THE IMPACT OF DISSEMINATION ON TEENEGERS

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ABSTRACT
Several things can influence us when our opinion is being shaped. Media, traditions and superstitions can be harmful factors of influence. The most receptive and vulnerable age group is the 8-14 year old teenagers. During this period outside impacts are playing decisive role to shape their personality (these effects can predict what kind of person they will become). We have done an attitude survey in this age group. Our question was as follows: Can significant difference be detected between "treated" school group and "control" school group due to the dissemination? A paper-based questionnaire was used, about bats and what children think about bats. The questionnaire included 22 items based on the works of ADDAMS & LINDSEY (2009) and LETENYEI & NAGY (2007). The questionnaires were summarized as "treated" and "control" groups, then Microsoft Excel was used to perform Chi-square tests. From 22 questions only four were shown significant difference and three differences out of four were shown in the control group. The wrong answers percentage was increased all the three times. Treated group was shown strong significant difference (p=0,001) in one question ("How do you relate to bats?"). In this case the positive attitude has been increased due to the dissemination. Since there is not any significant difference in the vast majority of these questions (before and after the dissemination), the effect of the dissemination is questionable. Presumably, there will not be increase in the population's knowledge, but the emotional attitude can be changed with dissemination.

Keywords: dissemination, bat, urban wildlife management, questionnaire, teenagers

INTRODUCTION

In recent years, various animals appeared in cities. Wild animals can cause conflicts with public, due to this their management is necessary. This management should be extremely important if the species are protected. The management techniques can only be performed by professionals and within legal limits (ADAM et al., 2006). In the future, urban wildlife manager experts can deal with these problems and these experts' education is solved in wildlife management BSc and MSc. However, the attitude of the population has to be known to create an economically valuable field (HILL et al., 2002). Attitude surveys usually based on questionnaires (KISS et al., 2006; BUDA, 2008) to reject or confirm a just conjecture.

The most receptive and vulnerable age group is the 8-14 year old teenagers. At this age a changeover took place when the teenagers' autonomous decision-making is being developed (LORENZ, 1973; BUDA, 2008; CSEKE, 2010). Because of this, children in this age group are the most suitable individuals to be surveyed and examined the potential changes in their attitude. Only a few similar studies have been done in this field in Hungary (OLÁH, 2010; BOGÁRNÉ, 2008), although questionnaires are being used by urban wildlife management in foreign countries to survey public opinion (ADAMS et al., 2006; ADAMS & LINDSEY, 2009). ADAMS & LINDSEY (2009) released a study guide on questionnaire techniques. CADE et al. (1993) has used this guide to study peregrine falcons in urban environment. Questionnaires were also used in a long-term national monitoring related to mammalian predators and birds of prey (SZEMETHY, 2004).

Some studies in Hungary have shown that scientific knowledge barely depends on the attitude of the 13-17 years old teenagers, but it is highly depends on their inductive thinking, complex problem solving and reading comprehension. Analyzes show us that this knowledge might not comes from formal education but informal studying outside the school (OLÁH, 2010; BOGÁRNÉ, 2008).
Our general question was: Are there any significant differences in the answers of the treated group and the control group? (H_o= there are not any significant differences. CI= 95%). To find out this, the aims were as follow: (1) compile a flexible, paper-based questionnaire to the teenager age group, (2) survey their general knowledge and their relation to bats, (3) apply the questionnaire to find out if there are any uses of dissemination in the teenager age group.

MATERIAL AND METHOD

We made the survey at Ferenc Erkel Elementary School and the Sándor Petőfi Elementary School. In both schools we chose a 7^{th} class (approximately 13-14 years old) and another one for control group. We distributed the questionnaires (which consist of 22 items) in the classes and three weeks later a dissemination lecture about bats was provided. Three weeks later we distributed the questionnaires to both groups again. Thereafter, the lecture was given for the control groups as well, but it has not influenced the results.
Former researches proved that the paper-based survey is more efficient than computer-based (MOLNÁR, 2010; CSAPÓ et al., 2008, 2009), therefore we choose this way. This method also let us kept contact whit the children, what was important as well. During the compile of the survey we tried to follow the instructions of ADDAMS & LINDSEY (2009) and LETENYEI & NAGY (2007) to get a flexible survey. Thus, during the compile of question we focused on the simple questions which's not require further explanations and can be measured on a scale. We have compiled the questions that the children only have a few alternatives to choose from.
We created the questions and the possible answers according to the language style of the teenager age group. We had a trial-filling with teachers, classmates and friends in order to control its understandably, readability and professionalism. After that, we made the final questionnaire. After the filling, we summarized data and analyzed them with Microsoft Excel. We used Chi^2-test to investigate the differences.

RESULTS

In lack of space we only can show the most important result. More than 2/3 of the children have seen bats in their life, and more than the half about these detections were in urban environment.
The changes of the children's basic knowledge and emotional attitude can be seen in *Figure 1*. The vast majority of children know real biological facts about bats but most of them feel negative emotions when they hear the word "bat". The number of answers in "biologically false" has decreased (6% → 1%) and the "negative emotional" answers also decreased (36% → 30%). The percentage of "biologically real" has increased (39% → 49%), although significant difference cannot be shown.
40% of the children did not know the difference between flying and gliding and many of them classify "birds" to flying mammals. Their knowledge did not improved after the

dissemination, but in the control group the incorrect answers percentage has increased (37% →56%).
After the second questionnaire the percentage of correct answers about the species numbers in Hungary have been increased in both groups (treated: 7% → 19%, control: 4% → 23%) (treated: n_1=42, n_2=38, x_2=8,280259, df=4, p=0,081835 →h_0 accepted. control: n_1=48, n_2=47, x_2= 19,63187, df=4, p= 0,00059→h_0 rejected (strong significance).
After the second questionnaire the percentage of wrong answers about bats protection in Hungary have been increased (treated: 9% → 24%, control: 12% → 32%) (treated: n_1=43, n_2=37, x_2=3,487228, df=1, p=0,17489 →h_0 accepted, control: n_1=48, n_2=47, x_2= 6,516891, df=1, p= 0,038448→h_0 rejected (significant).
Nearly 80% of the children know true biological facts about bats' orientation (e.g.: ultrasound).

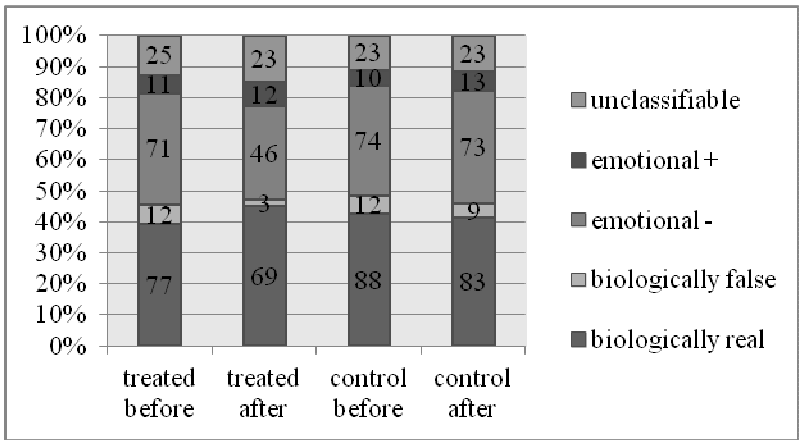

Figure 1. List five features that come to your mind when you hear the word "bat"!
Treated: n_1=196, n_2=153, x_2=6,10168, df=4, p=0,29645 →h_0 accepted
Control: n_1=207, n_2=201, chi^2 vagy x_2= 0,884833, df=4, p= 0,884833→h_0 accepted

The answers about bats diet can be seen in *Figure 2.*

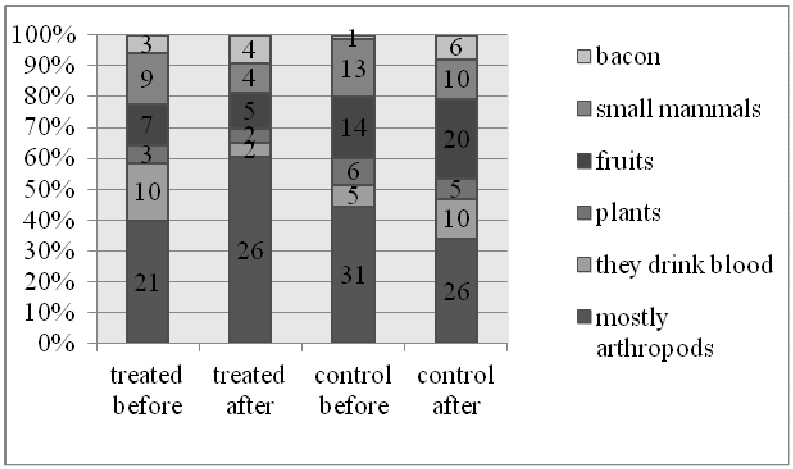

Figure 2. What do bats eat in our country?
Treated: n_1=53, n_2=43, x_2=7,457852, df=5, p=0,18576 →h_0 accepted
Control: n_1=70, n_2=77, x_2= 6,900042, df=5, p= 0,22818→h_0 accepted

Basically, the proportion of correct answers was in the vast majority in both groups. The answer "bacon" increased, "plants" and "fruits" decreased in both group. The percentage of the correct answer ("mostly arthropods") increased in the treated group (39% →60%), but decreased in the control (44% →33%), however this is not a significance difference.
The children's knowledge about bats' winter hibernation is mainly correct. In the control group the incorrect answers percentage significantly increased. Treated: n_1=42, n_2=36, x_2=0,956597, df=2, p=0,956597 →h_0 accepted, Control: n_1=49, n_2=46, x_2= 6,361607, df=2, p= 0,041552→h_0 rejected.
Questions about attitudes and emotions are rearranged after the second questionnaire. At *Figure 3*. and *4*. it can be seen that neutral emotions (for example: "I don't know" or "I don't mind") have changed into extreme emotions ("I like them" or "Very useful").

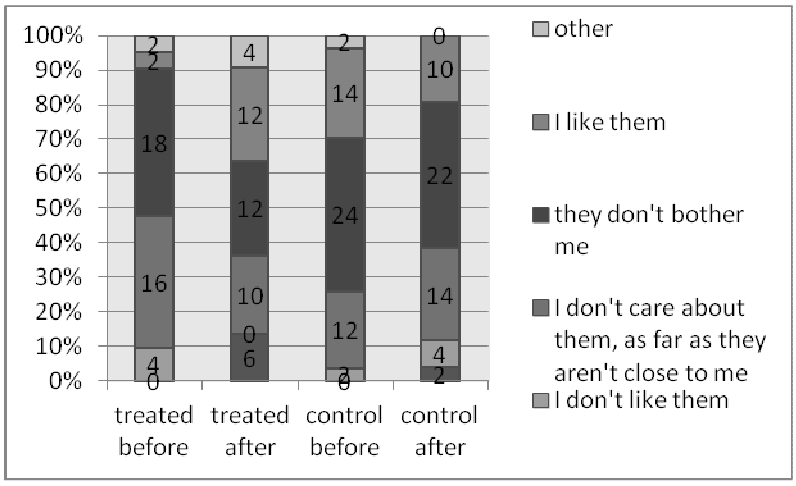

Figure 3. How do you relate to bats?
Treated: n_1=42, n_2=44, x_2=20,35864, df=5, p=0,00107 →h_0 rejected (strong significance)
Control: n_1=54, n_2=52, x_2= 5,538372, df=5, p= 0,35376→h_0 accepted

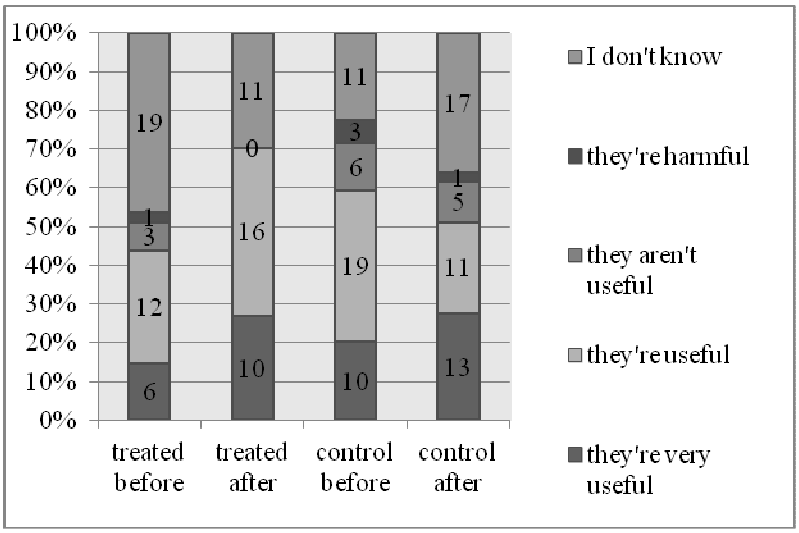

Figure 4. What do you think about bats?
Treated: n_1=41, n_2=37, chi^2 vagy x_2=6,61697, df=4, p=0,11086 →h_0 accepted
Control: n_1=49, n_2=47, chi^2 vagy x_2= 4,861705, df=4, p= 0,30178→h_0 accepted

The percentage of "I like them" (4% → 27%) and "I don't like" (0% → 11%) has been increased. The negative emotions have been increased in the control group (*Figure 3.*).

The numbers of answers in the “I don’t know” category have been decreased. The answers in “they’re harmful” and “they aren’t useful” categories have been decreased in both groups. The percentage of “they’re useful” has increased (29% → 43%) in the treated group, but decreased (38% → 23%) in the control group. The percentage of “they’re very useful” has been increased in both groups (treated: 14% → 27%, control: 20% → 27%) (*Figure 4*.).

CONCLUSIONS

Generally, we can say that we have received some unexpected results. In most of the questions there were not many significant differences between the treated and the control group. The number of „emotionally negative” answers did not decrease significantly and number of „biologically real” answers did not increase significantly. Basically, the number of the incorrect answers did not decrease after the dissemination course, but the number of incorrect answers increased at the control group. So it is possible that the dissemination course has not conveyed the effect of “dissemination”.

In the control group, there were significant changes in the rate of correct and incorrect answers, thus it is possible that the children looked the correct answers up at home, or persuaded each other what were the right or wrong answers. A good example for the increasing number of incorrect answers in the control group was the answer “flying squirrel”, for the question “Do you know any other mammal species beside bats, which able to fly?”. A good example for the increasing number of right answers was the correct answers about bats’ orientation.

There were more accurate changes in emotions. The given answers in the “unclassified” category have decreased, but the number of the extreme emotions has increased (*Figure 1*.). A good example for the extreme emotions might be the increase in “I like them” answers and the increase in “I don’t like” answers (*Figure 3*.).

Our results show us that, the knowledge about bats has not been increased (although there was a minimal development), the changes mostly realized in the children’s attitude. The raw data about species might not help in the attitude changes, but the lecturer and his/her emotions that he/she conveyed. Our suggestion is to divide the treated and the control groups in different schools, so it can be avoided that they can speak to each other about the tests. If the answers will be the same with the modified method, then the dissemination campaigns effect is questionable.

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REFERENCES

ADAMS, C.E., LINDSEY, K.J. (2009): Urban wildlife management second edition. CRC Press Inc 432 pp.

ADAMS, V.E., LINDSEY, K.J. (2006): Urban wildlife management by CRC Press - 328 pp

BOGÁRNÉ NÉMETH, M. (2008): Az iskolában szerzett természettudományos tudás tanórán kívüli alkalmazhatóságának változása 1999 és 2006 között. in: VIII. Országos Neveléstudományi Konferencia Budapest, 2008. november 13–15. ed.: PERJÉS, I. and OLLÉ, J. Aula Nyomda, Budapest 348 pp.

BUDA, M. (2008): Iskolai zaklatás- Egy kutatás első tanulságai az elmélet és a gyakorlat számára. in: VIII. Országos Neveléstudományi Konferencia Budapest, 2008. november 13–15. szerk: Perjés, I. és Ollé, J. Aula Nyomda, Budapest 348 pp.

CADE, T.J., MARTELL, M., REDIG, P., SEPTON, G.A. and TORDOFF, H.B. (1993): Peregrine Falcons in Urban North America.In: D. BIRD, D. VARLAND and J. NEGRO (ed.). Raptors is Urban Landscapes, Academic Press INC, San Diego 387 pp.

CSAPÓ, B., MOLNÁR, GY. and R. TÓTH, K. (2008): A papír alapú tesztektől a számítógépes adaptív tesztelésig: a pedagógiai mérés-értékelés technikájának fejlődési tendenciái. Iskolakultúra, 3-4. sz. 3-16.

CSAPÓ, B., MOLNÁR, GY., PAP-SZIGETI, R. and R. TÓTH, K. (2009): A mérés-értékelés új tendenciái, a papír alapú teszteléstől az online tesztelésig. In: PERJÉS ISTVÁN and KOZMA TAMÁS (ed.): Új kutatások a neveléstudományokban. Hatékony tudomány, pedagógiai kultúra, sikeres iskola. Magyar Tudományos Akadémia, Budapest. 99-108.

CSEKE, B. (2010): A média hatása a gyermekek kulturálódási folyamataira. Hallgatói dolgozat BTK

http1: Ipsos Média, -Reklám,-Piac és Véleménykutató zrt kid.comm. A 8-14 éves gyerekek kommunikációs szokásai 2008
http://www.mediatanacs.hu/elemzesek/21/1234535285kidcomm_20090213.pdf

http2: http://folk.uio.no/ohammer/past/

KISS, P., SZABÓ, M., UJHELYI, A. and BERKICS, M. (2006): Kutatásmódszertan: szociálpszichológia. Bölcsész konzorcium. 306 pp.

LETENYEI, L. and NAGY, D. G. (2007): A standard kérdőív kritikái és javaslat a kérdőíves adatgyűjtés terepközeli alkalmazására* in: Szociológiai Szemle 2007/1–2, 29–46.

LORENZ, K. (1973): A civilizált emberiség nyolc halálos bűne. Cartaphilus Kiadói KFT. 2001 134 pp.

MOLNÁR, GY. (2010): Papír- és számítógép-alapú tesztelés összehasonlító vizsgálata problémamegoldó környezetben. In: PERJÉS ISTVÁN and KOZMA TAMÁS (ed.): Új Kutatások a Neveléstudományokban. Aula Kiadó, Corvinus Egyetem, Budapest. 135-144.

OLÁH, M. (2010): A természettudományos oktatás helyzete tanulók kérdőíves felmérése alapján. in: DE--TEK--Természettudományi és Technológiai Kar--Biológiai és Ökológiai Intézet. Hallgatói dolgozat

SZEMETHY, L. (2004): A vadgazdálkodás szempontjából fontos emlős ragadozók és ragadozó madarak hosszútávú országos, kérdőíves adatgyűjtésen alapuló monitoringja in: Life Natura Projekt