PERCEPTION OF INTERNATIONAL WEB PAGES:
A REPERTORY GRID APPROACH

Summary: Presented paper is introducing Repertory Grid Method as an objectification of Kelly’s Theory of Personal Constructs. The main goal is to introduce Repertory Grid as a psychosemantic research method with all of its potential and possible obstacles and point towards the application potential of Repertory Grid in the domain of marketing communication, as well as present a research of the perception of web pages as a medium for current and potential online promotion by the means of group administration of Repertory Grid Technique.

Keywords: perception, web pages, Repertory Grid, group administration, marketing communication.

1. Repertory Grid Method and its application in marketing communication

Repertory Grid method/technique/analysis is a psycho-semantic method examining the relationship between elements and constructs in certain context [Burke, 2002] with the origin in the George Kelly’s psychological Theory of Personal Constructs. Basically, it is a combination of association techniques and scaling realised by the means of structured (in-depth) interview. Repertory Grid represents a cognitive mapping tool that provides understanding to complex cognitive structures of meaning [Wright, 2004]. It is named after its form of execution – a grid with columns represented by elements – subjects of human
thoughts we want to examine, either of materialistic nature (people, objects, events, pictorial material, movie sequences, etc.) or intangible nature (experiences, ideal concepts such as ‘effective bank advertising’, ‘my ideal boss’, ‘ideal web page’), while lines are defined by constructs elicited by research subjects. The simplest definition of construct would be that construct is an assigned quality (to element).

Essentially, there is no such entity that could possibly not be covered by this technique under these conditions:

1. Subject has personal constructs (thoughts/schemes) regarding an element (presented as a part of a research topic). That means subject has to know the element(s) to some extent or at least get the opportunity to become familiar with it (e.g. in form of advertising exposure regarding the use of this technique in advertising research) during the process of Repertory Grid interview.

2. Subject has an opportunity, cognitive skills and will to express his/her constructs.

In order to be able to examine these constructs we need to ask subject the right questions (as well as have certain background and follow certain rules in order for the technique to be valid and reliable), subject needs to have a certain level of cognitive skills (e.g. language skills) in order to be able to share his/hers constructs (technique relies quite heavily on the language of inquiry) and last, but not least, technique requires a cooperation of a participant.

Regarding the character of Repertory Grid, it is possible to apply both quantitative and qualitative approach. Repertory Grid combines these two approaches in the effort to persevere idiosyncratic view of an individual (with perception being considerably influenced by a variety of personal factors outside our control), while permitting quantitative analysis by a wide variety of statistical procedures offering a cue to more generalised conclusions. This method is idiographic from the point of its individualistic character of constructs and nomothetic from the point of interpretation resulting from statistical analysis of data that can be conducted either for each grid individually or for merged/concentrated grid from multiple participants as it is in our research mentioned below.

2. Theoretical background of Repertory Grid

Repertory Grid Method is tightly connected to the Personal Construct Psychology (further PCP) that suggests that people are similar to each other based on the meanings they give to the world. The origin of this psychological theory lies in constructive alternativism, according to which everybody perceives reality from own perspective and creates alternative constructs about it [Kelly, 2003]. People constantly perceive and interpret their environment, they built
images and schemes about it in order to give it a sense. PCP is of very subjectiv-
istic nature. It assumes people are similar because they construe certain modal-
ties in a similar way, as opposed to beliefs that people are similar because they
have similar experiences [Marsden & Littler, 2000]. The core concept of PCP is
that a present anticipation of a person acts as a motivation to action [Kelly,
2003]. G. Kelly [2003] states that people differ in the construction of events one
from another and one’s construct system is composed of a finite number of di-
chotomous constructs. The notion of dichotomy is clearly preserved in technique
itself when each grid encompasses inferences about two poles (emergent and
implicit) of a construct serving as a building element of meaning and reality. In
fact, constructs are not accidental or unorganised, they create a complex hierar-
chic system of relations [Neimeyer, 1993 in Marsden & Littler, 2000]. People
differ in number, character and structure of constructs [Klein & Lewis, 1985
after: Marsden & Littler, 2000] and this is the variability Repertory Grid Method
is trying to capture.

Repertory Grid is a comprehensive and complex method with a well elaborated
design. For a detailed procedure we suggest works of M. Fromm, [2004], D. Jank-
ówicz [2004] or F. Fransella, R. Bell and D. Bannister [2004]. Nonetheless, we can
summarise the procedure of Repertory Grid interview in these few basic steps
[Marsden & Littler, 2000; Jankowicz, 2004; Ritomský & Bachratý, 2008]:

• Research question(s) formulation.
• Selection of elements.
• Construct elicitation (by the means of finding similarities and differences between
elements applying one or more of these strategies: dyading – asking how two ele-
ments are similar/different, triading – asking how two elements are similar and at
the same time different from each other, laddering – asking how? why?, pyramid-
ing – specifying constructs, trying to understand the range of one’s constructs).
   By using these strategies, we are capable to reach a deeper level of mental
structures (in relation to meaning) and access constructs that might be diffi-
cult to articulate. Generally, Repertory Grid differs from methods such se-
matic differential or questionnaire where participant has to evaluate the
topic based on characteristics that are given.
• Combining elements with constructs. There are three ways in doing so: di-
chomatisation (assessing a positive or negative pole to elements for each
construct), scaling (evaluating each element according to each construct pair
on a pre-given scale) or rating (each element is ranked between the two ex-
tremes of the construct).
• Data analysis and interpretation. We can use standard statistical package like
SPSS or one of specialised Repertory Grid programs (e.g. Idiogrid, Webgrid).
3. Repertory Grid applications

One of the advantages of Repertory Grid is that the same procedure suits for many different purposes. Repertory grid is used in psychological research. It can be applied in social psychology, e.g. for examining personal impressions [Lukas & Šerek, 2007], barriers in communication [Ritomský & Bachratý, 2008], implicit descriptors of abstract term [Havigerová & Haviger, 2010]. Repertory Grid is closely linked to the theory of cognitive complexity as examined in realm area of consumer psychology by G.M. Zinkhan and A. Biswas [1988]. Because of its nature, Repertory Grid is a suitable tool for answering questions about perception, e.g. perception of child’s own artwork [Karpinnen, 2000], photographs [Burke, 2002], web designers’ perception of an effective website [Tan & Tung, 2003]. In management, Repertory Grid is being used to generate data useful for SWOT analysis; examining managerial competences and decision making process, understanding the set of expert knowledge [Ritomský & Bachratý, 2008]. Marketing applications of Repertory Grid include consumer research where products and/or services often serve as evaluated elements, e.g. differences in product perceptions between product creators and product users [Karapanos & Martens, 2007]. We can use Repertory Grid when we want to find out how participants construct certain concept, such as ‘customer experience quality’ described in the research of F. Lemke, M. Clark and H. Wilson [2011] or ‘effective advertising’. Some research projects are using Repertory Grid for obtaining associations with brands in connection to image, as it was in case of London musea and art galleries in research of N. Caldwell and J. Coshall [2002]. Repertory Grid also enables us to uncover schemes of consumer behaviour by providing cognitive schemes that are later congruent with choice behaviour [Marsden & Littler, 2000; Caldwell & Coshall, 2002]. Moreover, Repertory Grid is a method suitable for explaining abstract terms (e.g. effectiveness, normality, risk, esthetics, formality), terms that are hard to grasp and define because they are having a nature of individual thought constructions. Regarding the perception of advertising itself, application of Repertory Grid is fairly rare. For example, J. Olson and P. Dover [1978] used this method to examine cognitive effects of deceptive advertising. As we could have seen in aforementioned text, Repertory Grid has a solid potential in multiple domains, as well as in marketing research.

We now demonstrate the feasibility of Repertory Grid group administration by the means of our own research in which we focused on the perception of international web pages. In this era, a lot of companies benefit from having a website as a marketing tool. Web pages can serve as a branding tool, information center, shop, communication tool and advertising tool. Moreover, appeal of a website has an impact on forming user’s perception of website usability.
Perception of international web pages: A Repertory Grid Approach

[Schenkman and Jonsson, 2000; Tractinsky et al., 2000 in Djamasi, Svegel & Tullis, 2010]. The objective was to determine how participants perceive international web pages with the emphasis on following research questions:

1. What characteristics are chosen/used for web pages? What are group preferences regarding these characteristics?

2. Which web page is perceived as the closest to the element of ideal web page?

Research sample was composed of 12 Polish undergraduate students (9 females, average age 20.75). Our research sample belongs to the cohort known as Generation Y (also called Millennials, Echo boomers, Net generation, Facebook generation). K. Yarrow and J. O’Donnel [2009] characterise these individuals as born between 1978-2000, V. Lazarevic and S. Petrovic-Lazarevic [2007] and N. Shepherdson [2000 after: Beard, 2003] state years of birth of Generation Y members as lying between 1977-1994. Generation Y as a specific marketing segment is considered to be a group with a strong consumer potential. In general, we assume that generations differ in reactions to communication while at the same time members of one generation show common characteristics. Members of each generation have a tendency to demonstrate similar attitudes, values and preferences. K. Yarrow and J. O’Donnel [2009] described Generation Y as diverse, adaptive and self-confident. Generation Y represents a complex and challenging group of consumers. This group feels immune towards branding and marketing tactics. Members have the confidence to demand what they need from sellers, they are interested in consumption and are active in searching for products [Lippe, 2001 after: Lazarevic, Petrovic & Lazarevic, 2007; Yarrow & O’Donnel, 2009]. L.P. Morton [2002 after: Beard, 2003] described this generation as critical consumers with distrust to media. Even from this brief characteristic we can see, that Generation Y offers a lot of research incentives regarding each of information processing phases, e.g. personal characteristics influencing perception, interpretation, remembering, evaluation of communication or behavioural expressions. At the same time we have to remember that Generation Y is very widely defined and its characteristics are dependent on culture.

4. Method

Data were acquired by the means of Repertory Grid group administration inspired by the online lecture of Vivian Burr [www 1]. First of all, we asked participants which international web pages they knew (elements for repertory grid). Less familiar web pages were excluded. In line with our research interest we included an ‘artificial’ element of an ideal web page. Consequently, participants assigned into pairs were taking turns in the role of interviewer and research subject. Constructs
were elicited by triading and were in the form of bipolar statements noted by participant actually in the role of interviewer. After this part, all constructs were listed on a whiteboard. Only those understandable to everybody and not repeating were left for final evaluation. Afterwards participants wrote individually constructs into prearranged grid and rated them on a 5-point scale. During the whole process, participants had internet access with the possibility of viewing selected web pages.

The main advantage of a group administration is time saving when we gain more grids (and more inferences/data) during the time of one session. This procedure also has an educative aspect, since students have in a condensed timeframe the opportunity to use this method both from part of the participant and its administrator, while being able to ask additional questions. The main disadvantage is the loss of individual perception (in this case we are referring to group perception). Moreover, there is an influence of group dynamics on final list of elements and constructs (e.g. participant is too shy to express his/hers point of view). Due to the lack of the direct control by researcher, possible misunderstandings of instructions (e.g. in form of missing values) can occur. Despite a general declared demandingness of Repertory Grid method, in our case perceived difficultness of this method as evaluated by participants was ‘fairly simple’ (n = 14; mean = 2,43; mod = 2; med = 2; sd = 0,76) on a scale 1 = very easy, 5 = very difficult.

Generally speaking, a successful utilisation of a Repertory Grid demands mastering of these areas:

a) psychological background (Personal Construct Psychology),
b) methodology (elements selection, construct elicitation technique, method administration),
c) interaction with research subjects,
d) specialised software,
e) statistical procedures (multi-dimensional statistical analysis).

5. Results

Total of 8 elements (web pages) were evaluated: National Geographic, Wikipedia, Youtube, Facebook, Ebay, Google, Twitter, Ideal web page. Average number of constructs was 16, final number of constructs used was 21. Two repertory grids were displaced due to the extent of missing values (more than 5%). Other missing values were automatically imputed based on element means\(^1\). All 12 grids were merged on the level of elements and constructs.

\(^1\) According to Grice (2007) are single imputation methods generally preferred to listwise deletion. This approach is suitable (ibid) when the amount of missing values is less than 5%. We were missing values in 4 grids with the highest proportion of missing data at the level of 4,76%. 
<table>
<thead>
<tr>
<th>Construct pole</th>
<th>CPR*</th>
<th>Construct pole</th>
<th>CPR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>interaction</td>
<td>12</td>
<td>no interaction</td>
<td>0</td>
</tr>
<tr>
<td>for fun</td>
<td>6</td>
<td>can get knowledge</td>
<td>6</td>
</tr>
<tr>
<td>contact with friends</td>
<td>10</td>
<td>no contact with friends</td>
<td>0</td>
</tr>
<tr>
<td>author</td>
<td>7</td>
<td>not author</td>
<td>4</td>
</tr>
<tr>
<td>propositions/offered information</td>
<td>7</td>
<td>need to know what to find</td>
<td>5</td>
</tr>
<tr>
<td>colorful</td>
<td>11</td>
<td>not colorful</td>
<td>1</td>
</tr>
<tr>
<td>very often used</td>
<td>12</td>
<td>not very often used</td>
<td>0</td>
</tr>
<tr>
<td>helpful to learn</td>
<td>12</td>
<td>not helpful to learn</td>
<td>0</td>
</tr>
<tr>
<td>clear menu</td>
<td>12</td>
<td>unclear /not functional menu</td>
<td>0</td>
</tr>
<tr>
<td>for all ages</td>
<td>9</td>
<td>for young users</td>
<td>3</td>
</tr>
<tr>
<td>useful</td>
<td>11</td>
<td>useless</td>
<td>0</td>
</tr>
<tr>
<td>unlimited information</td>
<td>9</td>
<td>less information</td>
<td>3</td>
</tr>
<tr>
<td>all ages</td>
<td>10</td>
<td>older users</td>
<td>2</td>
</tr>
<tr>
<td>more pages</td>
<td>7</td>
<td>one page</td>
<td>5</td>
</tr>
<tr>
<td>general</td>
<td>8</td>
<td>about one topic</td>
<td>4</td>
</tr>
<tr>
<td>professional photos</td>
<td>10</td>
<td>amateur photos</td>
<td>2</td>
</tr>
<tr>
<td>few ads</td>
<td>8</td>
<td>lot of ads</td>
<td>4</td>
</tr>
<tr>
<td>changeable</td>
<td>11</td>
<td>permanent/stable</td>
<td>1</td>
</tr>
<tr>
<td>free</td>
<td>8</td>
<td>register</td>
<td>4</td>
</tr>
<tr>
<td>everything is visible</td>
<td>8</td>
<td>need to scroll</td>
<td>4</td>
</tr>
<tr>
<td>interesting</td>
<td>9</td>
<td>simple</td>
<td>3</td>
</tr>
</tbody>
</table>

* C Pr = number of times construct is preferred.

Source: Own research.
Consistency indices (Construct Consistency = 0.82; Element Consistency = 0.42) are reflecting highly consistent evaluation of constructs and not so consistent evaluation of elements, therefore elements are perceived as quite diversified. Generally, our respondents preferred web pages with following attributes: are interactive, enable contact with friends, are colorful, often used (in this case we suspect reciprocal relationship – preferred pages are probably also visited more often), perceived as useful from user’s point and useful for educational purposes, directed towards a wide age group, with clear (in the sense of understandable) menu with seemingly unlimited information available, pages with changeable/editable content and rather general than monothematic, available for free (no need to register in order to access) with professional photographs and few advertising. According to research of Djamasbi, Siegel & Tullis [2010] Generation Y may prefer pages that include a main large image, images of celebrities, little text, and a search feature.

Implicit pole of constructs is in majority of cases noted as a negation of a respective emergent pole with following exceptions: for fun-can get knowledge where fun and knowledge are perceived as contradictory, for all ages-for young users; all ages-older users; interesting-simple (simple perceived in more negative connotation). Constructs are mostly of general nature, describing performance/execution (so called propositional constructs), evaluative constructs are: helpful to learn::not helpful to learn and interesting::simple, behavioural constructs are: author::no author (in relation to content creation), very often used::not very often used. Regarding the division on affective, cognitive and behavioural we have not detected the presence of affective constructs. We have already named behavioural constructs above in text. All the other constructs can be considered as cognitive.

For the purposes of statistical analysis we used Idiogrid software (freeware, author: James W. Grice, available at: idiogrid.com). Factor analysis was conducted in form of Principle Component Analysis (4 eigenvalues > 1). Due to interpretation simplicity and transparency of graphical representation we focus on first two exclusive components covering 70% of data variability. Constructs with variability less than 0,70 were omitted.

Table 3. Structure coefficients and communalities for merged grid

<table>
<thead>
<tr>
<th>Construct</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>interaction</td>
<td>0,53</td>
<td>-0,82</td>
<td>0,95</td>
</tr>
<tr>
<td>for fun</td>
<td>0,73</td>
<td>-0,58</td>
<td>0,87</td>
</tr>
<tr>
<td>contact with friends</td>
<td>0,39</td>
<td>-0,69</td>
<td>0,64</td>
</tr>
<tr>
<td>author</td>
<td>0,14</td>
<td>0,60</td>
<td>0,38</td>
</tr>
</tbody>
</table>
The first component can be characterised by constructs: for fun, helpful to learn, clear menu, for all ages, useful, unlimited information, all ages, more pages, free, everything is visible. The second component is characterized by interaction, propositions (of topics/information) and changeable content. These dimensions represent the group perception of examined topic with its key characteristics. We suppose that this verbalised characteristics count for aspects that are the most noted and therefore also important to perceivers in relation to web pages.

Ideal web page is perceived as general (as an opposite to monothematic), with clear menu and a little amount of advertising, with all features visible, a lot of information, for all ages, interesting, free and not colorful. Youtube is perceived by this group as very close to the element of ideal webpage. Google and Wikipedia are the closest elements to be characterised as helpful to learn and for all age groups. Facebook is perceived as the most interactive. Twitter is near construct register, colorful and simple, but also useless. Twitter and Ebay are in the perception map created by component space perceived as slight opponents to Ideal web page and Youtube, while Facebook is in an opposite quadrant to Wikipedia. National geographic is perceived as stable, not interactive. This web page should be after further consideration and possible research on larger sample modified towards greater interactivity and engagement of recipients.
Fig. 1. Principle component analysis graphic output
Source: Own research (Idiogrid output).

**Conclusions**

This article sought to describe the feasibility of Repertory Grid approach using group administration of the technique and take a step forward towards understanding the web preferences of young people. We examined eight elements representing web pages that were consequently described by 21 bipolar constructs. Perception map created by Principal component analysis shows diversified perception of these elements. Generally, our respondents preferred web pages that are interactive, colorful, often used, enable contact with friends, perceived as useful from user’s point and useful for educational purposes, directed towards a wide age group, with clear menu with seemingly unlimited information available, pages with changeable/editable content, pages rather general than monothematic, available for free (no need to register in order to access) with professional photographs and few advertising. Ideal web page is perceived as general (as an opposite to monothematic), with clear menu and a little amount of advertising, with all features visible, a lot of information, for all ages, interest-
ing, free and not colorful. A closest element to the element of ideal webpage for a studied group is video database Youtube.com.

This research has important implications regarding the methodology itself, preferences research with further possibilities in marketing and advertising research. It also provides a methodology and characteristics to support future research. We are aware of limitations of this approach either on the side of the methodological tool, the group administration obscuring individual perception and a limited sample size. Ideally, we would recommend to combine proposed research plan with an eye-tracking study.

References


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PERCEPCJA MIĘDZYNARODOWYCH STRON INTERNETOWYCH:
PODEJŚCIE REPERTORY GRID

Streszczenie: Niniejszy referat przedstawia Repertory Grid Technique jako uprzedmiotowienie teorii konstruktów osobistych autorstwa G. Kelly’ego. Głównym celem jest przedstawienie Repertory Grid Technique jako psychosemantycznej metody badawczej wraz całym jej potencjałem i ograniczeniami oraz wskazanie potencjału aplikacyjnego w dziedzinie komunikacji marketingowej. Ponadto prezentuje badanie percepcji stron internetowych jako narzędzie bieżącej i przyszłej promocji on-line realizowanej metodą grupowej administracji Repertory Grid Technique.

Słowa kluczowe: percepcja stron WWW, Repertory Grid, administracja grupowa, komunikacja marketingowa.