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Measuring Reactance to Camcorder Symbols Linked to Online News

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Abstract. The aim of the study is to test the validity of a short-scale measuring reactance to a camera symbol associated with online news, indicating the possibility of viewing video footage. The operationalization of reactance means a mixture of anger and negative cognitions preceded by the sense of danger of losing one's freedom (Reynolds-Tylus, 2019). As the brief reactance scale elaborated by Hall and colleagues (2017) contains these elements, we assumed that it would constitute the appropriate basis for the elaboration of further brief reactance scales. Thus, we elaborated a brief reactance scale adequate for measuring reactance to camcorder symbols linked to online news. Data collection took place among the students of Sapientia University (Romania). For analysing the adequacy of the scale, we used confirmatory factor analysis, reliability analysis, and convergent validity analysis. We also checked to what extent the elaborated measuring tool could predict the avoidance of news linked with camcorder symbols. The results of this analysis show that in the case of people with high reactance to camcorder symbols, the increase of reactance leads to these people choosing less and less news linked with camcorder symbols. All these prove that despite its limitations the scale constitutes an adequate tool for the measuring of reactance to camcorder symbols.

Keywords: reactance scale, online news, camcorder symbols

1. Introduction

Different signs (photographs, symbols, etc.) linked to online news serve as a kind of bait to guide readers' attention (Sargent, 2007; Kósa et al., 2020). Their thoughtless and frivolous use can lead to an overestimation of the importance of news topics (Zillmann–Gibson–Sargent, 1999; Knobloch–Hastall–Zillmann–Callison, 2003). Journalistic cues, such as layout features, design elements, or cues to the importance of the news, can even have an agenda-setting function for online news (Knobloch-Westerwick et al., 2015) described by Stoyceff and her colleagues as agenda cueing (2017). Cues reflecting the importance of the news, such as prominent headlines, highlighting with larger print, photo illustrations, symbols, viewership indicators, etc., facilitate selective reading and sorting (Knobloch-Westerwick et al., 2015). Despite the impact of these signs and journalistic cues in point, it may happen that they will have the exact opposite effect due to resistance to persuasion. In the relevant literature, this phenomenon is called reactance (Brehm–Brehm, 1981). The general aim of our research was to find out whether these attention-grabbing signs / journalistic cues trigger reactance from readers browsing the news. Results of earlier studies conducted among university students (Kósa et al., 2020; Ambrus–Kósa–Zsigmond, 2010) have shown that certain groups specifically avoid news linked with camcorder symbols.

Starting out from the above, our research investigated the effect on reactance of one of these journalistic cues, the camera symbol – which indicates the possibility of visualization of video content – placed next to the news with high and low utility,[1] and examined the validity of the short reactance scale created by the authors of the present paper.

2. The Concept and Measurement of Reactance

Conceptualizing reactance is linked to Brehm's research (1966), who analysed the reasons why people often did the opposite of what was expected of them or of what regulations dictated. According to him, if people are limited in their freedom of behaviour, and even if the chance of such limitations occurs, the desire awakens in them to regain that freedom. This is called psychological reactance (qtd. in Brehm–Brehm, 1981). Reactance, of course, does not occur every time, but only when the individual feels that in certain cases s/he would have the freedom of

1 Knobloch-Westerwick and colleagues developed the model of utility, the Informational Utility Model (IUM) (Knobloch–Dillman Carpentier–Zillmann, 2003; Knobloch–Zillmann–Gibson–Karrh, 2002; Knobloch-Westerwick–Dillman Carpentier–Blumhoff–Nickel, 2005). Our current research is based on the IUM, indicating a single person's utility at a given moment. The conceptualization of its four dimensions – *magnitude, likelihood, immediacy, and efficacy* – enables the measuring of perceived threats and the opportunities carried by the messages (Knobloch-Westerwick, 2015).

choice. The strength of reactance also depends on the importance of the situation: in the case of limiting less important choices, reactance is less strong than in the case of alternatives of a higher importance. Furthermore, it also depends on whether the limitation of freedom is total or only partial: obviously, reactance will be less strong when the limitation of freedom is only partial. Finally, the strength of reactance grows if the given limitation implicitly entails the possibility of further limitations (Brehm–Brehm, 1981).

Although according to the researchers developing this theory reactance cannot be measured (Brehm–Brehm, 1981), many experiments have been made in this sense. Among these, we need to mention the research done by Dillard and Shen (2005), who distinguished between four different alternatives in the course of the operationalization of reactance. According to them, the first approaches defined reactance as a purely cognitive phenomenon that can be used well in the course of explaining thought suppression. This is the so-called single-process cognitive model. An example of this would be the research conducted by Kelly and Nauta (1997), who proved that people with high levels of reactance, if instructed to suppress their thoughts, are less able to control their thoughts than those asked to express their thoughts. Unfavourable thoughts, thus, are part of reactance.

According to Dillard and Shen (2005), another group of authors think that reactance can be fully, or at least partially, described as an emotion. Thus, reactance is a motivational state that resembles certain levels of anger and annoyance. From the perspective of the single-process affective model, reactance can be operationalized in different ways, but in any case it will show the different levels of the emotion on the subjective scale of respondents. This approach characterizes the research of Selzer (1983) or that of White and Zimbardo (1980).

Further, according to Dillard and Shen (2005), in the case of the third logical approach, reactance should be perceived as the set of emotional and cognitive responses. Research belonging to this group used the parallel process model elaborated by Leventhal (1970) and the extended parallel process model developed by Witte (1992) for the analysis of the efficiency of social advertising (for ex. Dillard–Peck, 2001 or Stephenson, 2003), and they were not specifically studying reactance. According to the model, cognitive and emotional processing occur in parallel during the processing of frightening messages. Thus, this has been defined as the dual-process cognitive-affective model.

Finally, according to the fourth approach defined by Dillard and Shen (2015), reactance contains both cognitive and affective aspects, but, as compared to the previous approach, which differentiates these two effects, cognition and affect are intertwined within this model. According to their results, reactance should be perceived as the blend of anger and negative perceptions. The raison d'être of the intertwined cognitive-affective model has been proven by several studies – for ex. Quick (2011) or Rains and Turner (2007). The latter researchers have not

only tested but also enlarged the model, elaborating the linear affective-cognitive model. Their results have also sustained the intertwined cognitive-affective model.

This has been completed by Quick and his colleagues (Quick–Considine, 2008; Quick–Stephenson, 2008), who maintain that any situation of dissatisfaction can result in anger and negative perceptions, and thus for reactance to occur, a threat of losing freedom needs to be perceived.

3. Measuring Reactance to Health Warnings

Measuring reactance is especially important when talking about social advertising with healthcare content, given that their aim is to encourage consumers towards a healthier behaviour. Though the positive aspect of these items of advertising is hard to question, reactance often occurs in these cases as well.[2] For its measurement, Hall and his colleagues (2017) elaborated the so-called brief measure of reactance to health warnings. Starting out from the large literature that contains the earlier mentioned extended parallel process model (Witte, 1992) and Quick-Stephenson's (2008) two-phase model, the authors define reactance as a cognitive and affective reaction to a message that entails not only the possibility of losing one's freedom but also the emotion felt against the message and the counter-argument that rejects or invalidates the message. Based on this definition, Hall (2016) developed the reactance scale to health warnings within the context of images portrayed on cigarette packages. Later on, Hall and his colleagues (2017) elaborated a brief reactance scale as well, which does not only refer to images shown on cigarette packages but measures reactance to health warnings in general. This brief reactance scale contains the following three statements: "This warning is trying to manipulate me." "The health effect on this warning is overblown." "This warning annoys me" (Hall et al., 2017). The first statement of this brief reactance scale refers to the perception of loss of freedom (manipulation), the second one is the negative affective response (anger) to the situation, and the third one is the negative cognitive response to the possibility of limitation. Thus, we hypothesise that reactance to camcorder symbols linked to online news may be measured in a similar manner. We phrased three statements that would reflect cognitive and affective resistance to camcorder symbols but also the threat to freedom of choice. These are the following: "Camcorder symbols linked to news are meant to manipulate me" (perception of losing one's freedom). "Camcorder symbols are only meant to get more clicks" (rejecting the importance of camcorder symbols). "Camcorder symbols linked to news annoy me" (expression of emotion towards camcorder symbols). The study aims to examine the validity of this brief reactance scale. The novelty of the

2 A study by Reynolds and Tylus (2009) provides a comprehensive description of research done in the field of reactance to convincing health communication.

approach lies in the fact that it extends reactance to health warnings to reactance to camcorder symbols linked to online news. The method also fulfils the growing demand for brief scales as well (Ziegler et al., 2014; Sandy et al., 2017).

4. Methodology

Presentation of the Sample

The subjects of our study were the BA and MA students of the Miercurea Ciuc and Târgu-Mureş campuses of Sapientia Hungarian University of Transylvania (Romania). In order to prevent the spread of impacts – the so-called "contamination" (Babbie, 1996: 264) –, the data collection took place over two days: 12–13 May 2021. The portal created with the purpose of this research was visited by 649 people in the course of the two days, while the survey was completed by 432 people. In the case of 34 of the respondents, data with reference to reading news were missing, wherefore they had to be left out of the research. Thus, the final database contained data with reference to 398 students.

Research Design

Data collection took place in a quasi-experimental set-up with a control group. After receiving an offer of taking part in the research, the participants accessed the portal created by the research group,[3] where they were randomly assigned to the research or the control groups. The advantage of random assignment is that the research and the control groups have similar compositions; however, a further important aspect was that random selection constitutes an important precondition of the majority of statistical procedures used for the evaluation of research results (Babbie, 1996: 260). People assigned to the research group were first asked to read through news headlines with and without camcorder symbols (*Table 1*), clicking on news that interested them. People in the control group only saw news headlines without camcorder symbols. In the case of both groups, news items were arranged in a random order on the portal.

When accessing the portal, we reminded respondents that they would not have time to read all the articles, so they should start with the news that is most important to them. Time spent on reading given news items was recorded by a computer program. Two minutes[4] were allotted to the reading of news, after which people involved in the research filled in an online questionnaire.

3 When setting up the portal, we tried to create a site that resembled a real portal both in its name (youth-index.ro) and in its appearance. Thus, we also attached a photograph to each news item.

4 The duration was set after the test run, so that there was not enough time to read each news item.

Table 1. *Arrangement of news for the experimental and control groups*

1. Experimental group (news with camcorder symbols)	**2. Control group (no news with camcorder symbols)**
Positive news with high utility	Positive news with high utility
Negative news with high utility	Negative news with high utility
Positive news with high utility	Positive news with high utility
Negative news with high utility	Negative news with high utility
Positive news with low utility	Positive news with low utility
Negative news with low utility	Negative news with low utility
Positive news with low utility	Positive news with low utility
Negative news with low utility	Negative news with low utility
Distracting news item	Distracting news item
Distracting news item	Distracting news item

Measuring Tools

Although Brehm (1966) originally defined reactance as a psychological state, he did not rule out the possibility of individual differences when it came to reactions to the threat of losing one's freedom. In his later work (Brehm–Brehm, 1981), he already defines reactance as an individual variable. On the basis of research, it became more and more clear that individuals differ according to their inclination to reactance, and thus measuring reactance as a feature was elaborated. One of the best-known tools for this is the psychological reactance scale elaborated by Hong and Page (1989) and further developed by Hong (1992). In our research, we relied on a refined version of this scale that contained 11 items (Hong–Faedda, 1996), given that research results have shown its adequacy for measuring reactance (for ex. Shen–Dillard, 2005) among young people as well (Moreira–Cunha–Inmand, 2020). This measurement tool has been used by many researchers, for example for the measurement of individual reactance by Quick and Stephenson (2008).

The adaptation of the scale to Hungarian language took place in accordance with the usual two-step process: the statements of the original scale were first translated into Hungarian, and later these were translated back into English. Statements translated from Hungarian to English corresponded to the content of the original English scale. Participants in the research could express their opinion about these statements through a five-point Likert scale, where 1 meant "I do not agree at all", while 5 meant "I agree completely".

In the case of the tool elaborated for measuring reactance to camcorder symbols, responses were also recorded on a five-point Likert scale.

5. Results

All respondents were students of Sapientia Hungarian University of Transylvania. There was a slight majority (57.8%) of women, while considering the type of settlement the number of those living in villages (53.0%) was almost the same as the number of those living in cities (47.0%). The youngest respondent was 19 years old, and the average age of the respondents was 22 years.

Confirmatory Factor Analysis

In the case of the three items we had phrased and in analysing assumed reactance to camcorder symbols, we first performed confirmatory factor analysis with the help of the IBM SPSS for the AMOS 26 Graphics program. The results of this factor analysis show a strong (in the case of two statements) or medium (in the case of one statement) relation between the items and the assumed latent variable (Reactance) (*Figure 1*). But the model that we have elaborated is just-identified,[5] and thus there is no possibility for testing the fitting of the model given that in such cases the model fits the data by definition (Münnich–Hidegkúti, 2012).

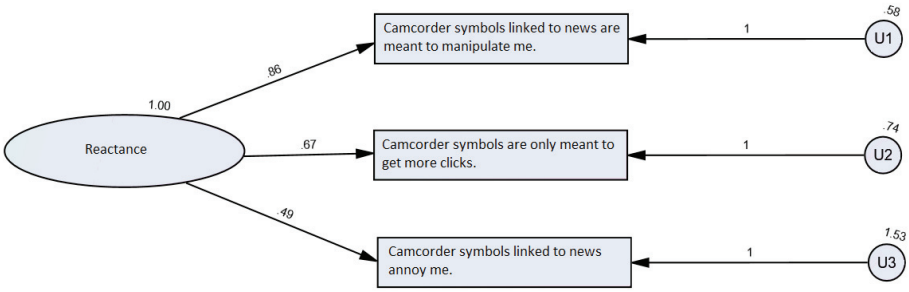

Figure 1. *Results of the confirmatory factor analysis*

Reliability

We checked the reliability of our measuring tool first with Cronbach's alpha indicator. The consistency of the three items measured on the scale that we elaborated was 0.57 (α = .57), which means an acceptable internal consistency, especially if we consider that the value of Cronbach's alpha depends on the number of items. Due to the low number of items, we also checked internal consistency with

5 If the number of free parameters is the same as the number of individual elements of the covariance matrix (qx(q-1)/2), we talk about a just-identified model (Bollen, 1989).

the Spearman–Brown correction given that in the case of a low number of items this is more acceptable (Eisinga et al., 2013). The two test spheres were created by the random split of items. The value of the Spearman–Brown correction was 0.64 (r_{SB} = .64), which is slightly higher than the Cronbach's alpha.

For further checking reliability, we also used McDonald's omega[6] reliability indicator, the value of which was 0.58, which in our opinion shows moderate reliability. According to Kjell and Diener (2021), a Cronbach alpha higher than 0.5 and a McDonald's omega higher than 0.7 shows good internal consistency.

The acceptable level of reliability is not consistent, but it depends on what we are measuring. In the case of features that are more stable in time, we can rightfully expect higher values of reliability (Nagybányai Nagy, 2006a). As opposed to this, for example, in the case of attitude scales, according to Horváth (1997), Cronbach's alpha of 0.5 is also acceptable (qtd. in Nagybányai Nagy, 2006). Based on all this, we consider that the reliability of the scale is acceptable.

Convergent Validity

For checking the convergent validity of the brief reactance scale to camcorder symbols linked to online news – similarly to Kim and colleagues (2020) –, we used the Hong reactance scale (Hong–Faedda, 1996) containing 11 items. Our results show that the relation between the brief reactance scale that we elaborated and the Hong reactance scale is significant (p = 0.01), but it is characterized by weak correlation (r = 0.33). This result can be considered acceptable since when measuring convergent validity not only do we not expect perfect correlation but we do not even consider a high correlation to be a good result, as that would mean that the two instruments measure the same thing (Nagybányai Nagy, 2006b).

Predictive Validity

We also examined to what extent the brief reactance scale elaborated by us is able to predict the avoidance of online news with camcorder symbols.

As we aimed to keep our variables continuous, we created the independent variable involved in the following way: we sorted the ascending scores of the variable of the reactance scores, and then, after calculating the mean, we marked the value of both one SD below the mean and one SD above the mean. Thus, we created a new nominal variable in the following column, with three levels, but taking into account the normal distribution of the scores when dividing it. We labelled them as follows: 1) those who had low scores on the camcorder reactance scale, 2) those who had average scores on the scale, and 3) those whose scores began from the value of M + 1 SD. We ran a linear regression in SPSS to test the effect of the Camcorder_Reactance with a three-level predictor on the selection

of headlines with the camcorder, using commands as follows: Graph→Legacy Dialog→Simple Scatter→Define→Set Markers by. In the case of people with high reactance in the research group, we observed a typical behaviour pattern, and we were able to identify a weak correlation: with the growth of their reactance to camcorder symbols, they chose less and less news with camcorder symbols ($R^2 = 0.044$, $r = 0.21$; see *Figure 2*).

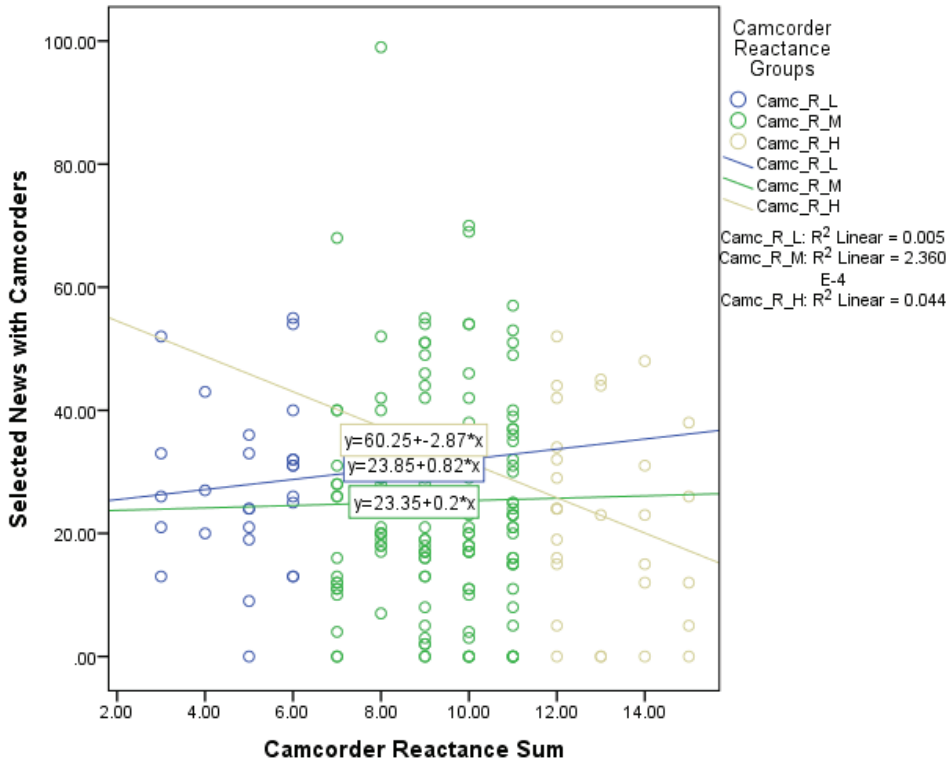

Figure 2. *Respondents' growing reactance to the camcorder symbol leads to selecting less news featuring it*

6. Discussion

The general aim of our research was to examine whether the attention-grabbing signs / journalistic cues trigger reactance from readers browsing the news. Involving several factors – such as dominant information-processing style, utility of message, priming, and results of earlier studies conducted among university students (Kósa et al., 2020) – has shown that certain groups specifically avoid news linked with

camcorder symbols – namely, respondents high on both scales, with average scores on the verbal scale, and low on visual scale.

Starting out from the above, our research investigated the effect on reactance of the camera symbol next to the headlines and examined the validity of the short reactance scale created by the authors of the present paper.

The results show that in the case of people with high reactance to camcorder symbols, the increase of reactance leads to these people choosing less and less news linked with camcorder symbols. Despite its limitations, the scale constitutes an adequate tool for the measuring of reactance to camcorder symbols.

Although avoidance of news with a journalistic cue – in our case with camcorder symbol – has been demonstrated three times among certain groups of students (Kósa et al., 2020; Ambrus–Kósa–Zsigmond, 2010), as to our knowledge, the role of reactance in such a process has not been investigated so far. At the same time, we suppose that some of the other journalistic cues – symbols, videos, photos, indicators, etc. – could cause avoidance in the same or similar context.

7. Conclusions

The present study's aim was to elaborate a brief reactance scale to camcorder symbols linked to online news. We based our scale on the statements of the brief reactance scale to health warnings elaborated by Hall and his colleagues (2017). According to the confirmatory factor analysis, the relationship between the three statements of the scale and reactance to camcorder symbols is medium or strong. We checked the reliability of the measuring tool on the basis of three factors: Cronbach's alpha, the Spearman–Brown indicator, and McDonald's omega. The first two showed relatively high reliability, but McDonald' omega showed moderate reliability. There is a significant, weaker-than-medium relation between the measuring tool and the Hong reactance scale, which we considered acceptable from the perspective of convergent validity.

The analysis of predictive validity showed that the reactance scale we elaborated was able to predict the avoidance of online news with camcorder symbols in the case of people with high camcorder reactance.

The reliability indicators of the brief scale are generally lower than those of the entire scale (Ziegler et al., 2014), but they reveal several advantages (elaborated in detail by Sandy et al., 2017) that make it worth opting for, using them in the course of empirical research. On the basis of all these, we can state that, despite its limitations, the elaborated scale can be used effectively in the measuring of reactance to camcorder symbols linked to online news.

8. Limitations of the Research and Possibilities for Further Studies

The most important limitation of the research is the fact that the elaborated measuring tool is limited to the measuring of reactance to one symbol only. In the course of further research, it would be worth applying the elaborated reactance scale together with other symbols as well. Collection of data took place only among university students, which limits the possibility of generalization. Further research with a more varied population would increase the possibility of generalizing results.

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