, while the non-cooperators have been assesses as being selfish, egocentric, egoistic and unscrupulous. Similarly, researches as conducted by Gregory Shelley and Peter Rives (quoted from: Shelley, Page, Rives, Yeagley, & Kuhlman, 2009) consistently indicate that the assessments of cooperators are more positive than those of non-cooperators in terms of such traits as: unselfishness, honesty, kindness and cooperation. Other researches also show that persons with prosocial orientations make a more positive impression on the others than persons with proself orientations. Judith Maki, Warren Thorngate and Charles McClintock (1979) demonstrated that persons making individualistic and competitive choices have been assessed as being more egoistic, evil and unfriendly than persons exhibiting altruistic and cooperative behaviour. Furthermore, the respondents with prosocial orientations have been assessed as being more moral as well as fair and honest, as compared to those proself-oriented (Liebrand, Jansen, Rijken, & Suhre, 1986). An important question is whether the assessment of a smiling person (most often associated with a tendency to cooperate), and of a person displaying a facial expression of a negative emotion, will vary depending on the observers' social value orientation (*proself* vs *prosocial*).

It is also interesting to see how the others are assessed by the representatives of social value orientations other than cooperation, depending on the facial expression being observed.

A change in the orientation depending on the facial expression being observed (orientations as a dependent variable)

In accordance with the definition of social value orientations, which considers the variability thereof depending on the external characteristics of the situation, researches have been carried out on the factors affecting the preferences for resource allocation. Those factors included one being the most significant from the point of view of the investigations conducted under own research, namely the information on the interaction partner. The image of the interaction partners affects our attitude towards this person and, consequently, our social value orientations. The information that the partner is a cooperator evokes a cooperative attitude towards him/her (Abric, & Kahan, 1972), similarly to a message that this person possesses the same orientation as we do (Kaufman, 1967; Tornatzky, & Geiwitz, 1968). Other researches have shown that we are more willing to cooperate with persons of whom we know that they are moral (van Lange, & Liebrand, 1989) or have authority (Abric, 1976, quoted from: Grzelak, 1988).

Signals of the emotions being felt by the interaction partner, flowing from the key channel of nonverbal communication, undoubtedly constitute information which

may be immediately processed into a specific assessment of the interaction partner's intentions, and thus, possibly, affect our social value orientation. Reaction to another person's emotional face is a range of various processes – not only perceptual and cognitive but also emotional and behavioural. Observation of an expression results in it being linked with behavioural categories determining the future behaviour of the sender (e.g. an expression of anger – attack, happiness – affiliation), which in turn affects the future behaviour of the receiver, and his/her motivation for approaching, avoidance, isolation, and the quality of mutual interactions (Fox, 1991, Oster, 1989, quoted from: Dolata, 2001). Research as conducted by Grzegorz Pochwatko and Joanna Sweklej (2003), concerning the specificity of behavioural reactions (approaching – distancing) with regard to the facial communication of emotions, indicated that photographs showing the expression of happiness triggered a smaller distance in relation to the stimulus than photographs showing the expression of negative emotions. Intuitive inference of intentions on the basis of someone's self-presentation finds support in other empirical reports directly referring to social value orientations – self-presentation affects the social value orientations of the sender of messages (Iedema, & Poppe, 2001) – since the nature of facial expressions being displayed by a person (and being indicative of his/her orientation) inclines one to activate an appropriate attitude and action towards this person, which is expressed through specific social value orientations of the receiver of messages.

Since the cooperative tendencies are evoked in us by other cooperators whom we apparently recognize by the happy facial expression, it is likely that observation of a positive facial expression being displayed by the interaction partner will evoke prosocial tendencies towards him/her. In turn, in accordance with the so-called *evolutionary stable strategy* (Slatkin, & Maynard Smith, 1979, quoted from: Wojciechowski, 2008) in a form of the "tit-for-tat" reaction, similarly to cooperation inducing cooperation, egoistic behaviour is very likely to induce a reciprocal, non-cooperative choice. Therefore, where a partner displays (as in own research) a negative facial expression of anger, by no means suggesting in this manner a tendency for cooperation, he/she is thus likely to undermine the other party's willingness to cooperate.

Method

The research was carried out via the Internet according to the experimental scheme; it allowed the determination of assessments being generated in relation to a person displaying various facial expressions, depending on the observer's social value orientation, and the determination of a change in a social value orientation, depending on the facial expression being observed.

The following techniques were applied in the research: a version of the Ring Measure of Social Values, as modified by Michael Kuhlman (2007), for the measurement of social value orientations, and photographs of a man (as obtained from the set of unpublished materials of M. Kuhlman (2007)[2] displaying expressions of happiness, anger and neutrality on his face, for the performance of an experimental manipulation. For the purposes of the research, a scale for assessing the perception

2 The materials were obtained courtesy of M. Kuhlman, professor at the University of Delaware.

of a person being presented, his facial expression, and trust being put in this person.

In the research, the following variables were used:

independent variables:

- social value orientations
- the type of a facial expression being displayed (the intra- and interpersonal factor)

dependent variables:

- the perception of the person (in the dimensions of traits in terms of competence, predictability, intentions and being trustworthy) displaying various expressions on the face
- a change in the social value orientation depending on the facial expression being observed.

Tools for the measurement of variables. Indicators

Method of the measurement of the independent variable: social value orientations

For the measurement of social value orientations, a version of the Ring Measure of Social Values (Liebrand,1984), as modified by M. Kuhlman. In this method, the respondents made 12 choices between three options (A, B and C), with each option presenting a specific distribution of points between self (You) and the Person in the photograph (Fig. 1). An accurate and rather complex method of the analysis of results as obtained using the Ring Measure of Social Values is provided in a paper written by the author of this technique (Liebrand, & McClintock, 1988).

Figure 1. An example of one of the offers in the modified Ring Measure of Social Values, in the version involving the distribution of points between self and the person in the photograph

A)	You receive 50 The person in the photograph receives –86
B)	You receive 70 The person in the photograph receives –70
C)	You receive 60 The person in the photograph receives –79

Source: Materials of M. Kuhlman (2007).

Using the tool as described, two types of indicators of social value orientations were developed:

1) a general indicator: *orientation on the self* (I) and *orientation on the others* (he)

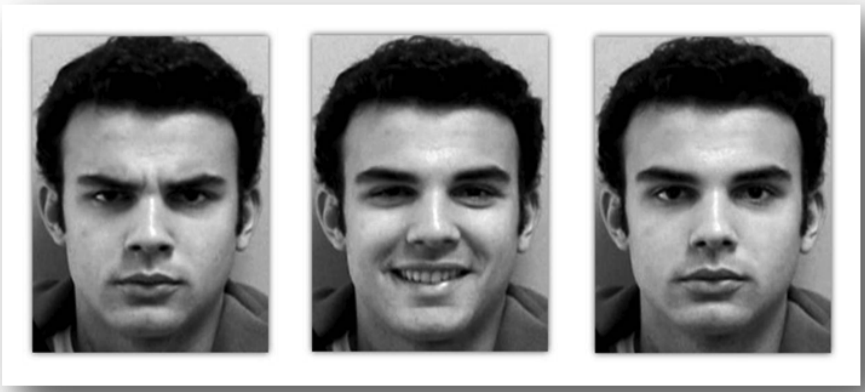
2) specific indicators: *dominant social value orientations*: competition, individualism, cooperation, altruism.

Method of the measurement of the dependent variable: the type of a facial expression being displayed

Under the research procedure, a type of manipulation was applied which involved a change in the emotional expression being displayed on the face of a person with whom the respondent is in a situation of social interdependence, and distributes points being important for both parties. For this purpose, photographs of a man were used (having been selected from a couple of dozen of photographs of

human faces (from Kuhlman's collection), tested for the lack of ambiguity of the facial expressions being presented (a study as conducted by Kuhlman's team, 2006, 2007), and chosen due to the appearance of the face being typical of a Polish citizen (studies for the purpose of the paper by Hubert Jakubiec, MSc, 2008) and on the basis of opinions of competent judges), presenting facial expressions of anger, happiness and neutrality (Fig. 2).

Figure 2. Photographs of a man displaying expressions of anger, happiness and neutrality, as used in the research



Source: Materials of M. Kuhlman (2007).

The photograph of a person displaying a neutral expression (who was presented in the research as a partner for the distribution of points being important to both parties) was shown to all respondents, while for the purpose of bringing about a change in the image of the partner concerned, a proportion of the respondents were shown a photograph of the same man with a smiling face, and the remaining respondents were shown a photograph of him displaying the facial expression of anger.

Method of the measurement of the dependent variable: the perception of a person displaying various expressions on the face

In order to determine the perception of the same person, depending on the emotional expression being displayed by him on the face, a scale for the assessment of the person in the photograph was developed for the purposes of the research. Questions concerned the intentions of the man being presented (e.g. whether or not he is willing to cooperate, help others, or rather compete or have mainly his own interest in mind), his competence (whether or not he is able, wise, and competent), and his predictability (whether or not he keeps his promises, is predictable). Respondents also assessed the degree of their trust in the person being presented in the photograph and, as part of the test of the manipulation, specified the type of

the emotion being displayed on the face. Respondents made their assessments on a five-point scale (1-yes, 2-rather yes, 3-difficult to say, 4-rather no, 5-no) twice: in relation to the man with a neutral expression on his face, and in relation to the same man displaying a specific (either positive or negative) facial emotional expression.

Respondents

The research was carried out entirely via the Internet on a random address sample of Polish residents, with the use of an application especially developed for the purposes of the research, which was put up on the website: *www.badanie.ankieta.pl* for the duration of the experiment. A computer system selected, by drawing of lots, a several tens of thousands of mail addresses (from the so-called mailing list), to which information on the opportunity to participate in the research, including a link to the research, was sent. The respondents willing to participate in the research visited the indicated website and followed the instructions. They were informed that the research contributed to the development of Polish science, concerned the perception of people, and had been prepared by the personnel of the Faculty of Psychology at the University of Warsaw. Respondents were encouraged to participate in the research with the possibility of being provided with collective feedback.

In total, over 2000 persons participated in the research, yet only 972 persons met the eligibility criteria for being included in analyses. A considerable proportion of respondents discontinued their participation in the research even before having completed the first task, or at a stage where it was not possible to collect sufficient data for performing analyses. The time of the beginning and end of the research was controlled using a filter rejecting persons filling in the questionnaire too quickly (in less than five minutes, which is only enough for mechanical checking of randomly selected answers) and too slowly (in more than 40 minutes – such an amount of time creates a risk of the occurrence of a pause between completing particular tasks, and thus a significant disturbance to the manipulation effect). The average amount of time for completing the task was 20–25 minutes.

Ultimately, the group of respondents consisted of 972 persons, including 603 women and 293 men (in 76 cases, no data on the participants' sex was available). The respondents' age fell within the range of 10–77 years, with the average age of 26 years. The sample included 136 persons aged below 18 years.

The course of research

The research was individualized, and basically consisted of 3 parts. Parts 1 and 2 required that points be distributed between the self and the person as seen in photographs in a situation where the person concerned displayed, on one occasion, a neutral expression on his face, and on another occasion the same person displayed one of the basic emotions. The 3rd part involved making assessments, using a scale, of the person in the photographs, depending on the facial emotional expression being displayed by that person, and concluded with filling in the demographics section.

Deliberately, the respondents had no opportunity to return to the previously displayed screens (yet they could return to the instructions). Making use of a computer and a specially developed application for the purposes of the research is, in this case, very helpful, since the researcher can acquire the certainty that the amounts of time spent by respondents for viewing the photographs were not too long or too diverse. Certainly, due to the Internet-based access to the research, there is a possibility that the same person may be willing to participate in the research many times. In practice, however, it should be assumed that during the subsequent visit to the research website, that person will not complete the entire set of tasks but only view the screens being of interest to him/her, and thus will not be included in analyses.

In the first part of the research, all participants were shown (in a rotational order) photographs of the same man who, on one occasion, displayed a neutral facial expression, and on another occasion displayed one of two basic emotions (happiness, anger). The respondents were therefore assigned (randomly) to one of 4 subgroups which differed in both the order of exposure of facial expressions, and the type of a basic emotion being presented:

- 1st subgroup of respondents: 1. exposure of a neutral facial expression 2. exposure of a facial expression of happiness,
- 2nd subgroup of respondents: 1. exposure of a neutral facial expression 2. exposure of a facial expression of anger,
- 3rd subgroup of respondents: 1. exposure of a facial expression of happiness 2. exposure of a neutral facial expression,
- 4th subgroup of respondents: 1. exposure of a facial expression of anger 2. exposure of a neutral facial expression.

In order to intensify the impact of a facial expression on the receiver of the message, both the exposure of a neutral facial expression and the specific basic emotion were presented three times. The photographs showing the face displaying one specific emotional modality only differed in the borders (which prevented the viewer's impression that the same photograph was being viewed; at the same time, a pilot study using the presented material indicated no differentiating effect of the type of photograph border on either the reception of the modality of the emotion being presented or the perception of the person in the photograph). The respondents viewed each photograph for approx. 4 seconds following the previously given instruction that they do not need to remember any details but only take a look at the photograph.

After having viewed a series of 3 photographs, the respondents distributed points (being important to both parties) between the self and the person as seen a moment ago in the pictures, using a modified version of the Ring Measure of Social Values. In this way, the respondents' social value orientations were determined, which were under the influence of the observed partner's facial expression in the situation of social interdependence.

Subsequently, the respondents were to assess (during a pause) the attractiveness of 3 advertisements, using a scale. All the advertisements were in a form of photo-

graphs of products, and included a written content either recommending a given commodity or informing of a certain campaign. Little known advertisements showing no human faces had been deliberately selected, so that their contents did not interfere with the facial expressions used in the experimental manipulation.

The next part involved the presentation of photographs of the face of the man known from the first part of the research, with the facial emotional expressions being appropriately changed (depending on the subgroup). The instruction preceding the presentation of photographs, and the duration of the exposure, were the same as in the first part. After that, another measurement of social value orientations was carried out using the same tool as in the first part of the research (a modified Ring Measure of Social Values).

In the third part of the research, the respondents were requested that they recall, in the first place, the photographs of the man as presented at the very beginning of the research, and assess it on the scale in accordance with the first impression they had had of him; subsequently, they were requested that they recall the photographs of the same man as shown to them in the second part of the research, and express their impression of him on the rating scale. In order to verify the accuracy of the reception of the material as used in the experimental manipulation, the respondents were asked about what type of facial emotional expressions had been presented in both parts of the research. The research concluded with the demographics section and acknowledgements for having participated, along with the information on the possibility of receiving the feedback on the research and relevant results.

Hypotheses

Hypothesis I. Indicators of the perception of a person displaying various facial expressions are varied depending on the type of general (*orientation on the self/the others*) and specific (the dominant category) indicators of social value orientations.

I.I The cooperative orientation coincides with high levels of trust in, and positive assessments of a person displaying a facial expression of happiness.

Hypothesis II. The type of a facial expression of a basic emotion (happiness vs anger) being presented affects both the diversity of the indicators *orientation on the self* and *orientation on the others,* and the distribution of the groups of the *dominant social value orientations* before and after the experimental manipulation.

II.I The impact of a facial expression of happiness results in an increase (in relation to the impact of the neutral expression) in both the indicator *orientation on the others* and the number of changes in orientations from proself to prosocial ones (cooperation and/or altruism), while the impact of a facial expression of anger results in a decrease (in relation to the impact of the neutral expression) in both the indicator *orientation on the others* and the number of changes in orientations from proself to prosocial ones (cooperation and/or altruism).

Presentation of results

Results of the Kolmogorov–Smirnov test indicated that the distribution of both the variables being the general indicators of social value orientations (*orientation on the self* vs *orientation on the others*) and the perception of persons and emotions was significantly different ($p < 0.001$) from a normal distribution. In view of the above, in order to achieve the statistical correctness, appropriate non-parametric tests were mainly used for analyses, although in verifying certain hypotheses analyses were carried out using also parametric tests (e.g. ANOVA), which, however, had a status of exploratory analyses or analyses further confirming the hypotheses being verified, in order to achieve a greater correctness using mainly non-parametric tests.

The manipulation stimulus in each group of the dominant social value orientations was interpreted in accordance with the assumptions, and thus rendered the manipulation effective (Wilcoxon test; $p< 0.05$).

All expectations as articulated in both hypotheses concerning the research were, at least partially, confirmed.

Results of analyses for hypothesis I: on the diversity of indicators of the perception of a person displaying various facial expressions, depending on the type of general (*orientation on the self/ the others*) and specific (the dominant category) indicators of social value orientations.

Among the descriptions of traits as used for the assessment of the person in the photograph, 2 phrases may be distinguished that describe the traits being more negative than positive ("willing to compete" and "prone to have his own interest in mind"), while the remaining 9 phrases describe the positive traits, including one concerning the issue of trust ("trustworthy").

Hypothesis I was confirmed by the results indicating the diversity of the perception of a person displaying various facial expressions (especially neutrality and happiness), depending on the type of both (general and specific) indicators of social value orientations.

A correlational study on the *orientation on the self* and *orientation on the others* was carried out in relation to the assessments of traits of the person displaying facial expressions of neutrality, happiness and anger in the photographs. The obtained results mostly indicate a very weak or weak correlation; however, the absolute values of the correlation coefficients reach, at a high *N* value, the threshold values which allow recognizing the relationship between the variables as being significantly greater than zero.

Orientation on the others coincided with positive assessments in relation to the person displaying on his face both the happy and neutral expressions (Table 1).

Table 1. Relationships between the *orientation on the others* and the assessments in relation to a person with a smiling face (manipulation +) and a neutral face (Spearman's rank correlation)

	Orientation on the others (manipulation +)	Orientation on the others (neutral face)
Willing to cooperate	0.171***	0.066*
Willing to compete	-	-
Prone to have his own interest in mind	-0.135***	-0.083*
Willing to help	0.110**	-
Willing to distribute evenly	0.123**	0.100**
Able	0.110**	-
Wise	0.124**	-
Competent	0.105**	-
Meets his promises	0.124**	-
Predictable	-	-
Trustworthy	0.185***	0.076*

* - significance at the level of 0.05 ** - significance at the level of 0.01 *** - significance at the level of 0.001

Source: Own research.

Cooperators and altruists (a high degree of the *orientation on the others*) assessed the person in the photograph (both smiling and displaying a neutral facial expression) more positively, and put more trust in him, than individualists and competitors did (Table 2 and 3).

Table 2. Comparison of the categories of social value orientations as determined before the manipulation in terms of the assessment of a person displaying the expression of happiness (ANOVA)

		An average value in the group before the manipulation				F-statistics	Significance of the F-test
		Competition	Individualism	Cooperation	Altruism		
SMILE	Willing to cooperate	3.78	3.96	4.19	4.12	4.327	0.005
	Competent	3.33	3.38	3.61	3.56	2.771	0.041
	Meets his promises	3.51	3.4	3.68	3.68	3.115	0.026
	Trustworthy	3.09	3.12	3.44	3.59	4.269	0.005

Source: Own research.

Under the conditions of a positive manipulation, the highest ratings in relation to the indicated (as significantly differentiating) positive traits were those of cooperators and altruists; moreover, further *post-hoc* analyses indicated that, generally, altruists and cooperators assessed, in terms of the traits as indicated, the person displaying a smile on his face significantly ($p < 0.05$) more positively than competitors and individualists did, and also put more trust in that person.

Table 3. Comparison of the categories of social value orientations as determined before the manipulation in terms of the assessment of a person displaying the neutral expression (ANOVA)

		An average value in the group before the manipulation				F-statistics	Significance of the F-test
		Competition	Individualism	Cooperation	Altruism		
NEUTRAL FACE	Willing to cooperate	3.4	3.56	3.69	3.82	3.303	0.020
	Willing to help	3.13	3.27	3.43	3.31	2.557	0.054
	Willing to distribute evenly	2.62	2.86	3.03	3.04	5.396	0.001
	Meets his promises	3.12	3.21	3.38	3.13	2.957	0.032
	Trustworthy	2.83	2.82	3.09	3.09	3.541	0.014

Source: Own research.

In the division into categories of orientations, in all cases (except for one case concerning individualists), the highest ratings in relation to the traits indicated (as differentiating significantly or, in one case, at the level of a statistical tendency) were those of altruists or cooperators. Further *post-hoc* analyses indicated that, generally, altruists and cooperators assessed, in terms of the traits as indicated, the person displaying a neutral expression on his face significantly ($p < 0.05$) more positively than competitors and individualists did, and also put more trust in that person. An exception was the distribution of assessments in terms of the trait "meets his promises", where the significantly highest rating values, as compared to the other groups, were those of cooperators, with no differences being recorded between the assessments made by altruists, competitors and individualists.

Orientation on the self coincided with negative assessments, including the lack of trust, especially in relation to the person with the neutral expression on his face, and, to a lesser extent, in relation to the person displaying a happy expression (Table 4).

Table 4. Relationships between the *orientation on the self* and the assessments in relation to a person with a neutral face and an expression of happiness (manipulation +) (Spearman's rank correlation)

	Orientation on the self (neutral face)	Orientation on the self (manipulation +)
Willing to cooperate	-0.090**	-
Willing to compete	0.083*	-
Prone to have his own interest in mind	0.083**	-
Willing to help	-0.093**	-
Willing to distribute evenly	-0.138***	-0.129**
Able	-0.081*	-0.088*
Wise	-0.095**	-
Competent	-0.082*	-0.117**
Meets his promises	-0.102**	-0.106**
Predictable	-0.076*	-
Trustworthy	-0.126***	-0.113**

* - significance at the level of 0.05 ** - significance at the level of 0.01 *** - significance at the level of 0.001

Source: Own research.

On the other hand, individualists and competitors (a high degree of *orientation on the self* with negative *orientation on the others*) assessed the person in the photograph less positively, and put in him less trust, than altruists and cooperators did.

Orientation on the others (as opposed to the *orientation on the self*) also coincided with the perception of the selected positive traits in the person displaying an expression of anger on the face (Table 5).

Table 5. Relationships between the *orientation on the others* and the assessments in relation to a person with an expression of anger on the face (manipulation –) (Spearman's rank correlation)

	Orientation on the others
Willing to cooperate	0.109
Willing to compete	-0.049
Prone to have his own interest in mind	-0.138*
Willing to help	0.125*
Willing to distribute evenly	0.136*

* - significance at the level of 0.05 ** - significance at the level of 0.01 *** - significance at the level of 0.001

Source: Own research.

In general, prosocials assessed significantly more positively (and put more trust in) a person with a smiling and neutral expression on the face, than those oriented proself did.

As a result of a (+) manipulation, in all categories of the dominant social value orientations, there was (even if varied) an increase in the positive perception of the person in the photograph. To put it more specifically: in the group of competitors, there was a significant increase in the indicator of 5 positive assessments (out of 9 possible ones); in the group of individualists, there was a significant increase in the indicator of 6 positive assessments; in the group of cooperators, there was an increase in the indicator of 8 positive assessments; and in the group of altruists, there was an increase in the indicator of 4 positive assessments. Moreover, in each group, significant decreases in the indicators of negative assessments occurred as a result of manipulation (+): in the groups of individualists and cooperators (when assessing the smiling face), there was a decrease (in relation to the assessment of the neutral face) in the indicators of 2 negative assessments (out of 2 possible ones), while in the group of altruists and competitors, there was a decrease in the indicator of 1 negative assessment (in the group of competitors, at a level of the statistical tendency).

On the other hand, as a result of a (–) manipulation, in all categories of the dominant social value orientations, there was a decrease in the positive perception of the person in the photograph. The smallest diversity in the assessments was observed among the representatives of the category of competitive orientation (significant diversity in relation to 3 traits) and altruistic orientation (changes only at a level of the statistical tendency). In the group of individualists, there was a significant decrease in the indicators of 8 positive traits (out of 9 possible ones), and a significant increase in the indicator of 1 negative assessment (out of 2 possible ones). In the group of cooperators, there was a significant decrease in the indicators of 6 positive traits (out of 9 possible ones), and a significant increase in the indicator of 1 negative assessment (out of 2 possible ones).

It is worth noting that in relation to the research being described, an analysis of standardized data using parametric tests confirmed the results as obtained when using non-parametric tests.

Hypothesis I.I, which concerned the link between the cooperative orientation and a high level of trust in, and positive assessments of a person displaying a facial expression of happiness, was also confirmed.

Cooperators positively assessed the person with a smile on his face – an average rating for the positive traits exceeded 3.6, and, as regards the expectation of cooperation, it amounted to 4.19 (the highest results as compared to the other groups). It was also only cooperators (out of the other groups) who, while comparing the person with a neutral face and the person with a smiling face, assessed significantly (and in one case, at a level of the statistical tendency) more positively the happy face in relation to all 11 descriptions of traits as mentioned in the research ($p = 0.000$).

The average value for trust in relation to the smiling face was, in the group of cooperators (similarly to the group of altruists), significantly higher than that in the other groups, and amounted to 3.44. For comparison, a significantly lower average value for trust in relation to the neutral face amounted, in the group of cooperators,

to 3.14 (W = –3.616; p = 0.000), and the trust in the face expressing anger maintained at a level of 2.59. In turn, the correlation coefficient for the *orientation on the others* with the indicator of trust in relation to the smiling person turned out to be the highest (as compared to the other correlation coefficients in that group) and significant at a level of $p = 0.001$, which seems to be translated into the picture of cooperators (being characterized by a high degree of the *orientation on the others*).

Results of analyses for hypothesis II: on the impact of the manipulation (positive vs negative) on the change in the general indicators of orientations and the distribution of groups of the dominant social value orientations.

As regards the predictions as included in hypothesis II, there was a diversity of the indicators of the *orientation on the others* (no diversity of the *orientation on the self* was revealed) and the distribution of groups of the dominant social value orientations before and after the experimental manipulation, depending on the type of a basic facial emotional expression being presented (happiness vs anger). As for the negative manipulation, there was a more than two-fold decrease in the orientation on the others than for the positive manipulation.

The directional predictions as articulated in hypothesis II.I were confirmed in relation to the negative manipulation which was followed by a decrease in the *orientation on the others* (Table 6) and a decrease (at a level of the category of orientations) in the total number of altruists ($Chi^2(9) = 101.703$ at $p < 0.001$; Cramér's V = 0.358 at $p < 0.001$), and partially (since only at a level of the category of orientations) in relation to the positive manipulation which was followed by the observed general increase in the number of altruists ($Chi^2(9) = 341.218$ at $p < 0.001$; Cramér's V = 0.436 at $p < 0.001$).

Table 6. Comparison of the degree of the *orientation on the others* between the first and second measurement[3] in the case of the negative (–) manipulation (Wilcoxon test)

	Measurement 1		**Measurement 2**		**W-statistics**	**Significance of the W-test**
	Average value	Standard deviation	Average value	Standard deviation		
Orientation on the others	19.35	35.31	13.75	37.22	-2.975	0.003

Source: Own research.

A supplement to the results for hypothesis II.I, concerning the changes within the category of social value orientations, was the results indicating significant diversity of the transfers of cooperators to the group of altruists, depending on the type

3 The intra-object factors (the type of a facial expression being displayed – a neutral face vs face expressing a basic emotion) were measured in a randomized manner; however, prior to the analyses, they were reorganized to the following pattern:
1st measurement = exposure of a neutral face
2nd measurement = exposure of a face expressing a basic emotion (depending on the manipulation group: happiness vs anger).

of manipulation. In the case of the (+) manipulation, significantly more transfers of cooperators to the group of altruists were observed than with the (–) manipulation, $Chi^2(1) = 4.673$ at $p < 0.05$. On the other hand, the results being significant at a level of the statistical tendency indicated that the (+) manipulation resulted in more cooperators and altruists than the (–) manipulation, and the (–) manipulation resulted in more individualists than the (+) manipulation.

The other diversities as expected according to hypothesis II, the direction of which was not foreseen, occurred at a level of the statistical tendency and indicated that in the case of the positive manipulation, the indicator of the *orientation on the self* decreased (in relation to the values from the first measurement), and increased in the case of the negative manipulation.

Analysis of the changes in the general indicators of orientations under the influence of both types of manipulation, as carried out within each of the four groups of the dominant social value orientations (which, in such a form, was not the subject of hypothesis II but seems to be an interesting detailed expansion thereof), demonstrated that individualists (in the case of the positive manipulation) and cooperators (in the case of the negative manipulation) operated in accordance with the predictions as articulated in hypothesis II.I in terms of the impact of the type of manipulation on the change in the *orientation on the others* (Table 7 and 8).

Table 7. Comparison of the indicators of the *orientation on the others* between the 1st and 2nd measurement in the case of the positive (+) manipulation in the group of persons with the individualistic orientation being dominant (Wilcoxon test)

	Measurement 1		Measurement 2		W-statistics	Significance of the W-test
	Average value	Standard deviation	Average value	Standard deviation		
Orientation on the others	0.41	11.63	0.53	21.88	-0.127	0.014

Source: Own research.

In the case of the (+) manipulation, the indicator of the *orientation on the others* significantly increased in the group of individualists.

Table 8. Comparison of the indicators of the *orientation on the others* between the 1st and 2nd measurement in the case of the negative (–) manipulation in the group of persons with the cooperative orientation being dominant (Wilcoxon test)

	Measurement 1		Measurement 2		W-statistics	Significance of the W-test
	Average value	Standard deviation	Average value	Standard deviation		
Orientation on the others	51	21.57	37.5	32.2	-4.244	0.000

Source: Own research.

In the group of cooperators, in the case of the (–) manipulation, the indicator of the *orientation on the others* decreased significantly in the second measurement (in relation to the first measurement).

Discussion of the results, and implications for further researches

The research indicated a link between social value orientations and the assessment of an interaction partner depending on his/her facial emotional expression. Generally speaking, it can be concluded that the cooperative orientation as well as (when expanding the scope to include altruists) the prosocial orientation were associated with a greater trust and more positive assessment of other people (including those with a negative emotional expression) than it was observed in the case of the proself orientation. The results demonstrating this positive attitude of prosocials indirectly correspond to the previous empirical findings which indicate that prosocials attach positive significance to the situation and outcomes of another person (Grzelak, 1988).

The results outlined a fairly consistent picture of persons with the prosocial orientation (cooperators and altruists) as opposite to the picture of those oriented proself (individualists and competitors).

Proselfs assessed positively and put trust in not only a smiling person (whom they considered to be competent and willing to cooperate) but also a person displaying a neutral facial expression. Possibly, the prosocials, as opposed to those oriented proself, preferred to analyse an ambiguous expression in positive terms, and were thus able to have confidence in the person with a neutral facial expression. Prosocials, which by definition are characterised by a high degree of the *orientation on the others*, were also able to discern selected positive traits in a person with an angry face. The cooperators themselves tended to trust, and attribute the traits of "trustful" and "honest" to a person with a positive facial emotional expression, discern positive emotions in a facial expression showing a negative emotional state, and assess a person with a neutral expression on the face as the one to most certainly keep his promises, and trustworthy as well (as compared with the assessments in the other groups of orientations). In general, the cooperative orientation was associated with the tendency to trust everybody (regardless of the type of facial expression) and assess them (as compared with the non-cooperators' assessments) to be honest. Therefore, the cooperative orientation seemed to perform the role of spectacles allowing them to perceive other people as being more positive and put trust in them even where the emotional expression on their faces was ambiguous or negative.

The cooperators' tendency to perceive the surroundings in positive terms was also indicated by the results of own pilot studies (not described in this paper). One of such studies, as carried out on 168 persons, concerned the link between social value orientations and the perception of persons with a emotionally neutral facial expression (a modified version of a Kuhlman's study). It turned out that with an increase in the degree of the observers' cooperative orientation, the tendency to assess persons with a neutral facial expression as being friendly also increased (Pearson's $r = 0.247$; $p < 0.01$).

In turn, the results for the proself-oriented persons (competitors, individualists) showed them (as compared with the prosocials) as those less positively assessing, and putting less trust in persons with a neutral and happy facial expression. They tended to assess a person with an angry face as one having his/her own interest in mind.

The obtained results also provided evidence for the existence of the effect of a change in the social value orientation depending on the interaction partner's facial expression. In general, a negative expression triggered a definitely greater decrease in the orientation on the interaction partner (as compared with a positive expression), greater focus on the self (at a level of the statistical tendency) and, therefore, a decrease in the altruistic behaviour, while a positive expression on the partner's face triggered a (close to significance) decrease in the orientation on the self, and an increase in the prosocial behaviours. As for the group of altruists, the sign of the facial expression being observed differentiated the number of shifts between groups of social value orientations: in the case of a manipulation using a positive expression, the number of altruists increased, while a manipulation using anger resulted in a decrease in the number of altruists. The manipulation also significantly differentiated the number of transfers of cooperators to the group of altruists – a positive manipulation triggered more transfers of cooperators to the group of altruists than a manipulation using a negative expression.

While commenting on the methodology of research, it is worth noting that for the purpose of the experimental manipulation, the emotional expressions being most accurately recognized in researches as carried out by *Paul Ekman* and Wallace V. *Friesen* (1971), namely happiness and anger, were deliberately used, which lent maximum credence to the accurate recognition of the modalities of emotions by respondents. The choice of the expression of anger out of the negative emotions was additionally dictated by the reports that the sight of an angry face triggered an exceptionally strong emotional arousal (the so-called maximum amplitude when measuring the brain's action potential) (Lang, & Nelson, 1990, quoted from: Dolata, 2001). This is supposed to significantly increase the probability of the perceptible impact of a manipulation stimulus on the respondents. However, when planning future researches to continue the empirical exploration of the subject being raised in this paper, it is worth considering the introduction of manipulations using other modalities of the basic emotions as well.

A methodologically debatable issue is the fact that the respondents were shown a photograph of one man displaying various facial expressions. Such a situation has its advantages, since it allows one to compare reactions to particular facial expressions without the interference of various types of human faces. On the other hand, however, the choice of no less than a man's face may be considered as odd – the author of the research was influenced by the information that the positive expressions are predominant in women (as compared with men), and that women are classified in the group of the "weaker sex", which may result in a more frequent manifestation of cooperative behaviour towards women. Moreover, there are more cooperators among women than among men, and we tend to respond to cooperation with cooperation. However, one question which remains unanswered is whether or not the obtained relationships between the perception of facial emotional

expressions and social value orientations would have differed significantly if the model had been a woman?

In addition to the sex of a person displaying particular facial expressions, another important issue may prove to be the very appearance (physical elements) of that person's face. Psychoneuroendocrinology, physiology and evolutionary psychology provide arguments for the existence of universal (in terms of the species), stable physical characteristics of a person's face, which communicate that person's social value orientation (Fehr, Kosfeld, Heinrichs, Zak, & Fischbacher, 2005; Buss, 2001; Solomon, Berg, Martin, & Villee, 1996). Therefore, one can speak of the parallel shaping of both the psyche and the body by the same physiological factor, and thus of the existence of model faces being more feminine and "estrogenic", which reveal the cooperative tendencies, and of model faces being more masculine and "testosteronic", which are indicative of a given person's competitive tendencies. Therefore, when selecting a person to present expressions in further researches, it is worth ensuring that the person's face is not representative of an extreme type. The most general morphopsychological analysis of the face of a man being presented in own researches classifies it (with certain exceptions) as being of the expansive, or open, type, with the outline of the face being wide, thick, solid, and compact; the receptors (eyes, mouth, nose) being large, wide, and thick; and all the three levels of the face (mental, emotional and instinctive) being large and well-developed (Jones, Little, Boothroyd, DeBruine, Feinberg, Smith, Cornwell, Moore, & Perrett, 2005). The dominant characteristics of such a person include extroversion, expansiveness, openness, and optimism, as well as the tendency to "force oneself upon others" with a smile (Binet, 2003), which is crucial to the subject of the paper. Of course, each type of a face implies certain probable psychological characteristics. However, it is worth controlling how the face of a person displaying expressions may be perceived, due to the possible, dependent thereupon interpretation of the facial emotional expression being exposed.

Another methodologically important issue is to what degree a person displaying emotions is physically attractive to a participant of the research. Joseph Forgas (1987, quoted from: Dolata, 2001), carried out a research with the aim of determining how the physical attractiveness of a sender affects the perception of the expressions being emitted by him/her. With the severability of those two characteristics, attractive persons, similarly to individuals emitting positive expressions, are assessed to be better adjusted socially, more competent, responsible, valuable and, what is particularly interesting to us, trustworthy. If, therefore, a man as presented in own research seemed physically attractive to a proportion of the participants of the experiment, then, regardless of the type of a facial expression being displayed, they might have assessed him more positively. In turn, the research as carried out by Waldemar Frąckiewicz (2000) shows that the persons preferred for cooperation are those with facial features similar to those of one's mother, which, in the context of own research, may enhance the cooperative orientation towards a person resembling mother. Therefore, when planning further research concerning the link between an emotional expression and prosociality, it seems essential to control the variable of the respondent's assessment of physical attractiveness of a person displaying emotions.

Another important aspect is the nature of the facial emotional expression being presented i.e. whether it is posed or spontaneous. In the research, the first type was used intentionally since, particularly in a situation where a facial expression was to be an unambiguous manipulation stimulus, the researcher was keen on it being interpreted as accurately as possible. On the other hand, according to Emilia Dolata (2001), posed facial expressions are recognized very well, while the spontaneous ones are not. On the other hand, the author is aware of the questionable ecological validity of the material being in a form of static, posed photographs of facial expressions, and recognizes the legitimacy of planning researches with the use of techniques enhancing the naturalness of the expressions being presented by models (e.g. allowing one to encompass the dynamics of expression, being the key determining the intensity of an affect, and the truthfulness or falseness of an expression), or even arranging and analysing real situations involving an interaction of two persons. However, one needs to be aware, while implementing the above idea, that the range of stimuli affecting the observer of expressions will expand from exclusively facial expressions and include pantomimic expressions and the entire context of the situation, since in the everyday interactions with people, we draw conclusions about their emotions also using contextual factors, other than the facial expressions, which are found in other nonverbal behaviour (gestures, body movements, the direction of the look, acoustic information as contained in the speech, tone, and nonverbal vocalization), or what we know of a given person. Therefore, the use of static photographs of faces in own research significantly simplified the stage of operationalization of variables and analysis of the results, and allowed the drawing of very preliminary, general conclusions which, however – where one is willing to ponder on the perception of another human in situations of social interactions – undoubtedly need to be supplemented by more detailed researches also taking account of non-facial factors.

Expanding the context of own research may also move towards the additional controlling of variables having a significant impact on the perception of facial emotional expressions, and possibly being able to interact with the social value orientation of the observer of emotions. Examples of such factors include the personality traits associated with the ability to discern and understand emotions: openness to experience, conscientiousness, extroversion or neuroticism (Dolata, & Czerniawska, 2005). Various diseases also have a documented impact on the perception of facial expressions, e.g. depression (deficits in the recognition of happiness, with elevated indicators of the identification of sadness and disgust: Dolata, & Czerniawska, 2005); schizophrenia (difficulties in recognizing the expressions of, particularly, happy and neutral faces: Lane, 2003); social anxiety disorder (increased sensitivity to faces expressing anger, as opposed to happy and neutral ones: Mogg, & Philippot, 2004); ADHD (deficits in the recognition of facial expressions of anger and sadness: Pelc, Kornreich, Foisy, & Dan, 2006). It is worth specifying in the interview whether or not the respondents are under the influence of certain pharmacological agents affecting the processes of cognitive analysis of expressions. For example, antidepressants reduce the ability to identify facial expressions of anger and fear (opposite effects are observed after having taken amphetamines). Longer-term intake of alcohol (studies on alcoholics following detoxification) or diazepam leads to deficits in

the recognition of all facial emotional expressions (Dolata, & Czerniawska, 2005). As regards this issue, the mediation of the Internet in receiving the above data from respondents seems to give rise to certain difficulties. While identifying the personality traits being significant to the research involves asking for filling in an additional questionnaire, asking a question about possible taking of psychoactive substances may give rise to resistance in respondents to providing an answer, since Internet users are aware that anonymity on the Internet is illusory, and may tend to avoid situations in which they could consciously present themselves in a bad light.

As regards the very procedure of carrying out the research, its Internet-based nature has its advantages which encouraged the author to use exactly this form. Making use of the Internet allowed receiving, in a rather short time, results from nearly 1000 respondents, which lent maximum credence to establishing sufficiently large subgroups which were distinguished on the basis of the type of the dominant social value orientation. Moreover, extensive socio-demographic data was received, which will be used for other analyses in the field of research into social preferences. The issue of the reliability of the obtained results depended, to a large extent, on the control of respondents' diligence at the time of following the research procedure; this is why numerous filters were used for rejecting persons failing to comply with the specified criteria for the correctness of task completion (in total, over 2000 persons participated in the research, yet only 972 met the eligibility criteria for being included in the analysis). Therefore, employing an Internet-based method involves the need to reach a group of respondents being much larger than the expected, sufficiently numerous group. Due to the sense of anonymity being found on the Internet, which results in lower motivation for performing a given task in a diligent and complete manner (and because of the absence of a personal contact with the researcher), many respondents provide data which is eventually excluded from the analysis.

Therefore, when developing researches to be carried out via the Internet, it seems that the real challenge is to actually motivate the Internet users to genuinely engage in following instructions in a diligent manner, and, on the other hand, to develop more and more precise tools controlling the quality of the completion of a given task by a respondent. Financial incentives remain a debatable issue, and are not always feasible, if only because of the nature of the content being studied, and the psychological influence of such motivation on the answers being provided.

Another important issue is the opportunity to compare the data as collected during the Internet-based procedure with the data as obtained in researches on social value orientations carried out in a traditional manner (e.g. the pilot studies as mentioned in this paper). As regards the latter, there is biased selection at the stage of drawing of the sample, which often results in over-representation of a certain group, e.g. students, in a sample. Due to the nature of the study population, being differentiated between both forms of research, one must not usurp the right to describe the relationships as revealed in both researches as systematic trends. On the other hand, based on the obtained results concerning one issue, yet obtained during another research procedure, we have no reason to believe that the method of collecting the data affected the results as obtained. At no point during the research as described in the paper do the results contradict the results as obtained from the

previously conducted pilot studies, and due to the size of the sample in the Internet--based research, the subject can be approached in a more detailed manner.

Carrying out experimental researches via the Internet is convenient (for both the researcher and the respondent) and, undoubtedly, has good prospects. In the era of the permanent lack of time, the fact that the research reaches the respondent, and not vice versa, is not without significance. Moreover, the influence of the person carrying out an experiment and his/her expectations on the results being generated by a respondent is eliminated. The data is collected 24 hours a day and, at the same time, the costs of operating the laboratory (e.g. rooms, paper, personnel or equipment) are significantly reduced. However, a major problem is still the lack of control over the setting of the respondent (the need to eliminate distractions), and the risk that technologically advanced users get access to the protected subsites and thus expose the conditions of the experiment even prior the completion of the research. However, we are successfully leaning towards transferring researches to the Internet, while simultaneously developing increasingly sophisticated tools necessary for conducting research activity in the virtual world.

In conclusion – the empirical data as obtained in own research seems to provide another "building block" of a new piece of knowledge on the link between social value orientations and the perception of facial emotional expressions and, consequently, the perception of people, at the same time revealing a number of variables and areas which need to be watched with interest in order to be able to speak, more confidently and in a wider context, of the relationships between a facial expression and social preferences. Moreover, the obtained results definitely confirm the utility of the Internet for carrying out experimental psychological researches.

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Patients on the Web. Analysis of the activity of medical internet portal users. Methodological reflections after an online experiment

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Abstract

The aim of the research presented in the article was to analyse the activity of medical internet portal users initiated by positive, negative, and neutral stimuli. The content of the researchers' comments, i.e. the stimuli, was related to three issue areas:

1) communication: the attitude of doctors towards their patients, the way doctors treat their patients,
2) subjectivity: patients' self-reflection on the character of the relations with doctors and on the way that doctors treat their patients,
3) awareness of patients' rights: patients' knowledge of their rights, awareness of infringements of patients' rights – in the opinions of the patients, exercising of patients' rights to be awarded damages.

The research was conducted according to experimental research procedures. 20 medical internet portals were qualified as the research sample and randomly selected to be included in the experimental group (10) and the control group (10). Results of the analysis of the collected data suggest that neutral stimuli generated the highest number of user responses, and negative stimuli generated positive user responses more often than negative responses, which was contrary to the initial assumptions. The online experiment allowed for the collection of interesting data that serve to present the relationships between the activity of internet users and forum topics and the stimuli types.

Keywords*:* online experiment, randomisation, activity on the Web, stimulus, post-test.

Introduction

The internet is omnipresent in the life of the modern man. The internet community has reached 2.3 billion worldwide, and in Poland its number has exceeded 17 million (57%) (Malec, 2012, p. 24). As a result of the informatisation of societies more and more receivers of healthcare services desire and seek simpler access to healthcare and health-related knowledge and services on the internet. Looking for medical information and information about healthcare on the Web is common. Nearly 70% of Poles declare that they use the internet every day, and that they use it the most frequently when they require information about health, illness, and treatment (88%) (see: *Pacjenci w sieci* [Patients on the Web], 2012, *Serwisy o zdrowiu* [Internet websites about health], 2011, *Aktualne problemy i wydarzenia* [Current problems and events], 2011). Websites containing information about doctors and healthcare are the second most popular type: 73% (*Pacjenci w sieci*, 2012). Other sources, i.e. the press, television, family, and other people with similar problems are less popular. On the internet one can find over 800 Polish language websites on health, illness, and medicines. The number of websites and the activity of internet users prove that the interest in and the popularity of medical knowledge and the number of opportunities to express opinions on health-related subjects are increasing. That is why, among others, the issues discussed in the present article constitute the topic of the authors' scientific interest.

The issue area of the conducted experimental research is connected with one of the most important problems related to the activity of medical internet portal users, i.e. expressing opinion on the course of doctors appointments and evaluation of medical personnel's attitudes. The authors were interested in the influence of emotional comments of the researchers on the three following issue areas of the activity (intensity = quantity, scope, and type of posts) of medical internet portal users:

1) 1) Communication: the attitude of doctors towards their patients, the way doctors treat their patients,
2) 2) Subjectivity: patients' self-reflection on the character of the relations with doctors and on the way that doctors treat their patients,
3) 3) Awareness of patient's rights: patients' knowledge of their rights, awareness of infringements of patients' rights – in the opinions of the patients, exercising of patients' rights to be awarded damages.

Analysis of patient attitudes towards the above problems seems particularly interesting. That is because issues connected with the difficulties in patient-doctor relations are discussed increasingly often in reference sources (e.g. Gordon, 1999, pp. 106-125, pp.162-180; Barański, 2002b, pp. 162-167; Więckowska, 2005, pp. 259-266; Łaska-Formejster, 2002, pp. 150-177). Dissatisfaction, lack of satisfaction, and failure to meet patients' expectations have substantial influence on treatment and on how patients follow medical advice. Such problems may prolong recovery, raise doubts as to the competences of medical doctors, and increase the number of cases brought against doctors in connection with malpractice or unethical behaviour in relations with patients. The information published on the websites of The Polish Chamber of Physicians and Dentists (see: http://www.nil.org.pl/ struktura-nil/

naczelny -rzecznik- odpowiedzialnosci - zawodowej / sprawozdania), the Ministry of Health (see: http://www.mz.gov.pl/, www.mz/ index?mr=m5&ms=0&ml=pl&mi=0&mx=7&mt=0&my=0&ma=se), and Rzecznik Praw Pacjenta (Patients' Rights Advocate) (see: http://www.bpp.gov.pl/bip_sprawozdania.html) leads to the conclusion that the number of complaints related to the structure and organisation of the healthcare system in Poland as well as, or perhaps the most frequently, doctors' unethical conduct in relations with patients or malpractice is growing rapidly. Patient awareness is increasing, and because of the medical knowledge that they receive through mass media the patients expect to participate in the treatment process more actively. During doctors' interviews patients often make suggestions based on media information and new findings in medicine. Patients closely observe the healthcare services market and notice certain tendencies, such as the contrary interests of certain parties; they expect healthcare services of increasingly higher quality, and more and more often they demand that their rights be respected. They take certain actions, such as sharing their experiences, opinions, and assessments: on the internet, among others.

This activity is aimed at initiating changes that medical personnel should also take into consideration, because most patients still believe that money is more important for doctors than the good of the patient (Gordon, 1999, p. 19). Patients tend to complain that doctors are in a hurry, that interviews are too short to give a diagnosis, and that doctors are not empathetic. Yet, both sides of these relations could benefit from more empathy, because it could allow for better mutual understanding and trust. Doctors could become more kind and caring, and they could analyse a patient's condition holistically as well as understanding a patient's needs better. The patients, in turn, may benefit from such an interaction because they may feel free to discuss their feelings, ailments, and doubts. Empathy allows patients to be subjects in the relationship: they become "human beings" instead of cases. Empathy allows for the establishment of a relationship in which the good of the patient is the ultimate goal. Empathetic doctors are sensitive, reliable, and charitable; they use language that can be easily understood by the patients and they bring hope of recovery (Dolińska-Zygmunt, 2001, pp. 283-289). It has been proven repeatedly that the very interaction between a doctor and a patient may in and of itself have beneficial therapeutic influence. Doctors themselves, with their positive character traits, can be an effective cure. Pleasant atmosphere in a surgery facilitates open discussion of patients' problems, which makes it easier for doctors to give a diagnosis and select proper treatment (Sokołowska, 1986, p. 91). The importance of doctor-patient interaction and the establishment of proper relations (taking into account their subjectivity-connected context and the respecting of rights) is crucial in diagnosis as well as in the process of treatment, which is why it is fully justified to investigate patients opinions on this subject that are already being expressed on the internet. That is even more so because internet activity is increasingly more popular among patients (see: *Serwisy o zdrowiu*, 2011; *Aktualne problemy i wydarzenia*, 2011). The fact that over 80% of internet users look for medical information indicates that the interest in and the need for such knowledge is growing. The popularity of medical internet portals and the need to share knowledge, opinions, and assessments on medical internet

forums proves the current importance of the issues of improper doctor-patient interactions, and of the failure to respect the fundamental rights of patients to receive comprehensive and comprehensible information on their medical condition, alternative treatments, etc.

That is why an online experiment is the most adequate method to collect the data sought by researchers: the data allowing for the analysis of the patients' attitudes towards doctors developed on the basis of the patients' activity on medical internet portals.

Methodological assumptions of the research

As it has been mentioned before, the main question of the conducted experimental research was: what influence do researchers' emotional comments on three issue areas: communication, subjectivity, and awareness of patients' rights have on the activity of medical internet portal users?

The aim of the research was to discern the relationships between the researchers' emotional comments and the opinions of medical internet portal users and the length of the discussions initiated by the comments. In this context, activity is understood as posting in a particular forum topic and the length of the discussion in a particular group. Willingness to participate in discussions and the way in which the opinions on particular subjects articulated were analysed.

The detailed questions are presented below, along with their division into the methodological and the substantive ones. Methodological questions were related to the nature of experimental research conducted online, and the substantive ones to the differences in the activity of patients on medical internet forums in the comparative groups in the context of the above issues, initiated by the particular stimuli.

The following questions were qualified as methodological:

1) What can a researcher do to ensure representativeness of the results of online research?
2) Is it attainable – and if so, how – to control the experimental environment and ensure a proper reception of the stimuli, i.e. the reception intended by the researchers?
3) How do the stimuli of a particular emotional charge (positive, negative, or neutral) influence the activity of forum users?
    a) How many posts were there in the topic started by the researchers? If there were none, why?
    b) How does a post by a new, unknown user influence the course of the experiment?
    c) Who reacts to a researchers' comments? Is it only the most active forum users? If so, why do other users fail to participate in the research?
    d) What influence do radical and emotional comments on a particular topic have on the discussion and the opinions of other forum users?
    e) Does the entire course of the discussion influence the relations between users? If so, how?

f) How does the discussion end? Is the ending closed or open?

4) Is there a difference in the time of the influence of the stimuli of various emotional charges (a negative and a positive comment)? If so, what is the difference?
5) Is it feasible to evaluate the honesty of users' posts? If so, how?
6) Can the researcher decrease the number of users discontinuing their participation in the experiment? If so, how?
7) How can the researcher address the doubts as to the ethical character of the experiment without informing the participants about the research?
8) What factor interferes the most with the present research?

Furthermore, the researchers found it interesting to attempt to answer the substantive questions below:

1) How many negative, positive, and neutral posts were there in a particular issue area before the stimulus was introduced?
2) How many posts initiated by the stimuli were there on a particular forum in a given issue area?
3) In which of the issue areas were the users of medical internet portals the most active?
4) Are there any differences between the posts of the users in the experimental and the control group? If so, what are they?

The main hypothesis verified in the course of the research was: ***The more negative the beginning of a discussion (the researchers' post), the higher the number of negative posts by medical portal users and the longer and more comprehensive and substantive the discussion on a given forum***.

The above hypothesis was formulated on the basis of the researchers' experience gained by observation of the activity of internet portal users. A certain regularity has been observed: negative and controversial posts inspire the users of forums and websites to be more active, and to post more expressive comments.

The authors of the research developed a plan of the online experiment. Simple randomisation was carried out with the use of a random numbers table. The forums qualified for the research (20) were divided into the experimental (10) and the control (10) group. It needs to be noted that the experimental and control conditions applied to the selected websites, and not to the particular, registered users. The experimental and the control group were subsequently divided into the three issue areas described above. Comments related to the three areas (stimuli) were posted in the experimental and in the control group. In the experimental group, two types of stimuli in the form of negative and positive posts were introduced, i.e. 5 positive stimuli and 5 negative stimuli. In the control group, 10 neutral stimuli were used. Altogether, the researchers posted 20 comments in both groups. The research participants in the experimental group were not informed about the experiment. The users of the forums included in the control group, however, were made aware of their participation. They were asked to express their opinion on a given issue area within the subject matter of a given medical internet forum.

Description of the research sample

The research sample included 20 medical internet portals selected by the researchers. The forums meeting the following criteria were qualified for the experiment: the numbers of registered users and posts had to be high. Also the "timeliness" of a forum was taken into account during the selection. The topics of internet forums on which the experimental research was conducted are presented below, in Table 1.

Table 1. Topics on the portals qualified for research

Portal number	Portal type
00	Disabled persons
01	Multiple sclerosis
02	Wilson's disease
03	Gynaecology and obstetrics
04	Cancer
05	Mental illness, psychotherapy
06	Gynaecology
07	Stomatology
08	Eating disorders
09	Allergies
10	Neurological disorders
11	Diseases of the lungs
12	Pregnancy, conception
13	Pregnancy, conception, adoption
14	Cluster headache
15	Dermatology
16	Heart and circulatory system diseases
17	Psoriasis
18	Forum for people undergoing dialysis and after kidney transplants
19	Ophthalmology

Source: Author's research.

Before posting the particular stimuli on the selected forums, the websites were first characterised. The following data were analysed: structure of the portal, type of patients' activity, type of information available on the forums (related to doctors, treatment, illness, or other data), patients' complaints, number of posts and number of registered users.

Analysis of the structure of the selected 20 portals showed that they were well--organised. The forums were divided into sections dedicated to particular forms of illness or problems that the patients had, depending on the general forum subject. However, the structure of some of the portals selected for research was disorganised and chaotic: the websites were difficult to navigate and finding information was troublesome. Some of the forums were of a broad scope, and some were only concerned with narrow issue areas.

It needs to be emphasised that the users of most of the forums were very active, typically in providing mutual support in illness and support for the families of the ill. The forums played a therapeutic role. What is more, there were expert advice topics on numerous forums. Experts, as well as the patients themselves, would provide valuable advice on the treatment of a given illness and ways of coping with everyday problems.

The types of information found on the forums were also analysed. Patients exchanged information about good medical doctors; the doctors that could help them combat their illness or improve their quality of life. They would also seek information about reliable surgeries. Furthermore, they exchanged information about treatment methods, medicines and their side effects, as well as the treatment that the patients had undergone in the past. On some of the portals there was legal advice to be found on how to look for help when a doctor violates a patient's rights. It ought to be added that in a number of cases complaints about doctors' attitudes and the healthcare system were posted.

Taking into account the number of posts on a forum one could discern those ranging from a few thousand to tens of thousands (e.g. ophthalmology forum: 7,814 posts, see: http://www.forum.optyczny.pl/index.php; disability forum: 198,111 posts[4], see: http://www.ipon.pl/forum/). The number of users would also vary greatly. Most portals had up to 20 thousand users, however, some only had a few hundred (these were in the minority): this was influenced by the commonness of a disease (e.g. cluster headache forum: 388 users, see: http://forum.klasterowy.pl/; disability forum: 27,551 users[5], see: http://www.ipon.pl/forum/).

Description of the internet as a medium employed in social research

Modernity is characterised by, among others, rapid progress and development of new technologies. Modernisation and development of technology, including information technology, are omnipresent in the life of the modern man. Because of these changes the area of social research is altered, as well. It has become significantly broader. That is why researchers need not restrict themselves to analysis of material world phenomena: they can also investigate the phenomena in virtual reality. The internet provides such an opportunity. As researchers claim: "The internet is the most important carrier of change in the civilisation of the modern world [...]. Thanks to the internet the social environment and the social context of an individual are fundamentally changed. [...] The internet has become the fullest expression of postmodern, web-based information society" (Batorski, Marody, & Nowak, 2006, pp. 5, 18). Furthermore, it has been stated that the internet provides individuals with almost complete anonymity, which, in turn, results in easier communication with others and easy, honest self-expression (Batorski, Marody, & Nowak, 2006, p. 102). Additionally, the costs of research conducted online are lower, and it makes data collection faster (Gregor, & Stawiszyński, 2005, pp. 333-334).

4 Number of posts as of 16.08.2013.
5 Number of users as of 16.08.2013.

Taking into account the advantages and the opportunities of internet exploration, as well as the subject of the research, the authors of the present article have decided to conduct an online experiment. It needs to be noted that in this research the "natural environment" of the research participants, in the form of 20 medical portals, constituted an "online laboratory". No websites were created especially for the research. The research technique selected was site centric research, also termed server centric. Server/site centric research in an Opt-In[6] technique, in which only selected websites are analysed. The collected data allows for the introduction of various types of indicators, such as number of forum users, number and duration of visits to a website, average number of a user sessions: number of posts and frequency of posting. The indicators can then be employed to generate statistical tables presenting how frequently a particular website is accessed (Żmijewska – Jędrzejczyk, 2004, p. 244). Such types of indicators, among others, were used by the researchers during conceptualisation, realisation, and evaluation of the research.

When conducting online research one must not forget the rights of internet users. The users constitute a sample, just as in the case of traditional research. Therefore, one ought to bear in mind that voluntariness of participation, anonymity, and confidentiality need to be ensured. It is crucial that research subjects have the right to discontinue their participation at any stage, and that contact between them and the researcher is established in case of any doubts or misunderstandings (Żmijewska – Jędrzejczyk, 2004, p. 246). The authors of the present research complied with these remarks and requirements throughout the process of data collection and analysis.

Randomisation – random selection of research participants

Ensuring a random character of the research sample is essential. The researchers had to take into consideration certain uncontrolled variables that could not be eliminated, such as the time in which the experiment was conducted. It may influence the temperature of the environment, tensions on the Web, etc. (Braszczyński, 1992, p. 51). According to the methodological assumptions of experimental research, randomisation allowed for the random selection of 10 medical portals for the experimental and the control group, which equalled the influence of the independent variable (stimulus – researchers' comment) on the dependent variable (users' activity). In order to carry out the randomization a sample frame was developed: each forum was assigned a number 0 – 19. Computer-generated random number tables were used to determine whether a given forum was included in the experimental or the control group (see: Brzeziński, 2000, p. 49). A part of such a table was used in the described research. The table and the column were randomly selected. Reading from top to bottom, the numbers higher or equal to 0 and lower or equal to 19 were marked. Repeating numbers were omitted. As a result, the numbers 10, 08, 12, 04, 02, 19, 09, 13, 15, 16 allowed for the identification of the experimental group, and the remaining forums were included in the control group.

6 Opt-In – only the websites that apply to take part in the research and those selected by the researchers are investigated

Table 2. Division of the research sample into comparative groups

Portal number	Portal type	Portal number	Portal type
10	Neurological disorders	**00**	Disabled persons
08	Eating disorders	**01**	Multiple sclerosis
12	Pregnancy, conception	**03**	Gynaecology and obstetrics
04	Cancer	**05**	Mental illness, psychotherapy
02	Wilson's disease	**06**	Gynaecology
19	Ophthalmology	**07**	Stomatology
09	Allergies	**11**	Diseases of the lungs
13	Pregnancy, conception, adoption	**14**	Cluster headache
15	Dermatology	**17**	Psoriasis
16	Heart and circulatory system diseases	**18**	Forum for people undergoing dialysis and after kidney transplants

Source: Author's research.

In the experimental research a two-group frame with an experimental and a control group with post-tests in both groups was employed (see: Brzeziński, 2000, pp. 65-70). The authors concluded that conducting a pre-test was unnecessary, because the users' posts that they intended to stimulate were dependent on the particular types of questions and comments that had been posted on the portals. What is more, the initial analysis of the portals indicated that the numbers of opinions on the subjects of research interest were equal: in fact, there were no such opinions to be found. Carrying out a pre-test in the natural environment of the research participants (a medical portal for active, ill forum users is certainly an environment of this type) could allow them to realise the experimental character of the stimuli they were exposed to. Such awareness could significantly influence the reactions of the research participants (see: Sułek, 1979, p. 103).

The authors of the analysed posts were the people who had had previous experience posting on other medical forums as well as those for whom commenting on the researchers' post on the portals selected for the experiment was their first activity of this type. This served to confirm a regularity described in the results of psychological internet research: online discussion groups are created because of, among others, topography, i.e. the lack of a space to exchange thoughts and opinions, the topics on a given forum for people with certain traits, and equality of access, i.e. free participation in forum discussions (Konopka, 2006, p. 194).

At the beginning of the research the researchers became acquainted with the procedures as well as ethical rules and norms of online research. It needs to be added that the ethical rules of research conducted on the Web are not unambiguously defined. However, the experimenters closely observed certain defined ethical rules throughout the course of the experiment. Anonymity of research participants was one of the most important issues. In accordance with the rule that the internet users' pseudonyms are to be treated as their real surnames (Kozinets, 2012, p. 217) the

researchers ensured that the users were completely anonymous: the names under the particular posts were not used. Among the four levels of research participants' identity protection: lack of protection, minimum protection, medium protection, and maximum protection (see: Kozinets, 2012, pp. 219-221) the researchers chose to employ the medium level of identity protection in the described experiment. It is commonly considered a compromise. It consists of ensuring the confidentiality of the investigated group's identity by describing the group in general categories, without presenting detailed data that may disclose the respondents' identities (Kozinets, 2012, p. 220).

Results of the research experiment

According to the research procedure, the main research question was assigned detailed methodological and substantive questions. This part of the paper presents an analysis of the collected data pertaining to the methodological questions, i.e. the questions connected with the differences between the selected medical portals users' activity in the experimental and the control group after the introduction of the defined stimuli in the issue areas discerned by the researchers.

The results of the analysis of the collected data allow for the conclusion that the total number of posts answering the researchers' stimuli (positive, negative, and neutral) depends on the topics of the threads. Table 3 illustrates the statistical number of comments posted by the research participants.

Table 3. The number of positive and negative comments divided into three issue areas

	Number of positive comments	Number of negative comments	Total number of comments*
The first issue area	18	20	39
The second issue area	10	6	13
The third issue area	1	4	4

Source: Author's research.

* The numbers do not add up, because one post of a research participant could contain both negative and positive opinions, and some posts were unrelated to the issue areas of the research.

One can notice that the research participants would most frequently address the problems in the first issue area, related to doctor-patient communication and doctors' attitudes towards their patients (a total of 39 comments[7]). In reply to the stimuli (the posted comments) there were 18 positive comments and 20 negative opinions. The stimuli connected with the problems of the second issue area, related to subjectivity, i.e. the character of the relations and the way the doctors treat their patients, produced 10 positive comments and 6 negative messages (a total of 13 comments). The third issue area, pertaining to the awareness of patients' rights,

7 The numbers of comments do not add up, because one post of a research participant could contain both negative and positive opinions, and some posts were unrelated to the issue areas of the research.

initiated the lowest number of comments: 1 positive comment and 4 negative ones (a total of 4 comments).

The differences in the numbers of comments in the particular issue areas may arise from the fact that some of them play a more important role in the eyes of the patients, or the patients may have more experience and knowledge of certain issues. Communication between a medical doctor and a patient constitutes the basis of interaction and effectiveness of treatment (Mayerscough, & Ford, 200, pp. 14-18; Barański, 2002a, p.161). How doctors talk to their patients also provokes strong emotions in patients, because it may alleviate or increase anxiety (medical doctors' lack of communication skills is an issue that draws a lot of attention, for example, problems of doctor-patient communication are often discussed in the media). It may be assumed that the number of comments in the third issue area was the lowest, because the area is related to patients' rights, and the general level of awareness of these rights is low (see: *Prawa pacjenta* [Patients' rights], 2008; *Gotowość do zmian w służbie zdrowia* [Readiness for change in the healthcare system], 2010; *Wiedza o prawach pacjenta* [Awareness of patients' rights], 2001; *Łamanie praw pacjentów – mit czy rzeczywistość* [Infringement of patients' rights – myth or reality?], 1996).

In the context of methodological assumptions, the substantive and cognitive aspects of the data on the distribution of positive and negative comments between the particular issue areas and the experimental and the control group were of crucial importance. What requires additional explanation is that each user comment was either positive or negative and it was considered an expression of the users' attitude towards an issue area. The comments of medical forums users contained no neutral content. As can be seen in Table 4 below, the number of positive comments was higher in the control group (a total of 17 positive comments) compared to the experimental group (a total of 12 positive comments). It needs to be underlined that the number of negative comments was also higher in the control group (a total of 25 negative comments) compared to the experimental group (a total of 4 negative comments). On the basis of the above data it can be concluded that the research subjects were more willing to post when they were informed about their participation in the experiment (that is, the people in the control group). What one may find interesting and remarkable is that the numbers of positive and negative comments both equalled 29.

Table 4. The number of positive and negative comments in the experimental and the control group divided into three issue areas

	Number of comments – experimental group		**Number of comments – control group**	
	Positive	**Negative**	**Positive**	**Negative**
The first issue area	5	1	13	18
The second issue area	7	2	3	4
The third issue area	0	1	1	3

Source: Author's research.

Analysis of the data collected in the research experiment allowed for the verification of the hypothesis formulated during the conceptualisation stage: ***The more negative the beginning of a discussion (the researchers post), the higher the number of negative posts by the medical portal users and the longer and more comprehensive and substantive the discussion on a given forum***. On the basis of the collected data (see: Table 5) it can be concluded that the above hypothesis was not confirmed, because the negative researcher comments provoked more positive user posts (9). There were only 2 negative comments on negative researcher posts. A similar tendency was noticed in the case of positive stimuli posted on medical portals: in this case, there were slightly more positive (3) than negative (1) replies. The longest discussion ensued as a result of a neutral comment (43). Negative researcher comments led to 11 posts, and the positive ones to 4. Most of the positive replies of medical portal users to negative stimuli were therapeutic and consoling; the users would provide examples of "good" doctors. One explanation may be that the internet plays a specific role for those who seek help and support, who feel powerless and perhaps rejected by their close ones. The anonymity that they find on the Web allows them to freely discuss their problems and ask for help. Results of psychological research indicate that people are typically more willing to help those similar to them, in this case, people with similar ailments, illnesses, and problems. This facilitates the establishment of strong social relations with "online friends" (Wallace, 2001, pp. 260-262). That is why the specific character of a medical forum had substantial influence on the attitudes of its users, who would reply to negative comments with consolation, help, support, and attempts to present the described situation in a more favourable light. Negative researcher posts in topics other than medical ones could have provoked a different reaction.

Table 5. The number of different types of comments in response to particular types of stimuli

Type of stimuli	Number of stimuli	Type of comment		Length of discussion
		Positive	Negative	
Positive	**5**	3	1	4
Negative	**5**	9	2	11
Neutral	**10**	17	26	43

Source: Authors' research.

Methodological reflections after the research experiment

Methodological reflections inspired by the conducted online research experiment are presented below. When addressing the methodological questions formulated at the conceptualization stage, its authors also intended to share their reflections on the difficulties encountered in the course of the research.

Representativeness of online research is a problematic issue mainly due to the unfeasibility of defining the internet population. What is more, it remains unknown who replied to the researchers' posts, because this could have depended on a number of factors, such as the type of the question. All the researchers could do was

collect a satisfactory number of answers. The medical portals selected for the present research had a sufficiently high number of registered users and were in current use.

It was mainly technical and administrative problems that made it unattainable for the researchers to fully control the research environment and to ensure a proper reception of stimuli. In order to address any uncertainties or doubts that the forum users in the control group might have had the experimenters would provide quick and comprehensive answers. Respondents' questions were usually related to the topic of the research and the innovative method of data collection. In the experimental group, in turn, the researchers made an independent decision to post additional discussion stimuli in the threads in which the online patients would not post at all.

In 8 of the 20 analysed portals there were no replies to the stimuli posted by the researchers. On the forums where positive stimuli were posted there was no reaction on 4 forums; where negative stimuli were posted there was no reply from the users of 1 forum, and on the portals where the researchers posted neutral questions there was no reaction on 3 forums. To sum up, there was no reply on 5 forums in the experimental group and on 3 forums in the control group. It can, therefore, be concluded that stimuli in the form of negative researchers' comments would provoke users' replies and attract their attention more often. A question may be asked about the reasons for this lack of user reaction. We may only suppose that one of the reasons could be the mistrust of a new, "unknown" individual. One must bear in mind that the questions asked were quite personal. They were related to the users opinions, personal experiences of relations with doctors, and awareness of their rights in the context of healthcare services. Another reason could be the lack of knowledge and experience with a particular life problem, or the unwillingness to share personal experiences with others, especially "strangers". It was also possible that the users would "duck" the responsibility to answer the researchers' question, while assuming that others would, in fact, reply to it. It may also be assumed that the presence of a new person registered on the forum could have influenced the number of users' replies. Analysis of the results indicates that there were more comments on the researchers' posts in the control group, in which the authors did not hide their identities and would openly ask for answers to the questions they were interested in. The most active people of a particular forum were also the authors of the highest numbers of replies to researchers' posts. Perhaps these people wanted to reaffirm their positions as leaders of the groups, or maybe they aspired to such roles. It should also be emphasised that on most medical portals there are points awarded for each forum post, and exceeding a certain number of points resulted in the user gaining a title. What is interesting in this context and from the cognitive perspective is that despite the controversies connected with the addressed problems there were no radical comments in the analysed discussion threads. Each discussion initiated on a medical portal was calm and open. The researchers decided to conclude the data collection stage on the particular forums when there were no new replies for 7 days. No difference in the duration of the influence of negative and positive stimuli was observed.

In the clearly defined conditions of an online experiment it is difficult to control the number of participants quitting before the research is concluded. In the discus-

sed research the experimenters had no influence whatsoever on who comments on the posts, at what time, and whether the same person will take part in the same discussion again. In the case of incomplete, unclear respondents' answers the researcher sent public or private messages to the users, asking them to post again to complete the comment.

Most users' replies to the researchers' posts were long and comprehensive. The problem, in this case, is the honesty of the answers. The researchers assumed that mentioning personal experiences in a post was an indicator of honesty. The reaction of other participants in the discussion, who knew that particular "life" example, or who expressed their emotions in connection with the comment by, for example, showing sympathy (in the case of "bad" experiences) or jealousy (in the case of "good" experiences) was considered another indicator.

Ethics of the online research experiment are still a subject of discussion. In the present research the issues that could raise doubts as to its ethical character was the fact that the information about the research, the aim of the research, and the true identity of the authors of the posts (stimuli) in the experimental group were left undisclosed. In order to minimise the ethical problem the fact that the research was conducted as well as its aims can be published on a given medical portal after the data collection stage is concluded.

The factors of highest interference with the experiment were outside factors, independent of the experimenters and connected with the nature of the employed medium: the internet. These include: problems with logging on a given portal, repetition of logins, a relatively long time needed to receive a forum administrator's confirmation of registration, problems with starting a new forum thread. The advantages of conducting the experiment online certainly include the opportunity to reach a great number of people who can be included in the sample, and the perfect anonymity of the participants as well as the researchers.

The conducted research experiment allowed its authors to develop a classification of the difficulties encountered throughout its course. The first category contains the difficulties arising from the low level of control over the experiment environment. This includes technical problems connected with forum registration, visibility of a topic on w website, and the short-termed influence of the stimuli among the constant influx of new posts.

The second category contains the problems related to the motivation of the users to reply to posts. In the control group, the unwillingness of the users to react to the researchers' comments could have been related to the fact that they frequently receive survey questions from students. The unwillingness to answer could have also been the result of a lack of understanding of the aim and the meaning of the research. What is more, the "new" way of data collection could have made the patients used to surveys sceptical. It could have been that the ill would not discuss their personal issues on the forum, because while they were anonymous to the researchers, their identities were not confidential to other forum users. The forums on which the experiment was conducted were often a places of discussion for people who knew each other, which could have constituted a communication barrier, because posting in the research threads might have been perceived as potentially harmful

to somebody's image. On the other hand, it was possible that the users sent private messages on the topic of the research, which is also disadvantageous to the research experiment. Cyber space presented no difficulties in the communication between the researchers and the respondents. The communication was fluent. In the experimental group, the number of user posts could have been influenced by the aforementioned mistrust of new users ("strangers") or placing the responsibility to respond on other people. On one of the forums there was a problem related to the negative researchers' comments: there were certain agreed upon, unwritten rules not to complain or "grudge" in public. That is why the lack of replies resulted from the internal rules of the forum and its specific profile. In the case of positive researchers' comments we encountered the "Facebook syndrome": the researchers' comment received 219 "likes" on the social networking site, which was understood as a positive reaction to the stimulus.

The voluntary participation and the protection of the identities of research subjects constitute important rules of online research. The same rules apply to experimental research. That is why online research of this type does not put as much pressure on possible participants as that in "real life" (Siuda, 2009, p. 159), however, this research is also not free from ethical issues. The third category of difficulties includes all doubts of ethical nature, such as failure to supply the respondents with sufficient information about the aim of the research, selection of the experimental stimulus: assuming a "false identity" of an ill person. We also do not know what were the psychological reactions on the forum users.

The problems with the representativeness of the sample constitute the last group of difficulties. This is connected with the specificity of the internet as a medium in Poland. There is still no common access to the internet: Almost 77% of Poles have internet access (...). Only 37% of Poles have access to modern technology (Zadrożna, 2013). Internet access as well as the skills required to use modern technology appear all the more important in light of the predictions that beginning with the year 2020 a "virtual cyber-doctor" is to be the patient's first contact with the healthcare system (Białobłocki, & Moroz, 2006, p. 156). The problem of digital exclusion is reflected in online experiments, resulting in unrepresentative samples, because it is only possible to reach people with internet access and skills required to use computers and the internet. The lack of internet access leads to immediate exclusion, and the lack of skills necessary to use computers and the Web may result in mistakes made during the participation in research or declining to take part in an experiment. Representativeness of online experiments is also lowered or "falsified" by identity cheating: claiming to be somebody else, or taking part in a discussion under different "nicks" (Batorski, & Olcoń-Kubicka, 2006, pp. 121-122). Analysis of the data of the conducted research experiment allows one to formulate a presumption that since the participants were registered forum users they had sufficient skills. However, the possibility that the users received some help cannot be excluded.

Conducting research experiments online becomes increasingly popular (Siuda, 2009, p. 158). The issues discussed in the present article could be perfectly addressed by means of online research experiment. To sum up, the specificity of research experiments carried out on the internet made it possible to easily collect information

and data which would have been difficult to access in the off-line world. The online character of the research allowed the experimenters to reach a large group of potential respondents, that is, patients with various illnesses. It is a specific, closed group. However, thanks to medical forums the contact with this group is much simpler. The experimental character of the research allowed the experimenters to receive honest answers from people who believed that they were having a "conversation" with an individual with similar problems. The assumption as to the honesty of the posts was formulated on the basis of the results of psychological online research experiments. The conclusions from this research prove that more and more often the results of online research are analogous to those of traditional research (Siuda, 2009, p. 159). In some cases online research is even considered more reliable and objective, which may be connected with the general advantages of conducting research on the internet; these can be divided into three groups: sampling-related, gaining control over an investigated environment, and the benefits connected with the process of data collection and analysis. The first group of sampling-related advantages pertains to the fact that the number of internet users is increasing, which is why the access to certain social groups active on the Web is easier. Control over the research environment is related to the easier, more open and authentic communication and attitudes of internet users. That is connected with the fact that online research is less stressful to the respondents. What is more, this form of the research allows a researcher to avoid ay prejudice against the participants. Unlike traditional research, data collection and analysis online is much quicker and more effective, which allows the authors of the research to save time and funds (Epstein, & Klinkenberg, 2009, pp. 230-232). The respondents' posts in the three issue areas on the particular forums are not presented in this paper. Also, the posts did not undergo interpretation, because this was not the main aim of the research and neither was it directly connected with the subject matter of the paper. Thanks to the use of an online experiment the collected research material suggests a new direction in research and investigation of problems of the ever-changing area of relations between doctors and patients.

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The principle of openness and transparency of the budget procedure of local government, and the principle of access to public information – in the experimental studies on the example of municipalities in the province of Lower Silesia

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ABSTRACT

The purpose of this publication is to indicate how the legislature pursues the principle of openness and transparency of the budget procedure of local government units on the basis of the Act of 27 August 2009 on public finances (Journal of Laws of 2011, No 291, item 1707 as amended) (hereinafter called u.p.f.) in connection with the act of 6 September 2001 on the access to public information (Journal of Laws of 2005. No 132, item 1110 as amended) (hereinafter called u.o.d.i.p.). The following issue is so important because it refers to the transparency of the conducted financial economy by the municipality in the province of Lower Silesia and the right of every member of the particular community of the local government the access to public information. This paper in the first part has a theoretical character, where the author of the publication gives a comprehensive legal state referring to the principle of openness and transparency of the budget procedure of local government units and the principle of the access to public information on the financial situation of the particular municipality. The second part of this paper, describes the principle of access to public information on the basis of the conducted studies using the Internet. In the second part, which has a research nature, the author has presented in detail the methodology of the conducted experiment. At the end of the research part of this experiment the results of the conducted research are discussed in terms of access to public information on the financial situation of the particular municipality in the territory of the province of Lower Silesia in the years 2010-2013.

Keywords*:* transparency budget, public finance, local government units, experiment.

The constitutional regulation of the citizen's right to access public information

The principle of openness and transparency has been expressed in art. 61 of the Constitution of the Republic of Poland of 2 April 1997 (Journal of Laws of 1997 r. Nr 78 item 483 as amended) (hereinafter called the Constitution of the Republic of Poland), where every citizen has the right to obtain information about the actions of the bodies of public administration, bodies of the economic and professional

government and other organisational units in the scope of performance of public tasks and the management of the public property as well as people performing public functions. This privilege has most of all the subject character (TK result of 20 March 2006, Ref. Act., *K. 17/05, OTK ZU 2006/A, no 3, item 30.)*, which also includes the access to documents and the admission to the meeting of the collective organs of public authority with the possibility to record sound and image. According to Barbara Kudrycka, such constitutional conditioning of the citizens' rule to access financial information of the specific local government is to support the "transparency of action, open dialogue, free and efficient flow of information between the residents and public officials, a condition *sine qua non* of public administration in many democratic countries. This method also limits biased and unethical actions within the administrative authorities" (Kudrycka, 1995, p. 93). The principle of openness may be limited in case of protection of freedom and rights of other people and entities, as well as due to the protection of the public order, safety of the country or the economic interest of the country (Strzyczkowski, 2011, p. 274). The limitation of access to public information regarding the financial situation of the particular municipality may lead to the arbitrary and discretionary actions of the local government administration (Koniuszewska, 2009, p. 125). That is why the rule of openness and transparency of the budget procedure of the specific unit of the local government for the local society is so important, because they have the greatest level of contact with it (Obrzut, 2002, p. 204). The barrier in access to public information of the specific local community is the payment for sharing public information, collected by the specific government. In general, sharing public information on the financial situation of the particular unit of the local government is free. If the sharing of public information by the specific unit of the local government is connected with the creation of additional costs on the side of the body issuing this information, such a body has permission to collect certain fees from the subject making such a request (WAS ruling in Wroclaw of 20 October 2004, Ref. Act. IV SA/Wr/505/04; unpublished). The amount of the amount taken by the body of the specified unit of the local government should not exceed the costs of the consolidation of the documentation (NSA ruling of 11 October 2002, Ref. Act., II SA 812/00; unpublished), where the exception to the principle of free sharing of public information was confirmed by the Constitutional Court in its judgment (TH ruling of 16 September 2002, Ref. Act., K 38/01; OTK ZU 2002, no. 5a, item 59.). Bodies of local government units are obliged to apply the provisions of the act of 6 September 2001 on the access to public information (Journal of Laws of 2005 No. 132, item 1110 as amended) (hereinafter called as u.o.d.i.p.), without creating additional regulation in this regard (Study of access to public information through the analysis of internal documents regulating the rules of sharing public information and costs of sharing public information, 2008).

The principle of openness and transparency of the budget procedure of the local government in the Act of 27 August 2009 on public finances

The principle of transparency applies to publicising the budget act, transparency of the budget debate and report on the implementation and control of the local government budget. The budget act of the given municipality should be published in the official statute book, as well as other information connected with the budget economy conducted by the local government (Kornberger-Sokołowska, Zdanukiwicz, 2010, p. 42-43). This principle is the "principle of principles" and the political-social postulate (Kołaczkowski, Ratajczak, 2010, p. 49), because the local community should be actively informed by the bodies of the specific unit of the local government about the financial economy conducted by it. It constitutes the instrument of the impact of a particular local community on the government bodies conducting the specific fiscal politics or budget economy (Osowski, 2008). The lack of implementation by the municipalities of the principle of openness and transparency of the budget economy conducted by them proves the lack of healthy public finances of the particular local government (Małecki, 1997, p. 273).

The principle of transparency is that economy of public funds is public. The statutory term in a general way of the openness principle of local government public finances finds detailed clarification in other legal acts. The principle of openness of finances of local government is broad and includes the conducting of accounting and the principle of reporting of the local government budget (Lipiec-Warzecha, 2011, p. 153-154). Keeping the accounts of local government units was regulated in the act of 29 September 1994 on accounting (Journal of Laws of 1994. No 151, item 855 as amended) (hereinafter called u.o.r.) and the regulations of the Minister of Finance. The provision art. 33 par. 2 u.f.p. contains restrictions of the principle of openness under separate laws or the concluded international agreements.

In the jurisprudence it was assumed that public information is not only a message created by subjects of the public law, but also information addressed to public authorities (WSA ruling of 8 October 2008, Ref. Act. IV SAB/Po 14/08, Legal Information System LEX no 509779.). Therefore, access to public information cannot be restricted to the scope of the conceptual "documents" on matters related to public finances of the certain unit of the local government (WSA ruling of 30 October 2002, Ref. Act. II SA 1956/02, Legal Information System LEX no 78062.). NSA formulated a broad theory that public information is constituted by all questions of the interested people addressed to public subjects (NSA ruling in Warsaw of 2 July 2003, Ref. Act. II SA 837/03, M. Prawn. 2003/17/770.). The provision of art. 6 par. 1 pt 3 lit. b) u.o.i.n. clearly indicates that the action of national legal persons and legal persons of the local government within the scope of the performance of public tasks and their activity within the budget and non-budget economy is clear. While art. 5 u.o.i.n. contains provisions restricting the right to transparency of public information. The doctrine distinguishes a dualistic approach to the principle of openness in the formal and material respect. The formal openness of the budget resolution is connected with art. 34 and art. 35 and art. 36 u.f.p. The material openness is connected with financial operations, which come from local

government budgets (Karlikowska, Miemiec, & Sawicka, 2010, p. 91). The mode of implementation of the principle of transparency during the adoption of the budget of units of the local government in art. 34 u.f.p. is achieved through: the performance of a debate on the reports from the implementation of budgets of the units of the local government and the project of the act on the long-term financial forecast, as well as by publicising the amounts of grants from the budget of municipalities. Moreover, the councillors of the given municipality have the right to access the accounting evidence and inventory documents, information on the results of the conducted control of the financial economy and report from the implementation of the audit plan for the previous budget year. The principle of openness is also manifested by sharing by the municipalities of the list of entities outside the public finances sector, which were granted a subsidy from the public funding, a grant to accomplish the task or a loan, or which had the amount due to the unit of the public finances sector cancelled and the annual reports concerning finances and activity of the organisational units belonging to the units of the local government. It is also important to publicise the contents of business plans, reports from the performance of business plans and statements about the condition of the management control. Unfortunately, the legislature has omitted in this legal provision the Multi-annual Financial Forecast for the units of the local government (Kosikowski, 2010, p. 159). Provision of art. 35 u.f.p. directly refers to art. 8 par. 3 of the act of 29 January 2004 – the public procurement law (Journal of Laws of 2012 r. Nr 240, item 1271 as amended) (hereinafter called as u.p.z.p.). The municipal government as a contractor may order the performance of supplies, services and construction works to the subjects of the private sector within the public-private partnership in the given tender mode, where he is obliged in relation to art. 35 u.f.p. to disable the principle of openness due to the company's secret in contracts concluded by the units of the public finances sector. The provision art. 35 u.f.p. contains the rule of presumption of not reserving the clause concerning the exemption of the openness principle and constitutes the independent legal provision. However, the exclusion of the openness principle cannot take place only due to the secret of the company (Lipiec-Warzecha, 2011, p. 163).

Based on art. 37 u.f.p. the executive body of the unit of the local government makes public until: the end of the month taking place after the end of the quarter – the quarterly information about the execution of the budget of the unit of the local government, including the amount of the deficit or surplus, and about the non-tax granted budget redemptions. Also the executive body of the specified unit of the local government should publicise the amounts of the grants obtained from the budgets of units of the local government and the amount of grants given to other units of the local government, the list of the sureties and guarantees, listing the entities, to which the guaranties refer, the list of legal and natural people, and organisational units without legal status, which were granted discounts within the taxes or payments, deferrals, cancellations or decomposition of repayments of the instalments in the amount exceeding the total of PLN 500. The units of the local government should give public information in relation to the discussed legal provision in the adopted form in the given municipality (Kosikowski, 2010, p. 163-164). This legal regulation refers to the provisions of art. 14 u.f.p. It shapes the

obligation on the side of the executive body of the municipality to the temporary information connected with public finances, the specified local government to public information on the pages of the Public Information Bulletin of the municipality in the Regional Official Journal or in the manner customarily adopted in the given unit of the local government (Karlikowska, Miemiec, Ofiarski, & Sawicka, 2010, p. 106-111).

The principle of access to public information on the financial situation of local governments in the province of Lower Silesia

The goal of the conducted study was to check how the municipalities in the territory of the province of Lower Silesia comply with their obligation to publicise the public information on their financial situation in the years 2010-2013 in the period from 1 June 2013 – 1 September 2013. For this purpose the Internet was used as the research tool, especially e-mail. Also the Internet was used as a tool to select the representative sample, using the contact information on the pages of the public information bulletin of the specific municipality located in Lower Silesia. For the purposes of this study both telephone survey and mail was used, with the open and closed nature, as means to get access to public information on the financial situation of municipalities located in the area of the Lower Silesian province. The sample of the studied units of the local government turned out to be representative, because it included: 3 cities with district status, 36 municipalities, 78 rural districts and 55 urban and rural municipalities, so the total of 169 municipalities found in Lower Silesia (the area and population in the territorial overview, 2011). Both sending the requests, in the open and disclosed study, to publicise the public information on the financial situation of the given municipality using: email, traditional mail and telephone, signing or introducing yourself as the director of the economic entity, an ordinary citizen, anonymously or signing up as gumisietofajnemisie people tried to obtain the answers to the following questions:

- What was the budget deficit of the municipality in the years 2010-2013?
- What was the public debt of the municipality in the years 2010-2013?
- What were the costs of servicing the public debt of the municipality in the years 2010-2013?
- How did the municipality cover the deficit and public debt in the years 2010-2013?

The main research problem was to obtain the answer to the following question: how do the municipalities in the Lower Silesian province respect the principle of the access to public information on the financial situation of the particular local government? In the course of the carried out research a detailed problem was encountered as presented below, which referred to the dependency between the date of sending the application by mail, email, phone call to obtain the public information on the financial situation of the particular municipality in the Lower Silesian province in the open and unofficial way (gumisietofajnemisie) and anonymous (without signing, not providing any information, which could contribute to the identification of the identity of the applicant). The first independent variable in this study is the way of asking for the public information on the financial situation of the particular

municipality in the Lower Silesian province using the methods listed above. While the dependent variables included the obtaining or the refusal to obtain the public information on the financial situation of the particular municipality in Lower Silesia through the application, email or phone call in the open way (giving the name and surname adopted for the purposes of this experiment as an ordinary citizen of the given local community or the head of the particular company) and in the anonymous way or not too official (signing under the application to share the public information, email or introducing oneself as gumisietofajnemisie). In turn, the second dependent variable was the time taken to obtain the public information on the financial situation of the particular municipality in the Lower Silesian province.

The results of the conducted experiment

During the experiment, the study included 36 urban municipalities and 3 cities with district rights. Submitting the application signed with own personal data to share the public information on the financial situation of the particular municipality, we obtained timely information on 36% using the traditional mail. Also in a similar way we obtained in a timely manner the public information using traditional mail, signing under the application as the head of the particular company. The first study revealed that the occupied social status did not have influence on the timely obtaining of public information on the financial situation of the particular urban municipality. The filed anonymous application to share the public information was not considered at all. Also in the course of the experiment it turned out that well computerised urban municipalities had a problem with the timely sparing of public information using email with the address of gumisietofajnemisie. Conducting the phone call with the local government officials responsible for the preparation of the budget of the municipality, we did not encounter greater obstacles in obtaining the public information. Officials gave all information connected with the financial economy of the municipality in a diligent and meticulous way, even without introducing themselves by name and surname. However, during the phone call, introducing oneself as gumisietofajnemisie, the officials did not give public information not taking the phone call seriously. Unfortunately, the first part of the study showed that the timely access to public information varied between 36%-43%, and it should be 100%.

Conducting the experiment with rural municipalities located in the territory of Lower Silesia in terms of access to public information, revealed their lack of transparency of functioning. The results of the studies turned out to be almost the same as of the experiment conducted among the urban municipalities. The access to public information on the financial situation of rural municipalities ranged from 29%-38%. It turned out to be lower than in urban municipal governments. It was noticed that public information in 4% of cases was granted in an untimely manner. Also the obtained public information on the financial situation of the rural municipality using email showed poor informatization of the rural local governments. Also conducting the phone call in several ways to share the public information on the financial economy of the particular rural government, we encountered high resistance in its receipt from officials.

Table 1. Access to public information on the financial situation of the urban municipalities located in Lower Silesia in the years 2010-2013 on the basis of the application, email or the conducted phone call

Studied subjects	application				sent email				phone call			
	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially
Urban municipalities	36,00% t	39,00% t	0,00%	4,00% t	39,00% t	39,00% t	2,00% t	5,00% t	43,00%	43,00%	38,00%	0,00%
Total	36,00%	39,00%	0,00%	4,00%	39,00%	39,00%	2,00%	5,00%	43,00%	43,00%	38,00%	0,00%

Source: Own study. The model of the table based on: Report on access to public information in Lower Silesia, 2011.

Explanations:

Zw – signed as an ordinary citizen of the local community,

Nadzw – signed as the director of the private company,

A – anonymously,

t – public information was obtained timely within 14 days or 2 months,

nt – public information was obtained untimely

Unofficially e-mail message – gumisietofajnemisie.

Table 2. Access to public information on the financial situation of the rural municipalities located in Lower Silesia in the years 2010-2013. based on the application, email, and the conducted phone call

Studied subjects	application				sent email				phone call			
	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially
Rural municipalities	34,00% t/4,00% nt	37,00% t	4,00% t	0,00%	33,00% t	32,00% t	0,00%	3,00% t	29,00%	29,00%	9,00%	2,00%
Total	38,00%	37,00%	4,00%	0,00%	33,00%	32,00%	0,00%	3,00%	29,00%	29,00%	9,00%	2,00%

Source: Own study. The model of the table based on: Report on access to public information in Lower Silesia, 2011.

Table 3. Access to public information on the financial situation of the urban and rural municipalities located in Lower Silesia in the years 2010-2013 based on the application, email, and the conducted phone call

Studied subjects	application				sent email				phone call			
	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially	Zw	Nadzw	A	unofficially
Rural municipalities	39,00% t	38,00% t	5,00% t	0,00%	43,00% t	42,00% t	11,00% t	2,00% t	53,00%	49,00%	15,00%	3,00%
Total	39,00%	38,00%	5,00%	0,00%	43,00%	42,00%	11,00%	2,00%	53,00%	49,00%	15,00%	3,00%

Source: Own study. The model of the table based on: Report on access to public information in Lower Silesia, 2011.

The best from the local governments subjected to the experiment were the urban and rural governments. Submitting the application to share public information on the financial situation of the particular municipality we obtained timely responses, where also social status and the professional position did not influence the time of its obtaining. The urban and rural municipalities proved to be the most technologically advanced among the other municipalities subjected to the study throughout the whole Lower Silesia. We obtained 43% of responses to the sent emails with the inquiry to share the public information on the financial situation of the particular urban and rural municipality, including 2% from the email address gumisietofajnemisie. Also in a telephone manner we obtained a high rate of responses to the inquiry on the financial situation of the particular urban and rural municipality. The result of the obtained responses using the phone call ranged within the range of 49%-53%, which proved to be the highest rate during the whole conducted experiment, where also the professional status did not influence the time of obtaining the public information. Also in the unofficial way during the phone call with the officials we obtained the public information on the financial situation of the particular urban and rural municipality. It is worth noting that officials during the conducted phone call on the financial situation of the particular urban and rural municipality turned out to be the most cultured and competent in comparison with officials working in typically urban or rural local governments.

Conclusion

Summing up this experiment, it should be noted that in municipalities lying within the territory of the province of Lower Silesia it is not easy to obtain public information on the financial situation of the particular unit of the local government, which results from the type of system used by the particular municipality. The most transparent municipalities are the urban and rural municipalities. While the least transparent in gaining access to public information proved to be the urban municipalities and rural municipalities, which results from large developmental disparities, inferior qualifications of the administrative staff in terms of the knowledge of the provisions of the Act of 6 September 2001 on the access to public information, as well as poor administrative local government computerisation. The arithmetical average of the obtained information on the financial situation of the municipalities in ordinary application was 31%, while by email it was 27%, and by phone 35%, where this average should be 100%. The author of these studies was concerned by the fact that many municipalities left the applications and emails on the sharing of public information unanswered, but we cannot interpret this phenomenon as rejection of applications to share the public information. In this case, the entity applying for public information may complain to the county administrative court for the idleness of the body.

It is worth noting that the telephone method of obtaining the public information on the situation of the given unit of the local government proved to be the most effective. While the poorly conducted digitisation of the offices in Poland is reflected in the study where the officials to a greater extent preferred to share the public infor-

mation using traditional mail. We did not not observe any significant differences in the statutory period of obtaining public information by the ordinary resident of the particular unit of the local government, and the unit, which was to fulfil the managerial role in the private company, where the average error between them was +/- 5%, which can be considered as insignificant. The officials employed in the municipalities tried, in most cases, to keep within the two month period of granting the public information to the requesting party. Unfortunately, the conducted study showed also that public information was not granted on the finances of the particular municipality to the person who, anonymously or unofficially, tried to obtain public information using the provisions of art. 63 of the act of 14 June 1960 – code of administrative procedure (Journal of Laws of 2012 No 186, item 1529 as amended), where you should provide the person, from whom comes the request to obtain the public information and her/his address, which is illegal, because it constitutes the breach of art. 2 par. 2 u.o.d.i.p. In accordance with the provisions of art. 2 par. 2 u.o.d.i.p. you cannot demand from the person exercising the right to public information to show the legal or factual interest. Moreover, in the feedback information concerning the granting of public information by municipalities on their financial situation there appeared claims concerning the payment of the fee for the actions connected with sharing of public information, which is inconsistent with art. 7 par. 2 u.o.d.i.p.

In conclusion it should be stated that in the municipalities of the territory of Lower Silesia there is a low legal awareness in the application of the act on the access to public information, which influences the reception of local governments in not being transparent in their actions in the scope of the financial economy conducted by them. Therefore, we should change this state of affairs by introducing obligatory training courses for the officials working in the local government municipalities in Lower Silesia on the knowledge of provisions of the act on the access to public information, in order to build in the future the trust of local communities to the country, because these are the local communities that constitute the place of the first contact for ordinary citizens with the actions of the public authority. And the lack of trust on both sides both of the citizens of the local community towards the local government and its opposite, influence the lack of completion of the constitutional principle of the country and the law and practice of applying the law.

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Problems of experimental researches conducted with the use of the Internet based on a failed experiment on the attitude of Polish people towards some neighboring nations.

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Abstract

The contemporary visual culture suggests to a modern person that a visual content has dominant influence on the information we acquire and it is largely responsible for shaping our attitudes and opinions of others. The experiment that is described here is entitled: "A research on the attitude of Polish people towards some neighboring nations" and its aim was to evaluate this theory. There were two experimental attempts, both withheld because in both cases the research groups stopped sending their responses. This drew the researcher's attention to difficulties occurring when using the Internet as a research tool. The final part of the article contains advantages, and disadvantages of doing a research by the Internet as well as conclusions based on personal experience.

Keywords*:* pedagogical experiment, information, image, research, change of the attitude, polls, visual culture, the Internet.

The Modern world – unlike in the past – is represented most of all by image. In the past, image was just one of the components of a culture, nowadays we have a visual culture represented mainly by film and photography – usually online photography. The pedagogical experiment that was conducted in June/July 2013 and then repeated in November 2013 was supposed to prove that today it is the image that has the most influence on the information people acquire.

An experiment itself (latin *experimentum* – an attempt, a test) is "a method of observing a phenomenon purposefully induced by a researcher, in an environment with conditions controlled by the researcher with a goal of finding the answers to questions concerning the results of introduced changes" (Maszke, 2008, p. 176). To be even more precise, a pedagogical experiment, according to Mieczysław Łobocki, is "a method of researching phenomena connected with upbringing and education, induced purposefully by a researcher in a controlled environment in order to study them" (Łobocki, 2003a, p. 106). Monitoring of an Internet experiment is a compulsory condition of a successful research using this method. Władysław Zaczyński states that "an experiment is a method of scientific research of a specific part of an

educational reality by introducing new processes or by changing some aspect of them and observing the results" (Zaczyński, in: Pilch, 1998, p. 43).

The aim of the experiment was to demonstrate if and how information influences a person's opinion if there was additional, visual content. The kind and form of information depends on the media it goes through: television (sounds and pictures), radio (sounds and voices – traditional radio, not the Internet one), newspapers (printed texts usually with photographs), and the Internet (all those mentioned options are available).

With different media, there are different methods of manipulating information, especially if there are visual, commentating materials attached to written information. Those materials may be considered the proof of authenticity of presented texts and may reinforce, modify, change or create an opinion. Our attitude to other nations and our self-esteem depends on the information we get as well as the means we get it from.

The experiment – two attempts

A study group was introduced to the topic "A research on the attitude of Polish people towards some neighboring nations". Materials that were used consisted of historical texts of various origins, mostly from mainstream history magazines, which depicted drastic experiences of Polish people during the second world war as a result of actions of neighboring countries: Germany, Russia and Ukraine.

The thesis that was introduced before the research was: *Information (descriptions of the second war crimes) with visual content (pictures of victims) causes of the change of opinion of Polish people about countries which committed those war crimes.*

The independent variable "X" is a visual content (graphic photographs of Polish war victims from the second world war) and the dependent variable "Y" is attitudes (positive, negative or neutral) towards some neighboring nations in the context of presented visual material.

The Internet was used during the research - materials were sent by emails. The first target group consisted of volunteers who responded to a posting on Facebook. One experimental design with one control group was used as well as initial and final measurement of the dependent variable. In the first research the age of the study group was from 17 to 32 years and education and history lore levels were varied. The number of male and female participants was more balanced in the first experiment than in the second.

The key to the experiment was to modify the independent variable, which came in two forms:

- fragments of historical texts
- fragments of the same historical texts accompanied by photographs of Polish war casualties

The experiment was to show how an independent variable affects a dependent variable – people's attitudes. In the first stage of the experiment, participants were sent a pretest along with information that the research is anonymous, divided into 3 parts and that the answers are not graded but calculated and saved as numbers or

percentages. The pretest was to determine participants' attitude towards neighboring nations and their prediction of those nations' attitudes towards Poland.

In the second stage of the experiment, 3 research groups were randomly formed: 2 experimental groups and one control group and each group consisted of the same number of people. Each group received specific sets of materials: the first experimental group received only written materials, the second group received the same written materials along with visual content (photographs). The second group had been warned that the visual content was graphic and there was a possibility to withdrew from the experiment – one person took that option. The third, control group received neutral, historical materials about everyday life in the Republic of Poland at the time of war. Each group also received three short corresponding questions whose purpose was to check if the participants had read the texts.

There was a final measurement in the last part of experiment - the same questions about attitude towards neighboring nations and their supposed attitude towards Poland were used in a pretest and in an evaluation test. The results were analyzed, presented in figures or percentages, and final conclusions were drawn to establish how participants' attitudes changed after being introduced to the materials and content.

The main research problem was: How do historical texts with and without visual content affect people's opinions?

There were also additional objects of study. The researcher wanted to find out if the nature of photographs (photos of war casualties) affect participants attitude. There were also specific questions about the course of the research such as whether the amount of text affects participants' involvement, if the lack of personal contact with the researcher (lack of direct control) affects the results, if the use of the Internet as a research tool affects the results.

The first pedagogical experiment was a failure because participants withdrew from the experiment. There were 36 people in it initially and the results of the pretest showed that Polish people's attitude towards neighboring nations was mostly neutral, except concerning Germans – most participants chose "I am sometimes annoyed by them", Russians – most participants chose "I do not trust them, I believe we must be cautious with them" and "I am afraid of them, they are a threat to us" and concerning Czechs – most participants chose "I like them".

It seemed that participants believed that most neighboring nations also have a neutral attitude towards Polish people except for Germans who, according to them, "consider us a helpless nation and cheap manpower" and "despise us and feel superior" and Russians who "despise us and feel superior" or even "hate us" and Czechs who are supposed to "like and respect us".

Unfortunately the results were inconclusive and cannot confirm or refute the thesis as participants gradually withdrew from the experiment and stopped sending their answers. Only some additional research problems found their answers. The most logical explanations for this situation are:

- lack of participants' involvement in the experiment fuelled by large quantities of material to read (26 pages devoted to materials about three countries - however those materials were scans of newspaper articles and relatively occupied only some parts of pages)

- probable low interest in history of average people (as common perception suggests)
- lack of involvement due to the use of the Internet as a research tool
- no direct researcher's control as the research was done by via the Internet which may have diminished motivation
- probably too much time was given to participants to read the materials (2 days) and send their answers (2 days, 4 days total). When the research was conducted on the spot, with direct contact between the researcher and participants, the researcher was able to monitor and control the experiment more thoroughly. Participants were also more concentrated on the task as there was a time limit. During the experiment on the Internet, the lack of direct supervision resulted in only 6 people remaining in the third stage out of the initial 36.

The second experiment was done in a different way. The researcher announced to students during her classes that she was looking for willing participants in an experiment. She explained what the experiment was about, how long it was supposed to take and that there were to be 3 stages. A list of volunteers was established and their email addresses collected. After the first stage of the experiment, the participants were randomly selected for two groups, with no control group whatsoever. The rest of the experiment detail was left unchanged although the amount of materials was decreased and the time was shortened.

The study group of the second experiment consisted of 26 people, age from 22 to 25, with 70% of participants living in a city.

Table 1. The characteristic of the participants

Gender	Polish citizenship	Self assessed history knowledge level
22 females 4 males	All participants	- I remember selected facts: 27 - I am good at history: 3 - I am very interested in history: 1 - No answer: 1

Source: Own research.

Table 2. Attitude towards neighboring countries

Neighboring country	I am fascinated by their culture and nation	I consider them to be a great country	I like them	There are things I appreciate in their country	I am indifferent	They sometimes annoy me	I do not trust them, I believe we should be vigilant when contacting them	I fear them, I consider them a threat	I hate them
Germany	2	2	-	8	1	6	4	1	2
Czech Rep.	1	-	15	3	2	2	1	-	-
Slovakia	1	-	7	1	9	1	-	-	-
Ukraine	1	-	4	1	15	1	-	-	-
Belarus	-	-	2	2	12	2	-	-	-
Lithuania	-	1	4	1	14	1	1	-	-
Russia	1	4	-	1	3	4	10	6	-

Source: Own research.

Similar to the first research, there were most answers "I like them" and "I am indifferent" about Czechs and Slovaks; most answers "There are things I appreciate in their country", "They sometimes annoy me" and "I do not trust them, I believe we should be vigilant when contacting them" about Germany (from most popular answer to less popular). With Russia, again similar to the first research, most answers were "I do not trust them, I believe we should be vigilant when contacting them", "I fear them, I consider them a threat" and equal number of "They sometimes annoy me" and "I consider them to be a great country".

Table 3. Attitude of neighboring countries toward Poland

Neighboring country	They like and respect us	They consider us to be a brave nation and admire our achievements	They want to help us become a better country	They appreciate some of our traits	They are indifferent	They are sometimes annoyed by us	They consider us a helpless nation and cheap manpower	They despise us and feel superior	They hate us
Germany	-	-	2	3	9	6	3	3	-
Czech	6	2	5	4	1	1	-	-	-
Slovakia	6	-	5	2	6	2	-	-	-
Ukraine	2	2	3	3	6	3	-	-	-
Belarus	1	-	1	2	10	3	-	-	-
Lithuania	1	2	2	1	9	1	-	-	-
Russia	1	-	2	1	4	13	2	3	-

Source: Own research.

These results suggest that most countries are indifferent to Polish people except for Czechs and Slovaks who "want to help us become a better country" and "like and respect us", and Germany and Russia who "are sometimes annoyed by us".

The results are different in some parts from the results from the first research. One of the differences is a different attitude towards Ukraine[8] due to more historic awareness (as it was explained by the participants) and the most popular answer was "I do not trust them, I believe we should be vigilant when contacting them". There are also differences in supposed opinions of other nations of Poland. In the first research, the dominant opinions were that Germany "consider us to be a brave nation and admire our achievements" and "despise us and feel superior", that Russia "despise us and feel superior" or even "hate us" and that Lithuania "despise us and feel superior" and is "sometimes annoyed by us". The results of the second – repeated experiment are less evident, less brutal. This mitigation of opinions may be caused by unbalanced gender proportions and less diversity of age among the participants and as result less diversity in experience. In the second research there were only 4 men and 22 women while in the first there were 15 men and 21 women. There was also less anonymity as participants were the researcher's students.

8 The first research was done in June and July 2013 so the present situation in Ukraine had no effect on it.

During the second research, the study groups were more willing to justify their answers e.g. "I am fascinated by Russia and I would like to learn more about it and visit this country but at the same time I consider it a big and powerful country that frightens me a little (…) and I distrust Ukraine and Belarus. I am not fond of Germans – I am annoyed by their sense of superiority and I feel threatened by their proximity. (…) In my opinion, Germans consider us inferior and do not like us. Czechs are not very fond of us either and it can be seen when Polish people visit their country but they are not hostile. (…) Russians have a great impact on what is going on in my country" or "I was impressed by Russians' firm stance against islamization". And another justification of an answer, this time from a man: "Russia and Germany are two superpowers which have an interesting history. One must remember that hatred leads to destruction" (Own research, 2013).

The aspect that was similar in both researches – with anonymous volunteers from Facebook and student volunteers – is the rate at which answers were sent back. Although the time given was optimized in the second research, it was again impossible to acquire enough answers to draw valid conclusions whether a description accompanied by pictures is more persuasive that a description alone. The few answers that were sent seem to indicate that a description has a greater effect than pictures as it more effectively stimulates imagination. In the first research, out of 6 people that took part in the third stage, 5 participants favored descriptions. In this stage, they were to answer an open question: "Which made a greater impression on you, descriptions or pictures?" Their answers were: "descriptions because they stimulated my imagination to a greater extent", "descriptions, as pictures present only one shot seen at a specific time, whereas descriptions let us see the whole situation", "descriptions, as each one of them is a detailed report" etc. In the second, repeated research, 5 participants out of 26 took part in the third stage and 2 of those people sent their answers after the deadline. All 5 people chose descriptions as "they give a detailed account of what happened". Answers given in the first and the second research lead to believe that the knowledge of war crimes committed by neighboring countries increased during the researches, have no effect on participants' attitude towards those countries. This conclusion cannot be entirely valid as the number of participants in the third stage was too low.

Problems with a research done by the Internet

The Internet was used at all stages of the research: looking for volunteers and acquiring their email addresses (in the first research), sending instructions and clarifications, sending pretests, materials, evaluation tests etc, answering specific questions about the experiment.

Disadvantages as well as problems that occurred during the experiment are mainly the lack of direct control over the participants - the specific nature of the Internet may have affected their commitment. The researcher could not be certain if given materials were read by the participants or whether the participants tried to communicate with one another. It might have caused the generalization of opinions (one of the participants admitted in her evaluating test to contacting others about

the research). Lack of control over the time which demotivated participants, although they were informed about time limits before hand. Another problem was a large amount of time devoted to preparing materials and research disproportionate to the results – materials could not be sent simultaneously, the researcher had to wait for individual participants to send their responses to continue with next stages of the research. There were difficulties with understanding instructions during the first research, it is not possible to efficiently correct any misconceptions. It would not be an issue with participants and the researcher converged. Insufficient feedback - although participants were instructed to contact the researcher in case of any doubts and were given two methods of communicating (email, Facebook and in the case of the second research, on the spot in the classroom). Out of 36 people, only 1 person in the first research contacted the researcher for explanations although there were 4 questionnaires with errors in stage I, 3 questionnaires in stage II and no errors in stage III. In the second research the participants were instructed face to face in a classroom and given a set time and there were no mistakes in the papers. Another problem was that there was no opportunity to pressure the participants who passed their deadline to send back their questionnaires although all participants were volunteers recruited through a Facebook announcement. A similar situation happened with students in the second research who also failed to fulfill the voluntary obligation. To sum up: the control of most external and distorting variables proved difficult when using the Internet as a research tool and without researcher's presence. It is difficult to carry out the experiment to the end and maintain a valid study group, especially if the research has multiple stages (this one had three stages) since there is little control over the participants.

There are many disadvantages of the research done by the Internet which may cause the experiment to fail and yet there are some advantages. The research can be can be nationwide, it is not confined to one city, institution, school (class) which was proved in the first research as participants were from Bielsko-Biała, Kraków, Wrocław etc. There are lower costs which in the Internet experiment consist only of researcher's work. Therefore, more materials like photographs or films may be sent (in the case of this experiment, there were many color photos and printing them would be expensive). A research by the Internet also allows the participants to familiarize themselves with the materials more thoroughly and provides more time to think over the answers than in a research done on a spot with a set time limit.

When comparing my own research and its advantages and disadvantages to the experience of other researches, there are some common conclusions about experiments conducted on the Internet. Other researchers point out some advantages such as reduction of research costs, possibility and simplicity in contacting many people at the same time, providing greater anonymity to participants. Exemplary disadvantages are: no possibility of checking who is really answering a questionnaire and if the person is truthful (one person can fill a few questionnaires from the same computer), possible low quality of hardware and problems with the access to the Internet, problems with computer skills (this disadvantage excludes elderly people the most), the Internet does not allow us to observe the reactions of participants, only the results of their actions and choices, the number of questionnaires

that are sent back is low (Siuda, 2009; Parzuchowski, 2006), the percentage of participants that withdraw is high despite researches being voluntary - in some researches that percentage is as high as 87% (Siuda, 2009, p. 164). According to Piotr Siuda "abandonment of the research may be the result of the lack of motivating stimuli like payment or other form of reward". This behavioral pattern was confirmed in the second research when one of the volunteers asked "What kind of benefits can we expect if we participate in the research?". This shows that a kind of reward was expected. Other explanations that are mentioned by Piotr Siuda are the lack of social pressure and obligation to participate (which are present when employees of a firm or institution are questioned directly, i.e. not via Internet) and unattractiveness and difficulty of a research (Siuda, 2009, p. 164).

The nature of the research might have been little attractive for both study groups (as it was mentioned earlier, unattractiveness might have been caused by low interest in history) but at least for the second group (only students) it could not have been difficult as materials were taken mostly from mainstream, history magazines. Some researchers suggest that participants might be motivated to stay until the end of a research by increasing the attractiveness or safety of a research web site. This advice could not be taken as the communication was done by emails. Other forms of motivations such as personal contact with the researcher, informing participants at which stage they are at or how long it would take, were utilized during both experiments and yet proved ineffective and did not produce valid results.

Another suggested form of decreasing resignation rate – payment for participation – is hard to take by an individual and independent researcher (that is not supported by an institution which can provide funding) who has limited possibilities of offering benefits, both monetary or other. This also eliminates one of the advantages of the Internet experiment – low costs. In the case of the second, repeated research it was possible for the researcher to offer the participants some positive marks for volunteering but the experiment was not examining the level of knowledge but rather opinions and so this procedure would have been unfair to active students not willing to volunteer and highly unethical as well.

Advantages and disadvantages described by other researches are given different values and a feature that is an advantage according to one researcher is not always an advantage in other researcher's opinion. This evaluation sometimes depends on the method used, for example on-line questionnaire (most popular method).

The research would probably be more popular and test groups would be more persistent if participation was rewarded with money or some other valuable gratification. There is a risk with this approach that participants would try to "match" their answers to the "expectations" of the researcher. A more controversial topic of experiment that would tackle issues like unemployment, limiting freedoms, evaluating certain politicians or parties, might persuade more people to participate and send their answers. It seems however there is no safe method of running an Internet research. Despite our preparations, predictions and planned attractions it might not work since we deal with a randomly selected group of people with different views and motivations.

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Comparative methods of obtaining information by students

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ABSTRACT

Cultural changes in the form of the technical and technological development are affecting all educational institutions including universities. The information revolution, which has resulted in the emergence of the information society and the knowledge economy, not only changes the perception of the quality of information, but also the methods of obtaining it.

The following text describes the results of an executed experiment related to teaching methods. The author has attempted to give an answer to two major problems: comparison of the teaching effectiveness of sources such as books, articles, general physical university library collections and the Internet. Then the comparison of methods used by students in obtaining information, in order to identify what is most effective.

Keywords*:* teaching college, experiment, technics, technology, methods of acquiring knowledge, the effectiveness of acquisition of knowledge, the Internet.

Information Culture and Higher Education

Each cultural and civilizational circle produces its characteristic tools that serve the purpose of the realization of its internal and external purposes (Sztopmka, 2007, pp. 241 - 251). These tools, which are produced can be specified in general term of technique. The particular structures or systems involving technical solutions for the purpose of complex manufacturing, can be specified by the general terms of technology.

Technical development (discovery of some tools) and technological progress (the discovery of productive system of tools) are closely linked with the symbolic and material stratum of entities functioning (Kłoskowska, 1983, pp. 317 - 318). Together they form something which is called culture. Besides the obvious functional value, entity within the scope of her cultural circle seeks excuses for her actions. Trying justify her own existence, In the scope of treating matter, some sense, thus giving her technical and technological search value of progressively understood development (Gruchoła, 2010, pp. 99 - 104). This is creating a coherent vision of a future in which innovations in the field of technology and technology connected with a specific ideological narration form a coherent cultural image-transfer (Szkudlarek, & Melosik, 2010, pp. 44 - 47). This is the base on which future generations will con-

struct their identity and consciousness. Perhaps this should be explaining the fact that along with technical and technological progress proceeds in some part with the evolution of society. An example of such progress are the changes in the collection, processing and dissemination of information of the codes in the oral and written form. European civilization and its derivatives (colonies and neighboring countries) produced in the course of history sophisticated tools for distribution of the information, which we now call the media[9]. In the range of media is included: press, radio, television and the newest, the Internet Each of the above tools had undeniable impact on European society. This relationship continues today as can be seen in the example of the virtual global network. An endless stream of data, created by billions of people around the world, convinced sociologists and cultural theorists that it have been produced or it took a different, more expressive dimension the so-called information culture (Batorowska, 2009). Its central element is possesion and production of more, and more data in the form of more or less developed information codes (Olechnicki, 2009, p. 217). Increasing opportunities in terms of generating and collecting data over time developed the need for a specialized institutions in society, and also became the reason for changes in institutions, which can be called traditional. An example is the author's research interest is the university.

Universities, colleges, academies and polytechnics are the most characteristic institutions of higher education in Western Civilization (Guri - Rosenblit, 2006, p. 31). The idea behind of their creation was the transmission of information in which members were future professionals, experts and officials. This mission has not changed until now, we may see that aforementioned are experiencing a resurgence. This is due to the previously mentioned cult of knowledge and information, and the ongoing process of professionalization of social services[10]. Universities as institutions providing educational services, with a view to the cultural context in which they had to function are coupled to the development of techniques and technologies. Therfore significantly and actively takeing part in the process of generating innovations and inventions. Therefore, it seems legitimate judgment in which we treat the university as not only the habitat of tradition and criticism, but also as a dynamic source of change. The academic world, is inevitably a very distinctive agent against the background of European culture though, it exists in the total assimilation of it, because it is present throughout its creation.

The process of education at university has always aroused the imagination of people representing the world of *inter-muros*. Its specificity has allowed the coining of the canon term "academic didactics", which can be understood as a specific set of processes that affects the student to induce in him some planned changes. It is thus a kind of analogy, the technological process of the fact that both the "tools" (academic and methodology of higher education) and 'products' (students, graduates, pre-doc's) are biological beings. In the "Dark Ages" the process was filled with

9 Medium - intermediary between the event and the observer.

10 The current meta-ideology maintains the myth of the necessity of the professions in society. This is due not only to the wealth (surplus food and a stable birthrate of humanity) but the fact of increasing complex of tasks, which the units have to learn to control some field of knowledge. This ensures efficient allocation of roles within the society in which distinguish the professional groups.

literature studies, interviews with masters, active participation in the life of the university. These features can be called the classical method of academic education.

However, these times are long gone and universities under pressure from many forces, eg. ideological totalitarianism, capitalism, globalization, liberalism, corporatism, commercialism, etc. have changed radically (Kozyr - Kowalski, 2005, pp. 35 - 37), and finally, creating a model of the university as a private enterprise market providing educational services for money[11]. Enterprises in which the teaching processes are very important because they generate income and prestige of the university. Therefore it is in the interest of the market, to invest in more advanced tools which have impact on the students, so that their learning process will bring more positive results. This ensures a constant flow of candidates which will lead to the ensuring of survival stability of the institution. In the culture of information the most valuable product is information. But this is not just any information, but what is most relevant. For technical reasons, the most valuable source of new information is the Internet. Its connection with the academic teaching machine is therefore natural.

There only remains one problematic subject which is academic culture. It is a combination of two contradictory trends: separatism (a critical attitude towards society and culture) and progressivism (acting on behalf of techniques and technologies). It seems impossible to combine these centrifugal forces as these forces are signs of ideological factions. The liberal option which exhorts adaptation, and conservatism, calling for resistance to the „sacred" tradition of academic excellence, are essentially absolute and yet, are bringing themselves harm. Conservatism has won supremacy, or better to say upheld it, which is shown in the study about higher education by Jerzy K. Thieme (Thieme, 2009, pp. 298 - 299). Resistance to change is affecting not only the definition of the role, functions and content of academic crescendo, it is also imprinting its mark on teaching.

Responsibility for forced qualitative and quantitative changes in the academic world, bears the aforesaid information culture, a whole range of ideologies and academics themselves. A closed caste of specialists generating valuable knowledge has led to the fetishization of knowledge and giving her the supreme value in the development of society. This is the aftermath of fashionable theoretical concept of the knowledge society (by Daniel Bell) and knowledge - based economy (Kukliński, 2003; Hejduk, 2006; Rosati, 2007; Florczak, 2007; Dworak, 2012), which contribute to the prosperity of individuals, countries or international organizations (Dobrowolski, 2005, pp. 88 - 89). The most important transformation, affecting currently supported academic governance, consists primarily of moving the supremacy of traditional media associated with the physical transfer of word and writing (books + activities at the university) to the dominance of one source which is the Web.

11 The role of public institutions or state-owned higher education is ambigiuous. These are examples of free institutions where the unit does not bear the cost of tuition. Although the profile of these institutions has also changed in the direction of the company generating profit. Financial expenditures on educational work and the scientific establishment are limited by the budget separated from the state treasury. This not only introduces competition between institutions (which in fact occurs only at the level of scientific activity), but makes the necessary allowance for the development of the facility has earned itself (grants, sponsors, service). These institutions take a personal profile, which is dominated by academic non-profit. education.

With the geometric progress of knowledge available for humanity questions are raised about the quality of the transmission of this gathered information for future generations. Therefore academic teaching becomes a valuable reflection on what must lead to very concrete results in the form of „suitably tailored to the individual". In the academic production it is all about faster and more efficient transfer of knowledge and information. The duration of the technological process, as well as the selection of data for the injected process are the most valuable. This is due to accumulation of information generated every day and the level of its complexity.

At this point, it is interesting why there is so little empirical data on this aspect of knowledge[12]? Of course, the fact is that there are the classification of teaching methods that are used for studies such as lectures, workshops, seminars. It is also rich in a range of forms which can be realized the above mentioned methods. We can extract: discussions, debates, Oxford discussions, readings, presentations, papers, etc. At present, we also have targets and the main ideas on which are created curricula data contained in the given field of education[13]. Althoug there remains a mystery about the effectiveness of „traditional" - classical and „modern" - innovative methods, of implementing the knowledge to students. One of them is usage and the value of the Internet in the education of students, the value of which description the designed experiment was intended to check.

Authors concept research base

In order to check the effectiveness of the tool which the Internet can be, in the process of academic education, it is worth using the experimental method. For using this method addresses the following arguments:

- The possibility of creating artificial conditions in order to induce interesting researcher phenomenon, which is partially or completely in the control of his moderating skills,
- The ability to channel the activities of students on specific tasks in order to obtain interesting researcher quantitative data
- The lack of any research data concerning the results of comparative methods of data collection by students, defined by the author as „traditional" and „modern";

The study was divided into stages: pilot and proper research. The concept of a two-stage study was dictated by the authors methodological lack of experience in carrying out the experiment as well as lack of author organizational and executional experience. Also important was the inability to get answers to all questions. simultaneously interesting to the researcher Complementing motives was the fact

12 Significant scientific publication in the field of academic teaching is the work of Kazimierz Denek: University in the society of knowledge. Academic Teaching and its effects. Publisher School of Teacher Education and Administration. Poznan, 2011. (authors free transaltion) Although it has a value in axio-normative, probabilistic and historical – monographic context. Reflections about teaching methods, rooted in the realities of academic word, are based on the potential tasks, challenges and needs faced by the academic Word. Althoug they are not a reliable and critical diagnosis treating about methods, forms and teaching tools embedded on the canvas of empirical research. Undoubtedly, the work has a high intellectual value, although it is not written on the basis of hard data embedded in the quantitative paradigm.

13 The Lisbon Strategy, the Bologna Declaration, Directional Training Effects.

of birth of the research questions in the course of the pilot study,. Differences in the organization and conduct of the two stages are so significant that it is necessary to characterize them separately.

The main research problem and the detailed problems

The two-stage structure of the study enforces double research activity in which you can specify two main lines of inquiry:

- Compare the effectiveness of juxtaposed two data collecting methods artificially known as classical and modern (both are idealised types),
- Compare the effectiveness of four juxtaposed data collection techniques artificially referred to as the control and experimental (control method of testing is a representation of the characteristics of all common students, which is their experience, and experimental are the variations which were broken after implementation of differentiating factor);

These lines of inquiry generate different main research problems:

The main research problem 1: What is the effectiveness of the classical and modern method of data acquisition by the students in direct comparison,?

The main research problem 2: What is the efficiency of contemporary and experimental methods of data collection used by students?

The answer to the above questions will become possible when we determine the three indicators of the dependent variable, based on which we will measure them: time, quality and quantity. It allows variables to formulate the following specific issues:

1. Which method, classical or modern is more effective time collecting data?
2. Which method, classical or modern is more effective in obtaining quantitative data?
3. Which method, classical or modern is more effective in obtaining quality data?

Formulated above questions need to be adapted to the two differently formulated main research problems. The variables on which the measurement will be made is identical, although the specific content of the questions will be slightly different, namely:

1. Which methods are more time effective in getting the data?
2. Which methods are more quantitatively effective in obtaining data?
3. Which method are more qualitatively effective in obtaining data?

Pilot study

The purpose of this step was to compare the effectiveness of methods of data collection by students, defined by the author for the purposes of this study as classical and modern. The Classical method is the scrutiny of the physical literature: books, articles, journals that are available in paper form. While the modern method is the search for Internet sites: pages, public Or private sites, forums, blogs, online encyclopedias, online dictionaries. In the scope of modern sources, for the purpose of this research, we do not include PDFs, digital libraries, open access libraries, generaly electronic equivalents of the physical library collections. The author is aware that

such conditions are unlikely to occur in the real learning strategies conducted by students. Indeed, the level of freedom in the selection of sources and their range in reality is almost unlimited. Although the experiment allowed the researcher to shape interest in methods, which are in this case a manifestation of a kind of teaching system. One embedded in tradition, while the second is in the Progressive form. For the purpose of the comparison of their efficiency, interference from the students side should be limited. The role of the actors mentioned in the study has been reduced to the most efficient usage of the tool imposed on them by the developer.

The experiment was conducted on 29.10.2013 from 10.00 to 12.00, above the Vocational State High School name of Witelon in Legnica. Included in the survey were four groups. Two control (classic) and two experimental (modern). A characteristic feature of the control groups was the possibility of unlimited (in terms of number of sources) usage of the resources of the university library and reading room. Although they did not have access to a computer, in any form, even in order to view the library supplies, the replacement was the opportunity to review an archaic paper catalog. The aim of such moderating of the control group was the most faithful copy of the conditions that students had before the era of global informatization. The benchmark was the Humboldts university stage of development and university education. While a characteristic feature of modern group was the possibility of unrestricted (in terms of number of sources) usage of Internet resources. As previously mentioned, the range of sources not included PDFs, digital libraries, library access, generally the electronic equivalent of the physical library collections. The purpose of these restrictions was the desire on the part of the author to:

- Eliminate the tangent point between the two groups, which are the physical library collections converted to virtual
- Give equal access restrictions both groups, classical and modern,
- Introduce a variable in the test which was the qualitative selection of information, for both of the groups classical and modern.

For the purpose of comparision where possible the work of both groups had been submitted identical sets of tasks. Each task (in the form of questions or commands) has been arranged by one of the four experts, representing four different modules of academic knowledge: research methodology of the social sciences, higher education, family (in terms of teaching), and social marketing. This eliminated the problem of assessment of students' work by the author, and allowed us to extend the usable subjects to the test.

Each expert was instructed to construct three questions on the basis of the diagrams created by the author, which range of topics will be not only covered to the knowledge of their research and didactical interests, but also will represent one of three levels of complexity. The first level represented questions that forces the need to provide the definition of a process, phenomenon, concepts, etc. To the second level belonged questions that forced on the students the need to search, compare and select the most valuable data. For the third level eligible questions forced on students the need of search, comparison, selection and creative interpretation of the data. We formed a set of twelve questions designed by experts and after gathering them together created one sheet of tasks that each group had to solve. The evalu-

ation of students work, each expert could make according to the criteria that they personally believed the most appropriate. This was made to simulate the actual mechanics of diverse assessments that often apply within a class the students.

On the solution of tasks the students had one and a half hour (the standard time unit of teaching in the academic education). The starting was common to all groups because such a solution was more functional from an organizational perspective. The author also consciously chose the number of tasks to the time devoted to their solution, forming a hypothesis that students will not be able to solve all the tasks on time, which also was aimed to measure the effectiveness of work-based sources of physical and virtual method.

In the study were participating students of the Vocational State High School called Witelon in Legnica. Students were from the second year of master's degree, pedagogical direction. The choice of field of study was partly dictated by the choice of experts and potential scope of the content of the tasks that students would have to perform Hence the content of the questions was divided into two blocks: the strictly educational sciences (family and higher education) and related to pedagogy (methodology of the social sciences and social marketing). This was the procedure that the author aimed at giving students the opportunity to use well-established knowledge of the familiar scope, and mobilizing them to work in favor of the need to gain new knowledge of the unknown or poorly-understood subjects.

Each group was assigned an invigilator, who was also a student, but unknown to the other students participating in the experiment. Their presence was to prevent unauthorized actions on the part of students directly involved in the experiment. Each of the invigilators was instructed to limit their activities to monitor activities while non-interfering in to substantive course of the experiment. Experimental groups of students were locked in for the duration of the study in order to eliminate the possibility of interruption of the structure of the test by external factors.

Each group answered individual tasks perpetuated on cards, which were collected by the author and converted into electronic documents. Each eletronic document containing answers to the individual tasks of each group were divided by the author thematically into four parts corresponding to the research and teaching expertise scope of the expert. To some documents scans of student responses have been attached (some of the answers were very illegible) so that an expert if in doubt, personally made the decryption, thus eliminating the possibility of misinterpretation of response from the author.

For technical reasons the two control groups were housed in one room – university reading room (with the prohibition of communication between them), the two experimental groups were placed in separate rooms. They have simultaneous access to the Internet, so as to be able to solve the tasks foreseen for the experiment.

The results of the pilot study

At the time of the pilot study the author left the experts the decision of design of the tools for measuring the effects of students' work. Each of them requires a brief discussion for the purpose of clarity of evaluation criteria.

Expert No.1 applied partial rating system on a scale of 0 to 10. Expert No.2 applied a complex system of partial assessments and In evaluation of students work has identified detailed elements such as (after the dash shows the maximum number of points that could be obtained): Language -3 (j) , a composition -2 (k), the content, sharing her range for quantitative -1 (T1) and qualitative -2 (T2) and critical approach -2 (marked by the author as reflexivity - r). Expert assessment No.3 applied in a 5-point scale. During the assessment three criteria were taken into account: the correctness of answers, wealth of sources (variety of information) and the quality of written expression. Expert No.4 applied a 10 step scale, which consisted of both partial evaluation and summary. The partial evaluation included variables such as form and content. These however were divided successively into vocabulary (s), the correctness of the language (pj) , the amount of information (T1) , the quality of information (T2) and the structure of wrriten expression (St).

The scoring results obtained by students in different subject areas including the system of expert evaluation are presented in Table No.1.

Table 1. Quantitative results of the pilot study

Group/ expert	E1sw	E 2r						E 3m	E 4ms					
GIn	Z1-3 Z2-0 Z3-0		j	k	T1	T2	r	Z1-3 Z2-2 Z3-5		s	Pj	T1	T2	St
		Z1	0,5	0	0	0,5	0		Z1	2	1,5	1,5	1	1,5
		Z2	1	0,5	0,5	0	0		Z2	1,5	2	1	1	1
		Z3	0,5	0	0,5	1	0		Z3	0	0	0	0	0
		Z1 – 1/10 Z2 – 2/10 Z3 – 2/10							Z1 – 7,5/10 Z2 – 6,5/10 Z3 - 0/10 ∑Z = 14/30					
GIk	Z1-0 Z2-5 Z3-0		j	k	T1	T2	R	Z1-3 Z2-3 Z3-2		s	Pj	T1	T2	St
		Z1	3	2	1	2	0		Z1	1	1	0,5	0,5	0,5
		Z2	1	0	1	1	0		Z2	2	1	1	0,5	0,5
		Z3	1	0	0,5	0,5	0		Z3	1	1	0,5	0,5	0,5
		Z1 – 8 Z2 - 3 Z3 – 2							Z1 – 3,5 Z2 – 5 Z3 – 3,5 ∑Z = 12					
GIIn	Z1-0 Z2-0 Z3-0		j	k	T1	T2	r	Z1-4 Z2-5 Z3-2		s	Pj	T1	T2	St
		Z1	3	1	0,5	1	1		Z1	1,5	1,5	1	1	1,5
		Z2	2	2	0	0,5	0		Z2	1,5	1,5	2	2	1,5
		Z3	0,5	1	0,5	0,5	0,5		Z3	1,5	1,5	1	1,5	1,5
		Z1 – 5,5 Z2 – 4,5 Z3 – 2							Z1 – 6,5 Z2 – 8,5 Z3 – 7 ∑Z = 22					

Group/ expert	E1sw	E 2r						E 3m	E 4ms					
G II k	Z1-7 Z2-0 Z3-0		j	k	T1	T2	r	Z1-1 Z2-3 Z3-0		s	Pj	T1	T2	St
		Z1	3	2	0,5	1	2		Z1	1	1	1	1	1
		Z2	2	1	0,5	1	0		Z2	1	0,5	1	1	1
		Z3	0,5	0,5	0,5	1	1		Z3	1	0,5	0,5	0,5	0,5
		Z1 – 8 Z2 – 4,5 Z3 – 3,5							Z1 – 5 Z2 – 4,5 Z3 – 3 ∑Z = 12,5					

Source: Author.

Legend: G - Group, Roman - style number - group number, k - classical group, n - modern group, E – Experts, digit after the E - the number of the expert, the letter after the number E - Expert specialization: s - higher education, r - family, m - the methodology of social research, ms - social marketing, Z - task, digit by Z - level tasks digit after the dash - the number of points awarded by an expert task, ΣZ - total points. for the task.

In order to maintain order statements the author received partial system response to research questions and the final evaluation summary which is also the answer to the first main problem. Individual specific questions wiil be asked, the data will be presented for interpretation, then the final assessment will be made in response to a outlined specific problem.

Which method, classical or modern is more effective in collecting data?

To answer this question, quantitative data was provided by the students in the questionnaire. They were instructed to mark the hour of ending of their activities, aimed at completing the tasks provided In the questionnaire. The results of the various groups are as follows: GI n - 1h10m, GI k - 1h15m, G II n - 1h15m, G II k - 1h30m. The most effective time proved to be Group I whereas the least efficient G II k. Difference in the execution of tasks between the two groups was about 20 minutes. The apparent advantage is also noticeable when comparing the arithmetic means of comparing the times of two groups (divided by method of work): classic and modern. The results were as follows: Classic group: 1h22,5m Modern Groups 1h12,5m. What is very important is the difference of 10 minutes in favor of the Modern groups.

In partial evaluation we can make the following interpretation of the results that, from the perspective of time the more effective source of data collection is the Internet although its effectiveness is also strengthened or weakened by the intellectual and organizational potential of a particular group of students. An example might be the result obtained by the GI and G II k n, which, despite the technical superiority of the experimental group, were similar.

Which method, classical or modern is more effective in obtaining quantitative data?

Indicators that will allow answer to this question are given in the number of tasks that the group failed to realize (tasks for the experts were able to award points were counted). Statement, as well as for time efficiency will be more credible if we take into account both the results obtained by different groups and in direct confrontation of both methods.

The results obtained by the group are as follows (after the hyphen: the number of solved tasks/number of tasks in the questionnaire), GI n - 9/12 GI k - 10/12, G II n - 9/12, G II k - 9/12. Number of tasks carried out by the group is on a very even level. What is very interesting is that the group handling the method more time efficiently in data collection temporarily obtained poorer results, This has been shown by the earlier analysis. This fact shows that, although the time result was similar (GI k, G II n) the quantification efficiency of the classical methods was greater.

We should also compile the number of tasks solved by the number of students scoring tasks by experts. This not only will be possible to enrich the quantitative analysis but would be an excellent introduction to the qualitative analysis of students' work.

Table 2. Summary of the number of tasks completed by the students with a number of points gained in the tasks

	Number of tasks					
	sw	r	m	ms	∑RZ	∑PZ
G I n	3/3	3/3	3/3	3/3	12/12	9/12
G I k	2/3	3/3	3/3	3/3	11/12	10/12
G II n	2/3	3/3	3/3	3/3	11/12	9/12
G II k	1/3	3/3	2/3	3/3	10/12	9/12

Source: Author.

The modern group solved most of the task (G I n), providing answers to 12 of 12 tasks provided in the questionnaire. This resulted, however in diminish the number of tasks - 9/12 gained by the modern group, in which students were able to score points. It shows that although there was a response by the students in each task, three of them were completely wrong (no points). Perhaps it was due to negligence on the students part, in terms of the selection and processing of information. The conclusion is all the more reasonable that the same result obtained the second modern group (G II n). Students of modern groups, probably enjoyed the quickest harvesting of the information, evidence could be the time of completing the tasks. In conclusion, students working on the basis of Internet sources did the job quickly and effectively enough in comparison to the classical groups. The latter solved a smaller number of tasks, albeit in a qualitative perspective, the task represented done enough quality that only one task in each group was not qualified for scoring points by experts.

The author proposes the following interpretation of the obtained results; effectiveness of quantitative methods of classical and modern stand at a relatively

similar level. In contrast, the differentiating factor could be the quality of content necessary to search by the students. Higher education proved to be the most difficult module (sw), although quantitative data show that the group limited to the classical method fared in this module slightly better than the modern group. Each of the classical groups received points in the module „sw", and similarly only one modern group scored points. The result is more interesting that like has been shown in time analysis, the latter group had a more modern and efficient tool for collecting data. Perhaps this is due to the specific nature of the tasks, because higher education is a very specialized field, which is not even included in the canons of academic education, therefore, it is very limited from the perspective of online sources and literature.

Which method, classical or modern is more effective in obtaining quality data?

This is the most difficult part to compare because in to the overall assessment we must take into account several important sub-ratings. The data which we will use for this are represented primarily by the number of points that particular groups and groups representing idealized method managed to score.

The first data which is worth quoting is the total number of points obtained by each group for carrying out questionnaire. They are shown in Table no.3.

Table 3. The results of all groups being the sum of ratings of all experts

Group	Module score				Summary score
G I n	3/30	5/30	10/15	14/30	32/105
G I k	5/30	13/30	8/15	12/30	38/105
G II n	0/30	12/30	11/30	22/30	45/105
G II k	7/30	16/30	5/30	12,5/30	40,5/105

Source: Author.

The highest score was obtained by group G II n, while the worst has obtained group G I n. Points difference between the two groups is significant and the difference is 13 points. Both classic groups have ended in the middle with 7 and 5 -point loss to the best result and the difference of 2 points between each of them.

The data presented above is interesting from the perspective of a particular group, but does not resolve the central question which is the qualitative effectiveness of both methods. Therefore, it is appropriate to present the result averaging solely for distribution within the data acquisition methods (Table No.3). The resulting average number of points is as follows: Group Modern - 38.5 pts.; Group Classic - 39.25 points. The difference between groups was 0.75 points. in favor of the classical groups. The result, however, does not provide a basis for the formulation of arbitrary assertions. It is therefore necessary to present further data taking into account the average and total results obtained within the metod (Table 4).

Table 4. The results of the classic and modern groups counted together, being the sum of ratings of all the experts

Group	Average score in module				Average summary score
Clasic Group	6/30	14.5/30	10.5/15	12.25/30	43.25/105
Modern Group	1.5/30	8.5/30	6.5/15	18/30	34.5/105

Source: Author.

This way compiled results confirmed the much greater efficiency of the classical method which allowed cllasic groups to achieve a better result by 8.75 points compared to modern groups. In the author's opinion presented data provides a basis for building some thesis, although not arbitrary claims for any of the analyzed methods. It becomes necessary to present further data on the effectiveness of quality used by the students in the experiment methods. They are located in Table No.5.

Table 5. Point values from the perspective of three levels of complexity of tasks

Group	Value of points gained by students.	Minimal points gained	Maximum points gained	Average score
G I n	Z1 – 3,1,3,7.5	1	7.5	3.63
	Z2 – 0,2,2,6.5	0	6.5	2.63
	Z3 – 0,2,5,0	0	5	1.75
G I k	Z1 – 0,8,3,3.5	0	8	3.63
	Z2 – 5,1,3,5	1	5	3.5
	Z3 – 0,2,2,3.5	0	3.5	1.86
G II n	Z1 – 0,5.5,4,6.5	0	6.5	4
	Z2 – 0,4.5,5,8.5	0	8.5	4.5
	Z3 – 0,2,2,7	0	7	2.75
G II k	Z1 – 7,8,1,5	1	8	5.25
	Z2 – 0,4.5,3,4.5	0	4.5	4
	Z3 – 0,3.5,1,3	0	3.5	1.86

Source: Author.

Conclusive information is contained in the scoring of complexity of task levels. The first level of task complexity (Z1) the results were clear but not conclusive. Using the maximum rating system: GI n - 7.5 pts.; G II n - 6.5 pts., GI k and G II k evenly over 8 points. can be observed that the score differences have a slight advantage over classical method. A slight advantage in favor of the classical method can also be seen using a list of tasks scoring average GI n - 3.63 points.; G II n - 4 points. Groups classic turn: 3.63 pts.; 5.25 points.

Similar results were obtained counting the average number of points achieved by the working group as determined by taking into account the maximum assessment: Modern Group - 7 pts.; Group Classic - 8 points. Then, the average number of points achieved by the working group as determined by taking into account the average results obtained by different groups. After calculating the numbers were: Modern Group - 3.82 points.; Classic Group - 4.28 points.

To summarize the classical group received slightly higher scores at the task level Z1. The advantage of this method occurred in the maximum ratings, ambiguously with average ratings of individual groups and clearly with the average group ratings.

On the second level of complexity (Z2) the results based on a system of maximum ratings were: GI n - 6.5 pts.; G II n - 8.5 pts., GI k - 5 points. ; G II k - 4.5 pts. At this level of analysis the better results obtained Modern Groups. However, using the average grade obtained by each group for the task, we observe that the results of groups hinder the release of arbitrary assessment: GI n - 2.63 points. ; G II n - 4.5, GI k - 3.5 pts. ; G II k - 4 points. It is therefore necessary to provide an average score for the group (based shared on the method) , which were as follows: Group Modern - 3.57; Group Classic - 3.75. Such a small difference point (0.18) in the opinion of the author allows us to conclude that the modern method efficiently utilized allowed us to get more points for a specific task, although the overall perspective, both the classical method and modern identity have emerged equally effective. While their practical efficiency probably largely depends on the students who use them.

At the third level (Z3), which is the most complex, and therefore the most highly valuable element of academic education, the results based on a system of maximum ratings are as follows: GI n - 5 points.; G II n - 7; GI k - 3.5 pts.; 3.5 points. Apparently showing a significant advantage over classical modern methods. Wrong reading of the data disappears when complemented with, as before, the above data, a list of the average score for the task of 3rd degree: GI n - 1.75; G II n - 2.75; GI k - 1.86; G II k - 1.86. and the average score for the task from the perspective of which method the groups where handling: Group Modern - 2.25; Group Classic - 1.86. Slightly better in this respect (0.39 pts.) Turned out to be the modern method.

In summary, the modern method is slightly more effective in the second and third levels of complexity of tasks contained in the questionnaire. In contrast, the classic method is more helpful in solving the tasks of the first level of complexity (footnote: requiring the least mental effort and creativity).

Summary of the pilot study

The results of the pilot study, though in some cases ambiguous, led to the formulation of the final assessment on the effectiveness of the classical and modern method in academic education. Modern methods allow faster execution of the tasks of medium and high complexity in comparison with the classical method, giving way only on the canvas of tasks with the lowest degree of complexity. This result coincides with the general trend that can be observed in higher education around the world. In this trend which shapes the teaching processes in higher education, the emphasis is put on rapid acquisition and processing of the information, which the author wrote in the introduction to this article. What is very important in some cases high speed and quantitative results of modern groups do not translate into the quality of all the work done by students using this method. Initially, the above data concerning the number of points obtained (Table No.2. and 3), although only at the level of the average score of both groups showed a significant advantage to the classical method. This means that this method promo-

tes a better quality of performance of students, albeit at the expense of time that must be paid to the cloth of action.

Comparision of methods constituted not real but hypothetical confrontation between the two sources, based on which strategies can be designed to acquire information by students. The value and effectiveness of the Internet in the present time, in academic education is indisputable. As one of the elements of Western culture, deservedly and relatively naturally has become a central element in processing, manufacturing, distribution and exchange of information in the academic world. More utilitarian useful, embedded in social trends and needs of technical progress than physical academic library collections. The author, however, allows himself to put forward the thesis that, the cultural impact of the Internet, violently implemented in the process of academic education, may reduce its general and overall sense of value, as evidenced by the data presented above.

The main research study

The conducted pilot study proved to be valuable in order to apply the necessary changes to the main study. Not only did it allow trial of the research tool, confirming its usefulness and effectiveness, but also it had a contribution to construction of the following research issues needed to be resolved in order to build a comprehensive vision of the problem which is the value of the Internet in academic education in Poland.

The main study was conducted 07/11/2013 in VSHS name of Witelon in Legnica. The Pilot study was created upon artificial conditions of work, creating two perfect types of sources on which students work. Whereas the actual survey was designed to check the real quantitative and qualitative differences in terms of content acquired by the students. Taking into account all modern strategies of acquiring information, available to the students, creating thus the following qualities (in parentheses codes and names of the groups):

- Quantitatively unlimited physical library collections + unlimited virtual collections of Internet (Experimental Group Ebi - library - internet);
- Unlimited physical library files (experimental group Eb - Library);
- Unlimited internet sources (experimental group Ei - Internet);
- lack of access to any sources, operating solely on the basis of their own experience and knowledge (control group Kbz – anti-source).

Each of the above were assigned to a randomly selected, separate, group of students, creating in turn a control group, named for the test anti-sources (all students have the same feature sets, which is the access to their own experience), and three groups marked as experimental. Each group was implemented as with a specified variable: internet, library, or both sources simultaneously. This solution resulted in the re-integration of previous organizational arrangements which result as follows:

1. the experts have been left unchanged;
2. the number and content of the tasks constructed by experts have been left unchanged;
3. author imposed a system of evaluation for students' work to the experts, limiting it to 10 point scale, taking into account only partial points;
4. left three - stage level of complexity of the tasks;

5. amount of time to complete the task was limited to one hour, as in the pilot phase, the students too quickly coped with the tasks In the questinnaire or were temporarily too tired to maintain a uniform level of motivation; time has been utilized as a variable to generate pro - creative pressure on the students in order to complete tasks, with the author's assumption that they will not be able to perform all the tasks provided in the questionnaire, which also directly indicated the most effective method of obtaining information;
6. all groups where physically separated from one another;
7. each group had an invigilator with an unchanged scope of tasks;
8. study subjects were students VSHS name of Witelon in Legnica, who are studying on the second-year undergraduate level of pedagogy, as a course of study.

The results of the main study

The structure of presenting the results from the main test will be similar to that which the author applied for the pilot study. However, with one significant exception, namely, the author deleted the averaged results and the distribution of the opposition: control method - experimental methods. This is due to the specificity of the experimental methods that can be quantitative and qualitative representations of themselves but not on each other as a whole. Generalizing the results within experimental methods would be in the author's opinion considerable abuse, due to lack of contact points within the tools which the students used working in the concerned groups.

The basis for conclusions or theses are the results obtained by different groups, after performing the tasks questionnaire. These data are shown in Table No.5.

Table 6. Points obtained by the groups during the main test

Group/Expert	Expert I (sw)	Expert II (r)	Expert III (m)	Expert IV (ms)
Ebi	Z1-2	Z1-5	Z1-10	Z1-10
RZ:1h	Z2-0	Z2-6	Z2-9	Z2-10
	Z3-0	Z3-1	Z3-0	Z3-4
Eb	Z1-0	Z1-8	Z1-0	Z1-2
RZ:45m	Z2-0	Z2-6	Z2-9	Z2-0
	Z3-0	Z3-6	Z3-8	Z3-0
Ei	Z1-0	Z1-2	Z1-10	Z1-8
RZ:40m	Z2-0	Z2-5	Z2-9	Z2-7
	Z3-0	Z3-8	Z3-3	Z3-6
Kbz	Z1-0	Z1-5	Z1-4	Z1-6
RZ:45m	Z2-2	Z2-6	Z2-10	Z2-6
	Z3-0,5	Z3-7	Z3-0	Z3-6

Source: Author.

Group Labelling: Roman number - group number, K - control group, E - experimental group, RZ - the time of execution of work; Experts designations: Roman number - the number of expert; letters after the number - the indications of specialization expert, s - higher education, r - family, m - methodology, ms - social marketing, bi - Internet library, b - Library, i – web, bz – anti-source.

Which metods are more time effective in collecting data?

Similar to the pilot phase, the students after the completion of their tasks, in the questionnaire, (or in inability to compete their tasks), had to mark the time of ending of their work. The results are as follows: Ebi -1h; Eb - 45m; Ei - 40m; Kbz - 45m. Best time acquired group: Ei, while the worst Ebi. Time differences between the groups are 15-20 minutes. Interestingly Ebi group had no restrictions on sources of information, the students benefited from both the unlimited resources of the Internet, as well as a variety of physical sources gaining the worst result. In contrast, the group Kbz, having no access to any source had a score of only 5 minutes worse than the best result. Perhaps the poor outcome of Ebi group, was caused by the fact that the number of sources, from which they could use, surpassed their selection abilities. Instead focusing on the tasks they focused on the selection of content for execution of their tasks, and the implications were the consequences in time result. The data, however is sufficiently clear that they allow to formulate the base thesis that some methods in certain groups have proven to be more efficient in time, allowing for faster execution of the tasks provided in the questionnaire.

Which methods are quantitatively more effective in obtaining data?

A necessary addition to the above analysis of the efficiency of time is a quantitative analysis. Representation of the effectiveness of the described and compiled methods will be the number of tasks completed by students in groups. The results are as follows (the number of completed tasks/number of tasks in the questionnaire): Ebi - 10/12; Eb - 7/12; Ei - 9/12; Kbz - 11/12.

The best result obtained Kbz, which is very important, the students in this group did not have any benefits from any virtual or library source, basing their answers on their own experience and knowledge. The second best result belongs to Ebi, who had access to two types of sources and used them as indicated by this result very effectively. However, as shown in the time analysis, high score in the amount of completed tasks, was achieved at the expense of time, that was given to their implementation.

The worst result obtained Eb group, having access only to the library physical files, which represented the classical method, which was tested at the pilot stage of study. Again, the theory has been confirmed that the classical method is the least quntitetively effective. At the same time confirming an earlier proposed thesis of the greater efficiency of the quantitative methods used by the Ei group (based on Internet sources without any restrictions).

Just as in the pilot stage of the study, the valuable source of information is the table containing the number of completed tasks by the each group, suplemented by number of tasks, scored by the experts. This will again make a quantitative analysis and a smooth transition for qualitative analysis undertaken in the next section.

Table 7. Number of tasks solved by students

	Number of tasks solved by the students					
	sw	r	m	ms	∑RZ	∑PZ
Ebi	1/3	3/3	2/3	3/3	9/12	9/12
Eb	0/3	3/3	2/3	1/3	6/12	6/12
Ei	0/3	3/3	3/3	3/3	9/12	9/12
Kbz	2/3	3/3	2/3	3/3	10/12	10/12

Source: Author.
Legend: ΣRZ - the sum of solved tasks; ΣPZ - the sum of scored tasks by the experts.

To summarize, the most effective metod, in the perspective of how many problems have been solved is Kbz, in which students are forced to use their own knowledge resources. Not only does it motivate them to work harder but it is channeling their efforts on solving specific problems, also it created the need to effectively manage their time to solve the task. This method resembles the work in American schools in the 90's. They were based on the experimental method of John Dewey, which imposed on pragmatics action (fast and efficient completion of tasks) on the value of intellectual property.

Also worth mentioning is the method used by the group Ebi using standard sources enjoyed by the students in order to carry out the tasks given to them at the university. It is a very quantitatively effective method, although requires on the part of students more experience, force and resources (skill selection of information and the organization of work).

Which methods are more qualitatively effective in obtaining data?

The most informative and valuable part of the study is qualitative analysis. Similarly as in the pilot study, in order to formulate general conclusions, it is necessary to break down the analysis into several sub-problems, namely: number of points gained regarded as the total score, the number of points having three degrees of complexity of tasks including the minimum, maximum, and total averaged scores. The scoring results obtained by the research groups are contained in Table No.8.

Table. 8. The results of combined experimental groups

Group	Module score				Summary score
	sw	r	m	ms	
Ebi	2/30	12/30	19/30	24/30	57/120
Eb	0/30	20/30	17/30	2/30	39/120
Ei	0/30	15/30	22/30	21/30	58/120
Kbz	2,5/30	18/30	14/30	18/30	52,5/30

Source: Author.

The best result was recorded by the Internet group, yielding a result at the level 58 points out of maximum 120 points. The worst result was recorded by the library group, reaching a score of 39 points out of 120. Also interesting is the high result anti-source group, which received 52.5 points out of the maximum 120 points.

High (from the perspective of all the groups) the result of the Ebi group, should not be surprising. This group not only had access to all sources in the experiment, in addition it spent the most time on completing tasks from the questionnaire also solving a relatively large number of tasks. The confirmation of the above conclusion is the scoring points in each thematic unit that group achived.

An interesting situation arose in the case of the website group (Ei) , which used a method defined in a pilot study as modern. The Internet has proven to be the most time efficient source of all and it allowed the group to get the best quantitative result with the quality of the work remaining high.

The worst result denied the conclusions from the pilot study. Providing conflicting data on the low quality of the physical library resources in resolving the tasks In the questionnaire. The relatively fast time execution recorded, resulted probably, from the resignation of the group of students to accomplish all tasks. The need for tedious queries from literature and the lack of experience needed for this (it is worth recalling that they were students of the second year of undergraduate studies) resulted in the worst result of quantity and poor quality of work that have been produced.

Anti-source group managed surprisingly well. Lack of access to any of the resources and the need to rely on their own experience, probably acted as motivation. The group completed tasks assigned to them relatively quickly, scored points in 10 of the 12 tasks of the questionnaire, and the quality of work produced by students in this group, in comparison to others, remained high.

Added to this analysis is the summary of the results obtained by each group having three levels of complexity of tasks. The results are contained in Table No.9.

Table 9. The results of groups depending on the level of complexity of the task in the questionnaire

Grupa	Point values per task including level of the tasks	Minimal number of points gained	Maximum number of points gained	Average number of points gained
Ebi	Z1 – 2,5,10,10	2	10	6.75
	Z2 – 0,6,9,10	0	10	6.25
	Z3 – 0,1,0,4	0	4	1.25
Eb	Z1 – 0,8,0,2	0	8	2.50
	Z2 – 0,6,9,0	0	9	3.75
	Z3 – 0,6,8,0	0	8	3.50
Ei	Z1 – 0,2,10,8	0	10	5.00
	Z2 – 0,5,9,7	0	9	5.25
	Z3 – 0,8,3,6	0	8	4.25
Kbz	Z1 – 0,5,4,6	0	6	3.75
	Z2 – 2,6,10,6	2	10	6.00
	Z3 – 0.5,7,0,6	0	7	3.38

Source: Author.

Among the tasks of the first stage (Z1) the best average result was obtained by group: library - Internet - 6.75 (Ebi). Taking into account the previously presented

data and conclusions this result is not doubtfull, the group Ebi had guaranteed access to all sources in the experiment, devoted much time to the realisation of the project, yielding significant quantitative result and the highest score point.

In contrast, the result of an online group - 5.00 (Ei) also logically proved the effectiveness of the tool which is the Internet in resolving the tasks in the questionnaire, which perhaps, was not so clearly demonstrated in the pilot study. Quick access to data with low complexity resulted in rapid implementation of tasks and an important result in quantitative and qualitative terms.

The lowest score of the Z1 received group Eb, whose main source of information was the physical library collections. This is a logical connection to the previously obtained results, namely low-performing quantitative and qualitative work.

On the second level of complexity (Z2), the best average result was obtained by Ebi - 6.25 and Kbz - 6.00. In the case of Ebi group, the factors that favored the implementation of tasks on the first level were also crucial to the second level. Difficult to explain is, however, the result of the Kbz group. Z2 tasks were designed to force the students to find and the selection of the information required in the resolving problems. Perhaps the experience of the students were already rich enough that they possess partially a single view, which minimized the need for the selection of information and allowed the group to focus on the content necessary to perform the tasks, which is also confirmed by the highest score point.

While the worst outcome again, at the level of the Z1 obtained library group - 3.75 points. Library collections again proved to be the least effective tool for gathering information. Key was the low engagement of the group (premature completing the quests) and lack of experience in the classic academical work[14]. Students represented one generation (1993) and one group within the study. Better results are obtained by the group library - Internet group and the Web group, show that these generation of students are better at solving tasks when they have access to the Internet or simply have a freedom of choice.

The highest degree of complexity of tasks (Z3) has provided a very interesting and ambiguous set of data to interpret. Firstly this is due to the highest score obtained by the Internet group (Ebi). We should return to the results of the pilot study in which appeared slightly higher value of the Internet, as a source of information, data or definitions, that need to be creatively selected and processed. In this case there is no difference. The only variable that allows for a different interpretation of this result is that obtaining a high quantitative score, went also qualitative aspects and factors[15].

Surprisingly low is the result of the library - website group, which theoretically represented the closest to the reality of the system work of students. Based on physical and virtual sources, caused that the group to complete its activities noting, at the highest level of complexity of the tasks, the worst score among all groups. Maybe

14 Evidenced by the high total score obtained by the students of the second year of Master's Degree in the pilot study.

15 Perhaps this is due to the different kind of academic socialization. Students on the masters degree, engaged In the pilot study were aged 24-25 years, so the author can assume that during their entire educational process, from the earliest stage to the time of study books and classic library work were more dominant. Unlikely in the case of the main test where the students were aged 19-20 years, the socialization process within educational institutions could be different, and the Internet as a source appears to be, for that generation a better base, a more user-friendly and more efficient source resulting in concrete practical consequences what has been demonstrated in the research.

simultaneously work on the basis of physical and virtual sources can reduce the initiative for creative work, dispersing the attention and effort of the whole group, eventually resulting in its low value in the authorship context. Partially it confirms the result obtained by the library, web and anti-source groups, which recorded a minimum of twice a better point values.

The most effective qualitative method in solving questionnaire tasks, was represented by the website group. Which source of the work had only been the unrestricted access to Internet resources. High efficiency also recorded the library - internet group, working on the basis of mixed sources and also the anti-source group, basing only on their experience (control - Kbz).

Summary of the main test

Among the most valuable methods specified by the author from the perspective of academic teaching are:

- A method of combining sources of information in the form of the Internet and the physical library collections,
- Web method, referred to as a modern,
- Anti-source method, in which students must use their own resources, knowledge, skills and creativity.

In order to illustrate the differences and selecting the best metod, the author proposes the following tabulation; Using the three-stage scale (Low, Medium, High) there will be specified levels of efficiency based on: time, quantity and quality. Ratings, which represents the level of the actual result, made it necessary to create compartments of point for each indicator used by the author. In the author's constant reference point to evaluate the performance of the proposed scale are the actual results achieved by the group, especially when it is possible to determine the results of the weakest and the strongest.

In the case of temporary criteria the author has identified the following time periods: 1-40 minutes - High; 41 - 50 minutes - Average; 51 -60 minutes - Low. The ranges for the quantitative efficiency are as follows: 1 - 7 tasks - Low; 8 - 10 tasks - Average; 11 - 12 tasks - High. The ranges for the quality criterion required adoption of a single criterion on which were established ranges. The most important criterion adopted by the number of points scored. Point ranges are as follows: 0-46 points. - Low, 47-52 points. - Average; 53-58 points. - High.

Then, in order to quantify the resulting ranking of each level is assigned a numerical equivalent: Low - 1, Medium - 2 High - 3 As a result, it is easier to evaluate the obtained data who is not condemning the far-fetched interpretations.

Table 9. Summary of methods along with the final evaluation of effectiveness

Method/ Efficiency	Time	Quantity	Quality	Ending Score
Ebi	Low	High	High	7
Ei	High	Medium	High	8
Kbz	Medium	High	High	8
Eb	Medium	Low	Low	4

Source: Author.

Established ranking shows that the most effective methods of obtaining the information necessary to perform the tasks in the questionnaire are, at the academic level, methods which are based on virtual sources or are based on the absence of any sources, thus allowing students to free intellectual work.

The most ineffective both from the perspective of teaching as well as methodical method is that based on only library resources. Its potential is possible with the right kind of socialization of students, quality of student experience and the lack of other sources that could distract and reduce the motivation of students.

Summary and concluding remarks of the author

The experiment provided an interesting and important research material. The obtained data not only refuted the myth of the high value of traditional or classical academic teaching but also demonstrated the real value of the virtual source as an essential complement of the academic process of education. Surprising was the high value of the individual work of students who are deprived of access to the internet sources. Scores showed a similar degree of effectiveness of that group in the implementation of tasks as the best group participating in the experiment. Perhaps the classic academic teaching should be used only to supplement the work of students directing their main attention, efforts and resources on unexhaustable resources of the virtual world and their self - directed intellectual work. Although the author due to lack of experience and authority in this field of knowledge does not want to take arbitrary voice in the above case.

However, in the light of obtained data, physical resources of the library appear to be a less effective source of knowledge for novice students, which not only charges financially the budget every university in the country and the world but also creates and sustains the social myth of the over pragmatic sense of the library, book, article or letter, a myth that does not stand up to the realities of the present world, that reality requires selected and high-speed access and data distribution. Despite these weaknesses, however, it is worth mentioning the library as a source, but as one of the alternatives to academic education. The more often they are used by the students, the more they become a valuable addition to the information that students usually seek on the Internet. The basis, on which they only begin their search. Academic education moving partially into the world of virtual network means that there must be sought the value and the future of it. The weakening potential of library sources could be reinforced, if all physical materials in libraries have their electronic representations, and what is very important, can be easy to use and access.

Separate discussion requires experiment itself aa a researching metod. That led the author to formulate some proposals for future practice researchers, who want to join in to the same trend of research. I want to point out that these are the conclusions of the author himself and, as such, may be only a fractional complement to the knowledge about the experiment as a method of research, and they take no arbitrary power, because the experience of practicing the method of the experiment may be different for each researcher:

- Each designed experiment should be consulted, discussed and implemented in a confrontation with a third party developer, although familiar to the subject and method of research[16];
- Each experimental study should be preceded by a pilot study that not only confirms but can overthrow and identify erroneous assumptions about the methods, techniques and tools used in the experiment;
- Each experiment should be carried out in a team with at least one researcher firmly embedded in that method of research[17].

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With the internet - Projects

The concept of the e-Portal as a specialized tool for conducting marketing experimental research on the Internet

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ABSTRACT

The objective of the article is to present the specialized tool –the e-Portal which is designed to improve the experimental research process on the Internet. The objects of studies are barriers which are faced by the research entities in the internet environment and efforts to restrain them by creating a universal research platform based on the gratification of participants. By introducing the possibility of interactions between investigators and research participants and by agreeing to reduce the risk of hoax, it is possible to reduce the reluctance of Internet users to take part in research, to extend the acceptable period of research duration and to increase the proportionality and veracity of a target sample.

Keywords: marketing research, experimental research, social media, interactive research tools, innovations in marketing research.

Introduction

The development of Internet has resulted in getting consumers active in the virtual world which has become a burgeoning environment for purchasing processes. The Internet is a specific form of market where buyers and sellers can transact and conduct business activities without limitations on accessibility and spatial distance. For shoppers the Internet has become a tool to improve the possibilities of obtaining information about the offers of various companies, a platform to exchange views and a place where interactions with other consumers are possible. For sellers this is primarily a promotional tool which allows access to geographically inaccessible customers and increase brand awareness and sales of the product. This versatility has become a motivating factor for expanding traditional marketing research on so-called networking tools. Using the power of the Internet, quantitative and qualitative research on consumers and sellers is conducted. Behaviour and attitudes of a specific audience can be examined, based on which it is possible to adjust marketing strategy towards the requirements of a particular group of consumers. The Internet is also a place for conducting experimental research that by creating a virtual market with limited range, a proportional selection of consumer segments aims at mapping real customer behaviour, recognizing and properly interpreting it (Babbie, 2013).

Experimental studies provide tracking consumer reactions to the product, its environment and competitive offers in theoretically the most realistic way and they are therefore seen as most reliable online research techniques (McBride, 2013).

Barriers to conducting experimental research on the Internet

Research conducted via the Internet is subject to numerous potential limitations and pitfalls that can consequently lead to low credibility of the study. **Anonymity of users** can be regarded as basic problem. The selection of the research sample on the basis of desirable characteristics is burdened with a high degree of potential, or inadvertent mistakes due to the inability to verify the data declared by the users of web portals. One possible place for collecting samples for research conducted over the Internet can be social media where users are theoretically more prone to make public the data about place of residence, age and education than in other websites. However, this is not a universal phenomenon. Users have the ability to hide the details of their profiles from strangers, some of them give false information allowing us to to argue that research with the use of social media also entails a risk of inauthenticity. Another barrier to online research is the reluctance of Internet users to take part in it due to the lack of time. The volume of research with the use of Internet is growing and therefore also the amount of tests proposed to one Internet user per annum is a statistically upward trend. This results in frequent rejection of proposals for participation in subsequent studies (NPR, 2013). This fact, in turn, connects to the necessity of **reducing the length of the web test**. Users are more prone to participate in short surveys than in several days long research experiments (Rand, 2014). While the objective of the surveys is to obtain maximum coverage, the total number of completed questionnaires and statistical analysis of the results, experimental research, however, requires the involvement of participants in the process.

In cases of cancellation of participation in the experimental research conducted in the Internet, finding the same user and persuading him to complete the study involves more logistical problems than in the real world. To involve people in experimental study financial rewards are used, however, such actions in the Internet environment is problematic due to the low tendency of users to report the actual data and a low level of confidence about further data transmission. Also considered to be problematic is **the disproportionality of given groups** in the real and virtual worlds. The research conducted by Pew Research Center shows that in the structure of Internet users, there is evidence of overrepresentation of age group 18-29 compared to the 50-64 and 65+ groups. Upon the studies provided by this research center in 2013, 89% of Americans aged 18-29 were using the Internet. In the age group of 65+, this number was only 59% (PewInternet: Whos-online, 2013). The use of social media among these groups shows even greater disparities. 89% of internet browsers aged 18-29 use such media. In the age group of 65+ this was only 43% (PewInternet: Social-Networking, 2013). It is evident, therefore, that in case of wanting to conduct Internet research on older people, recruiting them seems to be technically more difficult than a group of young users. It is a serious barrier to attracting a target research sample. Disproportionality of the different groups of Internet users in relation to the real world can be seen also in terms

of other indicators, such as place of residence, education or earnings. In 2013, 97% of people with higher education were Internet users. In the groups of lower educational status only 56% were using this tool. In the case of earnings there is a predominance of people with earnings above 75,000$ per year (97% are Internet users) compared to these with earning less than 30,000$ per year (75% of them used the Internet) (PewInternet: Whos-online, 2013). Worth noting is that the studies were conducted on the Americans. It is suspected that in the case of Polish research these results would have presented even greater disparities. It is therefore evident that the Internet does not reflect the real proportion of the world population so conducting any experimental research where the goal is mapping the real market, requires additional involvement in the selection of the research sample. Studies conducted by Harris Interactive clearly shows that Internet users have a high **distrust to other browsers and Internet activities** (such attitude indicated 98% of the sample of 1,900 people). Specific factors affecting this phenomenon were the ability to infect a computer with virus (63%), loss of the money (51%), the possibility of embezzlement (51%), loss of credibility (36%) (Mashable: American distrust of the Internet, 2013). Undoubtedly, such attitudes affect Internet users to reduce their willingness to participate in research conducted over the Internet. In particular, experimental research which requires the commitment and detailed data from the participants, are associated with a low level of confidence from potential respondents.

The concept and assumptions about the e-Portal

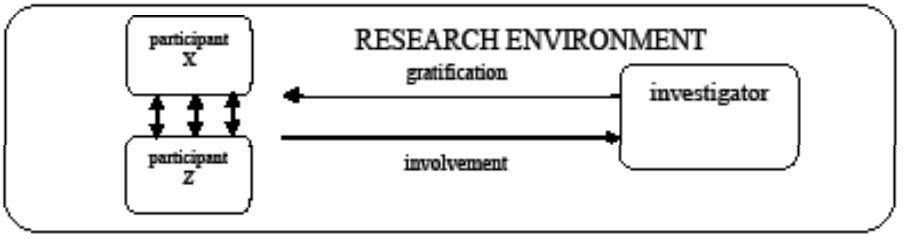
An attempt to reduce the above presented research barriers is to construct such a tool which could reduce the anonymity and increase the confidence towards such tool in perception of the Internet users. It is also necessary to reduce the level of reluctance to participate in the study and to increase the involvement and inclination to take part in longer experimental research by securing proper gratification. It is also crucial to increase the proportionality of particular groups of respondents what would allow for the reproduction of the real market in the virtual world. The proposition of such a tool is a research portal which combines the features of a database and social media. Its basic premise is the existence of a legally protected access to the registered users who are the potential participants in the experimental study. The actors involved in the functioning of the e-Portal are respondents, investigators, administrators and external companies. The purpose of the analysis is primarily to estimate the validity of functioning of such a tool and to gauge the possibility of its use by the respondents and investigators on the basis of mutual benefits. The e-Portal is assumed to be a tool in a form of website which would collect the largest possible group of Internet users. From among them it will be possible to select the desired participants for the particular experimental research. Depending on the intention of investigators it will be permittedto divide participants into experimental groups and control groups. Also provided is the potentiality of interactions between participants, participants and investigators or even the remaining unaware by participants about the number of other people taking part in the research (Luck, & Shogrun, 2007). The concept of the e-Portal is in the stage of planning and investigating its

market usefulness and commercial potential. Attempts to create the proposed tool are the result of a wish to limit previously experienced challenges in experimental research faced by the author and co-operating teams.

Functions of the e-Portal

Basically, the goal of the e-Portal is based on four basic functions. The first of these is the **research function**. Designed as a specialized tool, the e-Portal is used for conducting experimental research. Its functioning is aimed at reproducing the research environment in the closest way to the reality, particularly in terms of the characteristics of users. To ensure broad access to the potential respondents, the e-Portal should be based on the **principle of gratification**. Participation in the study should be therefore paid in cash or in any other form proposed by the investigator (e.g. by access to paid online information, products offered by ordering the tests, etc.). The principle of gratification is a key in the functioning of a research portal which guarantees the stability of sample and whole research. In principle, it is strictly related to another function of this tool - **involvement of respondents in the process**. Through mutual commitment it is possible to increase the involvement of the participant who is aware that remuneration will be paid only in the case of full participation and completion of the experiment. The last function of the e-Portal is the **admissibility of interaction between participants and between participants and investigators**- depending on the nature of the performed experiment and decisions of the principal. It should be assumed, therefore, that the working of the e-Portal as a tool for conducting the online experimental research is based on the following function:

Diagram 1. Functions of the e-Portal



Source: Author's collaboration.

Users of the e-Portal and role of administrators

Users taking part in the functioning of the research portal can be divided according to their characteristics and position in the study. The primary users are respondents (all registered people who are the potential research sample taking part in the experiment), the investigator (people commissioning the study and determining its course) and sponsors or external companies whose role is to provide the financing and securing the presence of the e-Portal administration. From the point of view of

the organization process and independence of research, an important role is played by the portal administrators who are inspecting the activities of the respondents, investigators and external companies. Their task is not active participation in the research process, but the preparation of suitable environment for carrying out the experiment. The role of administrators is also verification of the data declared by the users which under the premise of transparency affects the final quality of the study. In the case of choosing the particular research sample with specific psychographic or demographic characteristics, it cannot be allowed to examine the persons who declare false data. The task of administrators is also to manage the gratification system for the users which is intended to reduce the risk of fraud and boost the confidence of respondents to the e-Portal.

Position and role of the respondents

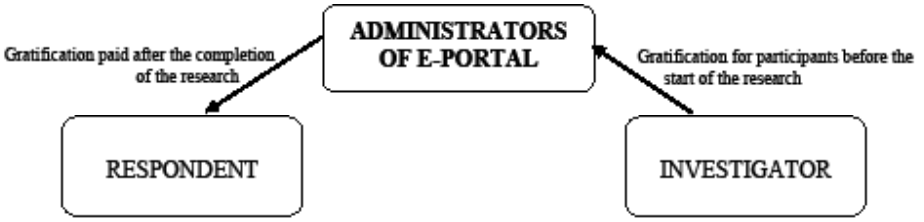
People willing to be involved in the research activity, register on the website e-Portal by setting up a personal account. At this stage, personal information that may be crucial in the final selection of the sample for experimental research is given: age, sex, education, place of residence, marital status, household size. In principle, potential respondents may be asked to provide additional information, depending on the needs of the particular assay. After registering, administrators send a paper contract upon which respondent agrees to participate in the e-Portal activity. Only the physical address indicated by the user can be recognized. To activate the personal account, the respondent must send back the signed contract. After its receipt by the portal administrators account is officially activated and stored in the database. Personal information is not visible to other users of the e-Portal. The request of the investigator to choose the desired sample with given characteristics results in the selection of the registered participants from the database. By each research proposal, the participant must decide if he/she wants to take part in the experiment. It is necessary to inform him/her about the duration of the experiment, its nature and proposed remuneration. After accepting the principles user is engaged into the study.

Investigator

A person or institution which is commissioning the research is called the "investigator". He must register on the Internet system to create the professional account where he publishes information about his activities, physical address and tax identification number. Each investigator is obliged to sign an agreement with the administrators of the e-Portal in order to avoid any kind of extortion or fraud and to protect its own interests. The next step is to present the concept of an experimental research by means of the completed form available only for the professional accounts. The investigator describes the size and nature of the research sample, determines the number of groups and decides about the scope of internal interactions and about the nature and length of the whole study. Necessary at this stage is to indicate the size of payment for potential respondents who may decide to accept or reject the proposal. From the point of view of the credibility of the study it is important to provide the proposed remune-

ration to the administrators of the e-Portal even before the research starts. In the case of remuneration in the form of cash, the investigator conveys a fixed amount of money, which is equal to the sum of payments for all participants, to the portal administrators who disburse money only if the experimental study is completed. Such action is a form of securing the interest for both the respondents and investigators who are guaranteed about the completion of signed agreement. The investigator is also obliged to pay for the possibility of using the offer of the e-Portal.

Diagram 2. The principles of gratifications on e-Portal



Source: Author's elaboration.

Sponsors and external companies

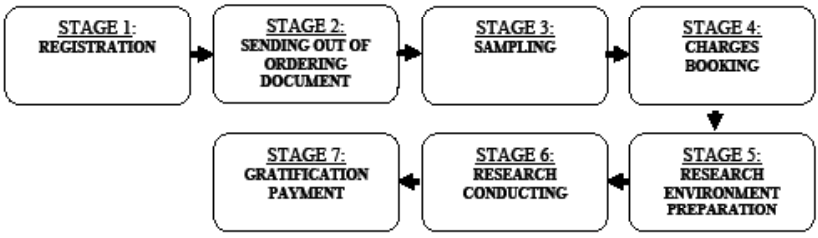
The role of sponsors and external companies has primarily a supportive nature. On the one hand, sponsors may place their logo and ads on the official website. On the other hand, they can transfer also their promotional materials to the participants. External companies, however, do not have access to the data of individual users as well as to the personal and professional accounts. Any sponsorship activity is permitted only upon the agreement of the administrators of the e-Portal who are assumed as a group to be the only people with access to the full database of users. Sponsorship materials cannot be used during the course of experiment because it could make the final result less reliable. The participation of sponsors and external companies in the functioning of the e-Portal is aimed primarily to cover the costs of the administration, legal actions and promotional campaigns.

Preparations and conducting of the research

The process of preparing and carrying out an experimental study with the use of the e-Portal consists of seven basic steps. The first one is **the registration of personal and professional accounts,** including all legal requirements. When the primary conditions are met, it is possible to move to the next phase - **sending a detailed proposal of the experimental study** in the form of a universal document which is available for professional accounts. On this basis administrators try to **derive the desired research sample from registered users**. Subsequently, **administrators send a proposal to participate in the experiment** which constitutes the third stage of the preparation of the study. The fourth step is **charging the posts or taking the other form of gratification** from the investigator for the future participants. Fifth step is **to prepare a "research environ-**

ment" in which the dominant role is played by the administrators of the e-Portal. On the basis of the previously mentioned document, a virtual place of research is created. Functionally, it resembles the chat window to which participants are prescribed and categorized. Worth noting is that in the ordering sheet the selection of the desired research sample is made in a broad manner: the field of study is defined (consumer behavior, brand management, product management, promotion, etc.), size of the sample and number of groups into which the total sample is divided must be assessed. It is also necessary to determine how many participants each group will contain. From the point of view of detailed selection it is essential to define the sample profile (it should set out the target age group, sex, degree of education, marital status, number of children, size of household, earnings, place of residence, profile of employment, hobbies). The last stage of the ordering document is to define the method and scope of interaction and to designate a moderator who is chosen by the investigator. Communication in the research is provided by chat, interactions between selected group members, monitoring the reaction on the project, filling out the questionnaires. The sixth stage is **performing the research**. The process of preparation and conducting of the research ends with the **payment of any remuneration**. A controversial part of the functioning of the e-Portal is the possibility of introducing data interpretation and inference provided by specialist hiring by the e-Portal. In the initial phase of tool construction it was assumed that the objective of the e-Portal is to make possible the completion of samples and to conduct the research. In such cases, the interpretation and analysis of final results would be at the discretion of investigator. If the e-Portal would have only the form of a research tool, the interpretation of final results is the responsibility of investigator. But if the e-Portal could have a form of commercial tool, introducing the option of ordering interpretation of the results it would be attractive and it could result in additional profits.

Diagram 3. The process of preparation and conducting the research



Source: Author's elaboration.

The use of the e-Portal in experimental marketing research

The tool of an e-Portal, can be used to study the majority of the problems, which are of interest for contemporary marketing. Depending on the choice of investigator, it is possible to gather opinions on the perception of the product, brand, consequences of rebranding, product adaptation, distribution, promotion, communication, etc. Thanks to the broad possibilities of the adaptation of research environment into each

particular experiment, it is possible to confront groups and to collect detailed data with the use of Internet. The e-Portal can be used for scientific research by a number of entities: academic institutions, companies, public institutions, non-governmental organizations. In the field of access to the tools there is no limit in the range of investigator profile. In principle, the e-Portal should be a tool universally available, especially because of the need to gather various users with different demographic and psychographic characteristics. Continuous expending of databases is provoking the question in which direction the e-Portal should develop? It is worth taking into account the commercial nature of this tool because of the necessity of several covenanting and controlling the research process by specialists which require financial outlays.

Limits in the functioning of the e-Portal

One of the limitations of the e-Portal is the necessity to pay the legal department and the accounting officer whose task is to control the environment and to prevent negative effects of legal actions. This fact is connected with the costs which should be covered by external companies, sponsors and people ordering the research. However, at the initial stage of the functioning of the e-Portal it is not possible to predict whether the obtained funds will be sufficient to pay for aforementioned entities. Thus, the cost of running an e-Portal seems to be the most serious limitation, particularly in the face of the uncertain profitability of the project. Another limitation is the structure and profile of Internet users. The initial assumption of an e-Portal was to gather people with various demographic and psychographic profiles which would provide the proper selection of desired research samples. However, as it was presented in previous investigation about Internet users' structure, there is an underrepresentation of persons over sixty years old. It has to be noted that this group of users would be involved in a greater number of potential experimental studies than others.

It remains an open question whether it would affect their activity in the experiment and some kind of certain automaticity of answering? On the other hand, it is not proven that people ordering the experiment would be more interested in making research with this age group than with other ones. It can be disputed how much real confidence participants will have towards the e-Portal. On the one hand this tool can be seen as a potential source of obtaining extra money for participation in the study. On the other hand, because of the high level of distrust of Internet users towards the virtual world, it is still questionable whether the legislation and the gratification would be sufficient factors for changing their current views about the Internet.

From the point of view of the geographical scope of the e-Portal activity, there is still the disproportionate access to the Internet in less urbanized areas. This could also result in problems concerning the proportionality and frequency of enrolling the same participants into further research. Moreover, people involved in numerous experiments may develop universal models of behavior and response to similar research problems what would greatly restrict the veracity of the final results. One possible solution to this problem is the restriction to participate in only two experimental studies per year within the same declared category of research by one participant. After use in two possible surveys, a personal account would be blocked for a period of one year.

Conclusions

Experimental studies conducted via Internet have been developing dynamically since the mid-90s of twentieth century. Their potential was noticed by both research centers and companies wishing to monitor regularly the surrounding environment and to adapt their products into new challenges and trends (Ledolter, & Swersey, 2007). Internet experimental studies are not only the domain of marketing or economic sciences. Their use makes it possible to conduct research on issues concerning sociology, political science, psychology, etc. Quantitative research in the form of short surveys are developing rapidly. Several previously described barriers affect the limitation of forms in which research can be conducted via Internet. Some of the most desirable types of research in the virtual world are considered to be experimental studies due to the possibility of mapping the actual environmental conditions and on this basis, conducting the examination of attitudes and behaviour of the respondents (Berndt, 1996). The concept of the e-Portal as a tool which would make possible an experimental study via Internet is based on the principles of functioning of social media, databases and interactive communication tools (including chat). Thanks to the legal regulations, the e-Portal should be perceived as a safe tool for both investigators and participants who want to obtain the proposed gratification after the completion of the experiment. Assuming that this tool will have commercial and universal form (for all eager people after meeting the legal conditions), it can be anticipated that it will be an attractive business project for sponsors and external companies who will have the possibility to make promotional and information campaigns on its basis. The tool which combines the features of the most popular applications and websites beside their usefulness, has a high potential of profitability. From a practical point of view, it is therefore an attractive channel for future research that could improve the work on experiments conducted over the Internet not only for marketing purposes but also for interdisciplinary ones.

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Computer games as a technique in the support of learning for seniors? The results of research

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Abstract

As noted byNail Selwyn, Stephen Gorard and John Furlong *Learning with technology is seen by many countries as a way of improving their collective human 'capital'*(Selwyn, Gorard, & Furlong 2006, p. i). Therefore, the article presents the implementation of the new technology (computer games) in adult education. The aim of the paper is to show the result of a pedagogical experiment which was realized in the University of the Third Age in the University of Wroclaw in the framework of the TANT project. In the article we present the transformation of civilization: Information Society, Knowledge Society and population aging which were the impetus for undertaking research on the relationship of new technologies and education of the elderly. Educational potential of computer games was presented. All steps of experiment were described. In the end we present results of research and conclusions.

Keywords: Educational experiment, pedagogical experiment, computer games, New technology, learning of elderly.

Using the method of pedagogical experiment it is possible to make a highly probable assessment of usefulness a different ideas in the field of teaching and education (Łobocki, 2010, p. 231). This method is an inspiration for searching for better educational solutions, and creative methods of work with children but also with youth and adults. Generally, the pedagogical experiment offers " a multiplicity of new solutions for improving the process of teaching, learning, upbringing or training" (Łobocki, 2010, p. 231). Therefore, it is the opportunity for direct experience of pedagogical practice, which has a huge impact on development pedagogy as a science. We believe that innovation, creativity and readiness to search for new educational and teaching solutions is a fundamental element of development in modern society. Furthermore, the rate of change of civilization and new social phenomena mean that importance of education is higher than ever.

In the context of these considerations we point to a few very interesting phenomena, which have a substantial impact on the shape of contemporary reality. First of all is the Information Society in which information is a fundamental element of socio-economic activities and changes. The IBM Community Development Foundation defines Information Society as: "A society characterised by a high level of information intensity in the everyday life of most citizens, in most organisations and workplaces; by the use of common or compatible technology for a wide range of personal, social, educational and business activities; and by the ability to transmit and receive digital data rapidly between places irrespective of distance" (*The Net Result – Report of the National Working Party for Social Inclusion*). This definition shows that information and management of it characterized a new type of society. Moreover, the new technology is used in every aspect of human life. It should be noted that knowledge is a very important pillar of Information Society. Furthermore, knowledge is fundamental for creation of the Knowledge Society, which is the next step for the development of society. Therefore, as noted by Peter Drucker- knowledge has special significance because access to information and education determine people's success and social positions. (Drucker, 1993, p. 90). Moreover, Nail Selwyn, Stephen Gorard and John Furlong draw attention to the educational potential of new technologies in modern reality which is reflected in this citation: "The information age presents many challenges for those in education and government. The need for the whole population to be able to access and use new technologies such as computers, the internet and digital television is often seen as crucial to establishing a skilled workforce and empowered citizenry for the twenty-first century. The potential of these new technologies to allow people to learn throughout the life--course is also seen as a ready means of establishing developed countries as learning societies'. Governments around the world have therefore set targets and developed policies to help all adults to learn, work and live with the support of information and communications technologies (ICTs)" (Selwyn, Gorard, & Furlong 2006, p.1). Authors stressed the importance of lifelong learning in Information Society.

Taking into account the above phenomena it can be concluded that the reality of twenty-first century is very complicated and multi-faceted. On the one hand, the dynamics of change is very interesting but it is also uncertain and unclear, so the life of people is unpredictable. This is due to the fact that various kinds of phenomena overlap each other and quickly appear, but also quickly disappear which reinforces the sense of chaos. Therefore the role of pedagogy as theory and educational practice is invaluable. Different kinds of educational process allow diagnosis of previously unknown phenomena and understanding of reality. Education enables us to adapt to the changing socio-cultural conditions.

Uwe Flick noted that sources of research interests are very different and depend on personal experiences, micro-social problems but also global processes which imply consequences for social policy (Flick, 2007, pp. 17-18). Inspiration to conduct what is described in title experiment was a desire to deepen reflection on old age in the aspect education and search for new methods of education "in old age". The aim of research was to answer the question whether computer games can be used as a technique to support learning for seniors.

The demographic changes that had been observed at the end of the XX century contributed to greater interest in the problems of the elderly, also - and perhaps primarily - in in their academic environment. The different kind of descriptions of old age and aging were appearing in the scientific literature but definition of these terms is not easy. Moreover, many researchers believed that is impossible create one definition of old age and aging because it is possible to examine only a certain regularity. It is result of the extension of research fields of modern science, but also the socio-economic conditions (Szarota, 2004, p. 23). Adam A. Zych noted that global aging is becoming an important challenge for modern lifelong learning and social systems whose task is to meet the changing social, cultural and educational needs of older people (Zych, 2012, p. 149). Therefore, the issue of old age is more and more popular in research.

As noted by Maria Straś-Romanowska in the phase of aging it is possible to acquire the knowledge, skills and shaping habits, attitudes and behavior, and thus it is possible to improve and enrich personality. This development is very important for old people because old age is a stage of new challenges and tasks. The main task of an elderly person is adapting to the changing conditions of life, and modifying these conditions according to their needs (Straś-Romanowska, 2000). In implementation of these postulates the idea of Lifelong Learning which is realized by formal, informal and non-formal education could be useful (Jarvis, 2004, pp.40-41).

One of postulates of elderly education is acquisition of resourcefulness and self--reliance where education in new technologies or knowledge economy could be helpful. Therefore, various initiatives to counteract digital divide are undertaken. An example is The University of the Third Age in the University of Wroclaw which conducts computer courses for seniors. ICT courses have different levels of sophistication and themes. Moreover, seniors are participants of international educational projects, whose aim is to counteract seniors exclusion. The experiment described below was carried out in one of these projects. It was TANT project (Third Age and New Technologies) implemented in the framework of the Grundtvig program.

Description of the experiment

This article includes analysis of educational experiment which was realized in The University of the Third Age in the University of Wroclaw. In line with the theoretical assumptions the goal of the experiment was to examine the learning process of seniors and the educational potential (or lack thereof) of computer games in education of the elderly. The education experiment is understood by the authors as a method for study of phenomena that are associated with upbringing, teaching and learning. These phenomena are created intentionally by the researcher under controlled conditions in order to understand the nature of these phenomena (Łobocki, 2011, p. 110).

Researchers of adult education suggest broad, multi-dimensional understanding of learning. therefore the authors proposed learning technique for seniors, constructed on the basis of strategic and commercial computer games. In the experiment the technique of parallel-groups was used (technique of comparison groups) of at

least two study groups. One of them is the experimental group- the independent variable (an experimental factor) is introduced to this group. The second one is a control group which is the reference point for the experimental group. Therefore, no independent variable is present which allows comparison of the results of these two groups (Łobocki, 2011, p.110).

As already indicated, a very important element of educational experiment is definition of the variables. In this research the independent variable is using **computer games** in learning of seniors. Whereas, the dependent variable is the **effectiveness of the educational process.**

Requirements for the implementation of learning supported by computer games

In the research we used as the method of learning for seniors: computer classes supported by strategic and commercial games. Therefore, before conduct experiment necessary was selection of seniors to research. Participants of research were seniors who had a basic level of knowledge of computers. For this purpose, the recruitment was made during which seniors had to demonstrate their knowledge of computers and internet. In this way we could measure the dependent variables in the initial phase of the experiment. It allowed us to choose a group of people which met the requirements. The next step of experiment was meeting with the trainer of computer classes who explained to the seniors the specifics of the computer course. Afterwards, participants were randomly assigned to groups (experimental and control). Both groups (7 people) carried out the same program.

Implementation of the experiment

The experiment was attended by 14 people- they were students of the University of the Third Age in the University of Wroclaw. They were assigned to two 7-person groups. The control group had lessons once a week, duration of 1 lesson: 45 minutes. They were computer classes, during which students were acquainted with Microsoft Office. During lessons students studied how to search for the necessary information on the Internet, sending e-mail, browsing social networking sites. Participants also expanded the knowledge of the new technologies, virtual communication and office equipment. The experimental group also had lessons once a week, but lessons lasted longer: 2 lessons (2x 45 minutes). During the first hour of classes they implemented the same program as in the control group. While the second hour of course was for computer games: strategic and commercial. Classes in both groups took place once a week and groups had the same teacher (trainer). The entire course contained 10 lessons. At the end of the research we measured the dependent variables.

Profile of participants

Participants of experiment were students of the University of the Third Age who took part in recruiting and over 60 years (60+)- person interested in new technologies.

Computer games

Theoretical analysis of strategic assumptions of computer games, which were put on websites of producers allowed us to conclude that in the experiment we should used strategic and commercial games[18]. The aims of these games are: learning to make quick decisions, solving problematic situations and improving the ability to think logically. These computer games are multidimensional, complex and diverse, so engaging in playing should bring measurable educational outcomes.

Seniors taking part in "computer brain gymnastics" in line with the producers, players, surfers have the opportunity to:

- absorb much more information and remember them for a longer time,
- play mode *multiplayer* (*online*) – with many players at the same time. This creates the opportunity to develop interpersonal skills, and improves communication skills,
- choice of language games, which can support language skills. The process of communicating with the online player also allows players to expand the circle of friends, and learn new and interesting things.

It may be noted that the games provide opportunities to development of a wide range of seniors skills. Therefore, it can be concluded that computer games have an educational dimension.

Justification for the choice of computer games

In the experiment were proposed strategic and commercial games. Thanks to them, participants of project were able to develop strategic thinking and gain knowledge of economics (trade). Producers and internet users believed that the chosen game allows improvement of ability of analytical and creative thinking, intuition, reflection, and coping with problems. Moreover, games improve manipulative skills and ability of using a computer.

The proposed strategy games present a varied level of difficulty in terms of the complexity of the interface and the tasks. Games are designed for groups with different levels of sophistication in the use of computers. Examples of games: „Farmerama", „ Zoomumba", „Anno 1701", „Ikariam", „Patrician".

As noted before, the computer games could have educational potential. A few aspects of learning by strategic and commercial games can be distinguished:

Technical aspects:

- Ability to use computer games (install the game, its saving, exiting the game).
- Strengthening and acquiring new competencies in computer skills.
- Improve knowledge in the use of new technologies in education, entertainment and everyday life.

Social aspects:

- Learning and experience of effective cooperation - developing team skills.

18 Staregic and commercial games:„Anno 1701", producr: Related Design, „Ikraiam", producer: Gameforge, „Capitalism 2" producer: Ubisoft, „The Guild 2, Piraci Starego Świata", producer: Head Studios.

- Preventing the digital divide.

Personality aspects:

- Develop creative thinking and creativity in solving problems.
- Development of social skills.
- Experiencing and strengthening the personal impact.

Educational aspects:

- Understanding and developing techniques for effective memorization.
- Maintaining mental activity.
- Developing spatial imagination.

Other aspects:

- Change in relation to computer games.
- Getting to know new ways of spending free time.

There is a multiplicity of aspects in which you can take advantage of games which shows great potential for programming the educational process. Computer games can not only used to teach ITC skills but also to develop social, personal and other skills by *tacit knowledge*. Therefore, taking part in lessons and using computer games at the same time it is possible to develop many skills at once.

Results of the educational experiment

Initially, people in the experimental group had mixed feelings in relation to computer games. Only two of the seven people had experience with computer games. Those people had a positive attitude to games - they encouraged other seniors to be active. In turn, people who had not benefited from computer games had a negative attitude towards them. Those seniors believed that these games are childish, do not develop any skills, waste time and are too difficult. Negative attitudes were the result of a lack of knowledge and feeling the fear of computer service- seniors feared that they can damage equipment. Another factor may be the fear of being the weakest in the group- they feared competition. In addition, the attitude of participants towards games was shaped on the basis of negative reviews in the media. It should be noted that at different stages of the experiment seniors changed their attitude towards games:

I step: the majority of the group showed a suspicion in relation to games,

II step: interest, asking questions-first independent attempts of playing at home,

III step: commitment- rivalry between the participants, a sense of "victory" and development.

IV step: commitment, high level of autonomy, lack of knowledge on the subsequent stages of the game was replenished independently: googles, forums. Spending free time to play, work at home.

It should be noted that in the control group, there was no change of attitude towards games. Seniors in the control group had an attitude which is characteristic for the first stage.

Not only attitudes were different in the experimental and control group. Differences are also evident in the behavior of the participants. Seniors in the experimental group rarely asked for help because they tried to use method of "trial and

error" to solve problems. In addition, those seniors tried to find the logical cause and effect linkages and represented a higher level of self-confidence and capabilities. Moreover, seniors in the experimental group showed a greater level of concentration on the task being performed and more likely than people in the control group to do homework. Participants of the experimental group to a greater extent competed with each other and they glorified their own achievements. It is worth noting that in this group was greater level of interest in working with the computer-seniors somewhat "by the way" broadened knowledge of computer. Furthermore, the experimental group was more integrated, and its members had a sense of being part of a group. Seniors in the experimental group were more spontaneous-often joked and commented on the interface and the tasks performed. It is also an important fact that the seniors were satisfied that they could boast in front of their grandchildren that they can play games. It is worth noting that the participants in the experimental group not only changed their attitude towards computer games, but also behavior. The results of the using computer games in education seniors are as follows:

- Games forcing quick reactions (reflexes) - therefore seniors have to repeatedly solve the problems alone - rarely asked for help, less fearful of damage to the computer or doing something wrong,
- Faster response time - performance of tasks,
- A positive attitude to classes,
- A positive attitude to new technologies,
- Seniors have learned to look for answers to their questions on the forums,
- Seniors learned to observe messages, balloons - drawing conclusions for further action.

Also, seniors themselves noticed the positive effects of participation in the experiment. They exchanged the following benefits of using computer games in learning:

- reduce the sense of e-exclusion,
- extending the knowledge of economics and trade,
- breaking the stereotypical, negative attitude to computer games,
- ability to use games: broaden the knowledge of computer operation,
- increasing self-esteem and motivation to achieve their goals in life,
- improving skills: communication, memory (memory training), to improve the efficiency of manual and intellectual tasks,
- sense of well-spent time: entertainment, fun, learning.

Observations of researchers and respondents' opinions have confirmed that computer games have a great educational potential and can be used to develop many areas of skills and abilities. Moreover, a very important aspect was a fact that using computer games reduces anxiety to technologies. It should be noted, that computer games motivate seniors to using technology and development of personal and social skills.

Problems during the experiment

There were also problems of ongoing research, which were both the result of the method used, the technique, but also the specifics of the research group. It should be

noted that the pedagogical experiment it is not carried out in the laboratory, therefore it is difficult to eliminate confounding factors. However, most of the problems in this study were result of the study group. We should be aware that older people are a very specific group. Below we refer to these elements, which we think were the most problematic, and they are:

- Negative attitudes of seniors to pre-selection when choosing people for experimental groups - the disappointment of rejection. Seniors often had a lower level of knowledge of computer operation than they declared.
- The negative attitude to selection of groups by random - seniors wanted to decide who will be in the control group and who in the experimental. Major importance was the "separation" of friends, because participants wanted be in a group with people whose they know.
- Absenteeism of seniors.
- Different levels of commitment.
- Diversified attitude to games and work at home.

Problems, which we experienced during the experiment are a source of information and show what should be improved in future studies. First of all, before the start of classes we should point to the benefits brought by computer games. This is important because seniors have a negative attitude to this kind of activity. Another aspect is the selection of the experimental and control groups. In both groups, classes should be attractive to seniors. thereby the participants will not disappointed. Moreover, seniors should not to know in which groups (experimental or control) they are located. What's more, the problem is the low turnout of seniors in the class. Therefore, we should pay attention to the motivation of seniors to take part in this kind of activities. a solution could also be the use of e-learning. Another important aspect is selecting a group of people, with similar skills in ICT. Very diverse groups in terms of these skills means that people with higher level of ITC skills slowly develop new skills, and those with lower skills are not able to keep up with the program.

Conclusions

The studies can draw interesting conclusions both in aspect of education, social and individual. Referring to the educational process, it can be concluded that computer games make this process more interesting. Moreover, the acquisition of knowledge takes place spontaneously- "in spite of himself". The use of this type of technique also helps to integrate theory and practice.

In the technical aspect, it can be concluded that seniors quickly mastered the computer service. The use of games in education reduces the fear of new technologies. Participants in the experimental group were able to use the web browser (accurately).

Studies also show that the use of games in education positively affects the atmosphere in the group. Games were a factor in a positive way, stimulating a competition in the group. However, the participants were able to cooperate when they had difficult task to do.

Using games in seniors education also affects the development of the individual. Participants had a higher sense of urgency, they were more self-reliant and self-

-satisfied. Computer games help in remembering new things, learning creativity and analytical thinking. The eye-hand coordination is also improved.

In summary, the proposed method can be used in teaching: new technology, foreign language (vocabulary), history (descriptions, maps), economics (basic mechanisms), management (risk management, human resources) and marketing. This kind of training supports mind and physical fitness. This does not prevent dementia, however, is an excellent form of stimulation- this technique improves concentration, sharpens mental acuity, improves memory and faster response time to visual and auditory stimuli. There is great educational potential in such techniques. We hope that this research will be an impulse for the development of methods to support seniors in learning.

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