The application of game and psychological techniques when surveying children’s opinion

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Abstract. The article explores the game as a method that can be used to conduct surveys with children using the possibilities of Internet in an entertaining manner. An empirical survey of children’s opinion based on the method of games has been presented. The description of the method by which a study is conducted is in terms of the psychological techniques that have been used, mainly the psychology of colours.

1. Introduction
The constantly changing consumer wishes, tastes and emotions are a serious challenge for companies seeking sustainable development [1]. The key success factor is the timely, and even the anticipated, discovery of consumer’s emotional changeability. The possibility to influence this volatility will provide one of the premises for market success [2, 3].

The interest in children as an important market segment is related to the fact that children are:
• an important market of consumers who spend their own money on their own wishes and needs,
• an influential market driving their parents’ money for their own benefit,
• a future market for all goods and services, which if cultivated will now provide a steady stream of new consumers.

Over the last decades, the children market has become significant as young people have greater disposable income than previous generations. Due to the fact that the purchasing power of young people continues to grow, marketers, manufacturers and advertisers are significantly interested in developing effective methods to reach the young market [4]. In order to accomplish this task it is necessary to know the behavior of the child consumer.

Surveying the child’s opinion is a great challenge. This is due to several reasons:
First, the specificity of this age group implies and requires special attention to the choice of a method of study,
Second, the necessity of taking into account the mental, cognitive and age-related development of children in forming the questions that will be addressed to them;
Third, the challenge of keeping their attention during the study.

There are different research methods for collecting primary data. Some of the most commonly used in practice are Interview, Observation, Experimentation, Questioning [5]. The most commonly used in practice is the questioning, because it allows the opinion of a large number of respondents to be explored [6, 7]. The types of questioning are: personal questioning, mail questioning, questioning at
the points of sale and Internet questioning [7]. A number of studies provide information on a successful survey through questioning among children [8, 9, 10, 11].

The report discusses an online survey method through questioning. The goal of the article is to present a method for conducting surveys with children, which uses the possibilities of Internet and applies game and psychological techniques.

2. The game as a method for conducting online surveys with children
Rumen Stamatov has defined the game as one of the main forms by which the child realizes his presence in the being [12]. Gili Freedman and Mary Flanagan define game as a situation with rules that require individuals to make judgments or decisions [13].

Adam Lobel claims that the play is integral to human development. He states that play helps fulfill basic needs, providing a sense of accomplishment with success and mastery, a sense of autonomy with its lack of constraints, and a sense of relatedness with its ability to bring people together in pursuit of a common goal [14].

Greg Costikyan points out that the game interacts with the players, and if not it’s not a game [15]. Each game has a beginning and an end, there is an absolute line in it. The game must create joy for the player and to be interesting. In other case the player will stop playing it. When we are talking for playing a game we could think for something that is not serious, because it’s an entertainment [15]. But Rumen Stamatov disprove this by saying that “knowing that this is just a game does not exclude the seriousness and dedication to the game, the playing child is completely conquered by the game, and the game is not only unserious, the game rises to the serious, and the serious - to the game” [12].

Ana Grudeva examines the “serious games”, by saying that they can be used and applied in different aspect of e-learning for children. She defines “serious games” as interactions between the educational goal and the technologies provided by video games [16].

There are different classification of games. Gili Freedman and Mary Flanagan point out four types of games: physical games (sports), behavioral economics games, board games, and digital games [13]. Ana Grudeva uses this classification: class games, frame games, “serious games”, and educational simulations [16].

Gili Freedman and Mary Flanagan states that games can be used to collect data (i.e., games can be used as instruments), but they can also be used as a way of altering a participant's cognitive state, emotional experience, or social situation [13]. Games allow social and personality psychologists to understand how individuals think about and interact with the world around them. Not only do games have a rich history of being used in social and personality psychology, they also hold the promise of pushing the field forward. Racial biases, affective forecasting, competitiveness, empathy, and power are just a few of the topics that have been successfully explored using game methods. Whether games are used as measures, manipulations, or contexts in laboratory experiments and field studies, their incorporation into psychological science has allowed for research that may not otherwise have been conducted. More broadly, games are an important and growing paradigm in social and personality psychology, and knowledge of how to effectively craft them will allow researchers to stay on the cutting edge [13].

Recently, multiple reviews have highlighted the impact of games on psychological states and behaviors however, reviews have not yet considered the ways in which games can be used as research methods in their own right. Unlike some methods in the psychology methods toolbox, games can be used as measures, manipulations, and experimental contexts for many different populations: they are a universal form of engagement and interaction with far-reaching applications [13].

3. An empirical survey of children’s opinion using a method based on the games
Children easily lose interest and get bored. The way of examining a child’s opinion should be interesting, fun and different. We consider this to be the most appropriate way for children not only to lose interest in completing the questionnaire but also to feel time-consuming. The opportunities offered by the online environment create the necessary prerequisites for achieving this intention.
A method that has been used for surveying the consumer behavior of children based on the games will be discussed.

In this survey, two age groups are defined - children (7-9 years) and teenagers (12-14 years). A web-based application based on the game as a method for studying children was created. It is based on various visual stimulants and the psychology of colors.

Rumen Stamatov notes that the child plays because the game is a pleasure and that is his freedom. The game brings joy, pleasure, self-assurance. This is the basis of the method we have developed. Rumen Stamatov defines the play as "a voluntary action, limited in time and space, requiring compliance with voluntarily accepted binding rules, which are inherently self-centered and accompanied by a sense of tension and joy from the awareness of" something different "by everyday life" [12].

The game is played with rules. Even when rules are denied, this is the reason for introducing new rules. The rules set the laws governing the temporary world created by the game. They are indisputable. Violation of the rules destroys the world of the game, it ceases to exist, the "illusion" of the game, the inner freedom and self-expression, the unconscious "it is not quite real". In this study, we came from this concept.

Taking into account the different periods of development of the two groups, bringing with them a different stage in cognitive and mental development, different interests and needs, we have sought to adapt the used visual stimuli. One aspect of visual stimulation can be found in the actual view of the web-based application, and the other in the way of asking each question.

The client view of the site is organized as a Border Layout. The border layout is organized in five regions – north item, south item, west item, east item and center item (figure 1). The north item in the developed site includes a brown shelf and the menu. The south item includes the same brown shelf, but with different foods and the contact information. The west and the east items include the hosts – a boy and a girl, respectively. All of the mentioned items are permanent. The center item is with dynamic content and shows the interviewers and the questions (figure 2).

![Figure 1. Border Layout Example](image)

- **Border Layout**

When creating the view, the psychology of colors is used, which is also a basic marketing technique. The large number of studies in the field of color psychology show that each color has its own psychological significance and character. In this direction, it is precisely found that the colors contain a certain emotional associativity [17]. Because of the power of influence on people's will and actions, colors are a powerful psychological weapon and a means of attracting attention, interest, and ultimately decision-making [18]. Each color has its own emotional language, which brings feeling and emotions. This is because every nuance in the color range is associated with positive or negative emotions, and this gives it the power to evoke and remind different emotions [19].

The main colors used in the view are:

Green is the color of nature and life. The green is related to healing, prosperity, reincarnation, harmony, tranquility and generosity. Popular in most cultures and is the color of nature and fertility. It symbolizes ecology, growth, rebirth, and the natural environment. It is the quietest color for the human eye, showing stability and endurance, hope, nobility, generosity, freshness. Green has a great healing power. Green means safety, so it is often used in the advertising of medicines and medical products. This color embodies security. Except as a basic color in the view the green was also used for two of the children interviewers (figure 4a).
Brown is a serious, earthly color that suggests stability, structure and support. The color of security, protection and material wealth it is associated with the protection and support of the family, with a clear sense of duty and responsibility. The brown is friendly and easy to access. It is associated with the overall, natural and organic production - all that is related to agriculture, open nature and agriculture. The brown soothes us. The brown does not look for attention. It prefers to remain in the background, allowing other colors to shine. It has strength and maturity, making it stable. Brown is the most dominant color on the planet, along with the green. It soothes and stabilizes while the green balances and refreshes.

❖ Colors in which the “virtual hosts” are dressed

Two “virtual hosts” has been created – a girl, dressed in pink and a boy, dressed in blue (figure 2, figure 3).

The blue is the color of the sky and the sea. It is connected with depth and stability, godliness and sincerity. It has a soothing effect, it is associated with peace and tranquility. Studies show that is very well received among male audiences [20]. It is also a receding color, expressing infinity and coolness. It creates a sense of calm and security and is a great choice in the design of travel agencies.

The pink personifies compassion, caring, and love. It is associated with unconditional love and understanding. Pink is feminine and romantic, intimate, lively, rational. This color is intuitive and shows its tenderness and kindness with its empathy and sensitivity. In color psychology, pink brings hope. Positive color, filling with warm and soothing feelings. The pink personifies the sweetness and innocence of the child in each of us. This is the color of uncomplicated emotions, experience and naivety.

![Figure 2. View of a question from the child questionnaire](image)

![Figure 3. View of a question from the teen questionnaire](image)

Often certain colors are associated with a given gender. In this regard, a number of psychological studies have been carried out, which show that women prefer more red color, and men prefer the more recent blue color [21]. These are the colors that we can define mainly for feminine and respectively male colors. A typical example in this regard is the pink color for women. This color is most commonly used in women's ads [21]. We associate with women all bright and cheerful colors - talking
about cheerfulness and frivolity. Men are often associated with most cold colors that speak of crude power and mysticism.

- Center Item of the Border Layout

In the rest, we used another concept. In the children section, it is related to asking a question from an interviewer who is a computer-assembled fruit, vegetable or other food that aims to provoke interest and joy in the children and create a sense of tranquility. In this way we expect them to trust the well-meaning and smiling "interviewer" (figure 2).

The same is true for the teenagers, with the difference that their "interviewers" are for slightly older children, so we used computer-minded and well-meaning emoticons (figure 3). Examples of both concepts are shown in figure 2 and figure 3.

- Colors of the “virtual interviewers”

Besides those that have already been discussed are also used:

Yellow is the color of the sun. The yellow color is the lightest basic color, it is expansive - it creates a sense of movement and often dominates other colors. This cheerful color is always followed by the eye, and in its brightest shades it can be more aggressive than the red color. Raises the spirit, stimulates communication, symbol of intelligence and attention to detail. Yellow is the color of sunlight. Its use produces pleasant feelings. It is connected with joy, happiness, intellect and energy, creates a warming effect, generates cheerfulness and stimulates mental activity (figure 4 b, figure 5).

Red is the color of fire, love and life. It is associated with energy, strength, power, determination, passion. As the most attractive color, it has a very high visibility and is therefore often used to indicate danger - high voltage, traffic signs, traffic lights and fire-fighting facilities. It is used as a symbol of courage and can therefore be seen in many national flags. This color is often associated with energy, so it can be used to promote energy drinks, games, cars, sports related subjects, and high physical activity. In painting and design, the red is perceived with the following characteristics: strength, cheerfulness and dynamics [22]. This is the most intrusive color of all and instantly eye-catching (figure 4 c).

Orange is the color of joy. For the human eye, this color is very hot and creates a feeling of warmth. It is connected with joy, sun and tropics. Orange represents enthusiasm, charm, happiness, creativity, determination, attraction, success, encouragement and stimulation. However, orange is not as aggressive as red. It is very well accepted by young people. This color embodies the sense of humor, optimism and friendship. It stimulates trust, tolerance, and sense of community. As a citrus color, the orange color is associated with healthy food and stimulates appetite. It is very effective in promoting sales of food and toys (figure 4 d).

White is associated with light, goodness, innocence and modesty. It is considered the color of perfection, it can be birth, purity and simplicity. The white color is the opposite of the black color. It usually has positive perception and means safety. In the world of fashion, in the furniture and interior design - white and black are extremely fashionable colors. In the advertising, the white color is associated with coolness and cleanliness, so it is common in bathroom and bedroom stores, dry cleaning, in cleaning service ads. White is also used as a symbol of simplicity in high-tech products. The color of snow promotes cleansing of thoughts and mental clarity. The white recreates the idea of hope and expectations for healing and restoration, which is why it is the color of hospitals and medical aprons for a long time. White is often used as a symbol of safety in the promotion of medical products and equipment (figure 4 e).

Purple is the color of spiritual power. Purple colors are associated with fun, festivity and solemnity. Unusual and magical, the purple color is often associated with royal peoples. It symbolizes power, nobility, luxury and ambition, suggesting a sense of wealth, wastefulness, self-confidence and independence. This magical color is suitable for use in graphic or interior design when it is necessary to bring a sense of fiction, mystery and magic [20] (figure 4 f).
Multi-color uses color combinations consisting of more than two colors. They rely on multi-color color psychology. The message they want to convey is related to emotions such as happiness, joy, lightness in life (figure 4 g).

In conclusion of the presented method we will bring facts showing the success of the conducted research. The return of the received responses is presented in figure 6. Less than 30% did not participate in the study in both age groups. Only 13.6% of the children and 8.6% of the teenagers did not fill the questionnaires to the end, so their answers did not participate in the statistical processing of the results.

Figure 4. The children interviewers

Figure 5. Examples for the teen interviewers

Figure 6. Distribution of participation in the study of sampled students
4. Conclusion

This report presented a method of surveying children's views, combining the capabilities of modern technologies and allowing interest in a fun and entertaining way. The modern generation of children has grown up with new technologies. Using those possibilities to communicate with them is an effective way to conduct a survey.

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