Using the Means-Ends Approach to Understand the Value of Sustainability on the Property Market

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Abstract. The paper explores the drivers of business organizations' decisions to locate in sustainable office buildings. This study uses a Means-End Chain (MEC) analysis to investigate tenant decision-making processes in the commercial property market. Fundamental research question was to identify motivations of market participants when they choose to locate in a green buildings, whether they aim for economics benefits or intend to promote themselves as environmentally responsible. First part discusses existing literature referring to benefits of sustainable buildings as perceived by market participants. Next, the development of sustainable office market in Poland has been presented. Finally, the research data and method were discussed along with the findings of the research. The study revealed limited environmental awareness of real estate market participants in Poland. Cost effectiveness of the selected space and corporate image are the values that link their choices to sustainability of the office building.

Keywords: Real estate · Sustainable · Means-End Chain analysis · Green building · Certification

1 Introduction

Incorporation of the concept of sustainable development into built environment results in construction of buildings which are called sustainable, green, high performance, featured by environmentally conscious design, economic use of natural resources at the construction stage, and during exploitation phase, low negative impact on the natural environment and its bio-diversity as well as on the local community, while providing optimal utility for their owners, tenants and other users and satisfying profitability for investors.

Even though there are disputes over the concept of sustainability in built environment [40], there exist some generally accepted definitions; among them the one by Charles Kibert [21]: "(…) sustainable buildings are responsibly created and managed construction environment, complying with the guidelines of natural environment protection and the efficient use of natural resources". But the most common and mainstream definitions are associated with the Brundtland Commission Report [37] and Elkington's [10] conceptualization of sustainable development into business activities.

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Sustainable buildings are the application of Triple Bottom Line: Profit, People, Planet, concept into business practices in real estate market. The concept assuming that companies should consider economic (economic value created by the company, economic benefit to the surrounding community and society), social (the fair and favorable business practices regarding labor and the community in which the company conducts its business) and environmental (the use of sustainable environmental practices and the reduction of environment footprint) impacts in their practices.

Literature provides a list of key design features of sustainable buildings [1, 12]: (A) responsibility to the environment; (B) efficient use of resources, in particular non-renewable energy and water resources; (C) maximum reduction of refuse, and the practice of recycling; (D) application of "environmentally friendly" materials; (E) flexibility and the possibility to re-adapt the building, its installations and appliances as a way to saving resources and economy; (F) the application of building management systems that monitor and control its appliances and installations in line with the principle of energy and non-renewable resources saving.

Since 2000 we observed diffusion of environmental innovation on the commercial property market [14] and growing competition between multi-criteria certification systems used to measure building sustainability [15].

Even though the definition of sustainability in built environment is disputable, it is generally acknowledged that into the category of a green building fall primarily buildings awarded one of a 'green certificates': BREEAM, LEED, Green Star, DGNB, CASBEE etc. These rating tools were developed to estimate the sustainability of the overall building stock in countries and an individual building, thus making investment and occupancy decisions more conscious for market participants. Even though the certification schemes differ, they have become useful also for the research purposes.

In recent years, the importance of the idea of sustainable development has been noticeably increasing in commercial building industry in Western Europe and United States and the number of sustainable real estate has increased dramatically [7], with extremely high increase of LEED projects worldwide [2], with more than a half companies worldwide projected to undertake green buildings activities (as compared to 13 % in 2009) [41]. Building certification schemes (LEED, Green Star, BREEM, CASBEE) have been successfully used in developed countries, but experienced considerable problems in less mature economies [30].

Eicholtz, Kok and Quigley [9] indicate that there are four basic explanations increasing users propensity to choose sustainable properties (properties with green building certificate). These are as follows: (A) direct economic benefits resulting from lower operating costs and lower energy consumption in those buildings; (B) indirect economic benefits drawn from improved image, increased work efficiency of staff, lower staff turnover, lower absenteeism due to sick building syndrome; (C) risk avoidance which in market conditions translates into the rate of functional and moral deterioration of sustainable building, commercial character of a facility, future changes of energy prices and future institutional and legal changes; (D) ethical conduct related to CSR (Corporate Social Responsibility), responsible property investing, and corporate culture.

According to economic theory, higher utility of office environment should translate into willingness to pay for better work space, and finally higher office rents.

Literature is quite consistent on rent premiums in sustainable office space [11]. Most studies report rent increase in such buildings, by 2–7 % [8], by 5 % [29], by 4–5 % [13], and even from 7 % to 17 % for buildings with Energy Star certificate and LEED ecological certificate, respectively [39], worldwide research, as presented by Stein et al. [35], confirms these economics benefits of green buildings. Several research findings suggest tenants willingness to pay higher rental rates for office space in green buildings, by 12.4 % on average in Poland [43], by average 3 % in Switzerland (2.59 % in private sector, 3.88 % public sector companies) on lease [38].

Most authors also indicate lower costs incurred by the use of sustainable buildings [24, 29, 33]. Especially savings on energy costs convince real estate companies to include green buildings into their portfolios as research in Great Britain demonstrates [5].

Direct economic benefits of sustainable buildings are the drivers of green real estate development but the benefits for employees and marketing and image aspects of investing and occupying 'green' space is gaining on significance considerably.

Sustainability is one of the features influencing the choice of the office by the tenants, others include: location, flexibility, cost, staff needs, external pressure, marketing and availability [22]. Lower operational costs of green buildings were not as important as marketing reasons – to enhance their image and satisfy CSR policies (the case of larger organizations), which choose green office space as this is what customers and 'market' expects and they want to be seen as responsible corporations. In case of smaller organizations, sustainability was declared part of their organizational culture and necessity to lower the maintenance costs. These marketing advantages were also confirmed by research in New Zealand, where the green certificate is seen as providing competitive advantage to investors and developers as well as better work conditions for tenants and together with the existence of a rating systems, the three are main drivers for developments of green buildings [3]. Bond and Perrett's research also confirms the significance of CSR policy, company's image considerations along with environmental considerations in developing plans for involvement in green buildings [3].

Involvement in the ecological building is the way business organizations may pursue to stand out from the competition to create the image of an innovative organization, socially responsible, concerned about the natural environment, setting new trends (USBGC). The research that has been conducted to date contributes to the issue indirectly [9]. Eichholtz et al. [9] noted that CSR influences corporate decisions on property market (e.g. deciding on LEED certified office space). Similarly, non-profit and government organizations display higher propensity to rent office space in an ecological building, guided strongly by legal considerations. The research by Myers et al. [25] proves the difference in motives to choose sustainable buildings between private and public sector, with the latter preferring social and environmental issues over financial reasons. And public companies express higher willingness to pay for leasing space in green buildings [38].

A few countries conducted research on the relationship between CSR and decisions on the property market. To give an example, Hebb et al. [17] indicated growing CSR awareness among developers and institutional investors operating on commercial property market in Canada. Similar research with comparable results was also conducted in European countries [26]. For many companies occupying office space in a green building is a way to communicate their corporate vision to shareholders and a part of

CSR policy that incorporates Environmental, Social and Governance virtues; this mostly refers to institutional investors and financial services, insurance and advertising companies and investors concerned with Responsible Property Investment [5, 27].

The research conducted in 6 U.S. cities, over the importance of green buildings attributes proves that most desired typical green buildings attributes (divided into: environmental, economic, and social as in the Triple Bottom Line) are more important for the tenants' employees, representing 'social' attributes [34]. Findings suggest that green buildings generate more social than economic and environmental benefits from the point of view of their users.

The overview of the latest research worldwide proves there's significant increase in the demand for green office space driven by social responsibility aspects of corporate policies and willingness to provide better workspace, which indirectly generates economic benefits to organizations (wellbeing of employees, higher productivity, lower turnover of employees).

And it is an important finding, further justification of the research on the value of sustainability for the market participants. But still, as Warren-Myers puts it [36]: "without financial justification and viability of the required investment it is likely that the advancement of sustainability in commercial real estate will be limited".

Knowledge of the investors' attitude towards sustainability in Polish real estate market and what arguments justify their choices of green buildings is particularly scarce. It is worth noting that although certification systems for ecological solutions such as LEED, Green Star, BREEM, CASBEE have been applied in highly developed countries, their implementation on nascent property markets such as Poland is relatively rare. That provision includes empirical research which predominantly has been focused on highly developed office space markets. The report authored by Sayce et al. [32] based on 128 papers indicates that till 2009 majority of papers was targeted on the US (28 %), Great Britain (26 %), and Australia (22 %).

2 Green Buildings in Poland

According to the report of Jones Lang LaSalle [20] focused on ecological building in the selected countries of Eastern Europe (Poland, the Czech Republic, Slovakia, Hungary, Romania and the Republic of Serbia), in the first quarter of 2012 there were 670 thousand sq.m. of office space in buildings that received multi-criteria certificates (LEED, BREEM, DGNB). The high share of ecological space within the total office space in the countries of Eastern Europe (as high as 8 % in Prague) finds explanation in the fact that those markets are relatively poorly developed, and the existing volume of such spaces is still negligible in comparison to similar cities in Western Europe. Hence new investment projects make a relatively larger impact on the changes of status quo on the market. That volume is not distributed evenly, and there are four major regional centers with the highest concentration of large ecological building projects, i.e. Prague, Warsaw, Bucharest and Budapest. By the end of 2013 there was over 730 thousand sq.m of certified office space only in Poland and if green office space in Czech Republic, Hungary, Romania and Slovakia are included, there are 1,7 million sq.m. of sustainable office space in Central and Eastern Europe, and this number has been

increasing annually [20]. At the beginning of 2014 almost 2.5 million sq. meter of office space was targeting certification (mainly BREAAM, and LEED – second most popular).

Between 2012 and 2014 Warsaw became the hub of ecological building in Eastern Europe (about 550 thousand sq.m/UFA by the end of 2014) taking the place of Prague. Jones Lang Lasalle's report informed that 100 % of office building projects that realized in 2012 have been covered by ecological certification procedure. Even if that estimate were slightly exaggerated, such large dominance of ecological building proves that type of building slowly joins the main stream of office building development in Poland [20].

Further on in our analysis we will focus on the volume of sustainable office space currently available in Poland. According to our assessment, in the first quarter of 2012 approximately 2–3 % of office space available in major cities in Poland (Warsaw, Kraków, Łódź, Wrocław, Poznań, Trójmiasto) is to be found in buildings that have been awarded ecological certificates. Needless to say, that volume is not evenly distributed – similarly to the commercial market, there is a noticeable strong dominance of the central part of Poland (that is Warsaw, the capital city, currently accommodating 50 % of ecologically certified office space).

According to Colliers [6] at the beginning of 2015 there were 47 LEED certified buildings in Poland, 24 of them in Warsaw, 4 in Krakow and the rest in other regional cities (Poznan, Wroclaw, Lodz, Szczecin, Gdansk). At the beginning of 2015 there are 202 BREAAM certified projects, what makes 81 % of green (certified) buildings in Poland). Half of them – 102 building are located in Warsaw, 22 in Krakow and 14 in Poznan.

3 Data and Methods

During the research we conducted 12 semi-structured in-depth interviews from May to August 2011. The research sample were commercial property professionals in Krakow (10) and Warsaw (2). The respondents were employees of consultancy companies specializing in real estate (e.g. Colliers, Knight Frank, FYI), developer companies involved in building green (Buma Group), employees of analytical institutes involved in market research (mrn.pl) and independent consultants in real estate. The interviewees were asked several questions about office space tenants – or more specifically users decisions and beliefs when choosing their office space. Although not expressed explicitly, the main research questions were: (A) are office tenants aware of characteristics (and advantages) of sustainable office space? (B) is sustainability taken into account when making decisions about renting office space, and if so what are the main reasons? (C) do office tenants in Poland value sustainable more than standard buildings? (D) are they willing to pay more for having sustainable working environment?

In order to understand how companies perceive relevant aspects of office space, the Means-End Chain (MEC) model was applied MEC conceptual framework was originally created by Gutman [16] and developed by Reynolds and Gutman [31].

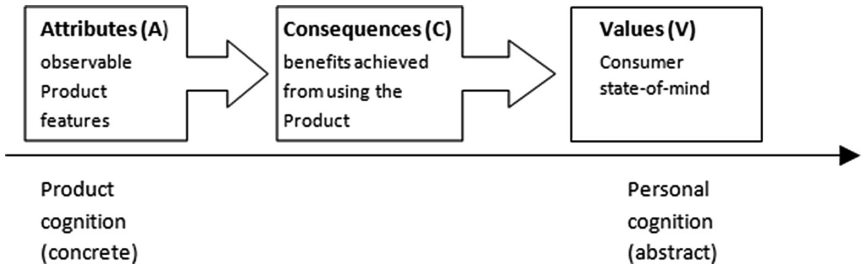

Fig. 1. Means-End Value Chain. Source: Own based on [16]

MEC links sequentially products' attributes (A) to consequences of product use (C) and to ultimate values (V). The A-C-V sequence is called Means-End Chain or Ladder (see Fig. 1).

MEC was successfully used since, when analyzing preferences and values attached to commercial products, but also in the field of architecture and urban design [42]. Lundgren and Lic [23] used MEC to understand housebuyers' needs and preferences, which can support decision-making in product development. In other study MEC was used as a theoretical framework to link customized housing projects attributes and costumers' values [18]. MEC was also applied to understand meanings and attitudes towards sustainability, for example when analyzing growing environmental awareness of clients in restaurants [19]. To authors best knowledge, although several authors tried

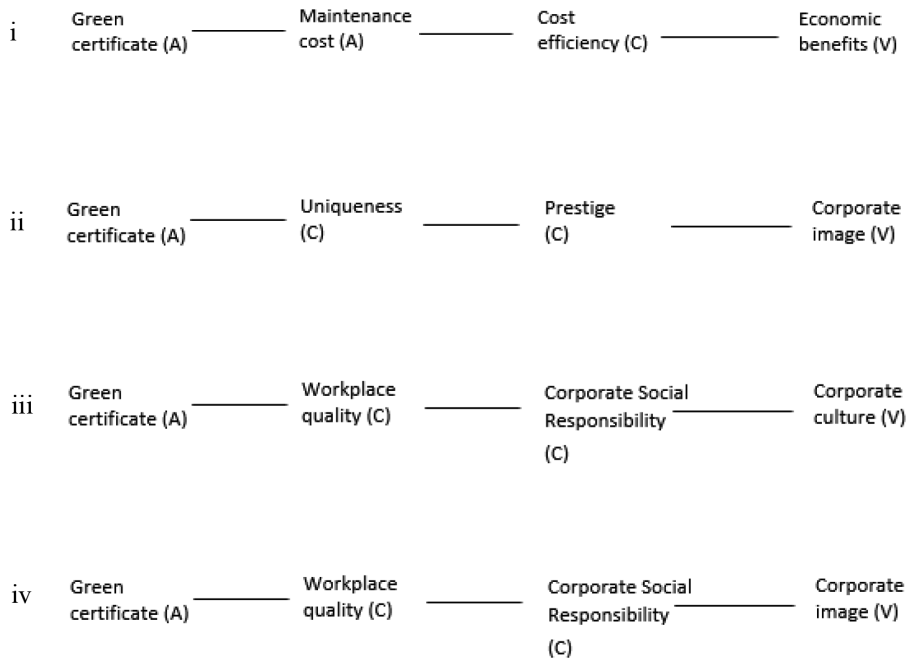

Fig. 2. Theoretical sustainable property Means-End Values Chains. Source: Authors' own

to use qualitative research to analyze the role of sustainability in decision processes of different agents on the commercial property market [22], there is no single paper applying MEC theoretical framework.

Based on literature review (see Sect. 1) we identified hypothetical Means-End Value Chains, that link property sustainability (we used green building certificate as a proxy), their functional consequences and values achieved by companies using office space (see Fig. 2).

To demonstrate how to verify connections between property attributes and end values on an empirical level, we used qualitative research results [2]. In order to elicit A-C-V sequences laddering interviews was used. Laddering is an in-depth one-on-one interviewing technique aimed at understanding of how users translate the attributes into meaningful associations with consequences of their use (direct and indirect), and finally values. The ultimate goal is the construction of a hierarchical value map (HVM) which is used to interpret market preferences.

4 Results and Discussion

In the first phase, interviewees were asked to indicate important factors considered by companies when choosing office space. To analyze the results, we used free-list technique. We analyzed both relative frequency of factors listed, and the order in which factors were listed. To build relative hierarchy of decision factors we constructed Smith's S saliency index [4, p. 21]:

$$S_j = \frac{n - r_j + 1}{n}. \tag{1}$$

where:

rj - position of element on a free-list

n - number of elements on a free-list Main text paragraph

According to experts, the most important features to be taken into account when choosing office space is rent (100 % of responses), the location of the building (83 %), the structure and size of the office space (75 %), capacity charge and the media (58 %) and the availability of parking spaces (50 %). Two respondents spontaneously mentioned the architecture, and only one mentioned the green certificate. The results are summarized in Table 1.

The importance of rent and maintenance costs can be attributed to budget constraints. Interviewees were consistent when assessing tenants flexibility in rent terms (1–2 euro/sqm/month). High sensitivity to rent in their opinions was typical to large tenants in the services sector - Business Process Outsourcing (BPO) and Shared Service Centre (SSC).

The size of office space was crucial for large tenants (i.e. tenants willing to rent 5000–10000 sqm of office space), and the office market is quite thin when this constraint is induced. Often, buildings are designed and built to suit for a specific tenant. The importance of location is not necessarily the most important feature and not only connected to the distance from city centre and prestige. In many cases, accessibility

Table 1. List of Means-End concepts

Attributes (A)	Consequences (C)	Values (I)
Rent (N = 12; S = 0,94) Location (N = 10; S = 0,7) Structure and area of office space (N = 9; S = 0,69) Maintenance costs (N = 7; S = 0,55) Parking lot (N = 6; S = 0,42) Tenant mix (N = 5; S = 0,25) Amenities (N = 5; S = 0,36) Architecture (N = 2; S = 0,18) Green certificate (N = 1; S = 0,33)	Cost efficiency Prestige Flexibility and options Workplace quality	Economic benefits Corporate culture Corporate image

Note: N – number of respondents spontaneously quoting the attribute; S – Smith's Saliency Index
Source: Authors' own

(by public transport - tram in Krakow and metro in Warsaw) and a good connection to the airport is even more important.

An significant conclusion of the qualitative research is that of low ecological awareness of tenants and companies. It is a conclusion that should encourage various institutions to launch educational activities. Low level of environmental consciousness is manifested i.e. by limited recognition of multi-criteria building certification systems; even worldwide applied systems such as LEED and BREEAM. Multinational corporation are basically featured by higher level of environmental awareness and do recognize sustainability criteria, with European companies being mostly familiar with BREEAM system and American ones with LEED.

Experts emphasized that generally tenants are not conscious of real economic benefits and costs of sustainable office space or are even express conviction about higher costs of renting sustainable space.

According to some respondents, there are significant differences between Polish and international companies, when office amenities are concerned. While some of the respondents felt that they were rather derived from the size of the organization (large companies attach greater importance to employees satisfaction and work space comfort), others argued multinational companies are more demanding. Popular expectations in that field are: air conditioning systems, access control, server rooms, recreation space.

Except one, respondents wouldn't spontaneously point green certificate as significant decision-making criteria when selecting the office space/particular building but direct questions about this feature of the building, lead to the conclusion that in practice green certificate has no or low significance (also due to very limited stock of green space in the market), although some companies sending request for proposal required space in a green building. General opinion of all respondents was that tenants – even those declaring interest in the sustainable office space would not be willing to pay (WTP) for it, i.e. they would not bear any additional costs of using green space such as higher rents, costs of moving to other building or participation in modernization costs. Probably tenants would accept temporary burden of modernization into green building.

When asked directly most of respondents admitted that green building certificate can be a factor in selected cases – for examples major international companies (with developed CSR practices). Laddering interview was used to understand the consequences and

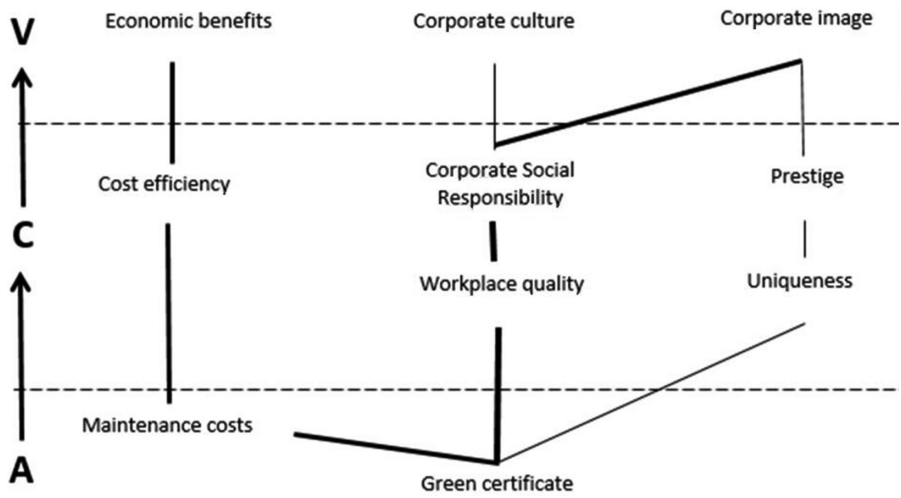

Fig. 3. Hierarchical value map for green certificate. Source: Authors' own. Note: links indicate Means-End Chains found in previous research or suggested in theoretical papers; thick lines indicate MEC identified during interviews.

values linked to the green building certificate (LEED, BREEAM or DGNB), and to verify chains identified in the previous studies (Fig. 3).

Respondents pointed out that environmental awareness (interest in Green Building Certificate) of tenants may be the result of their sensitivity to costs of space (maintenance costs), which is a major feature in space selection process. Basically, economic reasons (cost efficiency) create "green" behavior and raise environmental awareness.

Another chain identified by laddering interviews linked green building certificate with workplace quality (the functional consequence), and reporting related to Corporate Social Responsibility. According to experts interviewed it was not driven by concerns about environment, but rather because of corporate image enhancement practices used by multinational companies operating worldwide. In the same time experts admitted, that only few Polish companies/tenants consciously create the image of environmentally aware and socially responsible organizations.

5 Conclusions

Sustainable construction has been developing in developed countries with significant dynamics since 2000s. Research justifies this development with benefits green buildings provide over conventional buildings. These basically include lower maintenance

costs, indirect economic benefits due to improved image of the company-tenant, lower risk related to more sustainable market value of green buildings. Also, data (statistics) proves that market for green buildings has been growing recently in countries of Eastern Europe, and volume of new, sustainable office space, has been increasing significantly. But it is still very limited, and e.g. in Poland only 2–3 % of office space has been awarded ecological certificates (mostly LEED and BREEAM). The market of sustainable office space in Poland is limited and so far, there has been no research focused on demand for green offices and attitudes of users towards sustainability in construction.

Analysis of attitudes of office space users was conducted using existing data - analyzed were studies carried out among Polish companies, and own research was conducted - in-depth interviews carried out on a sample of professionals operating in commercial real estate market. The results were surprisingly consistent and allowed the isolation of the major barriers to development of green building in Poland. These are the following issues: (A) superficial understanding of the ecological issues among Polish enterprises (lower than in other countries in the region); (B) lack of awareness of users on the benefits of the sustainable of construction; (C) lack of conviction among developers and investors about whether to invest in green buildings (especially the demand for and willingness to pay for environmental solutions); (D) costs and financing of sustainable construction; (E) financial crisis has increased uncertainty of investing on the property market and reduced willingness to invest.

Above enumerated barriers, major criteria of office space selection – total costs (maintenance and rent) and generally low level of environmental awareness makes for most important barriers in further development of the sustainable office space volume in Poland.

The methods applied in this research were qualitative, and included semi-structured in-depth interviews. Research sample consisted of Polish real estate market professionals, involved in market research, analysis and investment. The results of MEC analysis allowed to create the hierarchical value map for office space decisions.

From practical point of view, the results indicate clearly the need for education and promotion of ecological solutions in construction and popularizing information on real economic benefits of sustainable space (maintenance costs, rents, value). Potential investors and developers of sustainable office space should appreciate the information that companies selecting sustainable office space are concerned about their image and apply rules of responsible business conduct.

Undoubtedly, there is a need for further research in this field; particularly as this was the first research of the users' attitudes towards sustainable office space in Poland. Research sample should be significantly larger and quantitative methods could be applied to investigate (and possibly measure) more thoroughly attitudes of tenants towards green buildings and ecological issues in their space-selection decisions.

Conclusions of qualitative research on the barriers of diffusion sustainable office buildings in Poland and attitude of tenants towards them are not univocal as the opinions of respondents – experts. Thus, the problem requires further research and more precise methods and techniques; also – bigger research sample.

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