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Impact of altered emotional state on impulse  
purchasing behaviour:  
Are happier people more likely to make impulse  
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## **Abstract**

The purpose of this paper is to determine whether increased happiness increases impulse purchases. We organize between groups design experiment to examine whether people with induced positive emotions are more prone to exhibit impulsive purchasing behaviour. We use the positive and negative affect schedule (PANAS) scale to measure individual level of positive and negative emotions. We then run a regression to see if increased happiness increases the impulsive purchasing behaviour. We triangulate our results by conducting a post-experiment focus group with experiment participants in order to clarify their behavioural motives. The results we obtain from the experiment suggest that positive mood does not have a robust impact on the impulsive purchasing behaviour.

**Keywords:** Impulse purchases, happiness, emotional state, PANAS scale, buying behaviour, between groups design.

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## 1 Introduction

Each year billions of euros and dollars are spent worldwide on impulse purchases. While there are understandable difficulties to establish precise aggregate figures for the total size of the impulse purchases industry, the sales for one of the impulse good categories alone, chewing gum, accounted for more than \$19 billion in sales in 2006 and are expected to reach \$20.7 billion by 2015 (National Confectioners Association, 2006). Over 80% of the total gum sales are believed to be impulse driven purchases (Global Industry Analysts, 2011). Yet the market for chewing gums constitutes only a minor fraction of the global market for impulse purchases.

Ranging from minor purchases, such as magazines, crisps and chocolate, impulse purchasing can be extended to items like jewellery, clothing or even automobiles. On a broad scale, impulse purchasing can be defined as the process of buying any good without any previous intention to do so in advance and without considering the decision carefully (Oxford Advanced Learner's Dictionary). Interestingly, the keystone of the concept, individuals being driven by emotions and feelings, provides a clear contradiction to the conventional economic theories that base analysis on an assumption of individuals being rational.

Even though impulse purchases and factors encouraging people to make unplanned purchases have been researched for more than 50 years, most of the research has been made in the USA, Canada and the UK. Studies show that there exist notable differences in purchasing behaviour among different countries, due to psychological, (Weber and Capitant de Villebonne, 2002) cultural, and social factors (He and Yang, 2006). This suggests that a research done in the Baltics might yield different results due to cultural differences. The researchers have also concentrated on marketing and economic effects facilitating the impulsive purchasing behaviour and the long term satisfaction with specific aspects of life, such as work (Diener et al., 1999) or general satisfaction with life (Diener et al., 1985). Yet several authors, including Baumeister (2002) suggest that further research should explore the impact of short term mood manipulations. Silvera et al. (2008) extends the previous studies by researching the impact of positive and negative affect and subjective well-being on impulsive buying and suggest that any investigation of short term mood alteration effect on impulsive buying is best made through an experiment rather than a survey.

Impulsive purchasing have attracted wide spread attention partially due to a seeming contradiction between people's thoughts and their behaviour. While people have very little

incentives to make an impulse purchase, as it serves no rational needs (i.e. it is not a necessity product, does not improve the social status nor does it provide a long term benefit), they still follow their emotional urges and make the purchase, in many cases being aware that the decision will be regretted in long term. This type of purchase also goes against most of the economic theories which assume a rational and a thoughtful consumer making educated choices after serious consideration.

Researchers use various terms to describe impulsive purchases. Rook & Gardner (1993), characterize impulsive purchasing behaviour by a “relatively rapid decision-making, and a subjective bias toward immediate possession” (Rock & Gardner, 1993). Other papers describe impulse purchasing as more arousing, unintended, less deliberate, and more irresistible buying behaviour as compared to planned buying behaviour (Rook, 1987; Rook and Fisher, 1995; Rook and Hoch, 1985). In our paper we rely on the definition provided by Nguyen et al. (2003) who consider the following characteristics of an impulse purchase:

- ✓ Rapid decision making
- ✓ More emotional than rational decision
- ✓ Not a reminder of a planned task (such as buying a gift)

We seek to fill the gap in the existing literature by investigating the effect of altered emotional state on the impulsive purchasing behaviour. As the most recent studies concentrate on the impact of negative emotions, we choose to contribute to the literature by developing a deeper understanding of the impact of increased positive emotions. Hence we pose our research question: **“Does increased situational well-being leads to more pronounced impulsive buying behaviour?”** We seek to determine whether people with higher subjective level of situational happiness are more likely to exhibit impulsive purchasing behaviour.

The experimental design has been suggested to be the most appropriate choice for this kind of research by Baun and Groeppel-Klein (2003); Ramanathan and Menon (2002); Silvera, Lavack and Kropp (2008) to name a few. Thus in order to answer our research question, we organize an experiment and employ between groups design, i.e. we comprise a control and a treatment group. In order to increase the situational well-being, we expose the treatment group to a compilation of humorous video clips while the control group is shown a neutral video material for the same length of time. Afterwards every participant receives 5 coupons, each of which can be exchanged for either 40 santimes (this sum is equivalent to 0.28 EUR as of December 2010) or one snack belonging to impulse purchase category and

having the same retail price. To measure the situational well-being, we use PANAS scale, which has been extensively used in similar researches. We hypothesize that participants with higher happiness, *ceteris paribus*, are more likely to choose impulse goods. Thus we make the amount of coupons exchanged for snacks our dependent variable and research the differences among the groups.

The main contributions of our experiment are the following. First, the sample consists of Baltic students, making it particularly relevant for Baltic community, as impulsive purchasing behaviour can differ substantially in different cultures and societies (He and Yang, 2006). Young people have been shown to portray a similar behaviour to the one of adults, yet scoring slightly higher in the measures of impulsiveness (Helmers et al., 1995). Second, our experiment reduces the potential biases of survey based researches as impulsive purchasing behaviour is highly influenced by current emotional state, which cannot be predicted beforehand.

We believe that the findings of our research are highly valuable for two major groups of stakeholders. First, for the academic community as it offers a notable extension of previous studies, especially contributing to the study by Silvera et al. (2008), by conducting an experiment and directly manipulating the emotional states of participants rather than using a survey. Second, our research contributes to a better understanding of the importance of individual's emotional state at the moment of making an impulse purchase, thus it can be a helpful material in the process of developing marketing activities of any company producing goods that fit under the category of impulsive purchases.

The rest of the work is structured as follows. First, we highlight the previous research on the topic. Second, we illustrate our methodology, introduce the PANAS scale, which we employ in order to assess participant mood states, and then describe our pilot and main experiments. Afterwards we present our empirical findings and continue with discussion of the results. Finally, we address potential biases, provide suggestions for further research and conclude the paper.

## **2 Literature review**

The literature on the subject of impulse purchases have grown gradually over the years. There's an obvious increase in the papers published starting from the decade of 1980-ties when this concept gained significant attention and entered marketing slang more profoundly. Albeit, there are valuable papers published dating as far as 1950-ties. Common



trait of first researches is a focus mostly on the external stimuli that were believed to increase the probability of an impulse purchase (Cox 1964, Kelly 1965).

Only several decades later researchers began to pay attention to internal factors as parting from the product-based approach took some time and readjustment in thinking. Such advance and readjustment of focus also meant that authors were required to base their assumptions and researches on findings from the field of behavioural psychology. Moreover, it is the reason for many studies to attempt to link proneness of impulse purchases with predominant traits of a person's character.

One of the first papers on the subject, illustrating the thinking of the corresponding era, was "Studying Customer Behavior in Retail Stores" by Applebaum (1951), in which the author attempted to classify customers and identify their shopping patterns mildly touching impulsive buyers. However, as the author admits, "the 'why' of customer behaviour is a separate and very difficult subject". Thus, the author demonstrated that the internal motives and personal attributes of the customers were not explored at the time.

In 1962 Stern published a paper clearly focused on the topic of impulse purchasing. It also contained a slight regard for internal motivation of customers and focused on items which belong to the category, as the author calls them, of "impulse items". He theorized that those items would be the ones with lower price and a short product life cycle. This paper also marked an advance in the attempts to define impulse purchasing, because at the time this concept was used interchangeably with "unplanned purchase", which, as later researchers clarify, is not the same.

The decade of 1960-ties turned out to be particularly productive for Kollat and Willett (1966; 1967; 1969) resulting in three papers on this topic. The first paper again focused on product categories and various brands linked to unplanned purchases. Regrettably, the results obtained were unsatisfactory to draw any reliable conclusions, which as pointed out by Youn and Faber (2000) might be due to definitional myopia trying to equate impulse purchasing with unplanned purchasing. Their second work (1967) focused on the differences of diverse customers and discovery of predominant personal characteristics associated with this behaviour. However, this led the authors to question the validity of the concept as such in their latest paper (1969). According to authors, there were too many troubles the marketers needed to confront in order to use this concept meaningfully in construction of a marketing strategy.

Two attention-worthy papers were developed in the seventies. In "Impulse Buying Revisited: A Behavioral Typology" by d'Antoni and Shenson (1973), the authors invested

remarkable effort in constructing a theoretical framework which could be used for later studies; however, they failed to obtain significant conclusions and relationship with other studies. The reason for this as proposed by Youn and Faber (2000) may lay in the previously mentioned definitional myopia, as well as focus on irrelevant personality traits and inadequate measures.

Bellenger, Robertson, and Hirschman (1978) approached the matter again from a well-known product-based perspective. They tried to propose an idea that there exist product-inherent attributes that encourage impulsive buying. However, this view has been widely criticized as other researchers show that consumer-product links play a far greater role. For instance, Dittmar and Beattie (1998) showed that products which project onto person's self-image are more likely to be bought on impulse.

The 1980-ties marked an entirely new approach to impulsive purchasing. "Impulsive Consumer Buying as a Result of Emotions" by Weinberg and Gottwald (1982) provided the first attempts to link impulsive purchasing with emotions. Authors managed to obtain results that linked higher emotional activity, lower cognitive control and reactive behaviour with heightened urge to act and purchase impulsively. Those who made an impulse purchase were noticeably more delighted, enthusiastic and amused than those who did not. The authors were the first ones to assert differences between various nuances of unplanned purchases by pointing out the importance of cognitive and affective factors. Their definition of impulse purchase is linked to high arousal and low cognition.

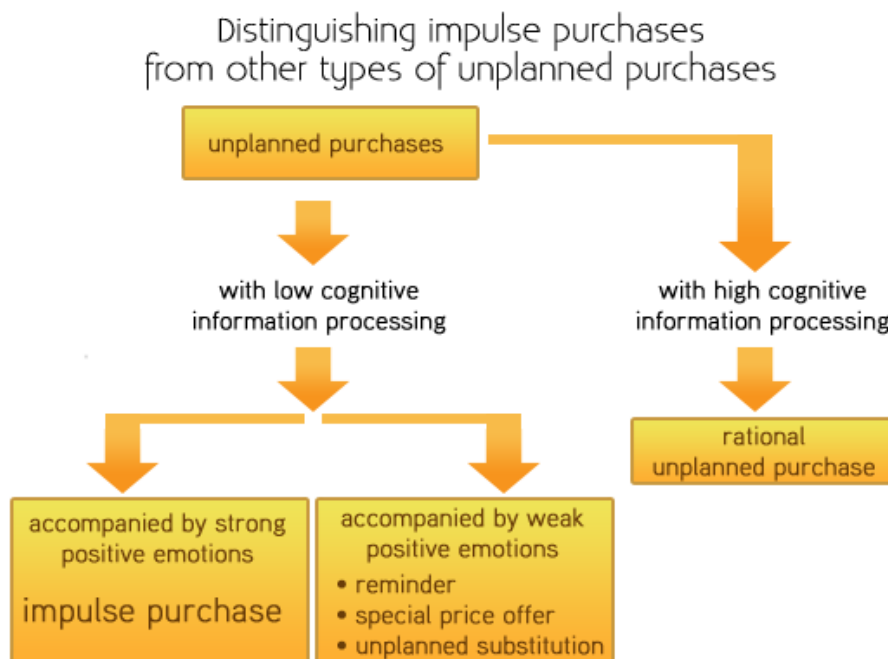


Figure 1: Source: Graph reproduced from Dorothea Baun, Andrea Groeppel-Klein (2003)

Further investigation of internal psychological states was made by Dennis Rook in collaboration with other authors. Rook and Hoch (1985) offered a psychological model and expanded the definition of impulse purchasing. They noted five crucial attributes that characterize this behaviour:

- A sudden and spontaneous desire to act;
- A state of psychological disequilibrium;
- The onset of psychological conflict and struggle;
- A reduction in cognitive evaluation;
- A lack of regard for the consequences.

Based on in-depth interviews with more than 200 adults, they identified that, apart from spontaneous urges to consume, inner dialogue with cost-benefit analyses, resistance strategies, rationalization and guilt also play a significant role in the psychological experience of the subjects.

Rook's "The Buying Impulse" (1987) continued on a similar note. Interestingly, it recognized that this phenomenon was to a large extent connected to the American way of life and that by that time it still had not received enough of attention. In alignment with previous study, it continued with the redefinition of the concept and with more regard to the psychological nature. This work recognized that the impulse purchase is hedonically very complex and that the utility gains for the customer are rather obscure, especially when the inter-temporal dimension is taken into account as the impulse purchasing is prone to occur with diminished regard for its consequences. Following a similar argumentation Hoch and Loewenstein (1991) portrayed the impulse purchasing as a fight between the psychological forces of desires and personal willpower.

Gardner and Rook (1988) explored the relationship between impulsive buying behaviour of customers and their corresponding internal affective states that follow after this behaviour. It turned out that many subjects tend to use impulsive purchases as a "mood-management" mechanism. The most significant conclusions were that impulse purchasing were found to be more likely to buy on impulse in both negative moods and positive moods than non-impulse buyers. This indicates that an impulse purchase is more likely to occur in a strong positive or negative state of mind. (Rook 1987; Gardner and Rook 1988; Rook and Gardner 1993).

Valence, d'Astous, and Fortier (1988) introduced to the concept of compulsive purchasing and investigated probable causes for such behaviour. What is more, they developed a reliable and valid scale, as their results later testify, to measure this phenomenon.

The definition of this concept clearly deviates from impulse purchases as it suggests a more obsessive and uncontrollable nature. Furthermore, this phenomenon was explored by O'Guinn and Faber (1989), who showed that persons who purchase compulsively have lower self-esteem and that they are primarily motivated by psychological rather than instrumental utility from the items bought. Consequences usually are very grim – indebtedness, anxiety, sense of losing control and even domestic dissension. So it is of a great importance to note this difference and distinguish from it when exploring impulse purchases.

The following decade was marked with a substantial increase in the literature pertaining to this field. The papers continued to progress in their understanding and also in the attempts to more clearly define the concept of impulse purchasing. One such paper was "Defining Impulse Purchasing" by Francis Piron (1991). The purpose of this work was to offer a definition that would "help to measure the pervasiveness of impulse purchasing more faithfully" (Piron, 1991). The author constructed his definition from elements of existing definitions and added additional dimension, namely, "on-the-spot". The complete definition involves three fundamental ingredients. First, purchase being unplanned and without any intention former prior entering the store. Second, the purchase being the result of an exposure to some stimuli, e.g. product stands. Lastly, the definition refers to the particular place and time, i.e. this action is processed immediately after the decision to purchase has been made.

Another novelty of the time was presented by Dittmar, Beattie and Friese (1995) who attempt to link gender identity and self-image as factors influencing impulse purchasing behaviour. They find that men are more prone to impulsively buy instrumental and leisure items which project independence and activity, while women, buy more symbolic and self-expressive products that pertain to physical appearance and emotional aspects of self.

The decade also marked the first researches into the dimension of age. A number of papers tried to touch upon the differences for teens and adolescents. It is claimed that impulsive behaviour for adolescents generally is regarded as unproductive and that impulsiveness in purchases generally goes together with impulsiveness in other areas of life (Lin, C. H. and Lin, H. M. 2005). Also it has been noted that young people score higher in the measures of impulsiveness (Helmets et al., 1995). Even though several papers have managed to link impulsiveness to other socially important behaviours such as aggression (Stanford et al., 1995), drug use (Stanford et al., 1996), pregnancy (Jones and Philiber, 1983) and HIV risk-related sexual behaviour (Clift et al., 1993), there is a lack of papers with a narrow focus of impulse purchasing behaviour of adolescents. Several authors admit that this would be a valuable addition to the field (Lin, C. H. and Lin, H. M. 2005). Authors point out that

otherwise it might create a serious social problem as the adolescents are being more heavily targeted because their spending potential is only increasing (Simpson et al., 1998).

Contributing to understanding of what role the age play in impulsive purchasing behaviour is a work by Wood (1998) which found a non-linear relationship between age and proneness to impulsive buying. However, the sample consisted only of adults. The found relationship was one where impulsive buying is expected to increase from ages 18 to 39, and decline afterwards. To some extent that is in harmony with the findings of Bellenger et al. (1978) who discovered that customers under the age of 35 were more prone to impulsive buying than older ones. However, nor gender, nor family income was not found to play an important role in a research done by Wood (1998) thus the debate regarding the impact of demographic variables is still open.

Faber and Christenson (1996) show that impulsive buying can serve as a mood management function, in cases when consumer wishes to lift himself out of bad emotional state and, thus, relieve pain. Thus, psychological matters could still be in core of this phenomenon.

Papers from this millennium demonstrate clear awareness of currently prevailing socioeconomic and cultural habits. It is noted that impulse purchasing opportunities are vastly expanded by 24-hour convenience stores, television shopping channels, and internet shopping (Kacen and Lee, 2002). Authors also find that regional level factors (individualism–collectivism) and individual cultural difference factors (independent–interdependent self-concept) significantly influence impulsive purchasing behaviour. In alignment with Rook (1987), authors state that buying impulse in its nature is universal, but local culture can greatly shape the way how consumers might operate on this impulse. For example, Asian collectivist consumers exhibit less of impulsive purchasing behaviour than Caucasian individualist consumers.

Still, there are papers observing the role of product-specific characteristics on impulse purchases (Jones et al., 2003). Albeit, there are advances in methodology and this study treats impulse purchasing tendency as product category specific. The found results show that a product-specific conceptualization of the impulse purchasing behaviour is a good predictor of actual observed impulse purchasing behaviour. This was determined against the background for general impulse purchasing tendency of two other product categories. Moreover, customers' involvement in the process was found to be an important determinant which is able to impact consumers' tendency of impulse purchasing.

Baun and Groeppel-Klein (2003); and Ramanathan and Menon (2002) mark the beginning of highly innovative experimental approach and provide valuable contributions that attempt to clarify the influence of hedonic goals on impulsive decisions and the process of their automaticity.

Paper by Verplanken et al. (2005) tries to link impulsive buying and unhealthy eating. They report a strong association between impulsive purchasing tendency and snacking habit. Overall, this paper portrays the negative side of impulsive buying, since impulsive buying tendency is moderately-to-strongly correlated with low self-esteem, dispositional negative affect and snacking habit, which in turn displays relation to eating disorder propensity. However, this paper clearly shows that snacks as a product category are among the products that are most frequently bought on impulse.

One of the most recent contributions to the impulse purchases is a paper by Silvera, Lavack and Kropp (2008). In this work they fail to discover a significant relationship between positive affect and impulse purchases. Opposing to the previous literature, authors report that satisfaction with life diminishes proneness to impulse purchases. However, the authors remark that “Any investigation into short-term effects on mood may be best served through experiment rather than survey.”

Another recent contribution regarding the impact of mood on impulse purchases comes from Ariely and Lowenstein (2000), who argue that the rational predictions individuals make about their future lives are not in line with their behaviour in certain situations, which is profoundly influenced by mood swings. Hence, due to self-reporting bias, the examination of impulsive buying phenomenon should better be undertaken as observations during an experiment rather than a self-reported study.

These findings give us a reason to believe that impulse purchasing is likely to be observed more vividly among young persons, i.e. students. Moreover, snacks serve as an appropriate item to be purchased impulsively. Hence, this leads to our primary hypothesis: **“The participants in the treatment group will choose considerably more snacks than the participants in the control group”**. Due to the limitations of our sample size, we also develop a second hypothesis to measure the impact of individual happiness, independently of the group: **“The participants with higher level of happiness will choose more snacks”**.

### 3 Methodology

#### 3.1 PANAS scale

For the purposes of evaluation the emotional well-being of our experiment participants we use the PANAS scale. PANAS stands for Positive and Negative Affect Schedule. It was developed and validated by Watson, Clark, and Tellegen (1988) in order to measure mood effects along these two dimensions – positive and negative. Authors assert that these two dimensions are relatively independent, and consequently the whole schedule consists of two 10-item mood scales (see Appendix 2). What is more, authors show that scales are “highly internally consistent, largely uncorrelated, and stable at appropriate levels over a 2-month time period”. Scales also are correlated with measures of similar constructs and exert the same pattern of relation with external variables as seen in other studies (Watson et al., 1988).

PA (Positive Affect) scale shows to what extent a person experiences emotions such as enthusiasm, activity, alertness. High level of PA can be taken as an evidence that person is in a state of high energy, full concentration and pleasurable engagement. Low level of PA hints of a state characterized by sadness and lethargy. The 10 employed descriptors for positive state are *attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong* and *active* (Watson et al., 1988).

NA (Negative Affect) scale is a general dimension of subjective distress and unpleasant engagement that includes a variety of aversive mood states such as anger, contempt, disgust, guilt, fear, and nervousness. Low NA signifies a state of calmness, tranquillity and serenity. The 10 employed descriptors for negative state are *distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous* and *jittery* (Watson et al., 1988).

We choose PANAS for our experiment due to several reasons. First, PANAS is a widely recognized tool and is the most often used instrument in psychological researches. Second, PANAS distinguishes between positive and negative emotions and treats them as separate dimensions rather than the opposites of one dimension. This distinction is particularly important as we are interested only in increasing positive emotions for our treatment group and it is vital that the level of negative emotions is left intact.

In the context of our research we use this scale in order to assess mood states (and therefore differences) in both of our experiment groups. Participants are asked to grade in a scale of 1 to 5 to what extent they do experience the each emotion at that very moment (Appendix 2). Hence, PA schedule is of primary importance when evaluating the

effectiveness and validity of treatment, whereas NA schedule is of secondary importance and is employed in order to confirm that the level of background negative emotions does not have an effect on the impulsive behaviour and is similar in both groups.

### 3.2 *Sample selection and description*

As mentioned previously, impulsive purchasing behaviour has been observed more intensely among young people. As our experiment required that at least some impulse purchases are chosen by each group (the experiment would fail if none or very few participants would choose products), we choose an international student community in Stockholm School of Economics in Riga as our sample base. The sample has a great diversity as it consists of students from all Baltic countries and has similar male and female proportions.

For the results of our experiment to be statistically significant in terms of number of observations, we decided to opt for 30 participants in each for the groups, or 60 in total. After we sent emails to all students in the university inviting them to participate in our experiment and promising a tangible reward, we received a sufficient amount of replies. Despite all the measures taken to stress the importance of arriving to the experiment on time, 10% of the students failed to do so and we were left with 54 participants. A random distribution lottery upon arrival resulted in 29 attendees being in the treatment group and 25 in the control group. Fortunately, the sample was well diversified in terms of nationality and the gender distribution was perfectly equal (See Figure 2). The sample also perfectly represents the population of SSE Riga, as it has the same proportions. Thus the findings can be generalized to the entire population of SSE Riga.

		Frequency	Percentage
Gender N = 54	Female	27	50%
	Male	27	50%
Nationality N = 54	Latvian	33	61%
	Russian	9	17%
	Lithuanian	9	17%
	Estonian	1	2%
	Other	2	4%
Age N = 54	< 19	3	6%
	19	8	15%
	20	22	41%
	21	13	24%
	21 <	8	15%

**Figure 2: Demographics of experiment participants**



### 3.3 *Design and procedure*

The experiment used between groups design. This design ensures that the most crucial objective is met as it removes possible external biases and the effect of the treatment remains the only difference among the groups. The distinction between treatment and control groups is a typical method employed in various types of scientific research. The control group is used as a baseline benchmark against which treatment group is compared. Both groups are identical in all critical aspects (participants, environment, experiment duration, etc.) except that the treatment group is a subject to receive experimental manipulation, i.e. the “treatment” (North Carolina State University, 2011).

In order to achieve this, we allocated the participants in two identical rooms on the same floor at the same time to carry out the experiment simultaneously. As participants arrived on previously determined place, they were asked to draw a folded piece of paper from a bowl, indicating in which room they will be located. This ensured that participants are located on random.

Before the start of the experiment, participants were explained the process and the expected length of the experiment and presented with a cover story about the purpose of the experiment. The cover story was necessary as having *a priori* knowledge about the purpose of our study participants could alter their choices during the rewarding process. Our cover story was that we are conducting an experiment of how audio-visual cues affect cognitive abilities, and hence therefore Cognitive Reflection Test along with several typical IQ test questions was used. The inclusion of these questions, besides giving credibility for the cover story, presents opportunity to have additional analysis on the factors influencing happiness and impulsive purchasing behaviour. Each participant received response sheets which consisted of a questionnaire on participant’s demographic information, a short IQ test, PANAS scale and an envelope with 5 coupons. All the sheets were anonymous, containing only an identification code to allow us to further analyse the data gathered. The response sheets can be seen in Appendix A.

The respondents were given 10 minutes to fill in the demographic information variables and to solve the IQ test. Then the treatment group was exposed to five minute compilation of funny video clips (Experiment treatment, 2010). Previous researches show that situational wellbeing can be increased by playing short comedy routine (Sgroi, 2010). Yet, as the previous experiments attempting to increase the situational wellbeing are done in USA and UK, we believe that the short performances by well-known comedians may not be

as successful in Baltics due to cultural differences. Hence, before our experiment we organized an online survey to help us to choose the most appropriate videos. More than 80 respondents rated several short clips, which allowed us to choose the most successful ones. The ratings and links to the videos can be seen in Appendix D. The control group was shown Windows 7 screensaver „Ribbons” for the same length of time. Research by Isen and Geva (1987) and Oswald et al. (2009) show that the effect of having no slip shown leads to a similar outcome as having random coloured lines being placed on the screen. Afterwards the participants were invited to extract the coupons from their envelopes and to exchange them for money or products. Finally, participants were debriefed and the true purpose of the experiment was revealed.

#### 3.4 *Materials used in the experiment*

According to Verplanken et al. (2005), snacks are among the most commonly bought impulse purchases. In total we had 300 snack items from which participants could choose. There were a total of 6 different products to choose from - two types of corn sticks, sweet popcorn and crisps with three most popular flavours in Latvia. The retail price for each of the products was approximately 40 santimes, which meant that participants were neither promoted nor discouraged to choose products over monetary reward. In addition to the products, we had sufficient amount of one Lat and 20 santimes coins which meant that we were able to exchange the coupons for any amount of products and/or monetary reward quickly.

#### 3.4 *Pilot study*

To test our experimental design and procedure before the final experiment, we organized a pilot experiment. This experiment was almost identical to the final version, only exceptions being a smaller amount of participants and no impulse purchases being offered at the end. Our main aim was to see whether the experimental video has a considerable impact on happiness and leaves the negative emotional state intact. The results of this experiment can be seen in Appendix E. Even though the sample is not large enough to draw any reliable conclusions, the results clearly suggest that participants in the treatment group have substantially higher level of positive emotions. Our intended treatment was validated as effective since the observed difference between both groups in terms of the level of positive emotions was sufficiently high. According to PANAS scale the total average score for

positive emotions was 20.6 and 29.9 in control and treatment groups respectively. This difference of more than 9 points between both groups has a t-stat of 3.05 and p-value 0.007 (estimated with OLS regression), thus there is less than 1% chance that this difference might have arisen due to random influences. What is more, the total average negative emotions were 14.9 and 15.8 for control and treatment groups respectively. This difference of 0.9 points has a t-stat of 0.36 and p-value 0.72 (estimated by OLS) and therefore is not significant. Moreover, all ten positive scale items when tested for reliability return Cronbach's alpha coefficient of 0.8827 which means that the scale is internally consistent.

### 3.5 *Statistical analysis*

The experiment allowed us to compute several key indices. Firstly, for each participant we computed the positive and negative emotion index based on their replies in the PANAS scale. The indices were formed by summing all values from all positive/negative emotion levels. Another variable is formed from the amount of impulse purchases made; the index varies from 0-5 according to the amount of coupons exchanged for the products. We also make age, gender and nationality variables according to the answers in the questionnaire. Additionally, we employ a dummy variable measuring whether the individual was a part of the treatment or the control group. Finally, we also add variables that measure a specific amount of impulse purchases made, i.e. only one and more than one.

Based on the acquired dataset we run several regressions. The group dummy variable is used as an independent variable to assess differences between groups on the aggregate level, i.e. PANAS scale emotion levels and impulse purchases made. In other specifications we use PANAS scale emotion levels as the independent variables to assess their influence on impulse purchasing behaviour.

### 3.6 *After experiment research*

Following our experiment, we created an online survey for participants to obtain feedback regarding the experiment. The survey and evaluation of the experiment by participants can be found in Appendix C and Appendix H, respectively. Additionally, we organized two focus groups with the participants of our experiment. The aim of the focus groups was to determine potential limitations and biases to our study as well as to gain additional insights on the short term emotional factors determining impulse purchasing. Few open-ended questions were prepared beforehand, to encourage a discussion regarding the

experiment and the topic of impulsive purchasing. A total of 15 people participated in our focus groups and 33 answered our online survey.

## 4 Empirical findings from the experiment

### 4.1 *Treatment effect*

To ensure that the treatment was successful, we look at the average scores for positive emotions. According to PANAS scale, the average score for positive emotions was 26.23 and 29.52 for control and treatment group, respectively. This difference has t-stat of 1.84 and p-value of 0.072 (see Appendix F) thus with more than 90% confidence we can claim that the experiment treatment was successful in increasing the positive emotions. Moreover, the differences between the levels of negative emotions do not display significant variations, which means that the treatment did not have an influence on the participants' subjective unhappiness. Using Cronbach's alpha reliability test (Appendix F, table 5) we see that both of the scales are reliable.

### 4.2 *Between groups differences in impulsive purchasing*

We were mostly interested in assessing how participants in both groups will differ in terms of purchasing behaviour, e.g. what will be the difference in the amount of purchases made in each group. Contrary to our expectation, on aggregate level both groups behaved almost identically with 17 products being chosen in the treatment group and 16 in the control group. Even before any further analysis is made, it becomes evident that our primary hypothesis is rejected: There are no statistically significant differences between the amounts of impulse purchases made in the groups. Most of the participants also preferred money over products. In total, out of 270 coupons, only 33 (12%) were exchanged for products and 237 (88%) for money, without significant differences between the groups.

However, several differences between the groups in respect to purchasing behaviour is visible on disaggregate level (Appendix G, Table 6). In total, 14 persons chose a single product, out of which 4 persons were from the control group and the rest 10 from the treatment group. This difference of 6 persons has a t-stat of 1.58 and is close to 10% significance level (OLS estimated p-value is 0.120). Two products were chosen by two persons in the control group and only by one person in the treatment group. Three products were chosen by one person from control group only. Also no one purchased 4 products, but however there was one person in each group who took 5 products home. So we can conclude

that there are no significant differences on the aggregate level, and the only noteworthy difference is in the number of persons who chose to purchase one single item. Yet no statistically significant conclusions can be drawn.

#### 4.3 *Relationship between emotions and impulsive purchasing*

Since the previous sections suggest that the level of happiness is not related to the impulsive purchasing behaviour on aggregate level, we run separate regressions to determine whether any PANAS scale emotion level can explain the number of items purchased. This allows us to increase our number of observations to 54 by not distinguishing among the groups and merely observing the level of emotions and number of items chosen. By having substantially higher amount of observations, we can gain larger certainty of the results.

The results of the regressions can be seen in Appendix G (Table 7). Again, we find no statistically significant relationship between the happiness (the total positive emotion score) and the amount of impulse purchases made. However, we find that several emotions are close to being significant and that the level of distress significantly (at 10% significance level) explains amount of purchases. The relationship is negative, meaning that people who were under higher levels of distress chose less of products on average.

## 5 **Empirical findings from focus groups**

### 5.1 *Feedback regarding the experiment*

One of the questions we raised during the discussion with experiment participants was whether they recognize any potential biases in our study. Interestingly, participants admitted that despite prohibitions to communicate among themselves and swift process of coupon exchanging, some still felt peer pressure when it came to choosing the amount of products and were discouraged from choosing many products. Also, participants admitted to a certain extent being influenced by herd instinct – the choice of people before them pressurized them to make a similar choice.

Yet, disregarding the issues mentioned above, participants stressed out that the process of choosing the products created feelings similar to the ones felt when making an impulsive purchase in stores, thus implying that experimental environment was comparable to the one in shops. According to Beatty and Ferrell (1998), the shopping environment is one of the main factors triggering impulsive purchasing behaviour, thus it is important that experiment at least partially resembles store environment.

## 5.2 *Importance of emotional state on impulse purchases*

Although, it is argued that individuals cannot truthfully answer questions about their choices in hypothesized situations involving imagining specific emotional state, we asked the focus group participants to think of the last three to five times they have made an impulse purchase being in a positive emotional state. Particularly, we invited them to share any reasons that might have promoted them to make more purchases in such state. One of the most popular reasons in both focus groups was a desire to increase the level of happiness even more or to maintain it at the same level. Another reason why increased positive emotions might lead to higher impulsive purchasing behaviour is because at that state wealth seems to be less important and, thus, money is spent more easily.

The findings from the focus group also provided support for the research done by Baumeister (2002), who argued that impulsive purchasing is influenced by the level of self-confidence, with less confident people choosing more impulse purchases in an attempt to increase their happiness.

## 6 **Discussion**

In this section we discuss the results from previous sections, give possible explanations and causes of those results and link some of the conclusions to previous researches.

### 6.1 *Results of experiment and focus groups*

The results clearly lead us to reject both our hypotheses – there is no evidence that treatment or higher level of subjective well-being would have an impact on the amount of impulse purchases made. As this contradicts the qualitative findings from our focus group as well as several previous researches using surveys, we look in more detail on the design of our experiment to see if specific characteristics of it might have influenced our results in a biasing way.

The usage of between groups experimental design and random distribution ensured several crucial objectives. First, all possibly biasing factors were reduced and only the effect of the treatment is left. This means that any influencing side-factors (such as time of the day) are equally likely to affect participants in both groups to the same extent, and random participant distribution ensured that there were no expected systematic excess influence in any one of the groups. Second, the participants' general affinity for any of specific products we offered to

purchase had no systematic influence on the outcome of the experiment following the same argumentation. Since offered products were exactly the same in both groups, random participant distribution ensured that on average the proneness to purchases specific products were equal in both groups and only the effect of treatment matters whether there are going to be any differences in the amount of impulse purchases made. The feedback received from our focus groups also suggests that the design of the experiment was unlikely to produce biased results, thus we believe that the results are internally valid.

## 6.2 *Comparison with previous studies*

Consistent with Silvera et al. (2005) during the focus groups we find evidence that impulse purchasing can be related to low self-esteem and snacking habit, which reinforces our believe that snacks are an appropriate reward in impulsive buying experiments. Also, we find evidence that impulsive purchasing behaviour is strongly rooted in ones personality as shown by Verplanken and Herabadi (2001). This is particularly important for our experiment, as some of the students stated that they are rarely influenced to make impulse purchases, thus independently of treatment they are not likely to choose impulse purchases due to personal characteristics. People choosing impulse purchases may, in turn, be the ones more easily influenced by external factors. This has an important implication for sample selection as choosing people with high self-esteem may result in low amount of impulse purchases made and vice-versa. Consistent with findings of Faber and Christenson (1996), participants also admit that impulsive buying serves as a mood management function.

The results of our experiment clearly contradict findings of several authors, including Rook and Gardner (1993), who reported a relationship between impulsive buying and positive and negative mood states; however it should be noted that our research is based on experiment rather than a survey, thus differences may persist due to dissimilarities between thoughts and actual behaviour.

In our research we also find no impact of demographic variables (gender, age and nationality). Even though this is not directly related to our research, we add to the wide debate regarding the impact of demographic variables and our research is consistent with Wood (1998), who finds that impulsive buying is not linked to gender factor.

## **7 Limitations of the study**

Our research provides a clear mechanism for observing the impact of increased situational wellbeing on impulse purchases. However, it is important to note that our sample

size was limited to 54 participants, thus with less than 30 participants in each group. Therefore, we must be careful while attempting to generalize our findings since an experiment with increased number of participants would yield greater certainty over the results and provide a greater external validity. Yet, our sample was still very well diversified in terms of nationality and gender; hence it allows drawing some inference on the general public in the Baltic States, particularly on young people.

## **8 Suggestions for further studies**

Suggestions for further studies derived primary from focus group discussion are the following. First, the timing of the experiment (12.15 pm) may not be appropriate, as most of the participants were having lunch just after the experiment and thus had lesser incentives to choose an impulse purchase. As our experiment participants choose only 12% of coupons to be exchanged into products, this suggestion is valid, as greater benchmark quantity of products being chosen would yield more convincing results. Second, the participants of the experiment felt influenced by their peer choices, thus anonymous choice options would provide greater validity. Though it must be noted that timing is important and the participants should be able to make their choices soon after having watched clips or having experienced any other mood alteration process. And of course, it is clear that no experiment can perfectly imitate real life situations.

Last suggestion from the authors of this work, is to attempt to create even larger gaps in level of happiness between the groups. Even though the differences achieved were statistically significant, a greater gap would improve the certainty of the results as it is likely that only substantial increase in happiness promotes people to choose more or less impulse purchases.

## **9 Conclusions**

In the last decades the topic of impulsive purchasing has attracted numerous researchers, many of which seek to determine the factors encouraging people to make this sort of irrational buys that is inconsistent with any rational choice model. The purpose of this paper is to develop a deeper understanding of the role of short term emotional state on the impulsive purchasing behaviour.

Several authors, including Silver et al. (2008) have suggested that the effect of short term mood alteration is better made through an organized experiment rather than surveys,



which have been employed before. Thus, as a main tool for our research we organize between groups experiment that enhances the level of happiness for the treatment group. This is done in order to answer our research question and see if increased subjective wellbeing can be associated with more outspoken impulsive purchasing behaviour. The use of experiment reduces several biases that previous researches using surveys may have (e.g. participants being unable to answer truthfully about a hypothetical situation) and makes our research particularly relevant for the Baltic States due to a sample that fairly well represents students from all Baltic countries. To the best of our knowledge, our study is the first research looking at the role of short term mood manipulations in making impulse purchases in Eastern Europe. Due to the cultural differences, it is important to note, that the results obtained may differ if research is done in another country or in a more homogenous sample.

The results of our experiment lead us to reject our hypothesis, suggesting that the level of happiness does not influence the likelihood of making an impulse purchase. However, it is important to note, that our research primarily sought to establish the mechanism through which alterations in impulsive purchasing behaviour can be observed. Having discovered few potential biases of our experiment (e.g. participants being influenced by the choices and presence of others, the time of the day having an effect on the amount of snacks being chosen, etc.) we suggest that a further research could be made using a larger sample and few improvements to obtain more certain results. Additionally, as our sample is fairly heterogeneous, it is possible to construct more homogenous sample in terms of gender, age, nationality and other factors to see if demographic variables have an impact on the impulsive purchasing behaviour after short term mood manipulations.

The findings from our focus groups still suggest that there exists a link between higher happiness and more impulse purchases being made.

To conclude, our work provides contribution to academic community by establishing a mechanism through which the link between happiness and impulsive purchasing behaviour can be observed. Even though the results reject our hypotheses, we suggest that a further research employing a larger sample is made in order to obtain results with greater certainty.

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**Appendices**

**Appendix A - Experiment survey sheet**

GX-NN

Your age: \_\_\_\_\_

Gender:  Male  Female

Nationality:  Estonian  Latvian  Lithuanian  Russian  
 Other (please specify) \_\_\_\_\_

I study in SSE Riga:  Yes  No

**Below are eight questions that vary in difficulty. Please answer as many as you can.**

(1) A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball.  
 How much does the ball cost? \_\_\_\_\_ cents

*Check the box if you have seen this question before*

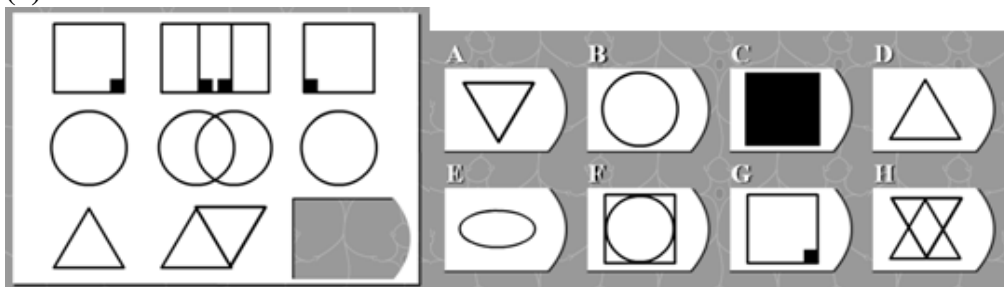
(2) If it takes 5 machines 5 minutes to make 5 widgets, how long would it take  
 100 machines to make 100 widgets? \_\_\_\_\_ minutes

*Check the box if you have seen this question before*

(3) In a lake, there is a patch of lily pads. Every day, the patch doubles in size.  
 If it takes 48 days for the patch to cover the entire lake, how long would it  
 take for the patch to cover half of the lake? \_\_\_\_\_ days

*Check the box if you have seen this question before*

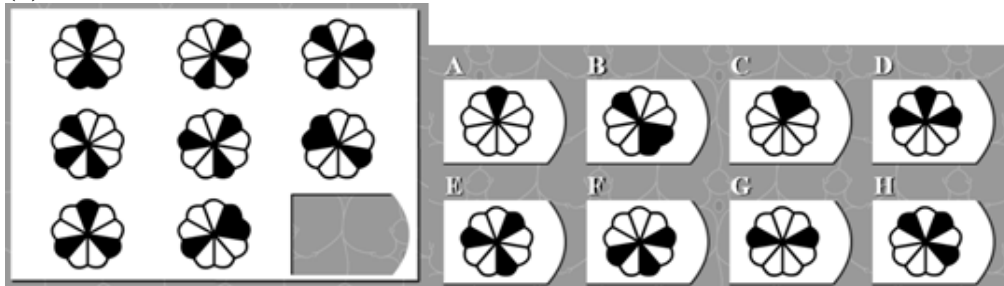
(4)



Answer: \_\_\_\_\_

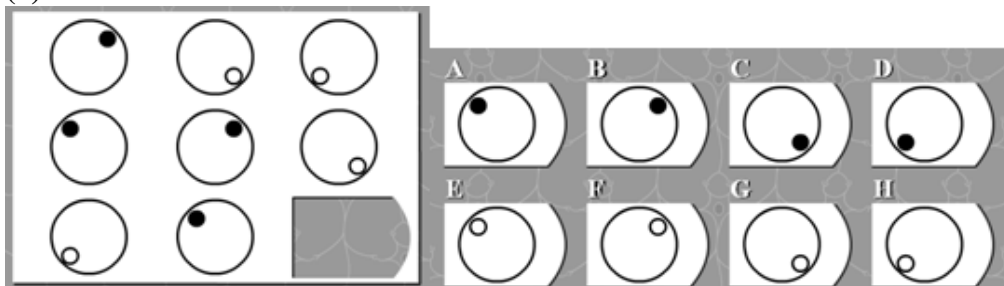
(more questions on the other side →)

(5)



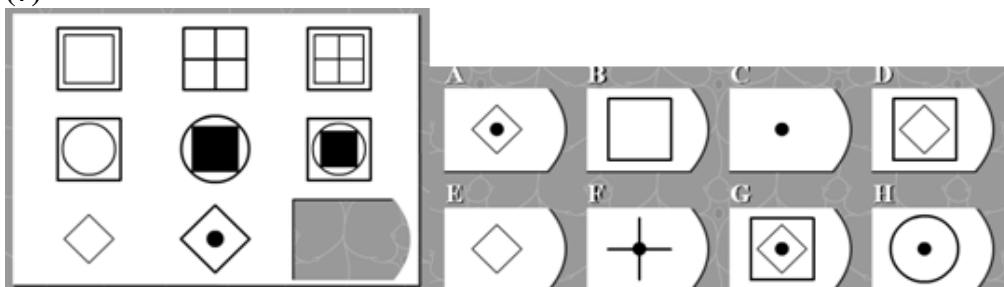
Answer: \_\_\_\_

(6)



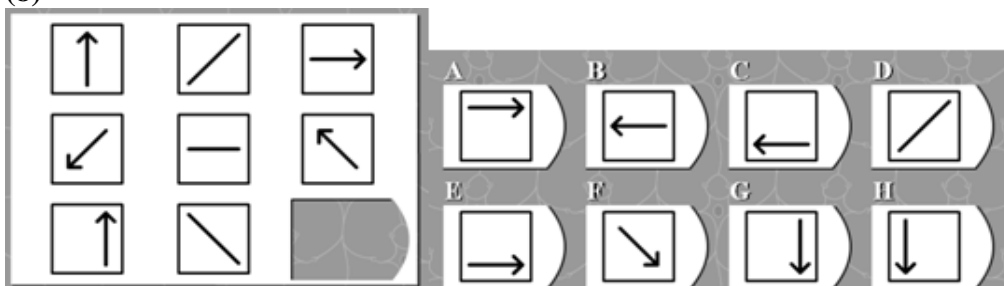
Answer: \_\_\_\_

(7)



Answer: \_\_\_\_

(8)



Answer: \_\_\_\_

**Appendix B- Experiment PANAS scale measurement sheet**

Bellow there are a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel that emotion right now at this very moment. Use the following scale to record your answers:

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

\_\_\_\_\_ interested

\_\_\_\_\_ distressed

\_\_\_\_\_ excited

\_\_\_\_\_ upset

\_\_\_\_\_ strong

\_\_\_\_\_ guilty

\_\_\_\_\_ scared

\_\_\_\_\_ hostile

\_\_\_\_\_ enthusiastic

\_\_\_\_\_ proud

\_\_\_\_\_ irritable

\_\_\_\_\_ alert

\_\_\_\_\_ ashamed

\_\_\_\_\_ inspired

\_\_\_\_\_ nervous

\_\_\_\_\_ determined

\_\_\_\_\_ attentive

\_\_\_\_\_ stressful

\_\_\_\_\_ active

\_\_\_\_\_ afraid



## Appendix C - Experiment after study online survey

### Experiment After-study

Please fill in this survey once if you took part in the SSE Experiment on 15th of December, 2010

I was in:

- Group 1 (to the left; visual effects group)
- Group 2 (to the right; funny videos group)
- I did not attend

Please mark each statement how much you agree with it  
1 - do not agree at all; 5 - agree totally

	1	2	3	4	5
The experiment was organized well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The tasks were explained clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was worthwhile to take part	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The remuneration was appropriate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was obvious what authors tried to actually research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would like to be informed about the final results of the experiment

- Yes
- No

E-mail

Fill it in if you answered "Yes" to the previous question

Comments,sugestions and any other feedback you might have.

## Appendix D - Most entertaining video survey results

Table 1: Entertaining video survey results

Video	Score	YouTube link
<i>Surprised Kitty (Original)</i>	3.20	<a href="http://www.youtube.com/watch?v=0Bmhjf0rKe8">http://www.youtube.com/watch?v=0Bmhjf0rKe8</a>
<i>Funny Car Crash - Hilarious</i>	2.92	<a href="http://www.youtube.com/watch?v=YB_JCUw9SoU">http://www.youtube.com/watch?v=YB_JCUw9SoU</a>
<i>Simon's Cat 'Cat Man Do'</i>	2.78	<a href="http://www.youtube.com/watch?v=w0ffwDYo00Q">http://www.youtube.com/watch?v=w0ffwDYo00Q</a>
<i>Simon's Cat 'TV Dinner'</i>	2.47	<a href="http://www.youtube.com/watch?v=s13dLaTIHSg">http://www.youtube.com/watch?v=s13dLaTIHSg</a>
<i>Mascot Fun</i>	2.43	<a href="http://www.youtube.com/watch?v=dLMROtY4U2I">http://www.youtube.com/watch?v=dLMROtY4U2I</a>
<i>Russian Guys Diving Into A Frozen Pond</i>	1.95	<a href="http://www.youtube.com/watch?v=xe6RrbP7FeE">http://www.youtube.com/watch?v=xe6RrbP7FeE</a>
<i>Fastest Goalkeeper In The World</i>	1.56	<a href="http://www.youtube.com/watch?v=JucAGVpNIys">http://www.youtube.com/watch?v=JucAGVpNIys</a>
<i>Unbelievable Hamster Runs Dog Agility!</i>	1.43	<a href="http://www.youtube.com/watch?v=2DVwrA5QRyg">http://www.youtube.com/watch?v=2DVwrA5QRyg</a>
<i>Tickling A Kitten</i>	1.37	<a href="http://www.youtube.com/watch?v=f3kAeqbnL28">http://www.youtube.com/watch?v=f3kAeqbnL28</a>
<i>Ice Hockey (Remi Gaillard)</i>	0.87	<a href="http://www.youtube.com/watch?v=gZWMwupUhpM">http://www.youtube.com/watch?v=gZWMwupUhpM</a>
<i>Blonde Stripper Pole Fail Flop Lands on Head</i>	0.28	<a href="http://www.youtube.com/watch?v=tXBb0r2KjA8">http://www.youtube.com/watch?v=tXBb0r2KjA8</a>

## Appendix E - Pilot experiment statistics

Table 2: Pilot experiment PANAS scale score statistics

	Emotion	Average score in group		Statistics		
		Control	Treatment	Difference	t-stat	p-value
POSITIVE	Interested*	2.5	3.3	0.8	1.98	0.065
	Excited***	1.7	3,5	1.8	4.35	0.000
	Strong*	1.9	2.7	0.8	1.95	0.068
	Enthusiastic***	1.9	3.7	1.8	3.86	0.001
	Proud*	1.6	2.4	0.8	1.76	0.096
	Alert	2.5	2.2	-0.3	-0.50	0.624
	Inspired***	1.9	3.7	1.8	3.50	0.003
	Determined	2.1	2.7	0.6	1.09	0.291
	Attentive	2.5	2.4	-0.1	-0.12	0.905
	Active**	2	3.2	1.2	2.71	0.015
	<b>TOTAL***</b>	<b>20.6</b>	<b>29.9</b>	<b>9.3</b>	<b>3.05</b>	<b>0.007</b>
NEGATIVE	Distressed	2	1.8	-0.2	-0.21	0.837
	Upset	1.5	1.2	-0.3	-0.73	0.474
	Guilty	1.1	1.4	0.3	1.32	0.205
	Scared	1	1.7	0.7	1.42	0.174
	Hostile	1.2	1.7	0.5	1.73	0.102
	Irritable	2.2	1.7	-0.5	-1.10	0.286
	Ashamed	1.1	1.4	0.3	1.11	0.282
	Nervous	1.8	2	0.2	0.35	0.731
	Jittery	1.7	1.3	-0.4	-0.85	0.406
	Afraid	1.3	1.4	0.1	0.29	0.773
	<b>TOTAL</b>	<b>14.9</b>	<b>15.8</b>	<b>0.9</b>	<b>0.36</b>	<b>0.727</b>

Note: Average scores and differences are rounded to the first digit after comma. T-stat and p-values are estimated with robust OLS regression. Significance denoted at the \*10%, \*\*5%, \*\*\*1% conventional significance levels.

Table 3: Pilot experiment PANAS scale score Cronbach's alpha reliability check

	Average inter-item covariance	Number of items in the scale	Scale reliability coefficient
PA scale items	0.5718	10	0.8827
NA scale items	0.2057	10	0.7578

## Appendix F - Final experiment statistics

Table 4: Final experiment PANAS scale score statistics

	Emotion	Average score in group		Statistics		
		Control	Treatment	Difference	t-stat	p-value
POSITIVE	Interested	3.2	3.5	0.3	1.13	0.263
	Excited***	2.4	3.1	0.7	2.8	0.007
	Strong	2.4	2.4	0	0.07	0.946
	Enthusiastic*	2.8	3.3	0.5	1.87	0.068
	Proud	2.2	2.2	0	-0.09	0.928
	Alert	2.2	2.2	0	0.15	0.884
	Inspired	2.8	3	0.2	0.63	0.530
	Determined	2.6	3	0.4	1.61	0.113
	Attentive	2.9	3.4	0.5	1.60	0.116
	Active	2.8	3.3	0.5	1.56	0.125
	<b>TOTAL*</b>	<b>26.3</b>	<b>29.5</b>	<b>3.2</b>	<b>1.84</b>	<b>0.072</b>
NEGATIVE	Distressed	2	2.5	0.5	1.43	0.158
	Upset	1.5	1.3	-0.2	-0.91	0.366
	Guilty	1.3	1.2	-0.1	-0.76	0.452
	Scared	1.4	1.1	-0.3	-1.29	0.202
	Hostile	1.5	1.4	-0.1	-0.71	0.482
	Irritable	1.7	1.7	0	-0.10	0.923
	Ashamed	1.1	1.3	0.2	1.11	0.273
	Nervous	1.5	1.7	0.2	0.54	0.593
	Jittery	1.5	1.6	0.1	0.27	0.791
	Afraid	1.3	1.1	-0.2	-1.36	0.179
	<b>TOTAL</b>	<b>14.8</b>	<b>14,7</b>	<b>-0.1</b>	<b>-0.06</b>	<b>0.953</b>

Note: Average scores and differences are rounded to the first digit after comma. T-stat and p-values are estimated with robust OLS regression. Significance denoted at the \*10%, \*\*5%, \*\*\*1% conventional significance levels.

Table 5: Final experiment PANAS scale score Cronbach's alpha reliability check

	Average inter-item covariance	Number of items in the scale	Scale reliability coefficient
PA scale items	0.3319	10	0.7998
NA scale items	0.1542	10	0.7517

## Appendix G - Final experiment statistics on group and individual level

Table 6: Amount of purchases made. Summary statistics

Products purchased	Frequency			%			Cumulative %		
	A	C	T	A	C	T	A	C	T
0	34	17	17	62.96	68.0	58.62	62.96	68.0	58.62
1	14	4	10	25.93	16.0	34.48	88.89	84.0	93.10
2	3	2	1	5.56	8.0	3.45	94.44	92.0	96.55
3	1	1	0	1.85	4.0	0	96.30	96.0	96.55
4	0	0	0	0	0	0	96.30	96.0	96.55
5	2	1	1	3.70	4.0	3.45	100.0	100.0	100.0

Note: A – All participants total; C – in control group; T – in treatment group.

Table 7: Final experiment: Amount of purchases predicted by various emotion levels

N=54	Dependent variable: Amount of purchases made					
	Emotion	$\beta$	t-stat	p-value	R <sup>2</sup>	SER
POSITIVE	Interested	0.0509	0.51	0.612	0.0022	1.1154
	Excited	0.1045	1.26	0.212	0.0092	1.1114
	Strong	0.2081	1.53	0.131	0.0378	1.0953
	Enthusiastic	-0.1024	-0.86	0.392	0.0090	1.1116
	Proud	0.1074	0.66	0.512	0.0114	1.1102
	Alert	0.1786	1.33	0.188	0.0355	1.0966
	Inspired	-0.2119	-1.41	0.164	0.0463	1.0904
	Determined	-0.1948	-1.41	0.164	0.0384	1.0948
	Attentive	0.0571	0.36	0.722	0.0034	1.1147
	Active	0.0269	0.20	0.841	0.0006	1.1162
	<b>TOTAL</b>	<b>0.0058</b>	<b>0.22</b>	<b>0.830</b>	<b>0.0011</b>	<b>1.1160</b>
NEGATIVE	Distressed*	-0.1641	-1.88	0.066	0.0363	1.0962
	Upset	-0.0930	-0.77	0.442	0.0049	1.1138
	Guilty	0.2000	0.63	0.534	0.0082	1.1120
	Scared	-0.0979	-0.70	0.489	0.0029	1.1150
	Hostile	-0.2073	-1.42	0.161	0.0181	1.1064
	Irritable	-0.0652	-0.59	0.559	0.0030	1.1149
	Ashamed	-0.0489	-0.27	0.789	0.0005	1.1163
	Nervous	0.1157	1.19	0.239	0.0097	1.1112
	Jittery	0.0846	0.60	0.549	0.0048	1.1139
	Afraid	-0.0323	-0.19	0.850	0.0002	1.1165
	<b>TOTAL</b>	<b>-0.0189</b>	<b>-0.67</b>	<b>0.505</b>	<b>0.0052</b>	<b>1.1137</b>

Note: Each line represents a separate regression with the corresponding emotion level as the only regressor. Lines "TOTAL" use summary score of either positive or negative emotions as the only regressor. All regressions are robust OLS. Significance denoted at the \*10%, \*\*5%, \*\*\*1% conventional significance levels.

## Appendix H - Experiment after study results

Table 8: After study responses summary

Video	Average score
The experiment was well organized	4.58
The tasks were explained clearly	4.45
It was worthwhile to take part	4.54
The remuneration was appropriate	4.39
It was obvious what authors actually tried to research	3.09

*Note: Answers were measured in a scale from 1 to 5. 1 - do not agree at all; 5 - agree totally.*