The creation of Compensatory health beliefs through positive and negative alcohol specific commercials : A survey experiment

Bachelorthesis

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Abstract

Objective: Alcohol consumption and the related damage to the human body are serious problems in today's society. Although the majority of the population knows the consequences, no foreseeable reduction of the consumption of alcohol is projected during the next 10 years. In order to justify a person's alcohol consumption, several techniques are used. The creation of compensatory health beliefs in order to reduce the cognitive dissonance between the need to live healthy on the one hand and the satisfaction to follow the temptation on the other hand is one 'assumed' solution for this problem. In the context of this study compensatory health beliefs are beliefs that the consequences of excessive alcohol consumption can be compensated through healthy behavior.

The main goal of this study was to examine in how far compensatory health beliefs can be manipulated through positive and negative alcohol related commercials.

Design: For the analysis experimental survey data was used.

Subject: The survey contained 108 subjects. The mean age of the participants was 23 years. Nearly all participants were students at the University of Twente.

Methods: The internal consistency of the prior designed constructs was tested with a reliability analysis. The conducted data of the experimental setting were evaluated with the help of a t- test, a correlation analysis as well as through a mediator and moderator analysis.

Results: Due to the fact that the mood of a person was significantly manipulated through the positive and negative alcohol related stimuli it can be concluded that the experiment was successful. Furthermore the randomization and manipulation check was successful. No evidence was found that CHBs can be influenced through positive and negative alcohol related commercials. Furthermore Self-efficacy and health awareness can be excluded as possible mediator between the manipulation and the creation of CHBs. Alcohol consumption can also be excluded as moderator variable between CHB ´s and the manipulation of the experimental setting. Finally intention is not significantly influenced through CHBs.

Conclusion: Although the experiment was successful it cannot be concluded that compensatory health beliefs can be manipulated through a positive or negative, alcohol related commercial in the short term.

Abstract

Thema: Alcoholconsumptie en de schade op het menselijke lichaam die daarmee in verbinding staat is een groot probleem in de huidige maatschappij. Hoewel de meerderheid van de populatie ervan bewust is, is er geen reductie van de alcoholconsumptie in de komende tien jaar herkenbaar. Om het overmatig gebruik van alcohol te kunnen rechtvaardigen, worden verschillende technieken toegepast. Een van deze technieken wordt ook wel compensatory health beliefs genoemd. Hierdoor bestaat de mogelijkheid om de cognitieve dissonantie tussen het gezond leven aan de ene kant en de bevrediging van de verleiding aan de andere kant te verkleinen. In het kader van dit onderzoek zijn compensatory health beliefs overtuigingen, dat consequenties van overmatige alcoholconsumptie gecompenseerd kunnen worden door gezond gedrag te vertonen. Het hoofddoel van dit onderzoek was te onderzoeken in hoeverre compensatory health beliefs gemanipuleerd kunnen worden door positieve en negatieve reclame met betrekking tot alcohol.

Onderzoeksopzet: In het onderzoek werd gebruik gemaakt van experimentele survey data.

Proefpersonen: Aan dit experiment hebben 108 proefpersonen deelgenomen. De gemiddelde leeftijd was 23 jaar. De meeste proefpersonen waren studenten van de Universiteit Twente.

Methode: De interne consistentie van de constructies werd met behulp van een betrouwbaarheidsanalyse getest. De verzamelde data van het experiment werd met een t- test, een correlatie analyse, een mediator- en moderatoranalyse geëvalueerd .

Resultaten: Door het feit dat de stemming van een proefpersoon significant door de positief en negatief reclame werd gemanipuleerd, kan geconcludeerd worden dat het experiment succesvol was. Bovendien kan gezegd worden dat de randomisatie en de controle van de manipulatie geslaagd zijn. Er werd geen bewijs gevonden dat CHB´s kunnen worden beïnvloedt door een positieve en negatieve reclame met betrekking tot alcohol. Self-efficacy en health awareness kunnen worden uitgesloten als mediatoren tussen de manipulatie en het creëren van CHB´s. Het is ook mogelijk om alcohol consumptie als moderator te excluderen. Tot slot kan geconcludeerd worden dat de intentie van een persoon niet door CHB´s beïnvloedt kan worden.

Conclusie: Hoewel het experiment succesvol was, kan geconcludeerd worden dat CHB´s kunnen worden beïnvloedt door positieve en negatieve reclame met betrekking tot alcohol.

1. Introduction

Excessive consumption of alcohol is a serious problem in today's society. According to the annual report of the World Health Organisation (World Health Organisation, 2014), individuals older than 15 years drink on average 6.2 litres of pure alcohol per year. This equates to 13.5 gram of pure alcohol on average per day. In Europe the consumption of alcohol lies between 10 and 12.4 litres of alcohol per capita (World Health Organisation, 2014). Besides the relatively high consumption of alcohol per year, binge drinking can also be identified as a possible hazard for the European population. The term binge drinking describes in this context the consumption of six or more standard glasses of alcohol on at least one occasion per month (World Health Organization, 2014). As it comes to binge drinking, the difference between the worlds average and Europe is even more pronounced. A total of 16 per cent in the worlds average is contrasted by 22.9 per cent in Europe. According to this number, Europe is on the first place in the international ranking of binge drinking worldwide. Binge drinking is not only present in the lower educated population in Europe but is also observed at college students (Nichols & Martin, 1997). Park (2004) stated in his research that the academic performances of students that are active in binge drinking suffer in comparison to their colleagues. As a consequence of this behaviour several harmful outcomes can be observed. These outcomes can be physical e.g. cancer or cardiovascular diseases, psychological, socio economical or harms to other individuals (Nichols & Martin, 1997; Hingson, Heeren, Winter & Wechsler, 2005). Although these consequences are known by the majority of the population, a foreseeable reduction of the actual alcohol consumption is not projected for the next ten years (World Health Organization, 2014). This result mirrors in the proportion of deaths, attributed to alcohol shown in the worldwide comparison of the WHO. The comparison shows that the European population has significantly more deaths that can be attributed to alcohol over their whole lifetime than citizens on other continents.

A model that tries to explain the contradiction that people willingly risk their health through pleasant, yet harmful behaviour is the 'Compensatory Health Beliefs' (CHB) model, which is explained in the following sections.

1.1 Compensatory Health beliefs

Health and the feeling of being healthy are very vulnerable. A healthy life style is more popular than it has ever been before. To fulfil the goal of being healthy it is necessary to pursue health goals, which are set actively and consciously. However, the intention of a person to execute a specific behaviour and not execute another demands a high degree of control. This can be very stressful and sometimes even impossible. As a consequence of this inability to resist a certain desire people may experience an internal conflict between their goals and their actual behaviour. This conflict is also known as a cognitive dissonance (Festinger, 1957). The dissonance between an actual and ought condition force a person to reduce the disharmony by trying to make the two concepts more compatible with each other. People try to reach a balance between satisfying the desire to execute an action on the one hand and maintaining the overall goal on the other hand (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Heatherton, & Tice, 1994; Metcalfe & Mischel, 1999; Mischel, 1996; Muraven & Baumeister, 2000).

Transferred to the consumption of alcohol this means that although it is widely known that a high consumption of alcohol can cause negative effects to several areas of

people's lives, many people still have problems with resisting the desire to consume alcohol (World Health Organization, 2014). Three different ways of acting can be found, which explain people's coping behaviour when exposed to a situation where a decision has to be made whether or not to consume alcohol. The first way is to 'resist desire'. Resisting desire in this context means that a person has the ability to not execute a desired behaviour and to withstand the temptation of doing so. Through this behaviour the mental conflict can be solved by not executing the pleasurable task. The second strategy is to 'adapt risk perception / outcome expectancy'. This strategy states that the person can adapt new cognitions about the temptation ('The influence of alcohol on the achievability of my goal is not that big') or the goal ('Reduction of my alcohol consumption does not have any impact on the achievability of my goal'). In this case a person does not have the ability to resist a desire and tries to reduce the importance of the goal in order to justify a chosen behaviour and to prevent a cognitive dissonance. The last strategy is to create 'Compensatory Health Beliefs' (CHBs) about the goals a person has.

CHBs include parts of 'resisting desire' on the one hand and 'adapting risk perception / outcome expectancy' on the other hand. CHBs are beliefs that the execution of an unhealthy but pleasurable action can be neutralized by another, healthy one. In this context it is understandable that CHBs are mainly a justification for unhealthy behaviour. This justification can be grounded in facts ('I can burn some of the calories I just took up through intensive training in the evening') on the one hand or can be factual faulty on the other hand ('I can smoke a cigarette now if I go jogging later to compensate the created damage to my lung'). Additionally, these beliefs can be problematic because the healthy action, which is required to compensate the unhealthy one, is not always executed (Knäuper, Rabiau, Cohen & Patriciu, 2004). This behaviour promotes the extinction of the compensational intention over time (Knäuper et al., 2004). Negative effects for the body and the physical constitution of a person and this person's healthy life can be found as consequence. Because of the fact that CHBs have negative influence on the risk perception of a person one aim of this study is to examine whether CHBs can be manipulated or not.

1.2 Self-efficacy

The belief of a person in its own effectiveness effects whether this person will try to cope with a given situation when it occurs (Bandura, 1977). People with a high level of self-efficacy avoid situations that are threatening and seem to exceed the coping ability. Furthermore they try to master an upcoming situation when they evaluate their abilities to do so as sufficient. Also incentives play a major role if they are able to enhance the willingness of a person to reach a goal (Bandura, 1977). Transferred to the consumption of alcohol an appropriate incentive could be to lose weight or to avoid the hangover the next day to accomplish the overall goal of being thin or living healthy.

Self-efficacy is relevant for this experiment because it can have influence on handling a given situation and can also strengthen or weaken the connection to the overall goal that a person has. This gives information about the strength of a person to resist an upcoming desire.

1.3 Health goals

Deci and Ryan (1985, 2000) state that different types of motivation are associated with the pursuit of goals. They mention that these motivations can be either internal (doing things because of pleasure or satisfaction inherent to it) or external (doing things because of free will, personal values, to avoid anxiety or guild or to attain ego enhancement). Based on this definition it is possible to trace back certain health goals to the external motivation of a

person to avoid e.g. the feeling of guild rooted in being obese. This means that a person who gets positive feedback on a new and freely chosen behaviour (in order to reach a self-determined external overall goal), for example not drinking alcohol, will be more motivated to further enhance the duration of the positive feedback of his environment through continuous execution of the positively evaluated action. This can be a challenging task if the temptation to drink alcohol is high. The application of CHBs can be a possible outcome to satisfy the temptation to drink without stopping the pursuit of the overall goal to live healthy. Based on the fact that CHBs are assumed to compensate the dissonance between a right and a chosen behaviour it is advisable to further examine the influence of self-efficacy in reference to the social cognitive theory on the introduction of CHBs in people's behaviour. In past only research with regard to the creation of CHBs and the consumption of food took place. Due to this fact the examination of this research can be justified because no prior research was conducted with regard to the consumption of alcohol and the creation of CHBs as consequence.

1.4 Creation of CHBs

According to Thomsen and Rekve (2006) it is possible to find a positive relation between alcohol consumption of young people and exposure to visual material. One possible explanation for this can be given through the dual-process theory. This theory states that an addictive behaviour is made up out of two components, namely an impulsive system, which appraises stimuli automatically in terms of affective and motivational significance and a reflective system, which is more conscious and reflective with regards to the possible outcomes of an action (Deutsch and Strack 2006; Wiers and Stacy 2006; Wiers, R.W., Bartholow, B.D., van den Wildenberg, Thush, Engels, Sher, Grenard, Ames & Stacy 2007). Deutsch and Strack (2006) mention that people who consume alcohol more frequently build stronger positive associations to alcohol and the impulsive system gets activated whenever a stimuli that contains alcohol occurs. According to this theoretical approach, the positive association between alcohol and visual material can be explained. Furthermore the dangerous consequences of alcohol related pictures, which support the consumption, are understandable.

Also mentionable in this context is the importance of role models. As mentioned above, most goals (e.g. lose weight to look more beautiful) related to health are not intrinsically motivated. Often they are motivated through external sources like role models, whose behaviour seems reasonable or adaptable. This can be explained through the social learning theory. This theory states that learning can take place in a social context and through observation of another person (Bandura, 1963). As Bandura (1977) reports there exist three types of models: Live model, verbal instruction and symbolic. Live model contains an actual person who executes the behaviour. Verbal instruction means that a role model explains the behaviour to the learning person until the process is completed. Symbolic contains modelling which occurs in forms like media, television, internet et cetera. These different models show that it is possible to create a positive attitude towards alcohol through the initiation of a role model. In this context the symbolic model is most interesting because the social learning takes place through offered visual stimuli.

Additionally to the concept of self-efficacy the concept of social cognitive theory is important. This can be explained through the fact that the social cognitive theory can only be applied if the person has sufficient self-efficacy. The theory says that if people observe a model under specific circumstances they are able to remember these actions and guide their own behaviour through this information (Bandura, 1986). This theoretical framework states that a person learns a new behaviour through the observation of others. The person will

continue executing a learned behaviour if the feedback is desirable. This demonstrates that media has a direct influence on implicit converting of perceived media and also plays a major role in role modelling. This is important because the theory states that a person will change a given behaviour under particular circumstances (the negative or positive condition of the experiment) if the circumstances are desirable and vice versa.

Based on the explanation given above it can be concluded that alcohol related stimuli, which are shown to consumers, may influence the implicit converting of the consumer. Due to this fact it is supposed that manipulations have a big influence on the desire of a person to engage in certain behaviour or not. The relation between the manipulation as independent variable and the creation of CHBs as dependent variable can also be manipulated through mediators. These mediators are self- efficacy and health awareness.

1.5 Aim of this study

CHBs are 'assumed' solutions for problems, which occur in people's everyday lives. These solutions are stated as assumed because they enable a person to engage in behaviour contrary to its original goals in order to satisfy a perceived temptation. As a consequence people engage in a pleasant but unhealthy behaviour, which is justified through an intended compensation. As explanation for this it is possible to find several reasons like the degree of temptation or difficulty of the goal or simply the inferior level of self-efficacy of the person that has to decide whether or not to engage in a contra productive behaviour.

Although research has been conducted about the motivations to apply CHBs, no research was available with regard to visual manipulation of a person with regard to the pursuit of a targeted goal. Also no research can be found with regards to what motivators drive people to further pursuit their health goals even when they get challenged through external influences. One possible way to explain this phenomenon can be through the manipulation of the setting. This manipulation takes place through positive and negative alcohol related commercials, to which the participant is exposed. An examination of the assumed effect through measurable outcomes will be conducted in the following experimental setting.

To examine this the following research question is formulated:

To what extent can compensatory health beliefs be manipulated through positive and negative alcohol specific commercials?

To answer this research question the following sub questions are formulated:

1.To what extent is self-efficacy manipulated through positive and negative alcohol specific commercials?
      1.1. Is a relation between CHBs and the assigned condition mediated by self-efficacy?
2. To what extent is Health awareness manipulated through positive and negative alcohol specific commercials?
      2.1. Is a relation between CHBs and the assigned condition mediated by health awareness?
3. To what extent does alcohol consumption moderate the relation between CHBs and positive or negative alcohol specific commercials?
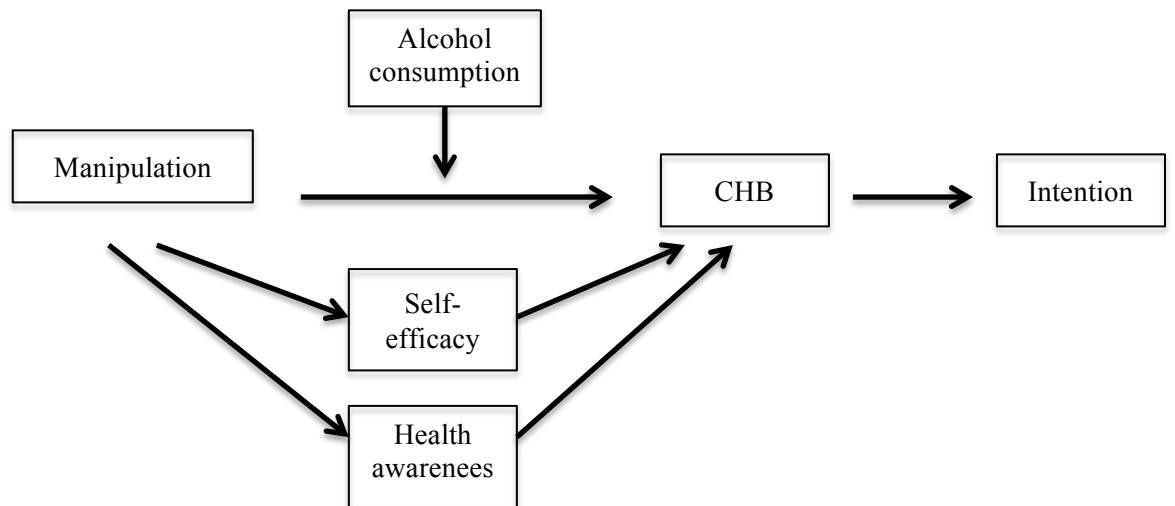*4. To what extent are CHBs related to intention?*

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Figure 1. The research model

2. Methods

2.1 Participants

In order to answer the research questions on the one hand and to support this answers empirically on the other hand convenient sampling via different channels took place. Marshall (1996) states that convenient sampling is the most rigorous sampling, involving the selection of the most accessible participants. The link to the online survey was posted on Facebook and sent via private messages to participants in the direct environment of the researchers. Through this sampling method it was possible to finish the data collection with 148 participants. Three participants of this sample completed part of the study but stopped before completion. Furthermore 40 (27.03%) participants could not be evaluated because they stopped immediately after the manipulation. Due to this fact the data of 43 participants had to be removed from the sample. At the end of the data collection, 105 surveys where completed by the participants.

All participants were recruited via Facebook or personal messages. Eight of the 105 participants stated that their participation was motivated in order to complete their necessary points via 'Sona systems'. 'Sona systems' is a cloud based participant management software, used through the University of Twente and requires psychology students to participate 15 hours in other student's researches during their first two years of study. 71 out of the 105 participants were male which corresponds 67.6 % of the sample. Of the 105 participants 76 (72.4%) had the German nationality and 29 (27.6%) had a Dutch nationality. 86 (81.9%) participants were students, 14 (13.33%) were workers and five (4.7%) out of the 105 stated to fulfil another current function. This can be further divided into two (1.88%) dual students, one (0.94%) retiree, one (0.94%) trainee and one (0.94%) unemployed participant. The average age of the participants was 23 years with a standard deviation of 5.1.

2.2 Procedure

During the data collection a manipulation of the setting took place. At the beginning of the research the participants were exposed to a short movie. The content of the movie depended on the condition to which the participants were assigned. The research contained two conditions, a negative condition (educational campaign), which contained a woman who lost her baby after a drunken person pushes her unintentionally with her stomach against a table (URL: https://www.youtube.com/watch?v=FfY7L_QUk8o) and a positive condition that contained a (commercial) person who enjoyed one of the best nights of his life only because he decided to drink a few beer with his friends (URL: https://www.youtube.com/watch?v=g9A1NowrnGI). After either the positive or the negative video was exposed to the participants they had to fill in a multiple-choice control question with regard to the video. The purpose was to differentiate whether the participants saw the video attentively or just wanted to proceed with the study. After the questions were answered the actual research took place. In this part of the survey the participants had to complete several questions, which were part of superordinate constructs. These constructs were compensatory health beliefs (CHBs), alcohol consumption, mood, intention, self-efficacy and health goals. CHB can be defined as the extent to what people hold the belief that negative effects of an unhealthy but pleasant behaviour can be compensated by later engaging in healthy behaviour. People who hold CHBs score higher than those who do not have CHBs. This can be justified through the fact that mood has a direct influence on the activation of CHBs. Alcohol consumption was operationalized by how often and with which frequency alcohol was consumed. Mood can be defined as a person's state of mind or feelings at a

certain point in time. Intention in the context of this study can be defined as a person's willingness to change his / her alcohol consumption in the future. Self-efficacy contains the perceived ability of a person to change their current alcohol consumption behaviour. The construct of health awareness contains the willingness of a person to reach self-determined goals with regard to this person's health.

2.3 Instruments

2.3.1 General alcohol consumption
The first two items, subsequent to the demographic variables, were set up to gather information about the general amount of alcohol consumption. The higher the score of the first question the higher the number binge drinking on each occasion. The lower the score the lower the consumption of alcohol in the last for weeks. The second question concentrated on the amount of alcohol persons drank on average per occasion. The higher the score, the higher the amount of occasions where binge drinking took place. The lower the score, the lower the amount of occasions where five or more standard glasses of alcohol were consumed. The possible answers were presented in seven categories with a possible range of outcome from one (zero glasses of alcohol in the last four weeks) until seven (more than 10 glasses of alcohol in the last four weeks). The second item was presented in the same way.

2.3.2 Positive and negative affect
The first construct, which was measured, was mood. In the context of the research, mood was important to measure because it is defined as an emotional state of mind a person has and in this context how a person reacts on a perceived stimulus. For this research the English version of the 'positive and negative affect schedule' (PANAS) was used (Watson & Clark, 1988). Participants were asked to rate 20 items on a scale from one (very slightly or not at all) to five (extremely). These 20 items are able to analyse the present mood (*indicate to what extent you feel this way right now, that is, at the present moment*) of a participant during the study. Through the indication of as many different moods as possible (*interested, guilty, jittery*) the PANAS tries to give a range that contains a representative sample of different moods a person can have. Two scores, which represent the positive and negative affect of the participants, can be observed. The scores can be seen as an indication of the present mood of the participant. Due to the fact that the reliability and quality of the PANAS can be seen as sufficient no items were deleted. An SPSS analysis of the alpha scores showed that the deletion of one item would not enlarge the alpha of 0.76 significantly. The alpha scores of the two scales individually were 0.85 for the positive affect scale respectively 0.81 for the negative effect scale.

2.3.3 Compensatory health beliefs
10 items were used to examine to what extent the participants hold any kind of CHBs. The items were used from the first factor (substance use) of a questionnaire developed by Rabia, Knäuper & Miquelon (2006), to measure CHBs. The purpose of the items used in this study was to find out what beliefs people had with regard to the compensation of different alcohol related behaviour. This part of the study was conducted with a five point Likert- scale, from one (totally disagree) to five (totally agree). A high score on the CHB items indicated that people engage to a high degree on compensation beliefs in a tempting situation. A low score indicated that people do not have those believes about the compensation of alcohol consumption. The SPSS analysis of the construct of CHB showed that the value of alpha was enlarged to 0.80 after the deletion of one insufficient item.

2.3.4 Self-efficacy
The third section of the study contained several items with regard to the degree of self-efficacy a person has. In this section five items were developed. Due to the fact that no appropriate methods were available to measure the self- efficacy of a person with regard to the ability to resist the temptation of alcohol in a given situation, five new items had to be developed. This design of the items was mainly influenced by Bandura (1977) and his concepts of self-efficacy and were designed to find out whether a person experiences him/herself as capable of executing an action if he/she is willing to do so (*I am sure that I am able to reduce my alcohol consumption in favour of living healthy*). A five-point Likert-scale with a range from one (totally disagree) to five (totally agree) was applied in order to answer the items. A high score on this scale indicated that people experience themselves as capable of changing their consumer behaviour. A low score indicated that people do not feel this capability as distinct enough to change their consumer behaviour even if they decide to do so. The conducted reliability analysis showed that that the construct of self- efficacy had an alpha of 0.74.

2.3.5 Health awareness
The purpose of this construct was to combine the health goals, mentioned above to a measurable scale. In order to avoid ambiguity with regard to the defined items the construct was named health awareness. The items, which can be related to the health goals of a person, were designed to give information about the degree to which a person has generally thought about current health goals but also about health goals also in the future. Due to the fact that there was no sufficient literature available it was necessary for his study to deduce the items from literature. Based on the literature five items were created (*I don´t use any substances or engage in any behaviour that could have negative consequences for my health*), which were answered through the application of a five-point Likert-scale. This scale ranges from one (totally disagree) to five (totally agree) (Gollwitzer & Oettingen 1998). A high score on this scale indicated that people did not make a lot of health goals. A low score indicated that people already defined goals with regard to their health, which they are willing to pursuit or at least thought about their general health. After conducting a reliability analysis, three items indicated insufficient values and were deleted. Through the deletion of these items the reliability of the remaining two items had an alpha value of 0.68.

2.3.6 Intention
The last part of the survey contained five items, which measure the intention of people to change their current behaviour with regard to their consumption behaviour. These five items were mainly concerned with the future behaviour that people are willing to perform (*I am going to reduce my alcohol consumption in the following 12 months*). As mentioned above the construct of intention contained items' concerning the future plans of a person with regard to this person's action. The items can be answered with the help of a five point Likert-scale, which ranges from one (totally agree) to five (totally disagree). A high score on this scale indicated that people's intention to change their future behaviour is existent. A low score on this scale indicated that people do not have the intention to change their usual behaviour. An executed SPSS analysis showed that the alpha value of the construct intention was enlarged to 0.65 after the removal of two items.

2.4 Data analysis

In order to determine the internal consistency of the constructs, analyses concerning Cronbach's α and item-total correlations were conducted. The purpose of this analysis was to examine in how far the different items correlated with the construct to which they were assigned. -1 can be defined as maximum negative correlation, which means that there was a negative relation between the item and the construct. +1 can be defined at the maximum positive correlation. This means that there was a perfect relation between the construct and the items, which were assigned to it. If the correlation coefficient is 0 it can be stated that there was no relation between construct and items at all. Based on these results an item-total analysis was conducted in order to purify the measure and exclude insufficient items.

To examine the possible relations between the variables of interest a correlation analysis was conducted. This tool of analysis was useful because of its ability to show the correlation of one construct in comparison to all other constructs included in this research. Furthermore, it was possible to identify the extent to what CHBs are related to intentions. The correlation coefficient ranges from -1 (absolute negative) to +1 (absolute positive). 0 means that there is no correlation found between the construct at hand and the remaining constructs. For this study it was desirable to have significant correlations between the items from at least +0.3 and +1.0 as maximum.

Due to the fact that this study contained an experimental setting, t-tests for independent samples were conducted. Through this test it was possible to compare the average scores on variables of interest between the two conditions, which were randomly assigned to the participants. According to this, significant differences (<0,05) between the negatively primed sample and the positively primed sample could be examined. Additionally the degree of manipulation of the constructs self-efficacy and health awareness through positive and negative alcohol related stimuli could be shown.

In order to control in how far the constructs self-efficacy and health awareness had significant impact on the relation between independent variable (manipulation) and the dependent variable (CHBs), a mediator analysis was conducted. Through this analysis research question 1.1 and 2.1 could be answered. Additionally a moderator analysis was conducted to control if the relation between the manipulation and CHBs was modified through alcohol consumption. The moderator analysis gave answer to the third research question.

3. Results

3.1 Descriptive statistics

The alcohol consumption during the last four weeks was stated by the participants and answered with the help of prior designed categories with a range of actual values from one to seven. The mean general alcohol consumption during the last four weeks was 4.56 times per week with a standard deviation of SD=1.921. Furthermore woman had a significant (p < 0.001) lower frequency of consumption (Mean=3.61; SD=1.57) compared to man (Mean= 5.03; SD=1.91).

The participants also stated the frequency of binge drinking during the last for weeks. The mean of binge drinking was 3.36 with a standard deviation of SD=1.636. On average females scored significantly lower (p<0.001) 2.36 (SD=1.16) than man (Mean=3.83; SD=1.62). The analysis of the scales included in the survey can be listed as follows: The mean of the positive affect scale of the PANAS was 22.22 with a standard deviation of SD=6.20 and the mean of the negative affect scale was 17.80 with a standard deviation of SD=6.64. The CHB scale had a mean of 20.13 and a standard deviation of SD=5.57. Self-efficacy had a mean of 16.59 with a standard deviation of SD=3.37 and the construct of health awareness had a mean of 5.79 with a standard deviation of SD=1.78. The alcohol consumption of the participants during the last four weeks had a mean of 7.90 with a standard deviation of SD=3.34.

3.2 Randomisation and manipulation

Condition 1 included 49 participants. 44 of the respondents were able to answer the question, which was introduced to control to what extent the participant watched the video attentively, correctly. Five participants chose the wrong answer. Condition 2 included 59 participants. In this condition 40 participants chose the correct answer, whereas 19 responded wrong. The results showed that both conditions were sufficient with regard to the proportion of right answers.

36 men and 13 women participated in condition 1. Condition 2 includes 59 participants, 36 of them were male and 23 were female. During the conduction of the survey two male and one female participant were excluded because they did not finish the full survey.

The nationalities included in the survey can be described as follows: 26 % of the participants were Dutch, 74 % of the participants were German. The first condition contained 25% Dutch and 75% German participants. The second condition contained 29% Dutch and 79% German participants. These results showed that the participants were equally distributed across the conditions.

Table 1.
Distribution of gender and age in the research

	Positive condition (n= 59)	Negative condition (n=49)	P (2- sided)
Age	23 (SD=6.3)	23 (SD=2.8)	P= .561
Gender, n (%)			P= .220
Male	36 (61%)	36 (73.5%)	
Female	23 (39%)	13 (26.5%)	
Nationality			P=.713
Dutch	15 (25%)	14 (29%)	
German	44 (75%)	35 (71%)	

3.3 Correlations between constructs
In order to examine the validity of the different scales in relation to each construct, a correlation analysis was conducted. The correlations of the six constructs in the total sample showed that only the constructs self-efficacy and health awareness correlated significantly (r=-.281). These findings indicate that people who are more aware of their health have lower levels of self-efficacy. A weak correlation (r=.073) was found between the constructs CHB and intention which indicates that no modification of a person's intention takes place through prior created CHBs. The correlations, calculated for each construct, can be found in table 2, table 3 and table 4. These tables show that the correlations of the other constructs were all below r= .20.

Due to the fact that the correlations found were not satisfying with regard to their values the analysis was conducted a second time, separated by the assigned conditions. As consequence correlations of the positive and the negative condition became viewable. The positive condition showed a significant negative correlation between the negative effect scale and self-efficacy (r= -.292). This indicates that people in this condition with a high amount of self-efficacy show less negatively associated mood. Furthermore a positive correlation (r=.258) was found between health awareness and intention. This means that participants of this condition who show higher levels of self- efficacy also show more intention to change their behaviour.

Furthermore, an insignificant negative correlation (r=-.012) between CHBs and intention was found what rejects the fourth research question. Finally, a weak negative correlation between self- efficacy and CHB was found (r= -.220). This means that people in this condition who hold more CHBs have lower levels of self-efficacy than people in the positive condition. However, this correlation is weak and not significant. Through this findings it is possible to give answer to research question 1.1. Self-efficacy can be excluded as mediator.

A positive correlation between negative affect and CHBs (r=.249) was found, which shows that participants in the negative condition are more willing to create CHBs when they are in a negative mood. This relation between negative effect and CHBs is only viewable in the negative condition. The correlation between health awareness and CHBs (r=2.58) showed

that participants who are more self-aware form more CHBs after the perception of the negative condition. A significant negative correlation between health awareness and self-efficacy (r=-.521) indicates that participants who anticipated the negative manipulation have lower levels of self- efficacy if they are health aware. Furthermore a negative correlation was found between self- efficacy and CHBs (r=-.220). This means that participants in this condition showed lower willingness to create CHBs if they have higher levels of self-efficacy. There was no significant correlation between CHBs and self-efficacy found (r=.074).

Finally a correlation was found between CHB and intention (r=.156). However these findings are not significant, so it can be concluded that people in the positive condition who form more CHBs also have a higher tendency to change their behaviour. With regard to the fourth research question it can be concluded that no significant modification of intention found place through CHBs.

Table 2.
Correlation coefficients of the different variables in the total sample

	1.	2.	3.	4.	5.	6.
1. Positive affect	-	-.114	.066	-.042	-.08	-.059
2. Negative affect		-	053	-.152	.128	.112
3. CHB			-	-.077	.104	.073
4. Self-efficacy				-	-.281**	.043
5. Health awareness					-	0.134
6. Intention						-

* p<.05

Table 3.
Correlation coefficient of the different variables with the negative condition

	1.	2.	3.	4.	5.	6.
1. Positive affect	-	.028	.165	.041	-.105	-.022
2. Negative affect		-	.249*	-.164	-.002	.041
3. CHB			-	-.220	.258*	-.012
4. Self-efficacy				-	-.521**	-.122
5. Health awareness					-	-.033
6. Intention						-

* p<.05

Table 4.

Correlation coefficient of the different variables with the positive condition

	1.	2.	3.	4.	5.	6.
1. Positive affect	-	.213	-.107	-.068	.015	-.071
2. Negative affect		-	.074	-.292*	.137	.181
3. CHB			-	.043	.000	.156
4. Self-efficacy				-	-.136	.154
5. Health awareness					-	.258*
6. Intention						-

* p<.05

3.4 Independent t-test

The results of the t-test for independent samples, which are presented in table 5, show that there was a significant difference between the means of the positive affect scale and the condition to which the respondents were assigned (t(106)=-3.99, p<0.001). Furthermore it can be seen that there is a significant difference between the negative affect scale and the assigned variable (t(106)=7.321, p<0.001). These findings indicate that participants who were assigned to the negative condition had a significantly higher score on the negative affect scale than people who were assigned to the positive condition. Complementary to these findings participants who were assigned to the positive condition had significant higher scores on the positive affect scale than participants who were assigned to the negative condition. As consequence of these findings it is possible to give answer to research question 1. It can be concluded that self- efficacy is not manipulated through the condition to which a participant is assigned. This was demonstrated through the insignificant value of the differences between the conditions (p=0.570). With regard to the second research question it can be concluded that the manipulation does not affect the level of health awareness a person has. This can be demonstrated through the insignificant value of alpha (p=0.225). With regard to the overall research question it can be concluded that the relation between the assigned condition and CHBs is not significant (p=.182).

Table 5.

Results: T test for independent samples

	Positive condition M(SD)	Negative condition M(SD)	T	P
Positive affect	24.25 (5.85)	19.78 (5.77)	- 3.99	.000*
Negative affect	14.30 (5.24)	22.00 (5.67)	7.321	.000*
Compensatory health beliefs	20.79 (5.33)	19.34 (5.80)	- 1.343	.182
Self- efficacy	16.42 (3.65)	16.80 (3.03)	.570	.570
Health awareness	5.60 (1.81)	6.02 (1.73)	1.220	.225
Intention	10.04 (2.78)	10.23 (2.72)	.360	.719

* p<.05

3.5 Mediator analysis

Due to the fact that there was no significant correlation found between the independent

variable (condition) and the dependent variable (CHB) it can be concluded that health awareness and self-efficacy can be excluded as possible mediators between the two variables. As consequence for research question 1.1 and 2.1 it can be concluded that the relation between the assigned condition and CHBs are neither mediated by self-efficacy nor by health awareness.

3.6 Moderator analysis
In order to control the extent to which the relation between the dependent variable (CHB) and the independent variable (condition) can be modified through alcohol consumption as a possible moderator, an univariate analysis including the dependent variable 'CHB' and the fixed factors 'alcohol consumption', 'condition' and 'alcohol consumption*condition' was conducted. The results of the survey made clear that the relation of the independent variable (condition) and the dependent variable (CHBs) is not moderated through alcohol consumption (p= .947). These findings indicate that there is no significant interaction between the variables, which means that the relation between the condition and the creation of CHBs is not moderated by alcohol consumption. With regard to the third research question it can be concluded that alcohol consumption does not moderate the relation between the dependent and independent variable.

4. Discussion

The main purpose of this research was to investigate the creation of CHBs and in how far they can be manipulated through positive or negative alcohol related stimuli. The most important outcomes of the experiment can be stated as follows: The experimental setting was successful. The most viewable success of the manipulation was its influence on the participant's mood (measured with the PANAS). Also the randomization and the manipulation check were successful. Mood can be stated as moderator between the manipulation and CHBs. The correlation of the constructs CHB and self-efficacy were influenced by the manipulation. The expected mediators self-efficacy and health awareness were not significant. Also the expected moderator variable alcohol consumption could be excluded. Finally, it can be concluded that CHBs are not influenced by positive or negative alcohol related stimuli.

In order to generate the experimental survey data, a survey including six constructs, which were assumed to influence the creation of CHBs, was conducted. These constructs were CHBs, alcohol consumption, the PANAS, self-efficacy, mood and intention. The necessary items for the development of the survey were partially found in already existing questionnaires and partially self developed. Results showed that only one of the developed constructs, namely mood, was significantly manipulated by the visual stimuli. The descriptive statistics showed that the participants drank alcohol regularly with an average consumption of three to 10 standard glasses of alcohol in the last four weeks. The analysis of the data made clear that the mood of a person in the negative condition of the experimental setting is significantly important with regard to the creation of CHBs.

Before the survey was conducted several outcomes were expected. First, it was expected that the condition to which a participant is assigned would have an influence on the creation of CHBs. Furthermore it was expected that CHBs would be mediated by self-efficacy and / or health-awareness. Alcohol consumption was expected to moderate the relation between the condition a participant is assigned to and CHBs. Finally, it was expected that the intention to change a future behavior would depend on CHBs. In the following paragraph the research questions will be answered and possible reasons for the results stated above will be discussed.

To what extent can compensatory health beliefs be manipulated through positive and negative alcohol specific commercials?

Starting point of this research was the hypothesis that the condition to which a participant is assigned would have an influence on the creation of CHBs. The results did not support this hypothesis. It is not possible to conclude that CHBs can be manipulated with the help of a prior presented, positive or negative stimuli. A possible explanation for this can be that although the chosen videos were strong enough to manipulate the mood, they were not adequate enough to influence CHBs in the short term. Furthermore it can not be concluded that the mediators health awareness or self-efficacy have any influence on the creation of CHBs. Neither does the assumed moderator alcohol consumption. The only significant influence on CHBs can be seen by the mediator mood.

1.To what extent is self-efficacy manipulated through positive and negative alcohol specific commercials?

One goal of this study was to examine the influence of the condition on the self-efficacy of a person. A priori it was hypothesized that the level of self-efficacy would be influenced by the condition to which a person is assigned. After the conduction of the survey and the associated analysis of the data it became clear that the level of self-efficacy a person has is not influenced through the assigned condition. A possible explanation for this may be the degree of self-efficacy the respondents have. According to Bandura (1977), self-efficacy can be defined as the ability to master a given situation. The results of the self-efficacy scale showed that four of the five items have a mean with a range from 3.30 to 3.85. The last item was probably to extreme *('...I am sure that I am able to not drink ever again'*) for the sample. A possible explanation for the low mean (1.86) is that the biggest part of the sample is relatively young at the one hand and are students at the other what explains a more frequent contact to alcohol in in their every day lives. As a consequence it can not be concluded that the strength of a persons beliefs in his / her own abilities can be strengthened or weaken through a positively or negatively primed commercial.

1.1. Is the relation between CHBs and the assigned condition mediated by self- efficacy?

Complementary to the prior sub question it was assumed that self-efficacy plays a role as a mediator between the creation of CHBs and the manipulated setting. After the analysis of the given data, the construct of self-efficacy could be excluded as mediator between the two constructs. It was noticeable in this context that the condition a person was assigned to, had a major influence on the correlations between CHBs and self-efficacy. A possible explanation for this is that the negative condition had more influence on the perceived levels of self-efficacy and the creation of CHBs than the positive one. An explanation for the differences in the creation of CHBs is given by Bandura (1977) who states that the future outcomes of an action play an important role. Future outcomes can be defined as the consequences of an executed action. This means that a person is less willing to execute an action if the consequences are not desirable. This can be found back in the correlation table. Nearly no correlation between self-efficacy and CHB could be found. This demonstrates that the expected outcomes in the positive primed manipulation were not desirable enough to implement an action. The negatively primed manipulation had more effect on the perceived outcomes, which can be demonstrated through the slightly negative correlation. This correlation indicates the tendency for people in this condition to hold more CHBs, which can be explained through the fact that the consequence of the anticipated manipulation is not desirable.

2. To what extent is health awareness manipulated through positive and negative alcohol specific commercials?

It was hypothesized that the health awareness a person has can be influenced by the setting to which this person is assigned. After the analysis of the data it became viewable that there is no significant difference between the means of the negative condition and the positive one. According to this data it can be concluded that the condition to which is a person was assigned had no influence on the awareness a person has towards his/ her health. This means that whether a person saw the positive primed video or the negative does not make any difference with regard to the person's level of health awareness. A possible explanation is that the students who were participating were mostly psychology students. Psychology students learn a lot about how to design or fill in surveys. Due to this fact they are aware that questions

are often answered with regard to the social norms a person has and want to avoid this bias. According to Verstraete (2000), participants often give answers that show the social norm of the person even if this answer is contrary to the own opinion. The results of the health awareness scale did not show any significant high or low scores. This can mean that the participants have an average awareness of their health but do not overestimate their scores or answer socially adequate. According to this data it could be concluded that the health awareness does not differ with regard to the condition a person gets assigned to.

2.1. Is a relation between CHBs and the assigned condition mediated by health awareness?

Health awareness was hypothesized as a possible mediator between the condition to which a person is assigned to and the CHBs, which are created by a person. The analysis of the data disproves this hypothesis. It became clear that the link between the two variables and the level of health awareness can not be related to each other. The age and the actual living situation of the participants can be a possible reason for this. Due to the fact that the average age of the participants was 23 and additionally that 79% (not included two dual students) were students it is possible that the actual live situation is not as healthy as the live situation of older or more settled people. These findings can be supported through high counts of binge drinking students (Wechsler, Davenport, Dowdall, Moeykens & Castillo 1994). Deducible from the frequency of alcohol consumption and the binge drinking scale it is possible to view that the temptation to drink is often present. For the overall research question it can be concluded that compensatory health beliefs which are created are not mediated and as consequence neither enlarged nor reduced by health awareness. This means that the degree to which people are aware of their actual life style and their health have nothing to do with the creation of CHBs.

3. To what extent does alcohol consumption moderate the relation between CHBs and positive or negative, alcohol specific commercials?

For this survey it was hypothesized that the connection between CHBs and the condition to which a person is assigned can be influenced through alcohol consumption as moderator variable. This hypothesis was not confirmed. An explanation for this can be that the participants do not experience their own alcohol use as problematic. As stated by Giner-Sorolla (2001) a motivational conflict arises when an upcoming temptation is anticipated as contrary to the goals a person has. Due to this fact the creation of CHBs only becomes necessary if a person experiences a conflict. This would explain why the condition does not manipulate the creation of CHBs significantly and also why the prior given statement with regard to the consumption of alcohol has no moderation effect. Concluding it can be stated that alcohol consumption has no moderating effect between the condition and CHBs.

4. To what extent is intention influenced by compensatory health beliefs?

After the evaluation of the data it became viewable that a persons intention to engage in a particular behaviour could not be manipulated through prior created CHBs. It can be concluded that there is no effect between the constructs. According to Miquelon, Knäuper, & Vallerand (2012), CHBs negatively influence the persuasion of goals. Additionally, the more intentions are hold the higher the probability that the goals are not reached. A possible explanation for the low correlation can be given through the formulation of the items of the intention scale items. The items in the survey were not formulated precise enough with regard

to the certain situation. This could be the reason why the participants did not notice the connection between the CHB scale and the intention scale. Another reason could be that self-efficacy and health awareness were tested between CHB and intention. Participants who conducted the study maybe experienced it as problematically to connect the two constructs because other parts of the survey could have influenced them. It can be concluded that the intention to engage in a particular behaviour is not significantly influenced by CHBs.

5. Limitations and Strengths of the research

There are also some limitations to the study. These limitations are different in nature and can be divided into three groups. These groups are the construction phase, the conduction phase and the evaluation. The construction phase was problematic because no prior research was available. Due to this fact there was no chance to prepare the survey with support of already existing literature. Only distant comparable researches were conducted. A research conducted by Knäuper and Kronick (2010), which was mainly concerned with temptation and the creation of CHBs with regard to eating behavior, can be mentioned in this context. However, it was not possible to transfer this setting because the offered manipulation (forced consume of high / low calorie cookie) during this study would not be appropriate to the present research setting (alcohol consumption). As a consequence nearly all of the items had to be developed by the researchers.

Additionally to this there was no chance to validate the developed survey adequate in order to guarantee that the different constructs are reliable and replicable. This also contains the problem that no standards with regard to scoring or interpretation were defined in advance. This problem was mainly caused through the fact that the required participant pool and scheduled time for the data collection were to limited for an adequate pilot study.

Another problem was that nearly all of the participants were UT students and a lot of these participants were psychology students. The fact that psychology students work a lot with manipulations in their study can explain the difficulties with priming them. This was also problematic because most of the students thought that the setting will be manipulated and were inclined to ignore this manipulation as consequence.

The evaluation phase showed some problems with regard to the analysis of the survey. The first problem was the validity of some of the scales. In consequence of the fact that a high value of alpha should be achieved, some of the items had to be deleted in case that changes with regard to the scoring did not work out. Because of that some of the constructs only consisted of two items and some consisted out of 10 items. One example for this is the construct health awareness, which was reduced from five to two items in the process of validation. Mainly responsible for this was the inability to access earlier research or to validate the test through the usage of a pilot test.

Finally, a problem arose through the formulation of the multiple-choice control question. Due to the fact that the negative condition referred to the content and the positive condition the slogan of the commercial it became viewable that the participants experienced the second control question as more problematic.

However, the design of the research had also strengths, which have to be mentioned. The most important strength of the research was the designed experiment, which can be referred to as complete success. This can be demonstrated through the impact of the manipulation of the participants' mood. Furthermore the randomization of the sample was successful. This can be demonstrated through randomization of the participants with regard to their demographic information. Finally the manipulation check was executed as expected. This means that the biggest part of the participants were able to answer the control question correctly.

6. Further research

For a follow up study several points would be interesting. First, it would be interesting to compare the differences of the nationalities, which were participating in the survey. Through this comparison it would become possible to investigate national differences with regard to drinking behavior, frequency and drink culture. Furthermore it would be recommendable to enhance number of items for some of the variables. During this process the formulation of the items could also be improved. This would enhance the overall quality and probably also the correlation of the different constructs.

Complementary to this it would be interesting to concentrate on the correctness of the CHBs people hold. During this study the main attendance laid on the CHBs without any attention to the correctness of these beliefs. A follow up study would give the possibility to the researches to separate wrong and right beliefs.

Also it would be possible to investigate the origin of the CHBs hold by the participants. This would open the possibility to further analyze reasons for holding factual wrong CHBs. Additionally the investigation of the differences between the correlations of the constructs would be interesting for a follow up study. One example in this context would be the investigation of differences in the correlation between the level of self-efficacy and CHBs in the two conditions.

In order to guarantee the improvement of the survey through new items a pilot study would be very important. This would guarantee that the constructs, which are included in the survey would correlate with each other and additionally that the items run through a satisfying process of validation.

Finally it would be very interesting to conduct a posttest. Through the measurement of two points in time it would be possible to control in how far people really implement their intentions.

7. References

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, *84*(2), 191.

Bandura, A. (1977). Social learning theory.

Bandura, A. (1986). Social foundations of thought and action: a social cognitive theory. *Englewood Cliffs, N.J.: Prentice-Hall.*

Bandura, A., & Walters, R. H. (1963). Social learning and personality development.

Baumeister, R. F., Bratslavsky, Muraven, M., & Tice, D. (1998). Ego depletion: Is the active self a limited resource. *Journal of Personality and Social Psychology*, *74*, 1252–1265.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. Academic Press.

Bud Light. (2015, January 22) Bud Light Super Bowl 2015 Commercial – Real Life PacMan #UpForWhatever[Videofile]. Retrieved from https://www.youtube.com/watch?v=g9 A1NowrnGI

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behaviour. *New York: Plenum*.

Deci, E. L., & Ryan, R. M. (2000). The what and why of goal pursuits: Human needs and the selfdetermination of behaviour. *Psychological Inquiry*, *11*, 227–268.

Deutsch R, Strack F (2006) Reflective and impulsive determinants of addictive behavior. In: Wiers RW, Stacy AW (eds) Handbook of implicit cognition and addiction. *Sage, Thousand Oaks*, pp 45–57

Festinger, L. (1957). A theory of cognitive dissonance. *Stanford, CA: Stanford University Press.*

Giner-Sorolla, R. (2001). Guilty pleasures and grim necessities: Affective attitudes in dilemmas of self-control. *Journal of Personality and Social Psychology, 80*, 206–221.

Gollwitzer, P. M., & Oettingen, G. (1998). The emergence and implementation of health goals. *Psychology and Health*, *13*(4), 687-715.

Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among US college students ages 18–24: Changes from 1998 to 2001. *Public Health*, *26.*

Knäuper, B., Rabiau, M., Cohen, O., & Patriciu, N. (2004). Compensatory health beliefs scale development and psychometric properties. *Psychology and Health, 19*, 607-624. doi:10.1080/0887044042000196737

Kronick, I., & Knäuper, B. (2010). Temptations elicit compensatory intentions. *Appetite*, *54*(2), 398-401.

Marshall, M. N. (1996). Sampling for qualitative research. *Family practice*, *13*(6), 522-526.

Metcalfe, J., & Mischel,W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, *106*, 3–19.

Mischel, W. (1996). From good intentions to willpower. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior,* 197–218. New York: Guilford Press.

Miquelon, P., Knäuper, B., & Vallerand, R. J. (2012). Motivation and goal attainment. The role of compensatory beliefs. *Appetite*, 58(2), 608-615.

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, *126*, 247–259.

Nichols JM, Martin F (1997) The effect of lorazepam on long-term verbal recall in heavy and light social drinkers. *Alcohol 14*:455–461. to 2001.

Park, C. L. (2004). Positive and negative consequences of alcohol consumption in college students*. Addictive behaviors*, *29*(2), 311-321.

Rabia, M., Knäuper, B., & Miquelon, P. (2006). The eternal quest for optimal balance between maximizing pleasure and minimizing harm: The compensatory health beliefs model. *British journal of health psychology*, *11*(1), 139-153.

Thomsen SR, Rekve D. (2006) The relationship between viewing US-produced television programs and intentions to drink alcohol among a group of Norwegian adolescents. *Scand J Psychol 47*, 33–41.

Verstraete, B. (2008). Het sociaal wenselijk antwoorden bij adolescentenenquêtes. *Inter-universitaire scriptie, Leuven, Jeugdgezondheidszorg, Katholieke Universiteit Leuven*.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, *54*(6), 1063.

Wechsler, H., Davenport, A., Dowdall, G., Moeykens, B., & Castillo, S. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *Jama*, *272*(21), 1672-1677.

World Health Organization. (2014). Global status report on alcohol and health. Retrieve from *http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf*

Wiers, R.W., Stacy, A.W. (2006) Implicit cognition and addiction. *Current Directions in Psychol Sci 15*:292–296

Wiers, R.W., Bartholow, B.D., van den Wildenberg, E., Thush, C., Engels, R.C.M.E,. Sher, K.J., Grenard, J., Ames, S.L., Stacy, A.W. (2007) Automatic and controlled processes and the development of addictive behaviors in adolescents: a review and a model. *Pharmacol Biochem Behav 86*:263–   283

xFrozenFishx's channel. (2009, April 3). Rethink Drink - Australian Anti-Drinking Advert [Video file]. Retrieved from https://www.youtube.com/watch?v=FfY7L_QUk8o

8. Appendix

Experimental online survey

Demographic variables

What is your gender?

- Woman
- Man

How old are you?

_____

Where do you come from?

- Germany
- Netherlands
- Other

What is your current function?

- Student
- Worker
- Other

How many times did you consume alcohol in the last 4 weeks?

- 0
- 1 or 2 times
- 3 or 4 times
- 5 or 6 times
- 7 or 8 times
- 9 or 10 times
- more than 10 times

How many times did you consume 5 or more glasses of alcohol on one occasion in the last 4 weeks?

- 0
- 1 or 2 times
- 3 or 4 times
- 5 or 6 times
- 7 or 8 times
- 9 or 10 times
- more than 10 times

Randomization process assigning participants to the negative or positive condition.

Video (Negative condition)

Control question
Please choose the most correct answer!

What happened to the woman?
- Nothing
- She fell down
- She lost her baby (Right response)

Video (Positive condition)

Control question
Please choose the most correct answer and continue the sentence:

"The perfect beer for...
- ...what's next!
- ...whatever happens. (Right response)
- ...everything.

Mood
In the following you see a scale consisting of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word.

Indicate to what extent you feel this way right now, that is, at the present moment
1= Very slightly 2= A little   3=Moderately   4=Quite a bit   5=Extremely

Interested

Distressed

Excited

Upset

Strong

Guilty

Scared

Hostile

Enthusiastic

Proud

Irritable

Alert

Ashamed

Inspired

Nervous

Determined

Attentive

Jittery

Active

Afraid

CHB

To what extent do you agree with the following statements?
1= Totally disagree   2= Disagree   3=Neutral   4= Agree   5=Totally agree

- The effects of regularly drinking alcohol can be made up by eating healthy
- It is alright to drink a lot of alcohol as long as one drinks lots of water to flush it
- The effects of drinking too much alcohol during the weekend can be made up for by not drinking
- Drinking alcohol is okay if one resigns the usage of other substances.
- Alcohol consumption in the weekend has no negative influence on one athletic performance.
- The effects of drinking alcohol only on weekends can be compensated through regular physical activity during the week
- Starting the day with a healthy meal can compensate the negative effects of prior alcohol consumption.
- Regularly consumption of one glass alcohol a day approaches my desire of living healthy more than binge drinking once a week (item deleted)
- The secondary damage of drinking alcohol can be reduced by exercising
- The relative high consumption of alcohol during my years of study can be compensated through a more

conscious lifestyle after this period

Self-efficacy

To what extent do you agree with the following statements?
1= Totally disagree   2= Disagree   3=Neutral   4= Agree   5=Totally agree

I am sure that I am able to...

- Reduce my alcohol consumption in favour of living healthy
- Refuse alcohol in order to fulfil self-determined goal
- Not drink alcohol ever again
- Only to drink at special occasions
- Estimate the limit of my alcohol consumption in order to guarantee my physical integrity

Health awareness

To what extent do you agree with the following statements?
1= Totally disagree   2= Disagree   3=Neutral   4= Agree   5=Totally agree

- I never gave a thought about my health Refuse alcohol in order to fulfil self-determined goal (item deleted)
- I don´t use any substances or engage in any behaviour that could have negative consequences for my health (item deleted)
- I think a balanced life between healthy and unhealthy behaviour is favourable (item deleted)
- I already live a healthy life so I don't have to change my lifestyle
- I have a lot of trouble with the completion of my health goals because temptation is everywhere

Intention

To what extent do you agree with the following statements?
1= Totally disagree   2= Disagree   3=Neutral   4= Agree   5=Totally agree

- I am going to reduce my alcohol consumption in the following 12 months
- I am going to exercise the next day for 1 ½ hours after alcohol consumption
- I am going to be more aware of my alcohol consumption in favour of living healthy
- I am going to refuse alcohol if I think that I already drank enough (item deleted)

- I am going to refuse drinking alcohol if I already had drunk more then five glasses in a week on another occasion