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Personality and motivational determinants of alcohol use

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Personality and Motivational Determinants of Alcohol Use

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List of Abbreviations

Abbreviation	
Anx	Anxiety
BAS	Behavioural Approach System
BIS	Behavioural Inhibition System
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders Version Four
E	Extroversion
FFFS	Fight-Flight-Freeze System
Imp	Impulsivity
N	Neuroticism
RST	Reinforcement Sensitivity Theory
SP	Sensitivity to Punishment
SR	Sensitivity to Reward

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CHAPTER 7

Study 3:

Induced Mood, Personality, and Reinforcement Drinking in Students

This chapter presents the third correlational (or quasi-experimental) study in this thesis. Study 3 was designed to explore the relationships between induced mood, personality, alcohol reinforcement, and alcohol use with an experimental paradigm. Together, Studies 1 and 2 identified the correlates, mediators, and determinants of alcohol use that were measured indirectly, through students' self-reports of habitual drinking patterns. These findings needed to be replicated with an experimental paradigm that directly measures alcohol use.

Procedures that cause transient changes in affective state have become an important research tool. Experimental studies have established the effects of induced mood on alcohol cognitions and risk-factors for alcohol misuse (see Chapter 6). There are a large number of stand-alone mood-induction procedures (MIPs) that can be used, but the majority of researchers employ a combination of techniques to increase the efficacy of MIPs and the target mood. A combined approach that is considered to be valid is the autobiographical memory technique coupled with mood-congruent music. This approach was employed in this study to establish the relationships between induced affective states, sensitivity to punishment and reward, and positive and negative reinforcement drinking among students.

In short, little research has investigated the relationships between induced mood, personality, affective regulation, and reinforcement drinking. Alcohol reinforcement can occur without overt awareness (Willner et al., 2005). Hence, induced affective states may activate implicit or explicit personality, motivation, emotion, and memory structures (positive and negative reinforcement drinking) that in turn affect actual drinking behaviour, such as alcohol consumption during a taste-test.

The taste-test study was designed to assess students' drinking of alcoholic and non-alcoholic beverages because it allowed for the direct measurement of the quantity of alcoholic and non-alcoholic beverages consumed at the time of testing. Taste-tests are considered to be an unobtrusive measure of alcohol consumption, which allow researchers to investigate the determinants of alcohol use. They have been shown to be a valid and reliable experimental technique for investigating the determinants of alcohol use in diverse populations (see Chapter 6). However, none of the cited taste-test studies in Chapter 6 has established the relationships between induced-mood, Reinforcement Sensitivity Theory personality constructs, reinforcement drinking motivation, and drinking behaviour among students.

Aims of Study Three

Study Three aimed to partially replicate some of the findings from Studies 1 and 2, and extend them by offering further support to the theoretical underpinnings of these studies and their statistical findings.

Alcohol can be viewed as having a negative or positive incentive value, both of which are seen as rewarding by drinkers, because alcohol can be used to alleviate negative emotions, and to enhance positive emotions (see Cox & Klinger, 2004).

Hence, students who score high on measures of sensitivity to punishment and reward are expected to have different sensitivities to the incentive rewarding properties of alcohol, because it brings about transient changes in their affective state. Students who show high sensitivity to punishment and participate in the negative condition are expected to consume more alcoholic beverage(s) during the taste-test, compared to low sensitivity to punishment participants, in order to alleviate their negative affective state (negative reinforcement drinking). Similarly, students who show high sensitivity to reward and participate in the positive condition would be expected to consume more alcoholic beverage(s) during the taste-test, compared to low sensitivity to reward participants, in order to further enhance their positive affective state (positive reinforcement drinking). No interactions are expected between induced mood, personality, and alcohol reinforcement in the neutral condition, which is the control group for this study.

There is expected to be a main effect for experimental mood-induction conditions in volume of alcohol consumption in the taste-test. Specifically, participants in the positive condition will consume more alcohol during the taste-test than those in the neutral or negative conditions. Conversely, those participants in the negative condition will consume more alcohol during the taste-test than those in the neutral condition. No predictions are made for the neutral (control) condition.

A number of primary hypotheses can be derived from the theoretical relationships between induced mood, personality, and alcohol reinforcement. First, as stated above, it is predicted that mood-induction condition and personality will interact to predict alcohol consumption in the taste-test (the main dependent variable for this study): There will be a two-way interaction between the negative condition and SP to predict volume of alcohol consumption in the taste-test, and a two-way

interaction between the positive condition and SR to predict alcohol consumption in the taste-test. Second, it is predicted that mood-induction condition and personality will interact to predict alcohol reinforcement motivations: There will be a two-way interaction between the negative condition and SP to predict changes in negative alcohol reinforcement (from baseline to post-taste-test), and there will be a two-way interaction between positive condition and SR to predict changes in positive alcohol reinforcement (from baseline to post-taste-test). Third, it is predicted that mood-induction condition, SP, and SR will interact to predict alcohol consumption in the taste-test. Specifically, there will be two three-way interactions between mood-induction conditions (negative or positive) and personality (SP x SR) to predict volume of alcohol consumption in the taste-test. No predictions are made for the neutral (control) condition.

This study also has a number of secondary hypotheses regarding the relationships between personality and alcohol reinforcement motivations. First, SP scores will be positively associated with negative alcohol reinforcement motivation scores at baseline and post-taste-test, whereas SR scores will be positively associated with alcohol reinforcement motivation scores at baseline and post-taste-test (e.g., positive reinforcement, negative reinforcement, expected and perceived reward from consuming alcohol). This will also establish the convergent and discriminant validity of the Desires for Alcohol Questionnaire (DAQ) in this sample.

Second, participants who score high on SR will consume more alcohol during the taste-test, and score higher on the TADD alcohol consumption index, than those participants who score low on SR, irrespective of mood-induction condition. No specific directionality is proposed for SP scores: Participants who score low on SP might consume more alcohol during the taste-test than those participants who score

high on SP, irrespective of mood-induction condition, or vice versa, or there could be no difference between them (see Chapter 5).

Finally, simple predictions are made regarding the effectiveness of the mood-induction procedure. It is predicted that participants in the positive condition will show an increase in their positive mood and present mood rating between baseline and post-taste-test, whereas the participants in the negative condition will show an increase in negative mood and a decrease in present mood rating. The neutral condition is not expected to alter the participants' mood.

METHOD

Ethical Approval

The research reported here complied with the BPS ethical guidelines; it was reviewed and approved by the School of Psychology Ethics Committee. Participants who suspected that they may be pregnant, those suffering from diabetes, and those with an allergy to fruit juices were excluded from the study for health reasons. The maximum number of units of alcohol that could be consumed by a participant during the taste-test was kept to an acceptable level (a combined total of 2.66 units of alcohol for the alcohol-based beverages). This was done so no participant would leave the study feeling intoxicated after consuming part or all of the alcohol-based beverages. Informed consent was obtained from all participants, who were aware of their right to withdraw without penalty (none did so); they were debriefed at the end of the procedure and their questions were answered by the researcher. Some deception was

necessary for the procedure; the participants were told that alcohol-based beverages will be included in the taste-test, but they were not informed prior to the study that the experimenter intended to measure their beverage consumption (the dependent variable). They were told this after the study was completed, when the full rationale was explained to them, and the experimenter made it clear that they could decide to withdraw their data if they wished (none did so).

Personal information that could identify individuals was not recorded on the study materials. Data were kept on a password-protected computer in a locked office. None of the participants in the negative condition reported feeling distressed at the end of testing (to ensure this, the positive mood induction was administered at the end of the testing in this condition; see Procedure). Consent forms and information sheets given to participants are presented in Appendix 17.

Participants

A total of 174 participants from 17 departments at Bangor University were recruited through two website advertisements. One was placed on the School of Psychology SONA website, which is used to recruit psychology students. They volunteered as part of a requirement for their degree in psychology. The other advertisement was placed on the Bangor University intranet. Each website advertisement stated that, "The research is investigating the relationship between personality and preferences for favourite drinks. Participants will be required to complete a number of personality-based questionnaires, a short memory recall task and a beverage-taste-test. During the taste-test, you will be presented with four beverages, such as a soft drink. All you have to do is provide ratings on the qualities

of these beverages on four rating scales. The sessions should take between 60 and 90 minutes to complete. You are not eligible for this study if you are currently pregnant."

Participants were given an information sheet when they attended the testing session that stated, "If you are pregnant, or do not drink alcohol, or have been drinking alcohol before attending the testing session, please inform the researcher now so that you can be discharged from the study before it commences. If you have been drinking alcohol you will be asked to schedule another session if you still wish to participate in the study." Fifteen participants were paid and discharged from the study when they attended the testing sessions: 9 because they informed the researcher that they did not want to drink and drive; 4 because they were abstainers from alcohol; and 2 because they appeared to be under the influence of a substance other than alcohol.

In total, 159 students participated in this study. Participants recruited via SONA earned 3 course credits and £6 worth of printer credits ($n = 43$) and participants recruited by the intranet earned £10 in cash ($n = 116$). Twenty-one participants who were tested were excluded from the main data analysis, because they consumed excessive amounts of alcohol during the beverage taste-test (between 200 and 400ml). Of these 21 participants, 10 were from the negative condition, 7 were from the neutral condition, and 4 were from the positive condition.

The final sample comprised 138 participants, who were randomly assigned to one of three mood-induction conditions (positive, negative, and neutral). Four testing sessions were run per day (morning, mid-day, afternoon, and evening), and the assignment to conditions was counterbalanced across these sessions.

Seventy-nine percent ($n = 109$) of the sample was female and 21% was male ($n = 29$). Eighty-six percent of the sample were undergraduates ($n = 118$): the

remainder were postgraduates (n = 18, 13%) and university staff (n = 2, 1%). Seventy-three percent of the sample were psychology students (n = 100).

Participants' ages ranged between 18 and 47 for males (median = 21) and between 18 and 45 for females (median = 20).[1] They first drank alcohol between the ages of 9 and 15 (median = 15 years) and have been drinking alcohol on a regular basis for between 0 and 33 years (median = 4 years).

The sample was not selected on the Department of Health's guidelines for excessive drinking (14-21 units of alcohol per week for females, and 21-28 units per week for males, or higher). This allowed the researcher to sample the full range of student drinkers for the taste-test. Forty-five percent of the participants were spirit drinkers (n = 62): the remainder were beer, ale, and cider drinkers (27%, n = 37), red or white wine drinkers (24%, n = 33), and Alcopops drinkers (5%, n = 6). Eighty-eight percent of the sample were native English speakers (n = 122) and 12% were non-native English speakers (n = 16).

Instruments

Participants were asked to complete six questionnaires at baseline and four questionnaires at the post-taste-test. These included a measure of personality, affect, alcohol reinforcement, prior experiences, beverage rating and preference, experimental evaluation, and demographics. A measure of alcohol use was administered and completed by the researcher to obtain a more accurate assessment of

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[1] Ranges and medians are reported as more appropriate measures of spread and central tendencies, respectively, rather than commonly used standard deviations and means, because the distributions were very skewed and kurtosed in the present sample.

each participant's alcohol use. Cronbach's alpha was set at .70 for this study; no scales violated this assumption. Hence, the scales employed in this study were found to be internally consistent and reliable.

Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ)

The SPSRQ (Torrubia et al., 2001) is a 48-item self-report questionnaire that assesses the responsivity of the BIS and BAS (see Chapter 3 for a fuller description of this instrument). Torrubia et al. (2001) reported good internal consistencies for the SP and SR scales (α = .84 and α = .76). The alphas for the SP and SR scales in this study were also found to be good (α = .81 and α = .78, respectively).

Positive and Negative Affect Schedule (PANAS)

The PANAS (Watson, Clark, & Tellegen, 1988) is a brief 20-item self-report questionnaire that contains two 10-item mood scales. The items were derived from a principal components analysis (PCA) of the mood checklist (Zevon & Tellegen, 1982). Items on the PA scale are deemed to be representative of an individual's pleasurable engagement with life and goal-directed efforts; the authors claimed that PA is comparable to sensitivity to reward. The items on the NA scale are deemed to be representative of an individual's subjective level of distress, and his or her unpleasurable engagement with events or situations that can generate aversive mood states, such as hostility and guilt. NA was deemed by the authors to be comparable to sensitivity to punishment.

Respondents rate the relative frequency with which they have experienced each particular emotion within a specific time frame on a 5-point scale, ranging from

1 (very slightly or not at all) to 5 (very much). The time frame was set at present mood for this study. Independent scores for PA and NA are calculated by summing the relevant items for each scale. An additional 21-point bipolar scale was added to the PANAS, ranging from -10 (Very unhappy) to 10 (Very happy), so present mood could be assessed independently of PA and NA. The PANAS was administered at baseline and at post-taste-test. Sample PANAS questionnaires are presented in Appendix 18.

Watson et al. (1988) reported that the PA and NA scales had good internal consistency when participants were asked to rate how they felt 'right now or presently' (α = .89 and α = .85, respectively). The alphas were also found to be good in this study, for present mood at baseline (α = .79 and α = .84, for PA and NA respectively) and post-taste-test (α = .85 and α = .75, for PA and NA respectively). The average alpha for the PA scale was found to be .82 and for the NA scale .79.[2]

The administration of the PANAS in this study served two purposes. First, it was used to verify that there were no baseline differences in positive and negative affect scores across mood-induction conditions. Second, it enabled a mood-manipulation check to be performed on the positive and negative affect scores to determine whether the mood-induction was an effective manipulation.

Desires for Alcohol Questionnaire (DAQ)

The DAQ (Willner, James, & Morgan, 2005) is a revised version of the Love and colleagues' DAQ (Love, James, & Willner, 1998). The questionnaire is based on

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[2] The average alpha was calculated by adding the alphas for each test and dividing by the number of times the questionnaire was administered. Thus, average PA = (.79 + .85)/2.

the theoretical ideas of Tiffany and colleagues (1991, 1993) that models of cravings should include several independent factors and are best measured by multi-dimensional scales or questionnaires. Respondents rate how strongly they agree (7) or disagree (1) with each of the 36 items on the DAQ.

In this study, an abbreviated version with 12 items was used to assess participants' anticipated positive (PR) and negative reinforcement (NR) from using alcohol (4 items and 8 items, respectively). Each reinforcement scale is viewed as being independent from the other. The authors claimed that scores for PR can be used to derive a measure of "liking" for alcohol (Willner et al., 2005, p. 1489). "Drinking now would make things seem just perfect" is a sample positive reinforcement item. "Drinking now would make me feel less tense" is a sample negative reinforcement item. Scores for positive and negative reinforcement are computed by averaging the scores across the items on each scale. An additional 11-point scale, ranging from 0 (Not at all) to 10 (Extremely) was added to the DAQ, so expected reward for alcohol consumption could be equated at baseline and perceived reward for alcohol consumption could be equated post-taste-test. Sample DAQ questionnaires are presented in Appendix 19.

Willner et al. (2005) reported that the PR and NR scales had good internal consistency (α = .88 and α = .96, respectively). The alphas were also found to be good in this study at baseline (α = .82 and α = .89, respectively) and post-taste-test (α = .85 and α = .93, respectively). The average alpha for the PR scale was found to be .84 and for the NR scale .91.

Prior Experiences Sheet

The Prior Experiences Sheet was designed specifically for this study as an autobiographical memory mood-induction tool. Three alternative versions of the sheets were devised: one for the negative mood condition (Sheet A), one for the positive mood condition (Sheet B), and one for the neutral mood condition (Sheet C). The instructions on the experiences sheets were a modification of those devised by Williams and Broadbent (1986). On the negative condition version the instructions read: "I'm interested in your memory for particular events that have happened to you. By a particular event, I mean something that happened on a particular day. The memory you recall could be from a long time ago or very recent, that doesn't matter. It could be something very important, or something very ordinary. But the main thing is that, if you can, let it be a memory of something that happened on a particular day. Please **take a minute** to think of events (or experiences) from your own life when you **felt very upset or distressed**. You may have been feeling any number of negative feelings (e.g., sadness, guilt, hopelessness, rejection, loneliness, grief, shame, or hurt) or a combination of these negative feelings. Write down a brief description of the three memories that come to mind, in the order they occur to you. Try to remember each event as vividly as possible and after each memory write how you felt about the event at the time. Your responses will be kept strictly confidential."

On the positive condition version the instructions for the type of event recalled read, "Please **take a minute** to think of events (or experiences) from your own life when you **felt very happy or elated**." The instructions for the type of event recalled on the neutral condition version read, "Please **take a minute** to think of events (or experiences) from your own life when you **felt neutral**. You may have been feeling

neither sad nor happy. Try to recall events or experiences that are **not** associated with any significant emotion."

The list of mood-congruent words for the negative and positive condition versions were drawn from the lists employed by Park, Goodyer, and Teasdale (2005), which had been previously balanced for emotional valence and word frequency by Brittlebank, Williams, and Ferrier (1993). The words selected for the positive condition version were: relieved, excited, pleased, hopeful, glorious, sunny, proud, and eager (see Williams & Broadbent, 1986). No such terms were identified for the neutral mood condition, and none were presented to the participants.

Respondents in each condition were asked to recall and record three life events. For each life event they wrote a brief description of the event, and then stated 'How they felt about the event at that time'. Respondents could record brief descriptors, or write full statements, or a mixture of both. They then went on to provide ratings for two statements regarding their feelings towards the recalled memory: (1) 'How strong are your current feelings related to this event' and (2) 'How difficult was it for you to recall this event'. Next, respondents provided ratings on two 7-point scales, ranging from 0 (Not strong) to 7 (Strong) and 0 (No difficulty) to 7 (Extremely difficult). The statement regarding how difficult was it to recall the event (or experience) referred to how difficult the respondent found it to recall the event from his or her memory, rather than meaning how emotionally difficult was it for them to recall the event. Independent scores for average strength of feelings and average recall difficulty were calculated by averaging the ratings across the number of events recalled. Sample prior experiences sheets are presented in Appendix 20.

Beverage Rating Scale

An amended version of Field and Eastwood's (2005) Beverage Rating Scale was used in this study. Three changes were made to the scale. First, the original scale contains the rating for the carbonation of the drink ('flat-gassy'); in the present study, this continuum rating was changed to 'unsatisfactory-satisfactory', to better assess participants' judgment of the satisfaction they gained from drinking. Second, the present rating scale allowed participants to write their own comments about the qualities of the beverages. Third, the present rating used an 11-point scale, ranging from 0 to 10, instead of a 100-mm visual analogue scale (the latter is usually administered on a computer). Respondents used the ratings scales to make valued judgements for each beverage on four continuums (unpleasant-pleasant, tasteless-strong, bitter-sweet, and unsatisfying-satisfying). Four rating scales were employed in this study, one for each beverage. Participants specified which beverage they were rating by registering an A, B, C, or D in the space provided on top of the measure before commencing with the ratings. A sample beverage rating scale is presented in Appendix 21.

Beverage Preference Rating Scale

This form was designed specifically for this study to assess the most preferred and least preferred beverage during the taste-test. Respondents were asked to rank order the beverages from 1 (Most preferred beverage) to 4 (Least preferred beverage). The beverage preference rating scale is presented in Appendix 22.

Mood-Induction and Taste-Test Evaluation Form

This form was designed specifically for this study to validate the experimental procedures. The first part of the form asked respondents to provide ratings on an 11-point scale, ranging from 0 (Not at all) to 10 (Very), to two lists of five affective adjectives. Each list contained one positive-valenced and four negative-valenced adjectives. The lists were used to evaluate the combined MIPs (autobiographical memory and mood-congruent music). Average scores were calculated for each affective adjective by averaging the ratings across the two MIPs.

Respondents also specified which of the MIPs successfully caused a transient change in their mood state. They were asked to select one of the following statements: (a) their mood was changed by the memory recall task, (b) their mood was changed by the music, (c) their mood was changed by the combined technique (memory recall task and mood appropriate music), and (d) their mood was not affected by any of the mood-induction procedures. The evaluation form also asked respondents to indicate if the taste-test caused a shift in their mood state by circling Yes or No, and to record how it changed their mood state in a brief sentence.

The last item on the evaluation form asked respondents to state if: "They had any particular ideas about what the researcher was expecting to find." No participant identified the true nature of the study; the majority of the participants stated that they thought the research was investigating how personality and different mood states influence beverage preference. The mood-induction and taste-test evaluation form is presented in Appendix 23.

Typical and Atypical Drinking Diary (TADD)

The TADD (Hogan, 2005) is a drinking diary that allows participants to record their drinking behaviour for usual and light or heavy weeks (see Chapter 5 for a fuller description of this instrument). Four indices of drinking behaviour were derived from the TADD: (1) total alcohol consumption for the previous three months, (2) average weekly alcohol consumption in units of alcohol, (3) number of weeks drinking, and (4) number of weeks abstinent from drinking. The administration of the TADD served two purposes. First, it was decided that normal level of alcohol use should be controlled for because it would have an effect on how much alcohol would be consumed during the taste-test. Hence, in the analyses, the planned subgroups were specified by their level of alcohol consumption (moderate drinker, coded 0, and non-moderate drinker, coded 1). Second, the TADD was used so the alcohol consumption scores from the taste-test could be cross-validated with a self-report measure of drinking behaviour.

Demographics Questionnaire

On the demographic questionnaire, designed for this study, participants were asked to state their department of study, year of study, gender, age, age of first drink (AFD), and how many years they had been drinking alcohol on a regular basis. A sample demographics questionnaire is given in Appendix 24.

Musical Mood Induction Procedure

Each seven-minute segment of music was recorded onto an audio compact disc (CD). Participants in the positive condition listened to the Blue Danube Waltz

Op. 341 by Johann Strauss Jr. Those in the neutral condition listened to Cannon by Pachelbel for 5:06 minutes and to Waltz of the flowers from the nutcracker suite by Pytor Ilyich Tchaikovsky's for 1:54 minutes. Those in the negative condition listened to Adagio in G minor for organ and strings by Albinoni. These musical compositions were independently rated for emotional valence before they were delivered to participants.

Apparatus

The mood-congruent music was delivered with an Aiwa portable Compact-Disc player (CD-player). Each segment of music was delivered at a medium volume (Setting 9), with Q-sound (Quadraphonic), T-Bass (Treble-Bass), and the graphic equaliser was set to 'R' for Rock Music.

A Duran 100:1ml glass graduated measuring cylinder was used to prepare each beverage and to measure the amount of fluid consumed during the experiment. Each opened bottle of beer was sealed with a wine-stopper to maintain carbonation. Beverages were stored in a refrigerator to keep them cool and palatable. Each beverage was presented at an equidistance on a rectangular tray in a 30cl clear plastic disposable glass that was labelled A, B, C, or D. The glasses were labelled with white universal self-adhesive labels (64mm X 34mm).

Procedure

The experimental procedure consisted of five stages: (1) the baseline assessment, (2) the combined mood-induction, (3) the beverage taste-test, (4) the post-taste-test assessment, and (5) the debriefing procedures. The experimental stages are

described next, following a description of the hygiene and environmental control procedures.

Hygiene Procedure

The graduated measuring cylinder was rinsed with cold water after preparing each beverage to ensure the purity of each sample. The cylinder was also used to measure beverage consumption, and was sterilised with boiling water after each testing session and dried with a paper towel for hygiene reasons (e.g., to reduce the possibility of transferring an oral infection from one participant to another). Plastic disposable glasses were used for administering the beverages to participants. The plastic tray used to present the beverages was rinsed with boiling water and dried with a paper towel between each testing session. The researcher's hands were washed and dried between each testing session. Each beverage was prepared for consumption in a clean location.

Environmental Control Procedure

All testing took place in a quiet testing room with constant environmental conditions. Three control procedures were added to the experimental procedure to reduce the possibility of any priming effects associated with the smell of alcohol prior to participants undertaking the beverage taste-test. First, the room was kept ventilated to keep the smell of alcohol down to a minimum. Second, the beverages were removed and stored in a different room after each participant had completed the taste-test. Third, the smell of alcohol was allowed to dissipate from the testing room for 30

minutes before the next testing session commenced. These procedures eliminated bias associated with priming effects on the baseline questionnaires (e.g., DAQ).

Stage 1: Baseline Assessment

At the onset of the study, the participants were verbally informed that the experiment was separated into three parts. The instructions were as follows: "In the first part you will be asked to complete four-questionnaires. In the second part you will be asked to undertake the beverage taste-test. You will be left alone whilst I go to prepare the beverages for the taste-test and when you undertake the taste-test; please tell me when you have finished your ratings, so that the beverages can be removed. In the third part you will be asked to complete four more questionnaires. The questionnaire packet is separated by two-red A4 sized pieces of card, with each piece of card being a check point to separate the procedure into its constituent parts. The first piece of card, labelled taste-test, comes after you have completed the first four-questionnaires and the second, labelled evaluation comes after you have completed two of the post-taste-test questionnaires." This was done to facilitate the running of the experimental procedures and to stop any premature completion of the post-taste-test questionnaires.

Next, participants gave verbal and written informed consent and received a questionnaire packet containing the: SPSRQ, PANAS (Version A), DAQ (Version A) Prior Experiences Sheet (Version A, B, or C), PANAS (Version B), DAQ (Version B), Mood-Induction and Taste-Test Evaluation Form, and Demographics Questionnaire, that were separated by the check-point pieces of card. Questionnaires were completed in a quiet research room, in single testing sessions that lasted between

60 and 90 minutes. After completing the SPSRQ, PANAS (A) and DAQ (A), the participants undertook the first part of the combined mood-induction procedure.

Stage 2: Combined MIPs

The first part of the combined mood-induction procedure asked participants to complete the prior experiences sheet, which was an autobiographical memory technique designed to induce a transient negative, or positive, or neutral mood-state. Participants were asked to recall and record three previous life events (or experiences) that have a negative, or positive, or neutral emotional-valence. After participants had indicated to the researcher that they had completed this procedure they were informed that they would be left alone to listen to some music whilst the beverages were prepared for the taste-test. Each participant was exposed to a musical MIP that was employed to enhance the intensity of the autobiographical memory technique and the target-mood.

Participants were left alone to listen to mood-congruent music for seven minutes whilst the beverages were prepared for the taste-test. This combined approach was employed to maximise the transient changes in mood state before participants undertook the taste-test. The combined neutral condition MIP was intended to minimise the effects of pre-existing mood differences among the participants who were not assigned to the negative or positive conditions.

Stage 3: Beverage Taste-Test

Participants were presented with four 30cl (centilitre) clear plastic glasses, each containing 200ml of a chilled beverage. Thus, participants were presented with:

(1) Morrison's elderflower and pear flavoured sparkling mineral water, (2) orange and grape flavoured Ame (similar to a non-alcoholic wine), (3) Cobra Beer (5% AbV, containing 1 unit of alcohol per 200ml glass), and (4) a dry white wine spritzer containing 2 parts wine (133ml of Hardy's Semillon Chardonnay at 12.5% AbV) to 1 part Highland Spring sparkling mineral water (containing 1.66 of units of alcohol per 200ml glass). These beverages were chosen so that participants received two alcoholic and two non-alcoholic beverages that were similar in appearance and carbonation. The glasses were labelled A, B, C, and D and presented in a predetermined order, counterbalanced across participants to control for any order effects.

Participants were given verbal and written instructions as follows: "Please feel free to drink as much as you like of each beverage, this will allow you to make valued judgements for each of the beverages on the ratings scales." Four beverage rating scales, one for each beverage, accompanied the presentation of the beverages. The beverage preference rating scale and the written instructions for completing the beverage taste-test were also presented. Participants were given a maximum of 20 minutes to sample the beverages and provide the ratings. The beverages were removed from the testing room when each participant informed the researcher that they had finished the rating task.

Stage 4: Post-Taste-test Assessment

Participants completed four questionnaires post-taste-test: PANAS (version B), DAQ (version B), Mood-Induction and Taste-Test Evaluation Form, and a Demographics Sheet. The four post-taste-test questionnaires were separated after the DAQ (version B) with the second check point A4 sized red card. Independent of the

questionnaire packet, the TADD was administered to each participant by the researcher.

Stage 5: Debriefing

Participants were debriefed after the TADD had been administered. Every participant who participated in the negative condition was asked to complete the positive version of the prior experiences sheet, the PANAS (A), and to listen to the positive mood-congruent music. This was done to eliminate any residual mood effects remaining from the negative condition.

All participants were given a full explanation of the procedure and why it was used; this was followed by a question and answer session. Lastly, their emotional wellbeing was verbally reassessed before they were discharged from the experiment. If a participant appeared to be in any form of emotional distress, he or she was given the opportunity to discuss any further issues relating to the experimental procedures with the researcher or the researcher's supervisor.

Participants were advised during the debriefing session that they should avoid driving or engaging in any activities that might be strenuous or dangerous for at least an hour after participating in the alcohol-taste-test, in order to let the alcohol metabolise from their body. This advice was also stated on the participant-debriefing sheet (Appendix 25).

Participants were paid, thanked, and discharged from the study after the researcher had dealt with any questions or issues relating to the study and emotional wellbeing. All participants left the study in a positive mood-state, according to their self-reports. Indeed, some of the participants left in a better mood state than they were

in when they arrived for testing.[3] Figure 7.1 shows the schematic summary for the experimental procedure.

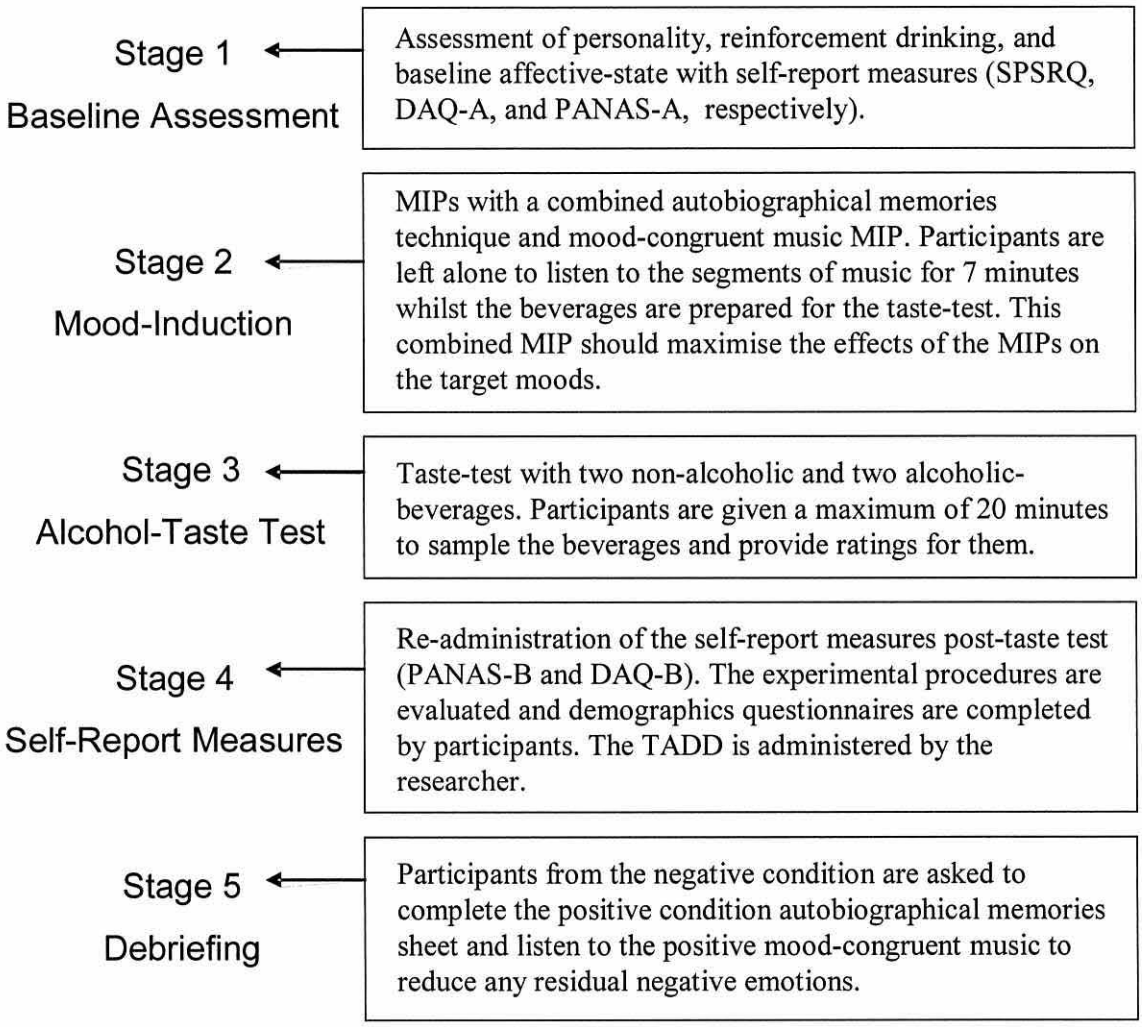

Figure 7.1. The schematic summary of Experiment 3 procedure

[3] For example, one participant in the negative mood-induction condition registered -8 for present mood state at baseline and registered -1 for present mood state during the debriefing.

Measuring Beverage Consumption

The amount of beverage(s) consumed during the taste-test was calculated to the nearest millilitre (ml) by measuring the amount of remaining fluid(s) in a graduated measuring cylinder after the participant had been discharged from the study. The volume of alcohol consumed during the taste-test was the main dependent variable for this study.

Plan of Analysis

Participants' responses on the questionnaires were scored and their data were entered into a spreadsheet; the statistical package SPSS was used for all analyses, unless stated otherwise.

Descriptive Analyses and Data Transformations

Descriptive statistics were calculated to establish that the data from the sample were normally distributed. Three demographic indices were found to be non-normally distributed by being skewed and kurtosed (age, age of first drink, and number of years drinking alcohol on a regular basis). These indices were then normalised through area transformations with the Rankit procedure. No variables were found to violate the assumptions for normality after being transformed (see Chapter 3).

Significance Testing

Two-tailed independent samples t-tests were used to determine whether there were any significant differences between the experimental conditions' scores on the prior experiences sheet ratings, mood-induction and taste-test evaluation form, and to determine whether there were any baseline differences on the main predictor variables. They also allowed the researcher to identify any significant differences that were attributable to sample characteristics (e.g., normal level of alcohol use and gender). The degrees of freedom for the t-tests were reduced whenever the Levene's test revealed that the variance of the two groups was not equal (violation of homogeneity of variance). No group-wise Bonferroni corrections were made when performing the multiple significance tests; instead, Cohen's *d* was used because the present researcher considered effect sizes to be a better measure than *p* values to identify the influence of the predictor variable on the criterion variable. This approach allowed the present researcher to identify any significant effects, and make more generalisations from the data; it also reduced the probability of making a group-wise Type II error, which is a problem associated with the Bonferroni correction. The critical value for α was set at .05 for the t-tests. These t-tests also allowed the researcher to identify any variables that needed to be controlled for in the regression and the moderation models. T-tests were also used to establish if there were any differences on the alcohol consumption variables that could be attributed to personality types.

Next, chi-square tests were used to identify if there were any significant differences in the reported frequencies for the beverage preference ratings and mood-induction and taste-test evaluation form. The critical value for α was set at .05 for the chi-square tests.

Pearson correlations were used to cross-validate the alcohol consumption scores from the taste-test and the TADD. The critical α was set at .01 for the cross-validation, because the present design required the two measures to be highly related, for the interpretation of the results.

Regression and Moderation

This study used an 'experimental personality' design in which participants are initially measured on one or more individual difference measures. Then, they are randomly assigned to a specific condition within the experiment and their responses on the criterion variable are measured (see West, Aiken, & Krull, 1996). This type of design usually employs a categorical variable and one or more continuous variables and identifies the interactions between these variables. The categorical variable in this study was mood-induction condition and the continuous variables were: (1) sensitivity to punishment and reward and (2) positive and negative desires for alcohol. The main criterion or dependent variable was volume of alcohol consumption during the taste-test.

Experimental personality designs are now termed moderation designs, because they employ regression techniques instead of ANOVA techniques to identify the interactions between the variables. ANOVA techniques are a less optimal method for analysing the data from this type of design because they have a number of limitations (see West et al., 1996). First, in ANOVA models the continuous variables need to be dichotomised before they can be used in the analyses. For example, the continuous personality variables in this study would have to be split on the median for each gender before the analyses could be undertaken. This would result in loss of statistical power for the model, and adversely affect other variable attributes (see Cohen, 1983).

Hence, regression techniques avoid the necessity of having to dichotomise continuous variables to make the data 'fit' the ANOVA model (Miles & Shevlin, 2001, p. 41).

Second, a regression model allows the amount of unique variance added to the full model by the interaction term to be identified; again making it a far more efficient way to identify the strength (or effect size) of an interaction than the ANOVA model. Third, according to Miles and Shevlin (2001), regression models are preferable to ANOVA models when the categorical variable has three or more values and there is a need to control for other predictor variables, which can also be centred. Fourth, regression techniques are considered to be more theory driven than ANOVA techniques because the relationships between the categorical and continuous variables are theoretically derived and specified before the analyses is undertaken (see Pedhazur, 1982).

A number of preliminary steps were performed before the analysis was undertaken with regression. First, the mood-induction categorical variable was dummy coded to allow the neutral condition to function as a reference group (or control group) for the positive and negative conditions in the analyses. Table 7.1 shows the two dummy coded variables for the moderational analysis (g-1, where g is the number of groups).

Table 7.1.

Dummy codes for moderational analysis

Conditions	Dummy Codes	
	Positive	Negative
Positive Condition	1	0
Neutral Condition	0	0
Negative Condition	0	1

Second, the continuous variables (e.g., sensitivity to punishment and reward) were centred by subtracting the mean score for the variable from each participant's score. Centring transforms each participant's score into a deviation from the mean. This transformation centres the variable around the mean of 0 (Miles & Shevlin, 2001). Third, interaction terms were produced by multiplying the centred variables by the dummy coded variables. Miles and Shevlin (2001) claim that this approach is appropriate for producing interaction terms when there is one categorical predictor variable (e.g., mood-induction) and one continuous predictor variable (e.g., sensitivity to punishment). A similar approach was used for the three-way interaction models, except first the personality variables were not centred but standardised by turning them into *z*-scores before the interaction term was produced. This approach is appropriate when interaction terms are created from one or more continuous variable and one categorical variable (Miles & Shevlin, 2001).

To determine whether there were any significant interaction effects, the dummy coded and centred or standardised variables were entered into Step 1 and the interaction terms entered into Step 2 of a hierarchical regression, using the 'enter'

method.[4] Any significant changes in R^2 represented a significant main effect for the variables in Step 2. This method was employed to identify the interactions between induced mood (positive and negative) and personality (sensitivity to punishment or reward) to predict alcohol consumption in the taste-test.

Post hoc effect size and power calculations were performed for each hierarchical regression and moderation model with G*Power 3 (see Chapter 3). Regression assumptions and diagnostics were applied to each model. No models violated the assumptions or diagnostics tests (see Chapter 3). Power was set at .80 and α was set at .05 (two-tailed) for all regression and moderation tests employed in this study. No regression or moderation models were found to be spurious.

Changes in Mood-State

Repeated measures t-tests were used to identify any significant changes in baseline and post-taste-test affective states (mood-manipulation check) and reinforcement drinking in each condition. Cohen's *d* was calculated for the *t*-tests with the following formula: *d* = (mean 1 – mean 2)/ mean *sd*. The mean *sd* is calculated by adding the *sd* for each variable together and dividing by 2 (*sd* of variable 1 + *sd* of variable 2)/2 (see Brace, Kemp, & Snelgar, 2006, p. 83).

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[4] See Chapter 3 for a rationale for this procedure. In brief, any control variables are usually entered into Step 1 and the remaining variables are entered into Steps 2 and 3.

Sample Size Calculation

To obtain a medium effect size ($f^2 = 0.15$) with 5 to 8 predictors, 147 participants needed to be tested at baseline (49 participants in each condition, power = .80 and alpha = .05; Cohen, 1992). This figure was used to determine the sample size for this study.

RESULTS

Preliminary Data Analysis

Discriminant and convergent validity findings for the PANAS and DAQ are presented next, followed by the findings for the prior experiences sheets, beverage preference ratings, mood-induction and taste-test evaluation, normal level of alcohol use, cross-validation of the taste-test, and differences associated with sample characteristics.

Discriminant and Convergent Validity

PANAS. In the present sample, the PANAS scales were found to have good discriminant and convergent validity at baseline. PA was negatively associated with SP ($r = -.23, p <. 01$) and NA was positively associated with SP ($r = .37, p < .01$). No significant relationships were found between PA and SR scores ($r = .02, p >. 05$) and NA and SR scores ($r = .15, p >. 05$). A different pattern of relationships was identified for the PA, NA, SP, and SR scores post-taste-test. First, there were no significant relationships between PA and SP ($r = -.13, p >. 05$) and PA and SR ($r =$

.05, $p >$. 05). Second, NA was found to be positively associated with SP ($r = .25$, $p <$. 01) and SR ($r = .27$, $p <$. 01). The higher correlation for NA and SR indicates that the NA scale of the PANAS may be a useful tool for assessing the negative emotion-driven aspect of impulsivity or sensitivity to reward (see Verdejo-Garcia et al., 2007). Sample ratings for present mood at baseline were found to be positively associated with PA ($r = .45$, $p <$. 01) and negatively with NA ($r = -.53$, $p <$. 01). A similar pattern of results was found for the sample post-taste-test; present mood was found to be positively associated with PA ($r = .33$, $p <$. 01) and negatively with NA ($r = -.34$, $p <$ .01).

Desires for Alcohol Questionnaire (DAQ). In the present sample, the DAQ scales were found to have good discriminant and convergent validity at baseline. PR was found to be positively associated with SR ($r = .28$, $p < .01$), whereas NR was found to be positively associated with SP ($r = .28$, $p < .01$) and SR ($r = .26$, $p < .01$). A similar pattern of relationships was identified for the PR, NR, SP, and SR scores post-taste-test. First, there was an increase in the strength of the relationship between PR and SR ($r = .30$, $p < .01$), and no relationship was found between PR and SP ($r =$ .15, $p > .05$). Second, NR was once again found to be positively associated with SP ($r = .26$, $p < .01$) and SR ($r = .29$, $p < .01$). Expected reward scores were found to be positively associated with PR ($r = .64$, $p < .01$), NR ($r = .58$, $p < .01$), and SR ($r = .20$, $p < .05$) scores at baseline. No relationship was found between expected reward and SP scores. The parallel version of the DAQ administered post-taste-test had the item relating to expected reward changed to perceived reward. This was done so a subjective reward value for alcohol consumption could be calculated by subtracting the scores for expected reward from the scores for perceived reward. Higher scores indicate a heightened subjective reward for alcohol consumption (Kambouropoulos &

Staiger, 2004b). A similar pattern of results to those for the baseline expected reward scores was found for the perceived reward scores post-taste-test. Perceived reward was found to be positively associated with PR ($r = .69, p < .01$), NR ($r = .66, p < .01$), and SR ($r = .25, p < .01$) scores post-taste-test. In a similar manner to the baseline scores, no relationship was found between perceived reward and SP scores. Also, no relationships were found between heightened subjective reward scores for alcohol, SP, and SR scores.

Prior Experiences Ratings

The average scores for each of the ratings for the experimental conditions were compared to those of the neutral condition, which was the control group for this study. Two tailed t-tests were used to make the assessments. As was expected, the scores for average strength of feelings were higher in the positive condition ($M = 5.38, sd = 1$) than the neutral condition ($M = 3.25, sd = 1.38$), $t(82.08) = 8.45, p < .01$, $d = 1.87$ (large effect). The scores for average recall difficulty were lower in the positive condition ($M = 1.93, sd = .75$) than the neutral condition ($M = 2.36, sd = 1.15$), $t(77.02) = 1.93, p < .05, d = 0.44$ (small effect).

Likewise, the scores for average strength of feelings were higher in the negative condition ($M = 4.22, sd = 1.39$) than the neutral condition ($M = 3.25, sd = 1.38$), $t(90) = 3.36, p < .01, d = 0.71$ (medium effect). No significant differences were found between the average recall difficulty scores for the negative ($M = 2.01, sd = .99$) and neutral ($M = 2.33, sd = 1.15$) conditions, $t(90) = 1.42, p > .05, d = 0.41$ (small effect).

Beverage Preference Ratings

Forty-seven percent of the sample ($n = 65$) stated that Ame was their most preferred beverage: the remainder preferred the mineral water (35.5%, $n = 49$), Beer (10.1%, $n = 14$) and Spritzer (7.2%, $n = 10$). The response frequencies were assessed with a Chi-Square Goodness-of-Fit test. A significant difference was found between the frequencies, $\chi^2(3, N = 138) = 62.64, p < .00$. In general, participants preferred the non-alcohol based beverages over the alcohol-based beverages.

The Effectiveness of the MIPs

A mood-manipulation check was performed to verify that the mood-inductions were an effective manipulation in the present sample. Two-tailed paired-samples *t*-tests were used to compare the participants' PANAS positive affect (PA) and negative affect (NA), and their present-mood ratings between baseline and post-test for each MIP.

Contrary to expectations, no significant differences were found between the baseline ($M = 30.13$, $sd = 7.24$) and post-taste-test ($M = 30.59$, $sd = 7.86$) PANAS-PA scores for the positive condition ($p > .05$). However, participants in the positive condition did show a reduction in PANAS-NA scores from baseline ($M = 15.15$, $sd = 5.76$) to post-taste-test ($M = 12.65$, $sd = 3.04$), $t(45) = 3.95, p < .00$, $d = 0.57$ (medium effect). The mean difference between the scores for the condition was 2.5 ($sd = 4.29$) and the 95% confidence interval was 1.23 and 3.77. Participants in the positive condition also showed an increase in present mood rating scores from baseline ($M = 5.11$, $sd = 3.14$) to post-taste-test ($M = 6.04$, $sd = 2.55$), $t(45) = 4.04, p < .00$, $d = 0.33$

(small effect). The mean difference between the scores for the condition was -.94 (*sd* = 1.57) and the 95% confidence interval was -1.40 and -.47.

No significant differences were found between the baseline ($M = 30.52$, $sd = 6.29$) and post-taste-test ($M = 29.74$, $sd = 6.99$) PANAS-PA scores for the negative condition ($p > .05$). Contrary to expectations, participants in the negative condition showed a reduction in PANAS-NA scores from baseline ($M = 13.30$, $sd = 4.89$) to post-taste-test ($M = 12.02$, $sd = 3.16$), $t(45) = 2.71$, $p < .01$, $d = 0.32$ (small effect). The mean difference between the scores for the condition was 1.28 ($sd = 3.22$) and the 95% confidence interval was .33 and 2.34. Also contrary to predictions, participants in the negative condition showed no change in baseline ($M = 5.28$, $sd = 3.51$) and post-taste-test ($M = 5.48$, $sd = 3.13$) present mood rating scores ($p > .05$).

Although the neutral condition was employed as a control condition, affective changes were also investigated in this condition. Participants in this condition showed a significant decrease in two scores derived from the PANAS at baseline and post-taste-test. First, they showed a decrease in PA from baseline ($M = 31.00$, $sd = 5.51$) to post-taste-test ($M = 29.87$, $sd = 6.31$), $t(45) = 2.40$, $p < .05$, $d = 0.19$ (small effect). The mean difference between the scores for the condition was 1.13 ($sd = 3.20$) and the 95% confidence interval was .18 and 2.08. Second, they showed a decrease in NA from baseline ($M = 12.76$, $sd = 3.33$) to post-taste-test ($M = 11.48$, $sd = 2.96$), $t(45) = 3.44$, $p < .01$, $d = 0.41$ (small effect). The mean difference between the scores for the condition was 1.28 ($sd = 2.53$) and the 95% confidence interval was .53 and 2.03. Participants in the neutral condition showed no change in baseline ($M = 6.13$, $sd = 2.19$) and post-taste-test ($M = 6.30$, $sd = 1.75$) present mood rating scores ($p > .05$).

Therefore, it appears that the positive condition MIP changed the participants' mood in the expected direction; the neutral MIP had the expected effect of not

changing or stabilising the mood by reducing both positive and negative scores, and that negative MIP did not have the expected effect of lowering the participants' mood. However, the present measures assessed the effect of the MIPs and taste-test on the participants' mood, so it is possible that these two experimental variables interacted in some way. Therefore, the present researcher measured the individual effects of these variables by asking the participants to report which (if any) procedure affected their mood, and to give affective adjective-ratings which could be used to compare their mood states at the end of the procedure between the three conditions (reported in the next section).

The differences between the three conditions on the two PANAS measures (PA and NA) and the present-mood rating scores were tested at baseline and the post-test. At baseline, there was no difference for PA and present-mood rating scores across the three conditions, but the NA was higher in the positive condition ($M = 15.15$, $sd = 5.76$) compared to negative ($M = 13.30$, $sd = 4.89$) and neutral ($M = 12.76$, $sd = 3.33$) conditions, $F(2, 135) = 3.18$, $p < .05$ (Games-Howell's post-hoc comparisons $p < .05$). At post-taste-test, there was no difference between the conditions on PA, NA, or the present-mood reports scores. This indicates that the MIPs were not producing differences in mood between three conditions; however, differences in the predicted direction have been found on a more sensitive measure, affective adjective-ratings, reported next.

Mood-Induction and Taste-Test Evaluation Form

The mean scores for the affective-adjective ratings for the positive and negative condition were compared to those of the neutral condition, which was the reference group in this study. Two-tailed t-tests were used to make the assessments.

As was expected, the scores for average happiness were higher in the positive (M = 6.87, sd = 1.70) than the neutral (M = 5.89, sd = 1.46) condition, $t(90) = 2.96$, $p < .01$, $d = 0.62$ (medium effect). The scores for average sadness (M = 1.99, sd = 1.49; $t(90) = 2.23$, $p <. 05$, $d = 0.47$, small effect), irritation (M = 1.88, sd = 1.62; $t(79.39) = 3.99$, $p < .01$, $d = 0.89$, large effect), and frustration (M = 1.93, sd = 1.55; $t(84.17) = 3.62$, $p < .01$, $d = 0.79$, medium effect) were higher in the neutral condition than the positive condition (M = 1.22, sd = 1.81; M = .73, sd = 1.10 and M = .89, sd = 1.18, respectively). No significant differences were found between the average anger scores for the positive (M = .60, sd = 1.04) and neutral (M = .94, sd = 1) conditions, $t(90) = 1.62$, $p > .05$, $d = 0.34$ (small effect).

Likewise, the scores for average sadness (M = 5.36, sd = 2.27; $t(77.39) = 8.41$, $p < .01$, $d = 1.91$, large effect) and anger (M = 2.29, sd = 1.99; $t(66.56) = 4.09$, $p < .01$, $d = 1.00$, large effect) were higher in the negative condition than the neutral condition (M = 1.99, sd = 1.49 and M = .94, sd = 1.01). The scores for average happiness were higher in the neutral (M = 5.89, sd = 1.46) than the negative (M = 3.36, sd = 2.24) condition, $t(77.39) = 6.42$, $p < .01$, $d = 1.46$ (large effect). No significant differences were found between the average irritation and frustration scores for the neutral (M = 1.88, sd = 1.62 and M = 1.93, sd = 1.55) and negative (M = 2.26, sd = 2.05 and M = 2.28, sd = 2.10) conditions, $t(85.27) = .96$, $p > .05$, $d = 0.21$ (small effect) and $t(83.00) = .90$, $p > .05$, $d = 0.20$ (small effect).

Respondents also specified which of the MIPs successfully caused a transient change in their mood state. Response frequencies for this question were investigated with a multidimensional 3 x 4 Chi-Square test. The analysis showed that 3 cells had a count less than five, so the exact test was selected. An association was found between mood-induction condition and which method affected the participants' mood the

most: $\chi^2(6, N = 138) = 19.23$, exact $p = .003$, two-tailed. The recorded sample frequencies for the MIPs across the conditions were: (1) music (37.7% $n = 52$), (2) memory recall (31.9%, $n = 44$), (3) combined procedure (26.1%, $n = 36$) and (4) mood not changed by the procedures (4.3%, $n = 6$). The frequency counts for mood not changed were recorded by the neutral and positive conditions, three counts in each (6.5% of each condition's recorded frequencies). The data from these participants were not excluded from the analyses because the very small n was unlikely to have any significant effect on the overall direction of the results.

The recorded frequencies for the negative condition were: (1) memory recall (43.5%, $n = 20$), (2) combined procedure (30.4%, $n = 14$), and (3) music (23.1%, $n = 12$). For the neutral condition the frequencies were: (1) music (58.7%, $n = 27$), (2) memory recall (21.7%, $n = 10$), and (3) combined approach (13%, $n = 6$). For the positive condition the frequencies were: (1) combined approach (34.8%, $n = 16$), (2) memory recall (30.4%, $n = 14$), and (3) music (28.3%, $n = 13$). The response frequencies for the sample and experimental conditions indicate that the MIPs were successful in causing a transient change in the target-mood states, although participants' opinions differed as to which component was the most effective.

Next, respondents stated whether or not the taste-test caused a transient change in their mood and recorded how it changed their mood. Sixty-two percent of the sample ($n = 86$) stated that the taste-test caused a change in their mood and 38% of the sample ($n = 52$) stated that the taste-test did not cause a change in their mood. The response frequencies were assessed with a Chi-Square Goodness-of-Fit test. A significant difference was found to exist between the reported frequencies, $\chi^2(1, N = 138) = 8.38$, $p < .00$, showing that the taste-test caused a transient change in participants' mood state significantly more often than not. Of those participants who

stated that their mood changed in the taste-test ($n = 86$), 86% reported a positive change ($n = 74$) and the remaining 14% reported a negative transitive change ($n = 12$). The response frequencies were assessed with a Chi-Square Goodness-of-Fit test. A significant difference was found to exist between the reported frequencies, $\chi^2(1, N = 86) = 44.70$, $p < .01$, showing that the taste-test caused a positive transient change in mood state significantly more often than the negative change.

Next, two-tailed t-tests were used to assess whether the changes in mood state influenced how much alcohol was consumed during the taste-test. Participants who reported that the taste-test caused a transient change in their mood state consumed more alcohol ($M = 59.20$ ml, $sd = 37.70$ ml) during the taste-test than those who reported no change in their mood state ($M = 39.31$ ml, $sd = 25.49$ ml), $t(134.24) = 3.69$, $p < .01$, $d = 0.64$ (medium effect). More specifically, the participants who reported that the taste-test caused a positive transient change in their mood state ($M = 60.15$ ml, $sd = 37.59$ ml) consumed more alcohol during the taste-test than those who reported no change ($M = 39.31$ ml, $sd = 25.49$ ml) in mood state, $t(123.87) = 3.71$, $p < .01$, $d = 0.67$ (medium effect). Participants who reported that the taste-test caused a positive transient change in their mood state were also found to consume more fluid overall ($M = 178.72$ ml, $sd = 95.33$ ml; $t(126.75) = 1.95$, $p < .05$, $d = 0.35$, small effect) and report higher levels of average weekly alcohol consumption ($M = 16.95$ $sd = 14.57$; $t(136) = 1.94$, $p < .05$, $d = 0.33$, small effect) than those who reported no change in mood state ($M = 150.10$ ml, $sd = 74.98$ ml and $M = 12.40$, $sd = 11.13$) No significant differences were found between those participants who reported a negative ($M = 53.33$ ml, $sd = 39.55$ ml) transient change in mood state and those who reported no change ($M = 39.31$ ml, $sd = 25.49$ ml) in mood state for taste-test alcohol consumption scores, $t(62) = 1.54$, $p > .05$, $d = 0.39$ (small effect). Likewise, no

significant differences were found between those participants who reported a positive and negative transient change in mood state for taste-test alcohol consumption scores, $t(84) = 0.58$, $p > .05$, $d = 0.13$ (small effect).

Because there were differences in the participants' report of whether the taste-test affected their mood, and because these differences were related to the volume of alcohol consumed in the taste-test, participants' responses needed to be controlled for in Step 1 of regression or moderation analysis. This variable was dummy coded (No = 0 and Yes = 1) for the subsequent analysis.

Normal Level of Alcohol Use

Considering the TADD scores, 70% ($n = 97$) of the sample were classified as light-moderate drinkers and 30% of the sample were classified as heavy drinkers ($n = 41$), according to the criteria cited in Willner et al. (2005, p. 1490). Heavy drinkers ($M = 65.88$ ml, $sd = 35.47$ ml) consumed more alcohol during the taste-test than light-moderate drinkers ($M = 45.71$ ml, $sd = 33.03$ ml), $t(136) = 3.21$, $p < .01$, $d = 0.55$ (medium effect). The results showed that normal level of alcohol use needed to be controlled for in the hierarchical regression or moderational analysis. The variable was dummy coded (light-moderate drinker = 0 and heavy drinker = 1) for the subsequent analysis.

Cross-Validating the Taste-Test

A strong positive association was found between the alcohol consumption scores from the taste-test and the TADD, $r = .35$, $p < .01$. Hence, the taste-test was

considered to be a valid and robust experimental assessment of students' alcohol consumption.

Personality Differences and Alcohol Consumption Variables

T-tests were performed to establish the differences between the personality types (SR+ and SR-; SP+ and SP-) on two alcohol consumption variables (taste-test and TADD). SR+ participants (M = 56.92 ml, sd = 35.87 ml) tended to consume more alcohol during the taste-test than SR- participants (M = 46.01 ml, sd = 33.13 ml), $t(136) = 1.85$, $p = .06$, $d = 0.32$ (small effect). SR+ participants (transformed $M = .17$, $sd = 1.06$; untransformed mean $M = 168.82$, $sd = 162.86$), were also found to score higher on the TADD alcohol consumption index than SR- participants (transformed $M = -.18$, $sd = .86$; untransformed mean $M = 107.08$, $sd = 108.46$), $t(136) = 2.11$, $p < .05$, $d = 0.36$ (small effect). This is consistent with the findings of Studies 1 and 2 of the present thesis. No differences were found between SP+ and SP- scores for taste-test and TADD alcohol consumption scores, consistent with Study 1 findings. However, the trend was for SP- participants to score higher on the TADD alcohol consumption index than SP+ participants, $d = 0.15$ (small effect), consistent with Study 2 findings.

Differences Associated with Sample Characteristics

Two-tailed t-tests were used to identify any significant differences that were attributable to sample characteristics. Males scored higher on: (1) sensitivity to reward ($M = 12.97$, $sd = 3.24$; $t(136) = 2.60$, $p < .01$, $d = 0.45$, small effect), (2) how rewarding was it to drink alcohol today ($M = 4.72$, $sd = 2.40$; $t(136) = 2.62$, $p < .01$, d

= 0.45, small effect), and (3) average angry (M = 1.98, sd = 1.90; $t(37.15) = 2.35$, $p < .05$, d = 0.77, medium effect) than females (M = 10.66, sd = 4.45; M = 3.45, sd = 2.31 and M = 1.09, sd = 1.45, respectively). Males also consumed more alcohol (M = 80.62 ml, sd = 33.99 ml) than females (M = 44.01 ml, sd = 30.99 ml) during the taste-test, $t(136) = 5.54$, $p < .01$, d = 0.95 (large effect). These results showed that gender needed to be controlled for in Step 1 of a hierarchical regression or moderational analysis. This variable was dummy coded (Males = 0 and Females = 1) for the analysis.

Baseline Analysis

Twenty-eight percent of the participants were tested in the morning session (n = 38), 28% were tested in the mid-day session (n = 38), 26% were tested in the afternoon session (n = 35), and 20% were tested in the evening session (n = 27). Three one-way ANOVAs were run with the accompanying Levene's test for homogeneity of variance to identify if there were any significant differences between the time of testing sessions, and the total amount of alcohol consumed, total soft drinks consumed, and total fluid consumed during the taste-test. No significant differences were found between the time of testing and these independent variables.

Table 7.2 presents the descriptive statistics for the independent and dependent variables at baseline and post-taste-test. There were no significant differences at baseline across the three conditions on the independent variables or PANAS scores.

Table 7.2.

Descriptive statistics for independent and dependent variables at baseline and post-taste-test

	Measure	Variables	Negative Condition		Neutral Condition		Positive Condition	
			M	*sd*	*M*	*sd*	*M*	*sd*
Baseline	SPSRQ	Sensitivity to punishment	11.39	4.90	9.96	5.33	11.22	4.65
		Sensitivity to reward	11.28	4.13	11.20	4.49	10.96	4.48
	DAQ (A)	Positive reinforcement	2.73	1.28	2.74	1.19	2.77	1.14
		Negative reinforcement	2.99	1.39	2.73	1.09	2.94	1.24
		Expected reward	3.20	2.27	3.63	2.44	3.63	2.20
Post-taste	DAQ (B)	Positive reinforcement	2.85	1.37	2.86	1.30	2.98	1.35
Test		Negative reinforcement	3.02	1.36	2.82	1.23	3.14	1.43
		Perceived reward	3.67	2.50	3.52	2.20	3.96	2.45
	Taste-test	Total soft drinks	118.11	83.37	118.13	68.46	112.46	66.25
		Total alcohol	48.98	30.07	43.76	30.49	62.37	41.03
		Total fluid	167.09	96.86	161.89	84.77	174.83	86.44
	TADD	Average weekly alcohol	15.27	13.49	17.42	13.13	13.04	13.87

Regression Analysis

Specific predictions were formed at the outset of Study 3 regarding the main effects for each experimental condition. It was predicted that participants in the positive condition would consume more of the alcohol-based beverages than those in the neutral condition, and that participants in the negative condition would consume more of the alcohol-based beverages than those in the neutral condition. The results concerning these main effects are discussed next.

Main Effects for Mood-Induction Condition

To examine the amount of unique variance in taste-test alcohol consumption that can be explained by the mood-induction conditions, two hierarchical regression analyses were conducted with the dummy coded gender, normal level of alcohol use, and whether the taste-test caused a shift in the participants' mood as control variables. Mood-induction conditions were the independent variables and taste-test alcohol consumption was the dependent variable. This was done to establish the main effects for the mood-induction conditions before undertaking the two-way interactions.

In the first hierarchical regression analysis the gender, normal level of alcohol use, and whether the taste-test caused a shift in the participants' mood control variables were entered into Step 1. The control variables accounted for 26% of the variance in taste-test alcohol consumption scores, $F = 15.48$ (3,134), $p < .01$. The dummy coded positive condition variable was entered into Step 2 and yielded a significant R^2 change ($p < .01$). The main effect for the positive condition accounted for another 6% of the unique variance. The final model accounted for 32% of the variance in taste-test alcohol consumption scores, $F = 15.31$ (4,133),

$p < .01, f^2 = 0.47$ (large effect). The power of the full model with four predictors was 0.99 (see Table 7.3.).

Table 7.3.

Results of a hierarchical multiple regression analysis of the ability of gender, drinking level, whether the taste-test caused a shift in the participants' mood, and positve condition to predict tatse-test alcohol consumption.

Variable	*B*	*SEB*	ß	R^2	ΔR^2	ΔF(df)	Δp
Step 1				.26	.26	15.48 (3,134)	.000
Gender	-30.41	6.62	-36***				
Drinking level	12.65	5.85	.17*				
Taste-test mood	15.64	5.40	.22***				
Step 2				.32	.06	11.23 (1,133)	.001
Gender	-31.47	6.39	-.37***				
Drinking level	14.80	5.67	.20**				
Taste-test mood	13.56	5.24	.19**				
Positive condition	18.01	.5.37	.24***				

Note: * $p < .05$, ** $p < .01$, and *** $p < .00$.

In the second hierarchical regression analysis, the dummy coded control variables were again entered into Step 1, as in the first analysis. The dummy coded negative condition variable was entered into Step 2 and yielded a non-significant R^2 change ($p > .05$). The main effect for the negative condition accounted for another 1% of the unique variance. The final model accounted for 27% of the variance in taste-test alcohol consumption scores, $F = 12.43$ (4,133), $p < .01, f^2 = 0.37$ (large effect). The power of the full model with four predictors was 0.99 (see Table 7.4.).

Table 7.4.

Results of a hierarchical multiple regression analysis of the ability of gender, drinking level, whether the taste-test caused a shift in the participants' mood, and negative condition to predict tatse-test alcohol consumption.

Variable	*B*	*SEB*	ß	R^2	ΔR^2	ΔF(df)	Δp
Step 1				.26	.26	15.48 (3,134)	.000
Gender	-30.41	6.62	-36***				
Drinking level	12.65	5.85	.17*				
Taste-test mood	15.64	5.40	.22***				
Step 2				.27	.01	2.68 (1,133)	.104
Gender	-32.27	6.68	-38***				
Drinking level	12.01	5.82	.16*				
Taste-test mood	15.82	5.37	.22**				
Negative condition	-9.07	.5.54	-.12				

Note: * $p < .05$, ** $p < .01$, and *** $p < .00$.

Summary of Main Effects Models for Each Mood-Induction Condition

There was one significant main effect for mood-induction condition in the hierarchical regressions. Specifically, the dummy coded positive condition accounted for an additional 6% of the variance in taste-test scores after the effects of the control variables had been partitioned out of the regression model.

Because this study found a main effect only for the positive condition, the main effects for personality, and two-way interactions between condition and personality (SR and SP) are not reported (they were also found to be non-significant). For the same reasons the three-way interactions are also not reported (they are available upon request). The only models reported are those with a significant main effect or those were the main affect or interaction is approaching significance.

Mood-Manipulation Effects

Changes in positive affect, negative affect, and present-mood rating were assessed using condition and personality moderated interaction terms. This study used the baseline scores as covariates to predict the post-taste-test scores, instead of a change score. The reported *t*-test and covariate adjusted mean values for each simple slope were established with Interaction, a licensed PC programme for undertaking moderation with covariates that was designed by Daniel Soper, because SPSS is unable to perform these tests. It was predicted that participants in the positive condition would show an increase in positive affect and present-mood rating. Likewise, it was predicted that participants in the negative condition would show an increase in negative affect and a decrease in present-mood rating. The findings for the mood-manipulation check are presented next.

Changes in Positive Affect and Negative Affect

To examine the amount of unique variance in PANAS scores that could be explained by the two-way interactions, two hierarchical regression analyses were conducted with baseline affect scores as the covariates (PA and NA), dummy coded mood-induction conditions, and centred personality variables were the independent variables, induction x personality was the interaction term, and post-taste-test affect scores were the dependent variables. The model for the negative condition is not reported because there were no significant main effects or interaction effect, but it is available upon request.

In the first hierarchical regression analysis the baseline PA score entered into Step 1 accounted for 68% of the variance in post-taste-test PA scores, $F = 287.82$ (1,136), $p < .01$. The dummy coded positive condition and SR personality variables entered into Step 2 accounted for an additional 1% of the unique variance and yielded a non-significant R^2 change ($p > .05$). However, the main effect for the positive condition approached significance

at $p = .06$, $t(133) = 1.92$. The covariate adjusted mean for post-taste-test PA scores was higher in the positive ($M = 30.97$, $se = .59$) than the neutral ($M = 29.61$, $se = .41$) condition, sample grand mean (30.29) and standard error (.36). The two-way interaction term entered in Step 3 yielded a non-significant R^2 change ($p > .05$). The final model accounted for 69 % of the variance in post-taste-test PA scores, $F = 74.40$ (4,133), $p < .01$, $f^2 = 2.23$ (large effect). The power of the full model with four predictors was 1 (see Table 7.5.). The effect size and the power of the model are due to the baseline PA covariate in Step 1.

Table 7.5.

Results of a hierarchical multiple regression analysis of the ability of positve-affect scores at baseline, positve condition, sensitivity to reward, and positve condition x sensitivity to reward moderated interaction to predict post-taste positve-affect scores.

Variable	*B*	*SEB*	*ß*	R^2	ΔR^2	ΔF(df)	Δp
Step 1				.68	.68	287.82 (1,136)	.000
PA at baseline	.91	.05	.82***				
Step 2				.69	.01	2.02 (2,134)	.137
PA at baseline	.92	.05	.83***				
Positive condition	1.38	.72	.09				
SR	.05	.08	.03				
Step 3				.69	.00	1.14 (1,133)	.288
PA at baseline	.92	.05	.83***				
Positive condition	1.36	.72	.09				
SR	.11	.10	.07				
Pos x SR	-.18	.16	-.06				

Note: * $p < .05$, ** $p < .01$, and *** $p < .00$.

Changes in Present-Mood Ratings

To examine the amount of unique variance in present mood ratings that could be explained by the two-way interactions, two hierarchical regression analyses were conducted with baseline present-mood ratings as the covariates, dummy coded mood-induction conditions, and centred personality variables were the independent variables, induction x personality was the interaction term, and post-taste-test present mood ratings were the dependent variables.

In the first hierarchical regression analysis the baseline present mood rating score entered into Step 1 accounted for 66% of the variance in post-taste-test present mood rating scores, $F = 266.91$ (1,136), $p < .01$. The dummy coded positive condition and SR personality variables entered into Step 2 accounted for an additional 1% of the unique variance and yielded a non-significant R^2 change ($p > .05$). The two-way interaction term entered into Step 3 yielded a non-significant R^2 change ($p > .05$). However, the main effect for the positive condition was significant at $p = .04$, $t(133) = 2.13$, in Steps 2 and 3. The covariate adjusted mean for post-taste-test mood rating scores was higher in the positive ($M = 6.32$, $se = .15$) than the neutral ($M = 5.75$, $se = .22$) condition, sample grand mean (6.04) and standard error (0.13). The final model accounted for 67% of the variance in post-taste-test mood rating scores, $F = 68.66$ (4,133), $p < .01$, $f^2 = 2.03$ (large effect). The power of the full model with four predictors was 1 (see Table 7.6.). The effect size and the power of the model are due to the baseline mood rating covariate in Step 1.

Table 7.6.

Results of a hierarchical multiple regression analysis of the ability of present mood-rating at baseline, positve condition, sensitivity to reward, and positve condition x sensitivity to reward moderated interaction to predict post-taste present mood-rating scores.

Variable	*B*	*SEB*	ß	R^2	ΔR^2	ΔF(df)	Δp
Step 1				.66	.66	266.91 (1,136)	.000
Mood rating at baseline	.69	.04	.81***				
Step 2				.67	.01	2.28 (2,134)	.106
Mood rating at baseline	.70	.04	.82***				
Positive condition	.57	.27	.11*				
SR	-.00	.03	-.01				
Step 3				.67	.00	.07 (1,133)	.800
Mood rating at baseline	.70	.04	.82***				
Positive condition	.57	.27	.11*				
SR	-.01	.04	.02				
Pos x SR	.02	.06	.02				

Note: * $p < .05$, ** $p < .01$, and *** $p < .00$.

In the second hierarchical regression analysis, the baseline present-mood rating score entered in Step 1 accounted for 66% of the variance in post-taste-test present-mood rating scores, $F = 266.91$ (1,136), $p < .01$. The dummy coded negative condition and SP personality variables entered into Step 2 accounted for an additional 1.3% of the unique variance and yielded a non-significant R^2 change ($p > .05$). The two-way interaction term entered in Step 3 yielded a change in R^2 that was approaching significance ($p = .06$). However, the main effect for the negative condition was significant at $p = .05$, $t(133) = 1.97$ in Step 3. The covariate adjusted mean for post-taste-test present-mood rating scores was lower in the negative ($M =$ 5.63, $se = .22$) than the neutral ($M = 6.10$, $se = .15$) condition, sample grand mean (5.86) and standard error (0.13). The simple slope value for the negative condition (0.11, 95% CI: lower bound = 0.02 and upper bound = 0.20) was found to be significant, $t(133) = 2.53$, $p < .05$.

Whereas, the simple slope for the neutral condition (0.01, 95% C.I.: lower bound = -0.05 and upper bound = 0.07) was found to be non-significant, $t(133) = 0.26$, $p > .05$. The interaction term ($M = 0.18$, $sd = 2.82$; minimum = -8.86 and maximum = 11.14) was found to be approaching significance at $p = .06$, $t(133) = 1.94$. The interaction term contributed 1% to the model's variance. The final model accounted for 68.3% of the variance in post-taste-test present-mood rating scores, $F = 72.14$ (4,133), $p < .01$, $f^2 = 2.16$ (large effect). The power of the full model with four predictors was 1 (see table 7.7.). The effect size and the power of the model are due to the baseline mood rating covariate in Step 1.

Table 7.7.

Results of a hierarchical multiple regression analysis of the ability of present mood-rating at baseline, negative condition, sensitivity to punishment, and negative condition x sensitivity to punishment moderated interaction to predict post-taste present-mood rating scores.

Variable	*B*	*SEB*	ß	R^2	ΔR^2	ΔF(df)	Δp
Step 1				.66	.66	266.91 (1,136)	.000
Mood rating at baseline	.69	.04	.81***				
Step 2				.67	.01	2.72 (2,134)	.07
Mood rating at baseline	.71	.04	.84***				
Negative condition	-.49	.27	-.10				
SP	.04	.03	.08				
Step 3				.68	.01	3.75 (1,133)	.06
Mood rating at baseline	.71	.04	.84***				
Negative condition	-.52	.26	-.10*				
SP	.01	.03	.02				
Neg x SP	.10	.05	.12				

Note: * $p < .05$, ** $p < .01$, and *** $p < .00$.

Predicting Reinforcement Scores from the DAQ

At the outset of Study 3, it was predicted that the positive mood condition and sensitivity to reward would interact to predict post-taste-test positive reinforcement desires for alcohol (PR), and that the negative mood condition and sensitivity to punishment would interact to predict post-taste-test negative reinforcement desires for alcohol (NR). However, there were no significant changes in PR scores from baseline to post-taste-test for the positive condition ($p > .05$). Likewise, there were no significant changes in NR scores from baseline to post-taste-test for the negative condition ($p > .05$). The regression models are not reported because there were no significant main effects or interaction effects, but they are available upon request.

Predicting Expected and Perceived Reward Scores from the DAQ

At the outset of Study 3, it was predicted that the positive mood condition and sensitivity to reward would interact to predict post-taste-test perceived reward scores for alcohol consumption, and that the negative mood condition and sensitivity to punishment would interact to predict post-taste-test perceived reward scores for alcohol consumption. The expected reward scores were used as a covariate in regression to predict perceived reward rather than using a difference score to represent heightened subjective reward for alcohol consumption. However, there were no significant changes in the expected and perceived reward scores for the positive and negative mood conditions ($p > .05$). The regression models are not reported because there were no significant main effects or interaction effects, but they are available upon request.

DISCUSSION

Study 3 had been designed to evaluate the contributions of mood-induction, personality, and alcohol reinforcement on students' drinking, measured directly in an alcohol taste-test, and indirectly with a drinking diary.

When participants' data were analysed irrespective of the experimental condition that they were in, this study replicated the findings of Studies 1 and 2: High SR participants were found to consume more alcohol during the taste-test, and on the TADD measures, than did the participants with low SR scores. The effect was weaker for the low-SP participants, who tended to consume more alcohol according to TADD measures, but not during the taste-test, as compared to high SP participants.

This study was the first to use mood induction, alcohol-reinforcement measures, and taste-test, in combination with personality measures. Thus, specific predictions were made, on the basis of the existing literature (reviewed in the earlier chapters), regarding the expected main effects and interactions between these study variables. First, it was expected that the combined MIPs would affect the participants' mood-states, their desires for alcohol, and ultimately their alcohol consumption in the taste-test (the main criterion or dependent variable for this study), dependent on their personality profiles. However, most of these predictions were not borne out by the present data.

The effectiveness of the MIPs was assessed in several ways, including changes from baseline to post-test and differences between conditions. The analyses of the PANAS measures (PA and NA) and present-mood ratings did not conclusively show that the three MIPs were effective, whereas the analyses of the affective

adjective-rating measures taken post-test, and students' reports about the perceived effectiveness of the study procedures, showed that the MIPs were effective, and that participants' mood differed between the three conditions in the predicted direction. Overall, it can be concluded that the MIPs produced some changes in the participants' mood states, but these changes might have been smaller than desired. This in turn meant that the predicted interactions between mood condition and other experimental variables, such as personality and alcohol reinforcement, would have been difficult to detect in the present study.

Indeed, the results showed that there were no two-way interactions between mood condition and personality, although it was predicted that students who showed high sensitivity to punishment and participated in the negative condition would consume a greater volume of alcohol during the taste-test, compared to low sensitivity to punishment participants, in order to alleviate their negative affective state (negative reinforcement drinking). Similarly, students who showed high sensitivity to reward and participated in the positive condition were expected to consume a greater volume of alcohol during the taste-test, compared to low sensitivity to reward participants, in order to further enhance their positive affective state (positive reinforcement drinking). This was not found. Likewise, there were no two-way interaction between mood-induction condition and personality to predict alcohol reinforcement, although it was hypothesised that the negative condition and SP would interact to predict changes in negative alcohol reinforcement (from baseline to post-taste-test), and that positive condition and SR would interact to predict changes in positive alcohol reinforcement. The present study also failed to detect any three-way interactions between mood-induction conditions (negative or positive) and personality (SP x SR) in predicting volume of alcohol consumption.

Nevertheless, two main effects had been found in the present study, in line with the hypotheses stated in the introductory section of the present chapter. First, it was hypothesised that there will be a main effect for experimental mood-induction conditions in predicting the volume of alcohol consumption in the taste-test. The results offered some support for this hypothesis: participants in the positive condition consumed more alcohol during the taste-test than those in the neutral or negative conditions, but the effect for the participants in the negative condition, who were expected to consume more alcohol during the taste-test than those in the neutral condition, failed to reach statistical significance. Second, it was hypothesised that SP scores will be positively associated with negative alcohol reinforcement scores at baseline and post-taste-test, whereas SR scores will be positively associated with various alcohol reinforcement scores at baseline and post-taste-test (e.g., positive reinforcement, negative reinforcement, expected and perceived reward from consuming alcohol). These relationships had been found in the present data.

Overall, the present study failed to support the hypotheses for the two- and three-way interactions because of methodological problems and sample characteristics. The findings for light-moderate level of alcohol use, alcohol reinforcement, beverage preference, prior experiences, and mood-induction and taste-test evaluation are discussed first because they had a direct affect on the overall direction on the results for this study.

Evaluation of the Experimental Variables

Light-Moderate Alcohol Use

Seventy-percent of the sample were light-moderate drinkers. The heavy drinkers consumed more alcohol during the taste-test than the light-moderate drinkers, and had higher scores for SR and alcohol-related cognitions (see Table 7.9). The demographic covariate variable 'normal level of alcohol use' had a direct influence on the overall direction of the results. It is possible that the hypothesised interactions between the study variables may have been easier to detect had the sample contained a larger proportion of heavy drinkers. In other words, if the sample consists mostly of light-moderate drinkers, whose personality and alcohol-related cognition scores are comparably low, the effects of the experimental manipulations and the interactions between the variables of interest may be lower than they would be if the sample contained a larger number of heavy drinkers. Addictive behaviours research as shown that male and female heavy drinkers have stronger and wider alcohol related cognitions than light-moderate drinkers (Ricciardelli, Connor, Williams, & Young, 2001). It can be further argued that heavy drinkers might have stronger alcohol-related expectancies, desires for alcohol, cravings, and urges for alcohol than light-moderate drinkers (see Wiers et al., 2006 for a discussion on alcohol-cognitions in heavy drinkers).

Alcohol Reinforcement

At the outset of the study specific hypotheses were made regarding the relationships between personality and alcohol reinforcement. In line with theoretical predictions (see Chapters 4, 5, and 6), baseline positive reinforcement desires for alcohol were found to be positively associated with sensitivity to reward, and baseline negative reinforcement desires for alcohol were found to be positively associated with both sensitivity to punishment and sensitivity to reward. The strength of the association between positive reinforcement desires for alcohol and sensitivity to reward was found to increase post-taste-test, and negative reinforcement desires for alcohol were again found to be positively associated with sensitivity to punishment and reward. These relationships are consistent with the findings of Study 2, which also found sensitivity to punishment to be positively associated with a measure of negative reinforcement alcohol motivations (e.g., coping alcohol use motives). Like Study 2, sensitivity to reward scores in Study 3 were also found to be positively associated with measures of negative and positive reinforcement alcohol (e.g., coping and enhancement alcohol use motives, respectively in Study 2).

The pattern of results for Studies 2 and 3 shows that sensitivity to punishment is more associated with negative-emotionality driven drinking, and that sensitivity to reward is associated with both pleasure-seeking and negative-emotionality drinking. These findings are consistent with Cox and Klinger's model and with Farber et al. (1980), who claimed that people may decide to drink for negative and positive reinforcement reasons, which alleviate negative emotions and enhance positive emotions, respectively. The findings are also consistent with those reported in the literature regarding personality and alcohol reinforcement reviewed in Chapters 4 and

6. However, the findings of Studies 2 and 3 show that the traditional singular account of extroversion or sensitivity to reward and positive reinforcement may need to be reconceptualised to include negative-emotionality driven alcohol reinforcement. This view is in keeping with the published literature regarding the activities of the BAS when exposed to negative emotional stimuli, which is reviewed in Chapter 6 (see Carver, 2004; Cooper et al., 2008; Harmon-Jones, 2004; Quilty & Oakman, 2004)

At baseline, expected reward for alcohol consumption was found to be positively associated with negative and positive reinforcement desires for alcohol. Again, this pattern of results was replicated post-taste-test and showed an increase in strength; thus perceived reward for alcohol consumption was found to be positively associated with negative and positive reinforcement desires for alcohol. This finding shows that as the incentive value of alcohol increased in the sample, so did the reinforcement properties of alcohol.

In this sample, at baseline sensitivity to reward was found to be positively associated with expected reward for alcohol consumption. This pattern of results was replicated post-taste-test and increased in strength. Hence, sensitivity to reward was found to be positively associated with perceived reward for alcohol consumption. It may mean that strong BAS participants found the consumption of alcohol during the taste-test to be more appetitive (or rewarding) than those with a weak BAS. This finding is comparable to that of Kambouropoulous and Staiger (2004b; see Chapter 6). These findings are also in line with Gray's predictions that alcohol can mimic the actions of positive reinforcers in the BAS (Gray, 1982). Thus, drinkers with a strong BAS may view alcohol as having a greater incentive value than participants with a weak BAS.

As was predicted, no relationships were found between sensitivity to punishment, expected reward, perceived reward, and heightened subjective reward for alcohol consumption. The present researcher did not expect to find any significant relationships between these scores because he hypothesised that sensitivity to punishment drinking patterns are more associated with the alleviation of negative-emotional states rather than the positive rewarding or pleasurable reinforcing aspects of alcohol consumption. Thus, SP+ participants may not have seen the alcohol as being rewarding per se, because rewards tend to have a positive incentive value rather than a negative incentive value. Also, no relationship was found between sensitivity to reward and heightened subjective reward for alcohol consumption. The failure to find a relationship in this sample is probably due to the participants' preferring the non-alcohol based beverages more than the alcohol based beverages (see Beverage Preferences section, presented next).

In general, the findings show that the Desires for Alcohol Questionnaire (DAQ) was a valid and robust tool for assessing alcohol reinforcement motivations, expected reward, perceived reward, and heightened subjective reward for alcohol consumption among a sample of student drinkers. Hence, it can be accepted that the DAQ had good discriminant and convergent validity in this sample of student drinkers.

Beverage Preferences

In general, 82.8 % the sample (n = 114) preferred the non-alcoholic beverages to the alcohol based beverages (only 17.2% of the sample, n = 24, preferred the alcoholic beverages). It would appear that this study employed alcohol based

beverages that, unknown to the present researcher, the sample did not prefer (beer and white wine spritzer). As a result of this, most participants consumed very little alcohol, and this could have reduced the expected differences (variability) in their scores. This made it more difficult to observe the predicted trends and interactions between different study variables and the participants' alcohol consumption in the taste-test. If the study was to be replicated, it would be advisable to select alcohol based beverages that students tend to drink more regularly. For instance, 45% of the sample ($n = 62$) were regular spirit drinkers, whereas only 27% of the sample ($n = 37$) were regular ale, cider, or beer drinkers, and only 24% of the sample ($n = 33$) were regular wine drinkers. Hence, only 51% of this sample ($n = 99$) regularly drank ale, cider, beer, or wine, but the remaining 49% regularly drank spirits (e.g., Vodka), or Alcopops.

Students' drinking patterns are clearly culturally determined and change over time. In Britain, they may be changing from the previously popular consumption of large amounts of ales, ciders, beers, or wines, to ones that contain less fluid but more units (spirits and Alcopops). The latter trend may be associated with the relative pricing of alcohol.[5] Another plausible explanation is that the drinkers in this sample may not have developed a taste for ales, ciders, beers, or wines, students mainly use alcohol for coping reasons, to alleviate negative emotional-states (see Kidorf, Lang, & Pelham, 1990). Kunstche, Knibbe, Gmel, and Engels (2006b) found that coping drinkers who preferred spirits drank more than those who preferred wine, beer, or

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[5] For example, it is probably more cost-effective for students to drink spirits or Alcopops when they are socialising than ales, ciders, beers, or wines because of the relative price of these drinks and their alcohol content if they are intending to become intoxicated (40% and approximately 6%, respectively).

Alcopops. Enhancement alcohol use motives scores were found to be negatively associated with the preference for wine or Alcopops and positively associated with the preference for beer. Kunstche et al. (2006b) go on to claim that interventions should target coping drinkers who prefer spirits because they are at greater risk of developing alcohol-related problems.

It may have been advisable to identify the most preferred alcohol based beverage for each participant before recruiting them into this study. This was not done because of time constraints associated with participant recruitment and testing, but it is an option for further studies; the pre-testing would also increase the validity and reliability of this form of experimental paradigm.

Autobiographical Memory: Prior Experiences Sheets

As was expected, the strength of feelings scores were found to be higher in the positive ($d = 1.87$, a large effect) and negative ($d = 0.71$, a medium effect) mood conditions than the neutral mood condition. The scores for recall difficulty tended to be higher in the neutral ($d = 0.44$ and 0.41, small effects) mood condition than the positive or negative mood conditions. The strength of the results and effect sizes confirmed that the prior experiences sheets were a valid tool for inducing transient changes in affective state in each condition, because they successfully accessed emotionally based autobiographical memories.

Mood Induction and Taste-Test Evaluation

There were a number of noteworthy differences among the three experimental conditions on the five affective-adjective ratings. First, participants' scores for

average happiness were found to be higher in the positive mood condition than the neutral mood condition. Second, the participants' scores for average sadness, irritation and frustration were found to be higher in the neutral mood condition than the positive condition. No differences were found between the conditions on average anger scores (both conditions recorded low ratings). It can be concluded that the positive mood condition MIPs were rated as making the participants feel happier than those employed in the neutral mood condition, indicating that the positive mood condition caused the expected transient change in the target-mood state. This is consistent with the trends reported in published mood-induction studies (e.g., Green, Sedikides, Saltzberg, Wood, & Foranzo, 2003). However, as noted earlier, the PANAS measures (present-mood rating, PA and NA) did not show the same trend; according to these measures, the positive mood condition MIPs were not very effective in enhancing positive affect or in effecting differences between the positive and the other conditions. In line with this result, Martin (1990) and Hufford (2001) are of the opinion that it is difficult to induce positive-mood states in a laboratory setting, and Hufford (2001, p. 604) goes on to claim that positive mood-inductions tend to maintain general levels of positive-affectivity, rather than enhancing them. The present researcher considers that positive MIPs can be used to produce a positive mood-shift, but that the PANAS is not a sensitive enough tool to detect subtle mood changes. This could be tested in future, by administering the PANAS alongside other measures (such as affective-adjective ratings and MIP evaluations), as was done in the present study, to replicate this trend. If the present pattern of results is confirmed, this would show that the PANAS should not be used as a measure of mood change.

A predicted pattern of results was found for the negative and neutral mood conditions affective-adjective ratings. First, participants' scores for average sadness

and anger were found to be higher in the negative mood than the neutral mood condition. Second, participants' scores for average happiness were found to be higher in the neutral mood than the negative mood condition. No differences were found between the conditions on average irritation and frustration scores. Thus the negative mood condition can be said to have successfully caused a transient change in the target-mood, consistent with the trends reported in the published mood-induction studies (e.g., Randall & Cox, 2001). Once again, the PANAS indices showed a different pattern of results; according to these, the negative condition MIPs created a more positive mood than the neutral ones. This discrepancy of results could be due to the insensitivity of the PANAS, or possibly to interactions between the MIPs and the taste-test, which was itself acting to affect the mood of participants in each condition, as discussed below.

It was noted that the neutral mood condition MIPs (the control group for this study) also caused a number of negative feelings; the affective-adjective ratings for this condition for average irritation and frustration were similar to those for the negative mood condition MIPs. For example, some participants stated that they found it difficult, taxing, irritating, and annoying to generate neutral autobiographical memories. According to Sechrist and colleagues, neutral mood-inductions can make the neutral mood more positive or negative (Sechrist, Swim, & Mark, 2003, p. 529). It would appear that in this study the neutral mood-induction made the neutral mood more negative. Thus the participants in the neutral mood condition scored higher than those in the positive mood condition on the sadness, irritation, and frustration affective-adjective ratings.

The present experiment employed a self-report measure, on which participants were asked about the study procedures and their effect on mood. As was expected,

approximately 96% of the sample (n = 132) stated that the MIPs caused a transient change in their affective state. There were significant variations in the effectiveness of each MIP in the different conditions. Participants in the negative mood condition reported that the autobiographical memories MIP was the most effective in causing a transient change in their affective-state, those in the positive mood condition reported that the combined MIPs were the most effective, and those in the neutral mood condition reported that the music MIP was the most effective. In sum, participants' reports confirmed that the MIPs were successful in causing transient changes in their affective state. These findings support the utility of MIPs in addictive behaviours research and are in agreement with the published literature regarding the use of MIPs to establish the determinants of alcohol cognitions and alcohol use (e.g., Birch et al., 2008).

Unexpectedly, the taste-test was also found to cause transient changes in affective state in most, but not all, participants. Sixty-two percent of the sample (n = 86) stated that the taste-test caused a change in their mood-sate. These participants consumed more alcohol during the taste-test than those who reported that the taste-test did not cause a change in their mood state. Participants who reported that the taste-test caused a positive change in their mood state were also found to consume more fluid overall during the taste-test and to consume more alcohol per week than those who reported no change in mood state. This shows that the taste-test acted as a selective positive MIP, effective for those participants whose average alcohol consumption was comparably higher. It is also possible that the taste-test selectively influenced how much liquid was consumed during the taste-test, confounding the results and making the interpretation difficult. Thus, the positive mood-shift caused by the test across conditions (about the same percentage of participants in each

condition reported this effect) could have reduced the between-condition differences in target mood that the MIPs were designed to create, diminished the effectiveness of the MIPs, and influenced the overall pattern and direction of the results.

The present researcher noted that the participants tended to be enthusiastic about and interested in the taste-test study. A large number of participants stated that it was good to take part in an interesting study in contrast to other experiments in which they had participated.

It is difficult to make recommendations for future research, because the strength of the association between taste-test alcohol consumption and TADD average weekly alcohol consumption scores confirmed that the taste-test was a valid, reliable, and effective behavioural assessment of students' drinking behaviour. This finding is in agreement with the published literature regarding the utility of taste-tests in addictive behaviours research (e.g., Caudill & Marlatt, 1975; Randall & Cox, 2001; Field & Eastwood, 2005). Perhaps the only conclusion that can be drawn from the present observations is that MIPs and taste-tests have good utility and validity in addiction research but should not be combined together because of their possible interactions. In addition, researchers should be aware that administering a taste-test in an experiment may selectively alter some of their participants' mood. This effect had not been discussed in the literature to date, but may have a bearing on the results of the studies that have used taste-test procedures.

Regression and Moderation Analysis

Main Effects for Each Condition in Predicting Taste-Test Alcohol Consumption Scores

As predicted at the outset of Study 3, the participants in the positive mood condition consumed more alcohol during the taste-test than those in the neutral mood condition; there was a significant main effect for the positive mood condition in predicting taste-test alcohol consumption scores (6% of the unique variance).

It was also predicted that participants in the negative mood condition would consume more alcohol during the taste-test than those in the neutral mood condition, but this hypothesis was not supported. Participants in the neutral mood condition consumed an intermediate amount of alcohol that did not differ significantly from the amount consumed by the negative mood condition (see Marlatt et al., 1975). Although the findings were not significant, they were in the predicted direction; the trend was for participants in the negative mood condition to consume more alcohol than those in the neutral mood condition ($d = 0.17$, small effect). The negative mood condition accounted for an additional 1% of the unique variance in taste-test alcohol consumption scores. As was expected, there were no significant differences between the amounts of alcohol consumed by the positive and negative mood conditions (the slight trend was for participants in the positive mood to consume more than those in the negative mood condition; $d = 0.38$, small effect).

In general, participants in the positive mood condition might have consumed more of the alcohol-based beverages during the taste-test to maintain or enhance general levels of positive-affectivity. Participants in the neutral and negative mood

conditions might have consumed the alcohol-based beverages to alleviate negative-affective states. Overall, it is difficult to make strong claims about the present data, because consumption of non-preferred alcohol-based beverages was quite low across the sample.

Two and Three-Way Interactions to Predict Taste-Test Alcohol Consumption Scores

Contrary to predictions, the results from the two- and three-way moderated interaction effects showed that there were no interactions between mood-induction conditions (positive or negative) and personality variables (sensitivity to punishment and reward) in predicting taste-test alcohol consumption. The failure to find any significant interactions was not due to: (1) a small sample size ($N = 138$), (2) unbalanced groups ($n = 46$ in each group), (3) low effect sizes for the regression or moderation models (which tended to have large effect sizes; $f^2 > 0.35$), or (4) low statistical power (power was >.80 for all the models). There were also no violations of regression assumptions or diagnostics, and the scores for the dependent variable were found to be normally distributed (Skewness = .96 and Kurtosis = .59). The range for the dependent variable was also found to be acceptable (4 ml – 153 ml; see Cohen 1953). According to Aguinis, Beaty, Boik, and Pierce, (2005), any or all of these factors can result in the failure to detect moderated interaction effects. They go on to state that moderated interactions tend to have very small main effects ($f^2 = 0.02$). The moderated interactions in this study were simply not strong enough to account for any of the additional unique variance in taste-test alcohol consumption scores after controlling for the demographic covariates (gender, normal level of alcohol use, and whether the taste-test caused a change in the participants' mood state).

There was also no systematic bias associated with the randomisation of participants to each condition. There were no baseline differences across the groups on the independent variables (e.g., the means for sensitivity to reward and punishment were equivalent in each mood-induction condition). There were equal numbers of participants in each condition who stated that the taste-test caused a transient change in their mood, who stated that the taste-test did not cause a transient change in their mood, who were moderate or excessive drinkers, and were male or female. There were no times of day, or times of day and mood-induction condition interaction effects in predicting alcohol consumption during the taste-test. Thus, time of testing (e.g., morning, mid-day, afternoon, and evening) did not influence the overall direction of the results. This check was performed because some participants reported that they felt uncomfortable drinking alcohol early in the day (e.g., morning and mid-day). Also, some of the participants may have restricted how much alcohol they consumed during the taste-test, which was administered at the end of the academic semester, in the exam period. Thus a number of participants stated that they did not drink much of the alcohol because they had an exam later that day or where going home to revise for another exam. A number of participants also stated that they have reduced their normal level of drinking since the exam period started because they did not want it to have a negative impact on their exam performance.

The amount of unique variance predicted in each model, effect sizes, and statistical power values were mainly due to the three demographic covariates and the main effect for the positive condition. Thus, the demographic covariates accounted for 26% of the unique variance in taste-test alcohol consumption, and the positive condition accounted for an additional 6% of the unique variance after controlling for the demographic covariates.

Mood-Manipulation Check and Current Mood Ratings

Contrary to predictions, no main effects for the personality variables or two-way interactions between the mood-induction conditions and personality variables were found for this study after controlling for the baseline positive (PA) and negative affect (NA) scores when performing the mood-manipulation check on post-taste-test affect scores. The amount of unique variance predicted in each model, effect sizes, and statistical power values were mainly due to the baseline affect or present mood rating covariates in each model.

Although the study did not find any significant main effects or interactions, the trends for predicting post-taste-test affect scores were in the right direction. The simple slope for the positive mood condition main effect was approaching significance at $p = .06$ when predicting post-taste-test PA scores. The covariate adjusted mean for post-taste PA scores was found to be higher in the positive condition than the neutral condition. This finding offers a degree of support to the studies claim that the positive mood condition MIPs tended to cause a transient change in the target mood, but it is difficult to exclude the impact of the positive mood inducing taste-test from this finding, so this finding may be due to the positive condition MIPs, the taste-test, or a combination of both. In a similar manner, the simple slope for the positive mood condition main effect was found to be significant at $p = .04$ when predicting post-taste-test present mood ratings. The covariate adjusted mean was found to be higher in the positive mood than the neutral mood condition. Again, this result indicates that the positive mood induction condition MIPs successfully caused a transient change in the target mood, but like the findings for positive affect, it is difficult to exclude the impact of the positive mood inducing

taste-test from the findings for the present mood rating. At best, it can be tentatively claimed that the findings for PA and present mood ratings are due to the positive mood condition MIPs or due to an accumulation of effects arising from both the positive condition MIPs and taste-test,

Likewise, the simple slope for the negative mood condition main effect was found to be significant at $p = .05$ when predicting post-taste-test present mood ratings. The covariate adjusted mean was found to be lower in the negative mood than the neutral mood condition. This finding indicates that the negative condition MIPs were effective in lowering general overall mood. However, another plausible explanation is that any effects caused by the negative condition were facilitated by the participants' dislike of the alcohol based beverages, so the effects of the mood condition and somewhat aversive alcohol stimuli interacted to reduce post-taste-test present mood ratings.

The simple slope for the negative mood condition x sensitivity to punishment interaction term was approaching significance at $p = .06$ when predicting post-taste-test present mood ratings. This finding indicates that participants in the negative condition who scored high on SP tended to find the condition aversive because it caused a decrease in self-reported general mood. Although, this seems the most parsimonious solution, the addictive effects of the participants' dislike for the alcohol based beverages cannot be excluded from this finding.

In general, the findings for the main effects for the mood induction conditions, and the interaction between SP and the negative condition are difficult to assign to the mood induction conditions per se, they could be the result of other additive factors, such as the taste-test or the dislike for the alcohol based beverages.

Predicting Changes in Alcohol Reinforcement

Contrary to predictions, no main effects for the personality variables or two-way interactions between the mood-induction conditions and personality variables were found for this study after controlling for the baseline positive reinforcement and negative reinforcement scores when performing the check on post-taste-test reinforcement scores. The amount of unique variance predicted by each model, effect sizes, and statistical power values were mainly due to the baseline reinforcement covariates in each model. The failure to find any significant changes in alcohol reinforcement is probably due to the sample favouring the non-alcohol based beverages over the alcohol-based beverages. Thus the participants in the positive-mood condition did not show the predicted increase in positive-reinforcement desires for alcohol after tasting the beverages they did not like; the participants in the negative condition did not show an increase in negative-reinforcement desires for alcohol for the same reason.

Heightened Subjective Reward for Alcohol Consumption

In keeping with the findings for changes in alcohol reinforcement, no main effects for the personality variables or two-way interactions between the mood-induction conditions and personality variables were found for this study after controlling for the baseline expected reward scores when performing the check on post-taste-test perceived reward scores. Again, the amount of unique variance predicted in each model, effect sizes, and statistical power values were mainly due to the baseline expected reward covariates in each model. The failure to find any

significant changes in heightened subjective reward for alcohol consumption is again probably due to the sample disliking the alcohol-based beverages offered in the taste-test, which made it difficult to assess the incentive value of alcohol.

Other Findings

The relationships between personality and alcohol consumption variables, differences with sample characteristics, and subgroup analysis for those participants whose mood was changed by the taste-test, who were heavy drinkers, and those participants whose mood was changed by the taste-test and were heavy drinkers, are presented next. The findings are discussed in line with Studies 1 and 2 whenever relevant. The discussion also addresses the findings for the excluded participants.

Relationships Between Personality and Alcohol Consumption Variables

The findings for Study 3 replicate those of Studies 1 and 2: sensitivity to reward scores were found to be positively associated with self-reported alcohol consumption. Participants with a strong BAS consumed more alcohol during the taste-test ($d = 0.32$) and reported consuming more alcohol ($d = 0.36$), than those with a weak BAS. The findings indicate that sensitivity to reward might be a consistent predictor of excessive alcohol use among student samples when indirect or direct measurements of alcohol consumption are taken (self-report and taste-test, respectively). Likewise, the findings for Study 3 are also consistent with those for Study 2, in that participants with a weak BIS tended to score higher on the TADD alcohol consumption index than those with a strong BIS ($d = 0.15$). This study failed to find a relationship between SP and taste-test alcohol consumption scores. However,

this finding is consistent with those reported for Study 1. Again, it followed the trends reported in the published literature, that the relationship between sensitivity to punishment and alcohol use is less consistent than that for sensitivity to reward (see Chapters 2, 3, and 5).

Differences Associated with Sample Characteristics

In keeping with Study 1, males were found to score higher on sensitivity to reward than females. This finding is in line with those previously reported, that males tend to score higher on self-report measures of sensitivity to reward (Caseras et al., 2003; Pickering et al., 1997; Torrubia et al., 2001). Males also scored higher on perceived reward for alcohol consumption and average anger, and consumed more alcohol during taste-test than females. The present researcher is unaware of any published articles regarding sex differences on perceived reward for alcohol consumption. The male participants may have simply found the beer in the taste-test to be more rewarding and palatable than the female participants. The may have also been enhancement drinkers; males tend to score higher than females on enhancement alcohol use motives (Stewart, Zeitlin, & Samoluk, 1996) and, as previously stated, enhancement motives are associated with a preference for beer among students (Kunstche et al., 2006b).

The researcher is also unaware of any published articles regarding sex differences on affective-adjective ratings. Most mood-induction studies do not usually take measurements of participants' emotional reactivity to mood-induction procedures (see Green et al, 2003). Male participants with higher levels of sensitivity to reward may have found the negative and neutral conditions to be the most anger provoking.

For example, sensitivity to reward scores were found to be positively associated with PANAS-NA scores post-test taste in the negative and neutral conditions. These findings are consistent with the theoretical claims of Quilty and Oakman (2004), who claimed that BAS activities are also associated with negative emotionality. Another, alternative explanation is that strong BAS participants may have experienced frustrative non-reward in the neutral and negative conditions (see Carver 2004; Corr 2001; Kambouropoulous & Staiger, 2004b).

Like Studies 1 and 2, the stability of any sex differences on the measures can only be established by replicating the study with a larger, more representative sample of male participants. Male participants were under-represented in this study (n = 29, 21% of the sample), but the ratio of males to females in this study is consistent with the ratios for Studies 1 and 2, and with the ratios for undergraduates at Bangor University. In general, the demographic covariate variable 'gender' was controlled for in regression and moderation analysis because it had an influence on the overall direction of the results.

Conclusions

The results of the study did not support the main hypotheses. It is possible that the interactions, predicted from the theoretical accounts and published literature, were simply not there in the present sample. It is possible that these effects exist, but were too subtle to be detected in the present design. The present researcher considers that sample characteristics and methodological issues affected the present findings to such a degree that no firm conclusions can be made.

The sample characteristics, gender and normal level of alcohol use, had a significant impact on the overall direction of the results. The effects for gender and normal level of alcohol use were expected because male and heavy drinkers tend to consume more units of alcohol than female and light-moderate drinkers; nevertheless, given that such effects are usually reported in the addiction literature, the present researcher did not consider them to be a serious impediment to the success of the procedure. More important were several methodological issues, discussed earlier in this section, and summarised below.

It is unclear whether all MIPs were effective in line with the expectations; while the positive and negative conditions appear to have been effective to a degree, the neutral-mood induction condition tended to make the neutral mood more negative. The present researcher still considers mood-induction procedures to be a valid experimental technique for investigating the determinants of alcohol use, but would suggest that, if neutral MIPs were used in the future, the autobiographical memory component should be omitted from the procedure.[6]

The results showed that the taste-test might have acted as a selective MIP, confounding the mood-manipulation procedure. It would be extremely difficult to eliminate the affective components from this experimental procedure; rather, the affect components of taste-tests ought to be investigated in their own right. In future research, drinkers could be assigned to either an alcohol or no-alcohol condition so evaluations can be made to establish which component of the taste-test is causing the

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[6] The participants found it difficult to recall and record neutral life events that did not have a positive or negative emotional content. This might be due to natural tendencies, in that human emotional memories tend to have a positive or negative emotional valence rather than a neutral one.

positive affective responses (e.g., participant expectations, doing something novel, being asked to give an opinion as a rater, drinking pleasant-tasting beverages, or drinking alcohol, or any combination of these factors). As a more general point, the present researcher considers that evaluations of the experimental procedures should be administered in (or prior to) all studies that use MIPs or taste-tests; this had not usually been done in the published literature (see Green et al., 2003). This point draws support from Rohsenow and Marlatt (1981), who claimed that the results of complex experimental paradigms that investigate the determinants of alcohol use are sometimes uninterruptible because of many factors, such as sex, participants' alcohol expectancies, the experimental setting, and the experimental design or procedures. These authors go on to state that experimental paradigms should be evaluated with self-report measures, interviews, or a combination of both because it is difficult to specify otherwise if the findings are due to psychological factors, pharmacological factors, or a combination of both. Rohsenow and Marlatt also claim that self-report measures of affective change are less sensitive than physiological measures. To assess affective change in further studies it may prove more viable to take a combination of measures (self-report and physiological) to improve the validity, and the findings for the effectiveness of MIPs.

The fact that the alcohol-based beverages used in the present study were not liked by the participants almost certainly affected the outcome. The lowered consumption would have made the effects of the combined influences of alcohol reinforcement, personality, and MIPs difficult to detect, although the main effects of these variables on the taste-test, and associations with self-reported alcohol consumption had been identified, in line with the study hypotheses and the findings of Study 1 and Study 2. Thus future studies ought to employ a pre-screening beverage

preference test with a sample of the target population, to identify universally preferred beverages for the inclusion in the taste-test.

More generally, the evaluation of the results led the present researcher to conclude that the hypothesised relationships may be more easily detected in a series of studies that used pre-screening of the sample to identify subgroups of interest and allocate them to the conditions according to individual hypotheses. Considering that interaction effects in the analyses employed in the present study tend to be very small and difficult to detect under the most ideal conditions (Aguinis et al., 2005), the experimental design needs to be adjusted to maximise the chances of detecting such small effects. For example, to eliminate the confounding effects of different drinking patterns on the overall results, it might be useful to pre-screen participants on their habitual level of alcohol use, and employ either moderate or excessive drinkers, but not both.

Another design improvement may entail screening the participants on the personality scores before allocating them to the MIPs. In the present study, it was hypothesised that high BAS participants would drink more alcohol after a positive MIP, and show an increase in positive-reinforcement desires for alcohol post-test, compared to the low BAS participants. However, the present design only recruited 46 participants into each mood condition; only a fraction of these would have been expected to show extreme BAS scores (high or low). A better design that can be used in future would recruit a larger number of participants, with equal proportions of high, low, and average BAS scores, and expose each of these subgroups to an identical positive MIP. Likewise, the hypothesis that high BIS individuals may drink more in the negative mood condition and show higher negative-reinforcement desires for alcohol post-taste-test than the low BIS individuals, can be tested by pre-screening for

BIS and exposing all participants to a negative mood MIP. The latter suggestions are similar to the designs employed by the researchers who are also investigating the negative and positive reinforcement aspects of alcohol, such as Stewart's (Grant & Stewart, 2007; Grant et al., 2007; Birch et al., 2008) pre-screening of participants on coping and enhancement alcohol use motives before assigning them to the appropriate mood-induction condition (see Chapter 6).

In sum, this study encountered some problems but still managed to identify theoretically important relationships between personality, alcohol reinforcement, and direct and indirect measurements of alcohol use that are consistent with the tenets of Gray's reinforcement sensitivity theory and Cox and Klinger's motivational model of alcohol use. It is hoped that the methodological improvements suggested in this section may lead to better and more sensitive designs in the future.

CHAPTER 8

General Discussion

The present thesis includes three studies that identified how Gray's Reinforcement Sensitivity Theory (RST) can be used to further addictive behaviours research, when tested with determinants that were derived from Cox and Klinger's multidimensional model of alcohol use. The first study identified the relationships between RST personality constructs and students' drinking patterns. The second study tested the personality, emotion, and motivational constructs of RST with determinants of alcohol use that were theoretically derived from Cox and Klinger's model. The third study focused on the reinforcement aspects of alcohol, and attempted to show the associations between RST personality constructs and alcohol reinforcement motivations with an experimental procedure, a combined mood-induction with an alcohol-taste test. The studies reported in this thesis tested the full range of student drinkers, rather than just excessive or problematic ones as is more common in the addiction literature, and are therefore deemed by the present researcher to be applicable to different types of drinkers. How the determinants of alcohol use tested in these studies apply to community or clinical samples awaits further investigation, but the findings from the student samples have some theoretical importance and provide options for further research and applied work with university, community, and clinical populations. This chapter discusses the salient findings from each study and the relationships between them when appropriate. The chapter also highlights the key methodological issues in each study, and makes conclusions and recommendations for future research.

Key Findings

The three primary aims of Study 1 were simple and modest in comparison to the remaining two studies. First, it was designed to show that the sensitivity to punishment and reward questionnaire (SPSRQ) was an appropriate tool for assessing personality dimensions in addictive behaviours research, prior to administering it in two more studies. Second, it set out to identify the relationships between sensitivity to punishment and reward and students' drinking patterns, which were assessed with a retrospective quantity x frequency drinking measure, the Alcohol Use Questionnaire (AUQ). Third, it built upon a previous small-sample study (Cook, 2004), by further clarifying the associations between students' drinking patterns and their alcohol-related personal life concerns, a theoretical question that was derived from Cox and Klinger's model. To do this, Study 1 tested 273 students, who participated as a requirement for their degree in psychology. It achieved all of its aims by showing that the SPSRQ was a useful tool for assessing student drinkers' personality traits, identifying the relationships between RST personality dimensions and various indices of students' drinking patterns, and identifying how alcohol-related personal concerns are related to students' drinking patterns.

In short, sensitivity to reward was found to be associated with seven drinking indices; of these, six relationships were with quantity indices (e.g., maximum amount of units consumed per day, and maximum amount of units consumed for the week) and one was with a frequency index (number of days binge drinking per week). Sensitivity to reward successfully predicted these drinking pattern indices after controlling for the other distal demographic factors (age and age of first drink). Sensitivity to reward and age of onset were found to be significantly related. Participants who scored higher on sensitivity to reward tended to have an early onset

drinking pattern, usually by the age of 15. In the recent literature, both of these factors might influence the development of alcohol misuse and alcohol-related problems, even when drinkers are experiencing negative consequences from excessive drinking (e.g., Staiger et al., 2007).

What was interesting about the simple regression models for Study 1 is that sensitivity to reward tended to account for only a small amount of the unique variance in each model after controlling for the demographic variables. This finding is in keeping with Cox and Klinger's model, which states that personality is a distal determinant of alcohol use that operates through more proximal determinants like cognitive mediators and affective regulation. Although sensitivity to reward predicted alcohol consumption, the average weekly alcohol consumption for the sample was not very large, approximately 21 units. However, according to Engs, Diebold, and Hanson (1996), this amount indicates heavy drinking among female students and 85% of Study 1s sample were female. These findings show that sensitivity to reward may contribute to excessive or heavy drinking among female students, and students in general, irrespective of sex. Male students consumed more alcohol than females when drinking on non-binge days (typical amount consumed per day) and scored higher on sensitivity to reward than females. The sex differences on the SPSRQ are consistent with previous research (e.g., Caseras et al., 2003, Jorm et al., 1999; Pickering et al., 1997).

In Study 1, participants were asked to state how their alcohol-related personal life concerns were related to their current level of alcohol use. This was the first study to ask this theoretical question. It can be proposed that if assessments are made of students' personal concerns, then it is also advisable to assess if any of those personal concerns cause them to drink or are a result of their current drinking.

Motivational interventions that specifically target these alcohol-related personal life concerns may achieve better outcomes if they enable clients to better understand the relationship between their alcohol-related personal life concerns and drinking patterns, especially if the intervention helps these clients to resolve those concerns and alleviate the negative course of excessive drinking. These interventions may also foster improvements in self-regulatory processes by encouraging clients to develop non-alcohol related incentives, which can be an alternative source of intrinsic and extrinsic motivation and self-reinforcement.

In summary, Study 1 found that age of onset and sensitivity to reward may contribute to excessive drinking among a student sample, findings that are consistent with recently published research (e.g., Pardo, et al., 2007). Contemporary RST researchers propose that sensitivity to reward might be an aetiological determinant of alcohol use, and that the tendency for some people to seek out alcohol-related rewards may start in early adolescence (e.g., Staiger et al., 2007). This tendency may be one example of a personality driven deficit in cognitive and motivational adaptive self-regulation processes, which might increase the likelihood of developing an alcohol use disorder, or alcohol dependence in later life, or alcohol-related problems (e.g., Dougherty et al., 2004). Ideally, people who show this type of inhibitory deficit should be targeted with interventions at a young age to reduce the impact of these determinants of excessive drinking and to halt the development of alcohol abuse or dependence.

The null findings between sensitivity to punishment and quantity and frequency indices of alcohol consumption reported in Study 1 are also consistent with those published in the recent addictive behaviours literature (e.g., Dawe et al., 2007). The likelihood of finding a positive relationship between sensitivity to punishment

and alcohol use might have been greater if the study had employed a clinical or a comorbid sample of drinkers rather than a normal sample of light-moderate social drinkers. Thus, the identification of a positive or negative relationship between sensitivity to punishment (or related measures) and alcohol use appears to be more or less sample-dependent (see Cox & Blount, 1998; Knyazev et al., 2004 for a comparison of findings).

Study 2 was designed to systematically test Gray's RST with distal (personality, control beliefs, and coping) and proximal (motivational structure, emotional dysregulation, drinking motives, and motives for not drinking) determinants of drinking that were derived specifically from the theoretical and conceptual framework of Cox and Klinger's motivational model of alcohol use. The study had four objectives: (1) to develop formulas for avoidance and approach motivational structure, (2) to identify the relationships between the determinants of alcohol use in each pathway (SP and SR pathways), (3) to identify the theoretically derived mediators of the relationship between personality and alcohol use in each motivational pathway that might terminate in the final decision to drink, and (4) to identify the relationships between motives for drinking and abstaining, which are components of the deciding to drink and drink not pathways in Cox and Klinger's model. In general, the study identified two alternative forms of Cox and Klinger's motivational pathway, which might terminate in the final decision to drink. Study 2 achieved all of its primary objectives. To do this the study tested 207 students, 71 participated as a requirement for their degree in psychology and 136 participated for a cash payment.

There were a number of noteworthy findings in Study 2; the most salient ones were for the relationships found between the avoidance and approach motivational

structure indices and distal and proximal determinants of alcohol use, the SP and SR motivational pathways, and the mediators of the relationships between RST personality dimensions and alcohol use. Study 2 also replicated some of the findings for Study 1. It needs to be emphasised that neither of the two indices of motivational structure (avoidance and approach) that had been developed and used in Study 2 can be considered to be adaptive. Both motivational profiles of goal-striving were deemed by the present researcher to represent the motivational profiles of drinkers who might be enthused to consume excessive amounts of alcohol rather than drinkers who may be motivated to consume minimum amounts of alcohol.

The results of Study 2 showed that drinkers with an avoidance motivational structure might have a behavioural profile that is associated with excessive drinking for negative affect regulatory processes (e.g., to behaviourally control emotional dysregulation and for coping alcohol use motives). In fact, drinkers with an avoidance motivational structure may have an "emotional-vulnerability behaviour profile", because they tend to score high on SP, use maladaptive coping behaviours when dealing with stressors or problems (avoidance and self-blame), have problems behaviourally regulating negative emotions (impulse control difficulties, difficulties engaging in goal directed behaviours, and nonacceptance of negative emotions), and drink for coping alcohol use motives. They may also have poor adaptive coping skills, low realistic control beliefs, and have low scores for average get concerns on the personal concerns inventory (R-PCI, see Chapter 5 for a review of this instrument). Conceptually, the emotional-vulnerability behaviour profile may cause deficits in goal-striving self-regulatory processes because it might limit goal-actions through causing goals to be avoided, disengaged from at an early stage, or abandoned completely, especially if negative affect systems are activated. This type of behaviour

profile may also have a secondary detrimental impact on subjective general well-being and self-esteem, problems that may further exasperated general levels of negative affect, anxiety, or depression. This was the first study to find such a pattern of relationships between an avoidance motivational structure, coping, control beliefs, emotional regulation, and coping alcohol use motives determinants of drinking. A drinker with an emotional-vulnerability behaviour profile might benefit from an intensive structured goal-setting, emotion regulation, and coping skills training programme. For example, some alcohol abuse coping skills training interventions include components for the regulation of negative emotions. They also attempt to replace the maladaptive coping behaviours with adaptive ones, and encourage the adoption of goal-striving, which may help to foster improvements in psychological functioning, and a reduction in alcohol abuse (see Monti, Kadden, & Rohsenow, 2002).

The promotion of structured goal-setting, emotion regulation, and coping skills training programmes for treating excessive drinking in students is also supported by some of the other results from Study 2. The pattern of relationships between sensitivity to punishment and the determinants of alcohol use was virtually identical to that for an avoidance motivational structure, except sensitivity to punishment was also found to be positively related to weak unrealistic control beliefs and negatively related to alcohol consumption. Having low unrealistic control beliefs is considered to be adaptive because people are not attempting to control events or problems that are unsolvable. This in turn allows them to employ adaptive coping strategies, like problem solving (Zuckerman et al. 2004). A composite score for emotional dysregulation and coping alcohol use motives partially mediated the impact that low sensitivity to punishment (or low fear) has on alcohol consumption. More

specifically, a weak-BIS or a weak-FFFS or a weak-BIS/FFFS combined was found to be directly and indirectly related to alcohol consumption. In the regression model for the sensitivity to punishment motivational pathway a different pattern of determinants was identified. First, three distal (weak-BIS or FFFS, or BIS/FFFS, avoidance and self-punishment coping) and two proximal (composite score for emotional dysregulation and coping alcohol use motives) determinants successfully predicted alcohol use. Negative consequences motives for abstaining, which is a proximal predictor derived from Cox and Klinger's motivational pathway that might terminate in the final decision to not drink, was found to be a negative predictor of alcohol consumption. The proximal determinants successfully predicted students' alcohol consumption after controlling for the more distal factors (personality and maladaptive coping). Thus the findings for the predictors of alcohol consumption in the sensitivity to punishment motivational pathway are consistent with the theoretical tenets of Gray's, and Cox and Klinger's models, and with the predictions that can be derived from them.

The pattern of relationships for the approach motivational structure was different from that for the avoidance motivational structure. That is, drinkers with an approach motivational structure tended to have poor adaptive coping behaviour skills (e.g., self-help and approach) and unrealistic control beliefs. These deficits might lead to frustration, disappointment, and anger because these drinkers are unable to find solutions to problems and stressors that they should be able to deal with adequately. They may also be overcompensating for this deficit in adaptive coping by perceiving that they can solve unsolvable problems and stressors (unrealistic control beliefs). They also tended to score higher on sensitivity to reward, lower on sensitivity to punishment, and have more get concerns. It was proposed that some drinkers with this

type of motivational structure may be motivated to seek-out and obtain goals or rewards that yield instant relief and self-gratification. This pattern of behaviour is deemed by the present researcher to be indicative of an "emotional-reward" behavioural profile. This type of drinkers may benefit from interventions that teach them how to set different goals that deliver affective delayed-gratification, such as structured short-term, medium-term, and long-term goals. This may foster improvements in motivational structure and facilitate increases in affective and behavioural self-control and self-regulation. Some drinkers with an approach motivational structure may achieve this as they mature from late adolescence to adulthood. Therefore, they might learn how to self-regulate by developing adaptive strategies for self-governance. Unfortunately, some of these drinkers may go on to develop maladaptive strategies for self-governance as they mature, and may require interventions.

The pattern of relationships between sensitivity to reward and the determinants of alcohol use was similar to that for an approach motivational structure in regards to adaptive coping behaviour. The relationships differed in regards to adaptive and maladaptive coping, and the motivational determinants of alcohol use, emotional dysregulation and internal alcohol use motives (coping and enhancement). Sensitivity to reward was found to be related to these determinants and an approach motivational structure was not. Study 2 found sensitivity to reward to be partially mediated by a composite score for emotional dysregulation, coping and enhancement alcohol use motives; these determinants can be said to partially influence the impact that sensitivity to reward has on alcohol consumption. In other words, sensitivity to reward was found to be directly and indirectly related to students' alcohol consumption.

After controlling for the distal determinant (sensitivity to reward) in regression, the more proximal determinants of the decision to drink (composite score for emotional dysregulation and internal alcohol use motives) successfully predicted alcohol consumption. Like the sensitivity to punishment motivational pathway, negative consequences motives for not drinking or abstaining were also found to be an inverse predictor of alcohol consumption in the sensitivity to reward motivational pathway.

Closer inspection indicated that the sensitivity to punishment and sensitivity to reward motivational pathways shared similar behavioural characteristics; this was not unexpected because both pathways were deemed by the present researcher to be alternative forms of Cox and Klinger's motivational pathway that may terminate in the final decision to drink. For example, both sensitivity to punishment and sensitivity to reward drinkers scored high on maladaptive avoidance and self-punishment coping, indicating that both types of drinkers might benefit from a coping skills training programme that targets these maladaptive coping strategies and encourages the development of adaptive coping strategies, like self-help and approach. In a similar manner both types of drinkers might benefit from a combined expectancy challenge and coping skills intervention that increases their negative expectancies for drinking, because negative consequences motives for abstaining were found to be an inverse predictor of alcohol consumption in both pathways.

However, the pathways differed on which proximal determinants they were associated with. First, sensitivity to punishment was found to be associated with three behavioural emotional dysregulation indices: (1) impulse control difficulties, (2) difficulties engaging in goal directed behaviours, and (3) nonacceptance of negative emotions, whereas sensitivity to reward was found to be only associated with two

behavioural emotional dysregulation indices: (1) impulse control difficulties and (2) difficulties engaging in goal directed behaviours. Drinkers with a SP and SR motivational profile may benefit from a behavioural emotional regulation intervention, but SP drinkers might need an enhanced intervention that teaches them how to accept, understand, and deal with negative emotions if their high risk of drinking for negative affective regulation is to be reduced. Second, in regards to alcohol use motives the two pathways also differed, in that sensitivity to punishment was found to be associated with coping alcohol use motives, and sensitivity to reward was found to be associated with enhancement and coping alcohol use motives. These findings are theoretically important because they show that a sensitivity to reward drinker may perceive alcohol to be incentively rewarding for the regulation of both positive and negative affect. Again, these findings are consistent with Cox and Klinger's account of drinking for affective change.

In view of the results of Studies 1 and 2, the most theoretically salient findings from Study 3 are those for personality and alcohol reinforcement. Sensitivity to punishment was found to be positively related to negative reinforcement desires for alcohol at baseline and post-taste test. A different pattern of results was found between sensitivity to reward and the indices for alcohol reinforcement at baseline and post-taste test. First, sensitivity to reward was found to be positively related to positive and negative reinforcement desires for alcohol at baseline and post-taste test. The strength of the relationship between sensitivity to punishment and negative reinforcement desires for alcohol was greater than that for sensitivity to reward at baseline, but not at post-taste test. This may be due to sensitivity to reward drinkers experiencing frustrative nonreward during the testing: they may have found the experimental conditions, or the alcohol-based beverages, or a combination of both to

be adverse. These findings are statistically and theoretically consistent with those for Study 2, which found sensitivity to reward to be associated with and partially mediated by coping and enhancement alcohol use motives, whereas sensitivity to punishment was solely related to and partially mediated by coping alcohol use motives. These findings extend Gray's (1982) claim that alcohol can mimic the actions of positive reinforcers in the BAS—it would appear that alcohol can also mimic the actions of negative reinforcers in the BAS, or BIS, or FFFS, or weak-BIS/FFFS combined. Second, sensitivity to reward was found to be positively associated with expected reward for alcohol consumption at baseline and perceived reward for alcohol consumption post-test. This showed that high sensitivity to reward drinkers may have viewed alcohol as having greater appetitive incentive values than sensitivity to punishment drinkers.

On the other hand, it can be claimed that the findings for Studies 1, 2, and 3 may be due to the indirect or indirect effects of heavy drinking. In that, heavy drinking might cause changes in personality (e.g., increased impulsivity, manifested as high BAS), altered drinking motives (generalising model, Chapter 4), mood (alcohol-induced allostasis, Chapter 6), and altered motivational structure (the narrowing of the behavioural repertoire in heavy drinkers, Chapters 4 and 5). However, this may only apply to problematic and heavy drinkers who already have a well established drinking history. It would be difficult to quantify how much of the variation (or variance) in each studies determinates were due to alcohol's biological effects without undertaking longitudinal research that established first the baselines for these determinants before the onset of drinking. This would need to be done so that any changes in the strength of these determinants that is solely due to alcohol's biological effects on these bio-psychological systems can be determined.

You may also have to factor in maturation influences when determining alcohol's biological effects on these bio-psychological systems (e.g., the temporal instability of personality), which may also have a direct or indirect effect on personality factors, drinking motives, emotional regulation, and motivational structure determinants of alcohol use. In fact, there may be cyclic relationships between alcohol's biological effects and predispositional personality, motivation, and affective determinants of alcohol use. It would be extremely difficult to identify if alcohol's biological effects attenuate predispositional factors, or if predispositional factors attenuate alcohol's biological effects, or if they covary.

You may also need to establish at what level of alcohol consumption that alcohol's biological effects start to impact on or covary with predispositional factors. For example, the samples for the studies reported in this thesis contained predominately light-moderate drinkers, but can it be assumed that alcohol's biological effects do or do not impact in some way on these drinker's predispositions or bio-psychological systems. Even though, it is difficult to quantify how much of the variation or variance in each studies determinants were due to alcohol's biological effects, a possible causal role for alcohol's biological effects has to be acknowledged in any study of the determinants of alcohol use. Especially, if these studies are underpinned by psychobiological theories of personality, motivation, and emotion like Gray's Reinforcement Sensitivity Theory.

Methodological Issues

A major goal of the thesis was to systematically test Reinforcement Sensitivity Theory (RST) personality, emotion, and motivation constructs with determinants of alcohol use that were derived from Cox and Klinger's motivational model of alcohol

use. To do this, Study 1 had to validate the SPSRQ as a reliable measure of personality. Although sensitivity to reward was found to predict or relate to alcohol use in Studies 1, 2, and 3, no relationships were found between sensitivity to punishment (SP) and alcohol use in Study 1, whereas Studies 2 and 3 found a negative relationship between SP and alcohol use. At first inspection, this pattern of results appeared to be non-problematic, but according to Corr (2004) the SP scale measures the combined functions of the Behavioural Inhibition System (BIS) and the Fight-Flight-Freeze-System (FFFS). From this assumption, the results for Studies 2 and 3 were interpreted in regards to "fearlessness" rather than anxiety-related personality traits per se. This poses a problem for the SPSRQ and other RST measures (e.g., Carver and White's BIS/BAS scales) that were designed on earlier, rather than the current version of the theory, because they do not clearly discriminate between behaviours that are due to BIS and FFFS sensitivities. The current psychometric problems of the SP scale might be partly responsible for some of the mixed findings for the relationships between BIS sensitivities and alcohol or substance use. Thus, they might interact with the gender and sample-dependent factors to limit the direction of the findings. The present researcher accepts these limitations but still considers the SPSRQ to be a valid measure of personality, but proposes that the items on the SP scale are revised to give separate indices for BIS and FFFS driven behaviours. This should help to rectify the short-comings of the SPSRQ, by improving its psychometric properties.

It can be argued that the results of Studies 1 and 2 are limited and cannot be generalised to other populations, because the study designs were correlational in nature (correlation, regression, and mediation), and were undertaken with student drinkers, but this argument can be rebuked because the findings for each study are

consistent with those that have tested singular constructs (e.g., alcohol use motives) in student, community, and clinical samples (see literature reviews in Chapters 2 and 4). Therefore, the findings reported in this thesis for the first two studies are considered to be robust, reliable, valid, and generalisable to other populations. For example, the mediation analyses in Study 2 was based on theoretical perspectives derived from RST and Cox and Klinger's model, rather than on any type of specific statistical analyses, and as such identified the personality, emotion, and motivational processes that might cause a person to decide to engage in excessive drinking (see Spencer, Zanna, & Fong, 2005 for a review of experimental and mediation designs). The present researcher acknowledges that the mediation analyses undertaken in this thesis with regression, which was based on Baron and Kenny (1986), does not establish a casual chain, and that additional studies that employ experimental or longitudinal designs are needed to establish causality. However, it may prove to be difficult to test how personality, emotion, and motivation determinants may or may not drive the final decision to drink under experimental conditions, as evidenced by the failings of Study 3.

Study 3 encountered some methodological problems with sample characteristics and sample preferences. These problems are discussed fully in Chapter 7 and will not be discussed in depth in this chapter. The three major methodological issues to be briefly addressed are: (1) beverage preferences, (2) mood inductions, and (3) the experimental procedure used in Study 3.

In Study 3, students did not like the alcoholic beverages. As proposed in Chapter 7, in future work, researchers need to establish each student's alcoholic beverage preferences before recruiting them to a taste-test. This can be done by pre-screening students or running a pilot study, which allows participants to select the

beverages that they wish to sample from a variety of alcohol based beverages. Therefore, the beverage preferences of students' needs to be established before they are recruited for experimental paradigms, although there is a possibility that researchers will experience some minor temporal changes in students' preferences.

Another critical problem with Study 3 was the combined neutral mood-induction condition, which tended to cause an increase in negative affect rather than stabilising pre-existing moods. This is a fundamental problem with mood-inductions, and one that is difficult to resolve fully, because experimental designs that compare positive and negative conditions against a control group need a neutral condition. At best, the present researcher advocates that mood-inductions should not be delivered with neutral conditions. It may be viable to replace neutral mood-inductions with neutral experimental tasks that have been previously rated for emotional valence. However, this premise awaits systematic evaluation before it can be implemented. Hopefully, it will not prove to be too difficult to identify a neutral experimental task for future research.

In general, the failure to administer the PANAS after the mood induction procedures had been delivered to participants was another methodological confound. The failure to assess mood state at this experimental time point meant that the independent effects of the mood induction procedures could not be established. In general, the post taste-test evaluation of the mood induction procedures assessed the combined effects of the experimental phases. It would have been methodologically better to have assessed the effects of the mood induction procedures pre- and post-taste test. The main reason why the PANAS was not administered between the delivery of the mood induction procedures and the taste-test was not to disrupt the

flow of the experimental procedures and stop participants identifying the true nature of the study (how induced mood effects alcohol consumption).

The results of Study 3 also showed that taste-tests themselves can have a strong effect on affective state. They showed that the taste-test generally tended to cause a positive change in affective state, which might have reduced the impact of the negative mood-induction condition and enhanced the effectiveness of the positive mood-induction condition. These findings imply that taste-tests should not be combined with mood-inductions, or that researchers should independently assess the emotional effects of taste-tests when they are implementing complex experimental paradigms.

Conclusions and Recommendations

The findings from the first study in the thesis are consistent with the assumptions of Chapter 3, which advocated that certain 'negative personality traits' may contribute to excessive drinking (e.g., sensitivity to reward, rash impulsiveness, and reward drive), because they may be associated with uncontrolled and disinhibited alcohol use (Barnes, 1988, 2000; Conrod, 2000. Conrod et al., 2008; Cox, 1979, Cox et al., 2001; Cox & Klinger, 2004; Dawe & Loxton, 2004; Finn, 2002; Moeller & Dougherty, 2002; Mulder, 2002; O'Connor & Colder, 2005; Sher & Trull, 1994; Staiger et al., 2007). From a RST perspective "disinhibtion" refers to any deficit in the ability to control behaviour, be it responding impulsively to an internal or external reward without planning or considering the negative consequences of actions (Moeller & Dougherty, 2002). Therefore, any inhibition deficit in self-regulatory processes may perpetuate and hasten alcohol misuse.

The findings for Study 1 are also consistent with the theoretical tenets of Cox and Klinger's model. Hence, sensitivity to reward might be envisaged as forming part of a motivational pathway to alcohol use, because it is can be depicted as being a biological and personality predisposition of the past drinking experience component level that can influence a person's decision to drink on a specific occasion. This is especially true if drinking results in pleasurable changes in affective state, which might be positively reinforcing because they result in an increase in positive affect and a reduction in negative affect (Cox & Klinger, 1988, 2004). The findings for Studies 2 and 3 support this claim, especially when the behavioural profiles for the personality derived motivational pathways in Study 2 and the alcohol reinforcement findings for Study 3 are taken into consideration.

Study 1 underscores the importance of developing personality-targeted interventions for treating alcohol-abuse; these interventions should attempt to foster improvements in self-regulatory processes. A number of personality-targeted brief interventions have been developed and trialed in clinical and adolescent samples by Conrod, et al. (2000, 2008). For example, Conrod et al. (2008) delivered a personality-targeted brief intervention to high scoring negative thinking (NT), anxiety sensitivity (AS), impulsivity, and sensation seeking (SS) adolescents who had an average age of 14 years. Participants attended two 90-minute group sessions. The group that had the best outcome was the sensation seekers, who received an intervention that challenged their reward-seeking and boredom-susceptibility cognitive distortions. Conrod et al. (2008, p. 181) reported that the sensation seekers where 45% and 50% less likely to be binge drinking at the 6 month and the 12 month follow-up, respectively, than the control group (who increased their level of alcohol consumption). Although these results are promising, there was a minor problem with

this study: it used the Substance Use Risk Profile (SURPS; Conrod & Woicik, 2002) to assess personality traits. Although this measure is brief, the reliability of the scales is questionable because a number of the items on the subscales do not clearly discriminate between the different personality traits. If this measure is revised, it may prove to be a useful tool for assessing four distinct negative personality traits that appear to be associated with alcohol misuse. Personality-targeted brief interventions are considered by the present researcher to be promising for treating alcohol abuse because they might improve treatment outcomes, even though they are still in their infancy.

In short, it can be concluded that the findings for Study 2 are in agreement with the assumptions of Chapter 1, which claimed that we now know more about alcohol use and abuse than the early unitary models of alcoholism or alcohol use can comfortably explain or account for (e.g., personality, conditioning or learning, and social learning theory models). Hence, alcohol abuse might be conceptualised as being a multiplically determined behaviour that is best explained by multidimensional biopsychosocial models like Cox and Klinger's model, because they have better utility and predictive properties. Cox and Klinger's model not only offers a theoretical and conceptual framework for identifying, testing, and establishing the determinants of alcohol use, it also affords the development of singular construct brief interventions and combined intensive interventions, such as the combining of goal-setting with emotional regulation or coping skills training for the treatment of alcohol abuse in student, community, and clinical populations. The findings for Study 2 are also in agreement with the core concepts of Gray's reinforcement sensitivity theory (e.g., Gray, 1981, 1987; Corr et al., 1997; Dawe et al., 2007; Franken, 2002). The personality factor sensitivity to reward was found to be partially mediated by the

motivational and emotional determinants of alcohol use and the combined influences of these determinants might contribute to the development of an alcohol use disorder or dependence for negative and positive reinforcement motives, desires, or reasons. All of these determinants might be aetiological factors of alcoholism and alcohol use (e.g., Staiger, et al., 2007).

In comparison, the findings for sensitivity to punishment are not as convincing. High-SP was found to be related to the motivational and emotional determinants, but not to predict alcohol use, whereas low-SP was found to be related to the same determinants and predict alcohol use. At best, this finding is partly in agreement with the core aspects of RST, because Gray did not account for how fearlessness or a weak-FFFS might be related to substance use, although—as stated in Chapter 4—the full role that a weak-FFFS may play in driving personality associated actions and behaviours is now being investigated and delineated (Cooper et al., 2007; Gray & McNaughton, 2000; see Chapter 2 for a review of the FFFS). The combined influences of high sensitivity to punishment, motivational (avoidance and coping) and emotional (alleviation of negative affect) determinants might help to explain how alcohol abuse is maintained in clinically anxious people, but not in normal samples of student drinkers. Hence, the present researcher concurs with Staiger et al. (2007), that sensitivity to punishment might function as a maintenance rather than an aetiological factor of alcohol use (see Kushner, Abrams, & Borchardt, 2000 for a review of the role of anxiety in alcohol use disorders).

At a theoretical level, the findings for Studies 2 and 3 show that the standard view that sensitivity to reward motivated drinking (BAS+) is only associated with positive affect and positive alcohol motivation (positive reinforcement and enhancement motives) might need to be reconceptualised to incorporate the functions

of drinking for negative affective and negative alcohol motivation reasons (negative reinforcement and coping motives). Therefore, the findings suggest that SR drinkers might consume alcohol to: (1) maintain their current level of positive affect, (2) enhance their current level of positive affect, (3) down-regulate their current level of negative affect, and (4) avoid negative affective states that can reduce their current level of positive affect. According to Corr (2002), a person with an overactive BAS (SR+) is predisposed to experience frustration and negative emotionality, a premise supported by Quilty and Oakman (2004), who found BAS sensitivities to be associated with measure of negative emotionality. To a SR drinker alcohol may appear to be rewarding for both positive and negative reinforcement reasons, probably because both may be seen as being incentively rewarding. It can be concluded that the consuming of alcohol for SR drinkers may serve many functions, such as for coping reasons, regulating positive and negative affective states, and positive and negative motivations (reinforcement and motives), possible indictors of an "emotional-reward" behaviour profile.

The type of coping a SR drinker might employ is considered by the present researcher to be problem or stressor specific (see Chapter 4 for a review). A study could be designed to test under what situations and conditions a SR drinker may employ adaptive and maladaptive coping behaviours. The points raised above become even more salient when the traditional accounts of Gray's BAS or SR driven behaviour, which is generally perceived to be activated by rewards that enhance positive affect (e.g., Corr, 2001; Dawe et al., 2007; Gray & McNaughton, 2004; Kane et al., 2004; Torrubia et al., 2001), is taken into consideration. Thus, the present researcher concludes that the current theoretical accounts of the BAS need to be revised to include behaviours and actions that are activated or mediated by negative

events and negative affect (e.g., Carver, 2004; Carver & Scheier, 1990; Cooper, Gomez, & Buck, 2008; Davidson, 2004; Davidson; 1998; Harmon-Jones & Sigelman, 2001; Harmon-Jones, 2004; see Chapters 2 and 6 for a review). In a similar manner, the findings for Studies 2 and 3 show that the definition of personality driven negative reinforcement drinking might also need to be broadened to include the alleviation of general negative affective states, the reduction of internal and external generated stress, and not just the alleviation of alcohol withdrawal symptoms and/or stress (see Baker et al., 2004; Conger, 1956; Koob & Moal, 2001; Lewis, 1990; 1996; Sher & Levenson, 1982 for different theoretical perspectives, and Chapter 6 for a review). For example, in Koob and Moal's (2001) allostasis model positive reinforcement drinking is associated with binge drinking and negative reinforcement drinking is associated with the alleviation of negative affect and withdrawal symptoms. Thus, for a sensitivity to punishment and sensitivity to reward drinker negative alcohol reinforcement may serve many unhealthy regulatory processes, be it for the down-regulation or avoidance of negative emotions. Both types of personality motivated drinkers were found to have problems regulating negative emotions in Study 2.

The present thesis concludes that the personality, motivation, and emotion constructs of Gray's reinforcement sensitivity theory have a valid place in addictive behaviours research, because they offer an alternative approach to the standard singular construct accounts (e.g., personality or emotion alone), and can be used to test the single and multiple determinants of alcohol use, although the theory appears to need some minor revisions regarding the actions of the BAS and FFFS. Furthermore, Cox and Klinger's biopsychosocial multidimensional motivational model of alcohol use is viewed as being better than the early unitary models of alcoholism and alcohol use because it offers a robust theoretical and conceptual

framework for determining why people decide to drink or not on a particular occasion. Reinforcement sensitivity theory and Cox and Klinger's model are also considered by the present researcher to be better than the early models of alcohol use because they have better predictive abilities, and can be used to formulate interventions that target various determinants of drinking (e.g., personality, coping, emotional regulation, alcohol expectancies, or motives, or reasons, or reinforcement, alcohol cognitions, life incentives, and the development of non-alcohol related goals), which might help clients to achieve better treatment outcomes, than interventions designed on the early unitary models of alcoholism or alcohol use, like the disease and biological models

Considering the recent developments in addiction research and studies that appeared in publication during the preparation of the present thesis and the research reported herein, it is apparent that many researchers of different theoretical persuasion are now looking to personality and motivation variables to explain and modify alcohol use. Another prominent trend is in producing interventions that target specific vulnerabilities, as opposed to the 'blanket' treatments that have been used in the past. The present researcher considers this to be a very positive movement and potentially useful at a time where alcohol-related problems are gaining prominence at all ages and all strata of society. It is hoped that the research reported in the present thesis can contribute to this literature.

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APPENDIX 1

FINDINGS FROM RST STUDIES IN ADDICTIVE BEHAVIOURS RESEARCH.

FINDINGS FROM RST STUDIES IN ADDICTIVE BEHAVIOURS RESEARCH

An extensive literature search was undertaken with Social Sciences Citation Index (Web of Science) to identify research and review articles that have investigated the associations between RST personality constructs, alcohol use, drug use, and substance misuse. The literature search, conducted in 2008, yielded twenty-three published articles and one published conference poster abstract covering six diverse, but interrelated areas of addictive behaviours research. Seven articles investigated the associations between RST and alcohol use, five articles investigated the associations between eating disorders and alcohol use, five articles investigated the associations between RST and alcohol/drug misuse, two articles investigated the associations between RST and eating disorders, and one article investigated the associations between RST and smoking.

Table 1.1. presents summaries of the RST articles published before Study 1 of this thesis was conducted in 2005, and Table 1.2. presents summaries of articles and one conference poster abstract (Trasovares et al., 2007) which appeared in press after Study 1 was completed (2005-present). Overall, the majority of the articles were published recently, and the number of published articles in this area is still relatively small. None of the published articles are from research conducted in the United Kingdom.

Table 1.1.

Studies investigating the relations between BIS, BAS, and Addictive Behaviours published before Study 1 was completed (2005).

Authors	Sample	BIS/BAS Measures	Measures of addictive behaviours/diagnosed patients	Results
Brunelle, Assaad, Barrett, Avila, Conrod, Tremblay, and Pihl (2004)	37 Canadian participants aged 18-19 years	SPSRQ	Heart rate after consuming a priming dose of alcohol Personality and drug use interview	Higher heart-rate responders scored higher on the reward scale of the SPSRQ. Stimulant use was associated with higher impulsivity scores on the SURPS personality questionnaire.
Franken (2002)	58 participants (21 females) from a Dutch inpatient alcoholism treatment centre and community sample. Aged 20-66, with average age of 41 years	BIS/BAS scales and Cue-Exposure reactivity Paradigm	Quantity x Frequency x Variability Index for alcohol use and the DAQ (cravings)	BAS sensitivity related to both desire and negative reinforcement aspects of alcohol craving. Drinking history was related to control and negative reinforcement aspects of craving. Participants with High BAS-Drive scores experienced stronger desires, intentions to drink alcohol, and negative reinforcement craving during exposure to alcohol related cues than low BAS-Drive participants.

Table 1.1. *Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Johnson, Turner, and Iwata (2003)	Representative community sample of Americans, 1803 participants aged 19-21	BIS/BAS scales	Computerised interview	Participants with a lifetime diagnosis of drug abuse/dependence or noncomorbid alcohol abuse/dependence were found to score higher on BAS-Fun Seeking. BIS as a vulnerability factor for depression and anxiety.
Jorm, Christensen, Henderson, Jacomb, Korten, and Rodgers (1999)	Representative community sample of Australians, 2725 participants aged 18-79	BIS/BAS scales	AUDIT	BAS scores related to extraversion and positive affectivity. BAS scores correlated with AUDIT scores. BAS-Drive and Fun-Seeking scores correlated with AUDIT scores. BIS related to neuroticism and negative affectivity.
Kambouropoulos and Staiger (2004)	40 Australian regular drinkers, aged 18-47 with an average age of 27.82 years	SPSRQ and Cue-Exposure reactivity paradigm	TLFB and urge to drink visual analogue scale. It also included a measure of expected and perceived reward from drinking alcohol (subjective reward)	The consumption cue produced increases in appetitive motivation, whereas the non consumption cue produced increases in aversive motivation. SR correlated with the change score for cue-elicited positive urge to drink in the drink condition. Participants in the drink condition reported higher levels of subjective reward than participants in the no drink condition.

Table 1.1. *Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Kane, Loxton, Staiger, and Dawe (2004)	23 Bulimia Nervosa/Alcohol dependent women, 22 women with Bulimia Nervosa, and 22 female controls	BIS/BAS scales and CARROT	AUDIT and Eating Disorders Inventory-2	Eating disordered women scored higher on measures of self-reported impulsivity than controls, and sorted the cards faster during a financially rewarding trial on the CARROT. Comorbid women scored higher than bulimic women on self-reported impulsivity.
Knyazev, Slobodskaya, Kharchenko, and Wilson (2004) and Knyazev (2004)	4501 (2075 males) Russian youths, aged 14-25 with an average age of 16.1 years	GWPQ	Substance use survey – Tobacco, drugs, and alcohol	BAS scores were the best predictors of substance use and the second best predictor of all the variables examined. BAS moderated the relationship between peer drug offer and drug use. BAS scores were negatively related to subjective well-being. BIS scores in males increased the risk for substance use and in females they provided a form of protection.
Loxton and Dawe (2001)	232 Australian high school girls aged 16-18	BIS/BAS scales	AUDIT and Drive for Thinness Scale (DT) of the Eating Disorders Inventory-2	BAS scores predicted alcohol misuse. BAS and BIS scores predicted dysfunctional eating. Dysfunctional eating girls with and without comorbid alcohol misuse had higher BIS scores than alcohol misusing girls.

Table 1.2.

Studies investigating the relations between BIS, BAS, and Addictive Behaviours published after Study 1 was completed (2005-present).

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Claes, Nederkoorn, Vandereycken, Guerrieri, and Vertommen (2006)	Three groups of eating disordered patients (*N* =56) and a control group of 83 female students with an average age of 23 years	BIS/BAS scales and Stop-Go Task	Patients with an Anorexia Nervosa and Bulimia Nervosa Classification	No significant results reported – may be due to sampling bias and sample characteristics.
Franken and Muris (2005)	99 female Dutch undergraduate students with an average age of 20.2 years	SPSRQ	Food Craving questionnaire	SR scores correlated positively with total food craving and Body Mass Index (BMI) scores.
Franken and Muris (2006)	276 (32% males) Dutch undergraduate students with an average age of 20 years	BIS/BAS scales	Quantity x Frequency x Variability Index for alcohol use and a simple yes/no drug use questionnaire	College students' drug and alcohol use was positively correlated with BAS scores and negatively with BIS scores. Positive correlations were found between BAS Fun-Seeking scores and the number of illegal substances used, the quantity of alcohol use, and the frequency of binge drinking episodes.

Table 1.2. *Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Franken, Muris, and Georgieva (2006)	39 alcoholics, 71 drug addicts from two Dutch inpatient treatment centres, and 96 healthy controls	BIS/BAS scales	Alcoholics and drug addicts	Drug addicts had higher BAS scores than controls, especially BAS-Drive and Fun-Seeking scores. No significant differences were found between the alcoholics and the other two groups.
Hasking (2006)	347 (184 males) Australian adolescents, aged between 12-18 with an average age of 14.18 years	BIS/BAS scales	Eating Attitudes Test-26 and Australian AUDIT	Coping behaviour mediated the associations between BAS-Drive, BIS scores, and eating attitudes. BAS-Drive and BIS scores were significantly related to disordered eating.
Hundt, Kimbrel, Mitchell, and Nelson-Gray (2008)	273 (65% female) American undergraduate students with an average age of 19.7 years	SPSRQ	DAST and AUDIT	High BAS scores predicted drug abuse, alcohol abuse, primary and secondary psychopathy, and hyperactive-impulsive AD/HD symptoms. High BAS scores associated with externalising disorders. Low BIS scores predicted drug use and hyperactive-impulsive symptoms. High BIS scores predicted secondary psychopathy and inattentive AD/HD symptoms.

Table 1.2. *Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Kambouropoulos and Staiger (2007)	27 Australian hazardous drinkers with an average age of 21.88 years, and 27 controls with an average age of 21.85 years	SPSRQ, CARROT, and Q-TASK	AUDIT	Hazardous drinkers scored significantly higher than controls on SR and negative affect, and significantly lower on positive affect than controls. No differences were found between hazardous drinkers and controls on SP scores.
Loxton and Dawe (2006)	443 Australian female university students/staff, aged 17-53 with an average age of 23.51 years	SPSRQ	AUDIT, Drive for Thinness Scale (DT), and Bulimia Scale of the Eating Disorders Inventory-2. It also included the Children of Alcoholics Screening Test (CAST-6)	SR was directly associated with dysfunctional eating and hazardous drinking. SP was directly associated with dysfunctional eating but not hazardous drinking. SP mediated the association between a chaotic family environment and daughters' dysfunctional eating.
Loxton and Dawe (2007)	131 Australian female university students/staff with an average age of 22.9 years	SPSRQ, CARROT, and Q-TASK	AUDIT and Eating Disorders Inventory-2	SR scores correlated positively with AUDIT and Dysfunctional eating scores. SP scores correlated positively with dysfunctional eating scores. Dysfunctional eating women are more sensitive to environmental threat cues.
O'Connor and Colder (2005)	553 (36% male) American undergraduate students with an average age of 18 years	SPSRQ	Quantity X Frequency measure of alcohol use, DMQ-R, and the Young Adult Alcohol Problems Screening Test (YAPST)	SR was associated with problematic drinking patterns, and enhancement, coping, and social drinking motives mediated this relationship.

Table 1.2.*Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Pardo, Aguilar, Molinuevo, and Torrubia (2007)	144 (62% female) Spanish undergraduate students, aged 18-29 with an average age of 20.64 years	SPSRQ	Quantity X Frequency measure of alcohol use and a measure of age of first drink	BAS scores were positively related to and predicted alcohol intake. SR scores were negatively related to and predicted the onset age of alcohol use.
Simons and Arens (2007)	821 (32% male) American undergraduate students, aged between 18-25 with an average age of 19.67 years	SPSRQ	Marijuana Effect Expectancies Questionnaire and a measure of Marijuana use	SR scores correlated positively with positive expectancies. Marijuana users reported higher levels of SR. SP scores correlated positively with negative expectancies and negatively with marijuana use frequency.
Taylor, Reeves, James, and Bobadilla (2006)	617 (316 females) American undergraduate students, aged between 18-33 with an average age of 19.18 years	SPSRQ	SMAST and DAST	A disinhibited group marked by low constraint, high impulsivity, weak BIS and strong BAS slowed elevated drug use problems, and histrionic and antisocial personality disorder features across genders. A high affectivity group marked by high negative emotionality and strong BIS showed elevated drug use problems and personality disorder features. Two different trait profiles for disinhibitory psychopathology.

Table 1.2.*Continued*

Authors	Sample	BIS/BAS Measures	Measure of addictive behaviours/ diagnosed patients	Results
Trasovares, Andion, Roncero, Bruguera, Casas, and Torrubia (2007)	30 Spanish cocaine dependent patients and 30 controls from the general population	SPSRQ	Cocaine use and age of onset of cocaine use questions	Cocaine addicted patients scored higher on SR and BAS related measures predicted age of onset of cocaine usage. BAS is a vulnerability factor for cocaine misuse, whereas, the BIS might be a protecting factor.
Westmaas and Woick (2005)	186 (95 males) American undergraduate smokers with an average age of 18.95 years	BIS/BAS scales	Perceived risk from smoking-related diseases scenarios and intentions to quit smoking questions	Genetic biomarker feedback is a motivator for college student smokers to quit and would be more effective among high reward sensitive smokers.
Zisserson and Palfai (2007)	188 American hazardous drinkers (90 females) with an average age of 22.56 years	BIS/BAS scales and Cue-Exposure reactivity paradigm	AUDIT, TLFB, and an urge to drink alcohol scale	BAS sensitivity was significantly associated with baseline ratings of urge and affect, and significantly predict urge and affect reactivity.

APPENDIX 2

Consent Form and Information Sheet for Study 1

Consent Form

I, ..., hereby agree to participate in a scientific study of Professor Miles Cox, Simon Victor Cook. The study and my part in the study have been fully explained to me and I understand this explanation. I will complete a personality questionnaire, and then complete a drinking questionnaire alongside a personal details sheet. The procedures of this study and their risks have been answered to my satisfaction.

I understand that I am free not to answer specific items or questions in interviews or on questionnaires.

I understand that all data will remain confidential with regard to my identity.

I understand that I am free to withdraw my consent and terminate my participation at any time without penalty.

I understand that I may request a summary of the results of this study.

In the case of any complaints concerning the conduct of research, these should be addressed to Professor C. F. Lowe, Head of School, School of Psychology, University of Wales, Bangor, Gwynedd, LL57 2DG.

.....

Date Participant's Signature

I, the undersigned, have fully explained the investigation to the above individual.

.....

Date Experimenter's Signature

Information Sheet for Study 1

This research is designed to study the relationship between personality and alcohol use. In this session, you will be asked to complete a personality questionnaire, a drinking diary, and a demographics sheet. The session should take between 40 and 60 minutes to complete. If you are a psychology student, you will receive 2 course credits and £4 worth of printer credits.

Each questionnaire includes instructions for its completion, if you have any problems whilst completing the questionnaires please seek advice from the researcher.

If you would like to receive a summary copy of your results from this study, please write your **e-mail address** on the **Consent Form.** Your personal information will not be disclosed to third parties. We will keep the data of this research confidential. Only the student researcher and their supervisor, Professor Miles Cox, will have access to the data.

If you have any questions about this study, please feel free to ask the researcher.

APPENDIX 3

Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ)

SPSRQ (Avila, 2001)

Please answer each question by circling "YES" or "NO" after each one.

1. Do you often refrain from doing something because you are afraid of it being illegal?	Yes	No
2. Does the good prospect of obtaining money motivate you strongly to do some things?	Yes	No
3. Do you prefer not to ask for something when you are not sure you will obtain it?	Yes	No
4. Are you frequently encouraged to act by the possibility of being valued in your work, in your studies, with your friends or with your family?	Yes	No
5. Are you often afraid of new or unexpected situations?	Yes	No
6. Do you often meet people that you find physically attractive?	Yes	No
7. Is it difficult for you to telephone someone you do not know?	Yes	No
8. Do you like to take some drugs because of the pleasure you get from them?	Yes	No
9. Do you often renounce your rights when you can avoid a quarrel with a person or an organisation?	Yes	No
10. Do you often do things to be praised?	Yes	No
11. As a child, were you troubled by punishments at home or in school?	Yes	No
12. Do you like being the centre of attention at a party or a social meeting?	Yes	No
13. In tasks that you are not prepared for, do you attach great importance to the possibility of failure?	Yes	No
14. Do you spend a lot of time on obtaining a good image?	Yes	No
15. Are you easily discouraged in difficult situations?	Yes	No
16. Do you need people to show their affection for you all the time?	Yes	No
17. Are you a shy person?	Yes	No
18. When you are in a group, do you try to make your opinions the most intelligent or funniest?	Yes	No
19. Whenever possible, do you avoid demonstrating your skills for fear of being embarrassed?	Yes	No

SPSRQ (Avila, 2001)

Please answer each question by circling "YES" or "NO" after each one.

20. Do you often take the opportunity to pick up people you find attractive?	Yes	No
21. When you are with a group, do you have difficulties selecting a good topic to talk about?	Yes	No
22. As a child, did you do a lot of things to get peoples approval?	Yes	No
23. Is it often difficult for you to fall asleep when you think about things you have done or must do?	Yes	No
24. Does the possibility of social advancement, move you to action, even if it involves not playing fair?	Yes	No
25. Do you think a lot before complaining in a restaurant if your meal is not well presented?	Yes	No
26. Do you generally give preference to those activities that imply an immediate gain?	Yes	No
27. Would you be bothered if you had to return to a store when you noticed you were given the wrong change?	Yes	No
28. Do you often have trouble resisting the temptation of doing forbidden things?	Yes	No
29. Whenever you can, do you avoid going to unknown places?	Yes	No
30. Do you like to compete and do everything you can to win?	Yes	No
31. Are you often worried by the things you said and did?	Yes	No
32. Is it easy for you to associate tastes and smells to very pleasant events?	Yes	No
33. Would it be difficult for you to ask your boss for a raise (salary increase)?	Yes	No
34. Are there a large number of objects or sensations that remind you of pleasant events?	Yes	No
35. Do you generally try to avoid speaking in public?	Yes	No
36. When you start to play a slot machine, is it often difficult for you to stop?	Yes	No
37. Do you, on a regular basis, think that you could do more things if it was not for your insecurity or fear?	Yes	No
38. Do you sometimes do things for quick gains?	Yes	No

SPSRQ (Avila, 2001)

Please answer each question by circling "YES" or "NO" after each one.

39. Comparing yourself to people you know, are you afraid of many things?	Yes	No
40. Does your attention easily stray from your work in the presence of an attractive stranger?	Yes	No
41. Do you often find yourself worrying about things to the extent that your performance in intellectual abilities is impaired?	Yes	No
42. Are you interested in money to the point of being able to do risky jobs?	Yes	No
43. Do you often refrain from doing something you like in order not to be rejected or disapproved of by others?	Yes	No
44. Do you often like to put competitive ingredients in all your activities?	Yes	No
45. Generally, do you pay more attention to threats than to pleasant events?	Yes	No
46. Would you like to be a socially powerful person?	Yes	No
47. Do you often refrain from doing something because of your fear of being embarrassed?	Yes	No
48. Do you like displaying your physical abilities even though this may involve danger?	Yes	No

APPENDIX 4

Alcohol Use Questionnaire (AUQ)

Alcohol Use Questionnaire

W. Miles Cox

School of Psychology

University of Wales, Bangor

United Kingdom

Drinking Questionnaire

1. How often do you usually have a drink containing alcohol (e.g., beer, cider, stout, alcopop, wine, spirits)?

____ daily	____ once a month
____ 3 or 4 times a week	____ 3 or 4 times a year
____ twice a week	____twice a year
____ once a week	____ once a year
____ 3 or 4 times a month	____ never
____ twice a month	

****

2. Think of the days when you have had an alcoholic beverage recently. On days when you drank, how much (in units of alcohol) did you usually drink in a day)?

//

Units of Alcohol

There is <u>one unit</u> of pure alcohol in:

-- 1/2 pint of ordinary strength beer, cider, or lager (containing 3.5 or 4% alcohol)

-- A small (4 oz.) glass of wine (containing 11 or 12% alcohol)

-- One pub measure of spirits (containing 40% alcohol)

There are <u>two</u> units of alcohol in:

-- One pint of ordinary strength beer, cider, or lager (containing 3.5 or 4% alcohol)

-- 1/2 pint or half a can of high strength beer or lager (containing 8 or 9% alcohol)

-- A large (8 oz.) glass of wine (containing 11 or 12% alcohol)

-- A large glass (double pub measure) of spirits (containing 40% alcohol)

-- A bottle (330 ml.) of lager or alcopop

//

Total Units You Usually Drank Per Day

____ 1	____ 5	____ 9	____ 13
____ 2	____ 6	____ 10	____ 14
____ 3	____ 7	____ 11	____ 15
____ 4	____ 8	____ 12	____ More?
			How many? _____

____ I never drink alcoholic beverages

****

3. Think of days when you drank more alcohol than usual. On such days, how many units did you typically drink in a day?

Most Units Drunk Per Day

____ 1	____ 5	____ 9	____ 13
____ 2	____ 6	____ 10	____ 14
____ 3	____ 7	____ 11	____ 15
____ 4	____ 8	____ 12	____ More?
			How many? _____

____ I always drink the same amount
____ I don't drink

****

4. About HOW OFTEN do you drink this larger-than-usual amount?

____ daily	____ twice a month
____ 3 or 4 times a week	____ once a month
____ twice a week	____ 3 or 4 times a year
____ once a week	____ twice a year
____ 3 or 4 times a month	____ once a year

____ I always drink the same amount
____ I don't drink

****

5. How many days has it been since you last had an alcoholic drink?

NUMBER OF DAYS SINCE LAST DRINK _____

6. On the last day that you drank, how many units did you have that day?

Units on Last Day I Drank

____ 1	____ 5	____ 9	____ 13
____ 2	____ 6	____ 10	____ 14
____ 3	____ 7	____ 11	____ 15
____ 4	____ 8	____ 12	____ More?
			How many? _____

____ I always drink the same amount
____ I don't drink

APPENDIX 5

Demographics Questionnaire for Study 1

Personal Details

Name: _____

Sex: M or F

Age: _____

Total number of years of education: _____

Educational level (undergraduate or postgraduate): _____

Department of study: _____

Age you first decided to drink alcohol: _____

How many years have you been drinking alcohol on a regular basis? _____

Undoubtedly, you are likely to have concerns about things in different areas of your life. By concerns we do not mean only problems. You might have concerns about unpleasant things or you might have concerns about pleasant things. Thinking about your own concerns in different life areas please answer the question below.

1) How many of your personal concerns are related to your current level of alcohol use? _____

If you placed a number greater than Zero in question 1 go on to answer questions 2 and 3 below. If you answered Zero to question 1 please ignore the two questions below. Please read the final comment at the end of the personal details sheets.

2) People's personal concerns can be classified into distinct life areas. Think carefully about your most prominent personal concern that is related to your current level of alcohol use. Then tick the corresponding life area from the list below.

Please tick one life area only

Home and household matters ____ Employment and finances ____

Relationships ____ Love, intimacy, and sexual matters ____

Self-changes ____ Education and training ____

Health and medical matters ____ Leisure and recreation ____

Other substance abuse ____ Other (please specify) _____

3) Please place an A, B, or C at the end of the question below

A) your current concern causes you to engage in drinking behaviours.

B) is a direct result of your current drinking behaviour.

Or

C) is not a result of your current drinking behaviours and does not cause you to engage in drinking behaviours.

Thinking about your most prominent concern related to your current level of alcohol use would you say that: _____

****

Thank you for completing the personal details. We are considering inviting people back to take part in the second phase of this study. Would you be willing to take part in the second phase? If so please supply your email address below.

Primary E-mail address: _____

Alternative E-mail address: _____

APPENDIX 6

Debriefing Sheet for Study 1

Debriefing Sheet for Study 1

Thank you for taking part in this study. The addictive behaviours literature often states that certain personality traits predispose a person to drink heavily or to develop alcohol-related problems. This study investigated the relationships between sensitivity to punishment (or anxiety) and sensitivity to reward (or impulsivity). It is predicted that students' who score higher on sensitivity to reward will be drinking more alcohol than those who score higher on sensitivity to punishment. In addition, it is also predicted that those students' who have alcohol-related personal concerns will be drinking more alcohol than those who have no such concerns.

If you are concerned about your current drinking behaviour:

(1) Please speak to your Doctor (GP).

(2) Please speak to your personal tutor at the university.

(3) Please speak to Student Counselling Services. The counselling service is in Glanrafon Flat, a building attached to the end of the Students' Union. Please contact Kelly Snowden, Administrator on k.a.snowden@bangor.ac.uk or 01248 382024 for an appointment.

Other useful contact numbers:

CAIS	0870 5134902 or 01492 872014
Alcoholics Anonymous	0845 7697555
Drug Advice Service	01248 351829
National Drugs Helpline	0800 776600

Thank you for Participating in this study! Please feel free to contact the researcher if you require any further information about the study.[1]

---

[1] Mr Simon Cook, School of Psychology, 45 College Rd. 01248 351151, pspe@bangor.ac.uk

APPENDIX 7

Consent Form and Information Sheet for Study 2

Consent Form

I, ..., hereby agree to participate in a scientific study of Professor Miles Cox, Simon Victor Cook. The study and my part in the study have been fully explained to me and I understand this explanation. I will complete a battery of personality questionnaires, and then complete questionnaires about my drinking behaviour and my coping style. The procedures of this study and their risks have been answered to my satisfaction.

I understand that I am free not to answer specific items or questions in interviews or on questionnaires.

I understand that all data will remain confidential with regard to my identity.

I understand that I am free to withdraw my consent and terminate my participation at any time without penalty.

I understand that I may request a summary of the results of this study.

In the case of any complaints concerning the conduct of research, these should be addressed to Professor C. F. Lowe, Head of School, School of Psychology, University of Wales, Bangor, Gwynedd, LL57 2DG.

.....

Date Participant's Signature

I, the undersigned, have fully explained the investigation to the above individual.

.....

Date Experimenter's Signature

Information Sheet for Study 2

This research is designed to study the relationships between personality, coping behaviour, emotion, and alcohol use. In this session, you will be asked to complete a battery of questionnaires, a drinking diary, and a demographics sheet. The session should take about 1 hour to complete. If you are a psychology student, you will receive 2 course credits and £4 worth of printer credits. If you are a student from another department you will be paid £5 in cash and £4 worth of printer credits.

Each questionnaire includes instructions for its completion, if you have any problems whilst completing the questionnaires please seek advice from the researcher.

If you would like to receive a summary copy of your results from this study, please write your **e-mail address** on the **Consent Form.** Your personal information will not be disclosed to third parties. We will keep the data of this research confidential. Only the student researcher and their supervisor, Professor Miles Cox, will have access to the data.

If you have any questions about this study, please feel free to ask the researcher.

APPENDIX 8

Revised-Coping Orientation to Problems Experienced

(R-COPE)

R-COPE (Zuckerman & Gagne, 2003)

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Then respond to each of the following items by circling one number on your answer sheet for each, using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true "FOR YOU" as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for "YOU", not what you think "most people" would say or do. Indicate what "YOU" usually do when "YOU" experience a stressful event.

1 = I usually don't do this at all

2 = I usually do this a little bit

3 = I usually do this a medium amount

4 = I usually do this a lot

R-COPE (Zuckerman & Gagne, 2003)

1 = I usually don't do this at all, 2 = I usually do this a little bit, 3 = I usually do this a medium amount
4 = I usually do this a lot.

1. I take my time to express my emotions	1	2	3	4
2. I concentrate my efforts on doing something about it	1	2	3	4
3. I try to be optimistic in spite of what happened	1	2	3	4
4. I say to myself "this is not real"	1	2	3	4
5. I blame myself	1	2	3	4
6. I let my emotions show	1	2	3	4
7. I take additional action to try to get rid of the problem	1	2	3	4
8. I work on feeling positive no matter what	1	2	3	4
9. I refuse to believe that it has happened	1	2	3	4
10. I realise I brought the problem on myself	1	2	3	4
11. I try to let out my feelings	1	2	3	4
12. I take direct action to get around the problem	1	2	3	4
13. I work on staying positive even when things look bad	1	2	3	4
14. I pretend that it really has not happened	1	2	3	4
15. I criticise or lecture myself	1	2	3	4
16. I allow myself to show how I feel about things	1	2	3	4
17. I do what has to be done, one step at a time	1	2	3	4
18. I get used to the idea that it happened	1	2	3	4
19. I admit to myself that I cannot deal with it, and quit trying	1	2	3	4
20. I see that I am at the root of the problem	1	2	3	4

R-COPE (Zuckerman & Gagne, 2003)

1 = I usually don't do this at all, 2 = I usually do this a little bit, 3 = I usually do this a medium amount
4 = I usually do this a lot.

21. I discuss my feelings with someone	1	2	3	4
22. I make a plan of action	1	2	3	4
23. I accept the reality of the fact that it happened	1	2	3	4
24. I give up the attempt to get want I want	1	2	3	4
25. I just think about my problem constantly	1	2	3	4
26. I try to get emotional support from friends or relatives	1	2	3	4
27. I try to come up with a strategy about what to do	1	2	3	4
28. I try to see it in a different light, to make it seem more positive	1	2	3	4
29. I blame someone or something for what happened to me	1	2	3	4
30. I return in my head again and again to what is troubling me	1	2	3	4
31.I talk to someone about how I feel	1	2	3	4
32. I think hard about what steps to take	1	2	3	4
33. I look for something good in what is happening	1	2	3	4
34. I accuse someone of causing me misfortune	1	2	3	4
35. I relive the problem by dwelling on it all the time	1	2	3	4
36. I talk to someone to find out more about the situation	1	2	3	4
37. I try hard to prevent other things from interfering with my efforts at dealing with this	1	2	3	4
38. I try to identify something else I care about	1	2	3	4
39. I try to forget the whole thing	1	2	3	4
40. I brood over the problem	1	2	3	4

APPENDIX 9

Realistic and Unrealistic Control Beliefs Scale (RAUCB)

RAUCB (Zuckerman, Kiefer, & Gagne 2004)

Please use the following range to answer each question: 1 (Disagree) through to 7 (Agree)

	Disagree						Agree
1. Grades in university are largely a matter of luck or markers' whims.	1	2	3	4	5	6	7
2. Some daily hassles cannot be prevented.	1	2	3	4	5	6	7
3. To be successful, it is essential to be in the right place at the right time.	1	2	3	4	5	6	7
4. There is no such thing as misfortune; everything that happens to us is a result of our own doing.	1	2	3	4	5	6	7
5. Hard work and following through are the best means of realising one's goals.	1	2	3	4	5	6	7
6. When unexpected events happen, it means that that the people involved failed to think ahead.	1	2	3	4	5	6	7
7. If I try very hard, most of my plans will work out.	1	2	3	4	5	6	7
8. People aren't born with personality traits; they are what they wish to be.	1	2	3	4	5	6	7
9. To achieve your goals, you need to know the right people.	1	2	3	4	5	6	7
10. What people see as inability is invariably a lack of will.	1	2	3	4	5	6	7
11. I have the ability needed to handle life challenges.	1	2	3	4	5	6	7
12. In each and every task, not finishing successfully reflects a lack of motivation.	1	2	3	4	5	6	7
13. One's great accomplishments result from good fortune.	1	2	3	4	5	6	7
14. Any person who tries can become a world-class scholar.	1	2	3	4	5	6	7
15. I am sure I can acquire all the skills necessary to fulfil my career plans.	1	2	3	4	5	6	7
16. I could work very hard and still lose my job.	1	2	3	4	5	6	7
17. No matter how hard you work, without a lucky break, you will fail.	1	2	3	4	5	6	7
18. Some tasks in life require abilities that I do not have.	1	2	3	4	5	6	7

RAUCB (Zuckerman, Kiefer, & Gagne 2004)

Please use the following range to answer each question: 1 (Disagree) through to 7 (Agree)

	Disagree						Agree
19. There is very little I can do to influence how much other people like me.	1	2	3	4	5	6	7
20. Sometimes I can do my best and still not get the job done.	1	2	3	4	5	6	7
21. I can initiate and maintain friendships.	1	2	3	4	5	6	7
22. I can be as careful as possible and still make mistakes.	1	2	3	4	5	6	7
23. I often find that others misunderstand me when I try to explain myself.	1	2	3	4	5	6	7
24. I can be a very alert driver and still end up in a serious accident.	1	2	3	4	5	6	7
25. It is my impression that in most group situations people ignore me.	1	2	3	4	5	6	7
26. Even if I do everything I am capable of, some people may not like me.	1	2	3	4	5	6	7
27. I am more of a follower than a leader.	1	2	3	4	5	6	7
28. The success of my relations with others is solely up to me.	1	2	3	4	5	6	7
29. I can get along with most other people.	1	2	3	4	5	6	7
30. I can keep anyone from getting angry at me.	1	2	3	4	5	6	7
31. I can say no even under social pressure.	1	2	3	4	5	6	7
32. I can keep any friend from engaging in irresponsible behaviour (e.g., taking drugs).	1	2	3	4	5	6	7
33. I am often awkward when interacting with others.	1	2	3	4	5	6	7
34. I am responsible for the well-being and happiness of all my friends.	1	2	3	4	5	6	7
35. Couples who work at their relationship are more likely to enjoy their life together than couples who do not.	1	2	3	4	5	6	7
36. My impressions of others are not always accurate.	1	2	3	4	5	6	7
37. I can get along even with people I dislike.	1	2	3	4	5	6	7
38. I don't always know when others deceive me.	1	2	3	4	5	6	7

RAUCB (Zuckerman, Kiefer, & Gagne 2004)

Please use the following range to answer each question: 1 (Disagree) through to 7 (Agree)

	Disagree						Agree
39. I can usually show others that I am trustworthy.	1	2	3	4	5	6	7
40. I cannot make another person love me.	1	2	3	4	5	6	7
41. I can discuss many topics without feeling uncomfortable.	1	2	3	4	5	6	7
42. Even if I try very hard, I cannot make myself like some people.	1	2	3	4	5	6	7

APPENDIX 10

Difficulties in Emotion Regulation Scale (DERS)

DERS (Gratz & Roemer, 2003)

Instructions: For each statement indicate how often the item applies to you.

	Almost never	Sometimes	About half of the time	Most of the time	Almost always
1. I am clear about my feelings.	1	2	3	4	5
2. I pay attention to how I feel.	1	2	3	4	5
3. I experience my emotions as overwhelming and out of control.	1	2	3	4	5
4. I have no idea how I am feeling.	1	2	3	4	5
5. I have difficulty making sense out of my feelings.	1	2	3	4	5
6. I am attentive to my feelings.	1	2	3	4	5
7. I know exactly how I am feeling.	1	2	3	4	5
8. I care about what I am feeling.	1	2	3	4	5
9. I am confused about how I feel.	1	2	3	4	5
10. When I'm upset, I acknowledge my emotions.	1	2	3	4	5
11. When I'm upset, I become angry with myself for feeling that way.	1	2	3	4	5
12. When I'm upset, I become embarrassed for feeling that way.	1	2	3	4	5
13. When I'm upset, I have difficulty getting work done.	1	2	3	4	5
14. When I'm upset, I become out of control.	1	2	3	4	5
15. When I'm upset, I believe that I will remain that way for a long time.	1	2	3	4	5
16. When I'm upset, I believe that I'll end up feeling very depressed.	1	2	3	4	5
17. When I'm upset, I believe that my feelings are valid and important.	1	2	3	4	5
18. When I'm upset, I have difficulty focusing on other things.	1	2	3	4	5
19. When I'm upset, I feel out of control.	1	2	3	4	5

DERS (Gratz & Roemer, 2003)

Instructions: For each statement indicate how often the item applies to you.

	Almost never	Sometimes	About half of the time	Most of the time	Almost always
20. When I'm upset, I can still get things done.	1	2	3	4	5
21. When I'm upset, I feel ashamed with myself for feeling that way.	1	2	3	4	5
22. When I'm upset, I know that I can find a way to eventually feel better.	1	2	3	4	5
23. When I'm upset, I feel like I am weak.	1	2	3	4	5
24. When I'm upset, I feel like I can remain in control of my behaviours.	1	2	3	4	5
25. When I'm upset, I feel guilty for feeling that way.	1	2	3	4	5
26. When I'm upset, I have difficulty concentrating.	1	2	3	4	5
27. When I'm upset, I have difficulty controlling my behaviours.	1	2	3	4	5
28. When I'm upset, I believe that there is nothing I can do to make myself feel better.	1	2	3	4	5
29. When I'm upset, I become irritated with myself for feeling that way.	1	2	3	4	5
30. When I'm upset, I start to feel very bad about myself.	1	2	3	4	5
31. When I'm upset, I believe that wallowing in it is all I can do.	1	2	3	4	5
32. When I'm upset, I lose control over my behaviours.	1	2	3	4	5
33. When I'm upset, I have difficulty thinking about anything else.	1	2	3	4	5
34. When I'm upset, I take time to figure out what I'm really feeling.	1	2	3	4	5

DERS (Gratz & Roemer, 2003)

Instructions: For each statement indicate how often the item applies to you.

	Almost never	Sometimes	About half of the time	Most of the time	Almost always
35. When I'm upset, it takes me a long time to feel better.	1	2	3	4	5
36. When I'm upset, my emotions feel overwhelming.	1	2	3	4	5

APPENDIX 11

Research Version of the Personal Concerns Inventory

(R-PCI)

Personal Concerns Inventory

(Short form)

Instructions

DO NOT ANSWER HERE

Undoubtedly, you have concerns, wishes, or aspirations about different areas of your life. You may also have in mind things that you would like to change in order to resolve these **goals**. You might have goals about unpleasant things that you want to "get rid of," "prevent," or "avoid." Or you might have goals about pleasant things that you want to "get," "obtain," or "accomplish."

The following are examples of areas of life in which many people might have important concerns:

- **Home and Household Matters**
- **Relationships (with Partner, Family, Relatives, Friends, Acquaintances)**
- **Love, Intimacy and Sexual Matters**
- **Self-changes**
- **Finances and Employment**
- **Leisure and Recreation**
- **Health and Medical Matters**
- **Education**

Before, going to the ANSWER SHEETS, think carefully about each of these areas. **What is the goal in each area that seems most important to you?** (You might have more than one goal in a particular area, but for the purposes of this questionnaire, just think about YOUR MOST IMPORTANT GOAL **IN EACH AREA**.) **What would you like to do about this goal?** (That is, how would you like things to turn out.)

Now READ THE EXAMPLE ANSWER SHEET CAREFULLY. Then, on the Answer Sheets, rate how you feel about resolving your MOST IMPORTANT GOAL in each area of life.

W. Miles Cox & Eric Klinger,
m.cox@bangor.ac.uk

DO NOT ANSWER HERE

EXAMPLE ANSWER SHEET IN MORE DETAIL

FOR HOME AND HOUSEHOLD LIFE AREA

Please answer the following questions for each Area of Concern (A, B, C, etc.). Please write a number from 0 to 10 in each box below. 0 is for the 'least amount'; 10 is for the 'greatest amount'. If you have a concern in an Area of Life, be sure to fill in all the boxes for that area (e.g., Home and Household) before going on to the next Area of life (e.g., Relationships).

General Rule:	**0 1 2 3 4 5 6 7 8 9 10**	**The greatest amount**

(A)
Home & Household Matters

Start

a) I have no concern here (go to the next Life Area). ⇨ (B)

√ b) I have a concern here (answer the questions below).

(1) *Only one question*

Is my most important goal for *Home and Household Matters* something that I want **to get, obtain, or accomplish?**

Definitely no 0 1 2 3 4 5 6 7 8 9 10 Definitely yes → 10

Is my most important goal for *Home and Household Matters* something that I want **to get rid of, prevent, or avoid?**

Definitely no 0 1 2 3 4 5 6 7 8 9 10 Definitely yes

(2) **How likely** is it that I will achieve my most important goal for *Home and Household Matters*?

Not likely 0 1 2 3 4 5 6 7 8 9 10 Very likely → 7

(3) **How Much control** do I have in achieving my most important goal for *Home and Household Matters*?

No control 0 1 2 3 4 5 6 7 8 9 10 Much control → 6

continued

(4) Do **I know what to do** to achieve my goal for *Home and Household Matters*?

Not knowing at all 0 1 2 3 4 5 6 7 8 9 10 Knowing exactly → 3

(5) If I try **to do my best,** will I achieve my goal for *Home and Household Matters*?

Not at all 0 1 2 3 4 5 6 7 8 9 10 Completely → 4

(6) **How happy** will I be if I achieve my goal for *Home and Household Matters*?

No happiness at all 0 1 2 3 4 5 6 7 8 9 10 Great happiness → 7

(7) **How committed** do I feel to achieve my goal for *Home and Household Matters*?

No commitment at all 0 1 2 3 4 5 6 7 8 9 10 Strong commitment → 5

(8) **How long** do I feel that it will be before I make real progress on reaching my goal *Home and Household Matter*?

Very short 0 1 2 3 4 5 6 7 8 9 10 Very long → 5

(9) **How sad** will I be if I canNOT achieve my goal for *Home and Household Matters*?

No sad at all 0 1 2 3 4 5 6 7 8 9 10 Great sad → 5

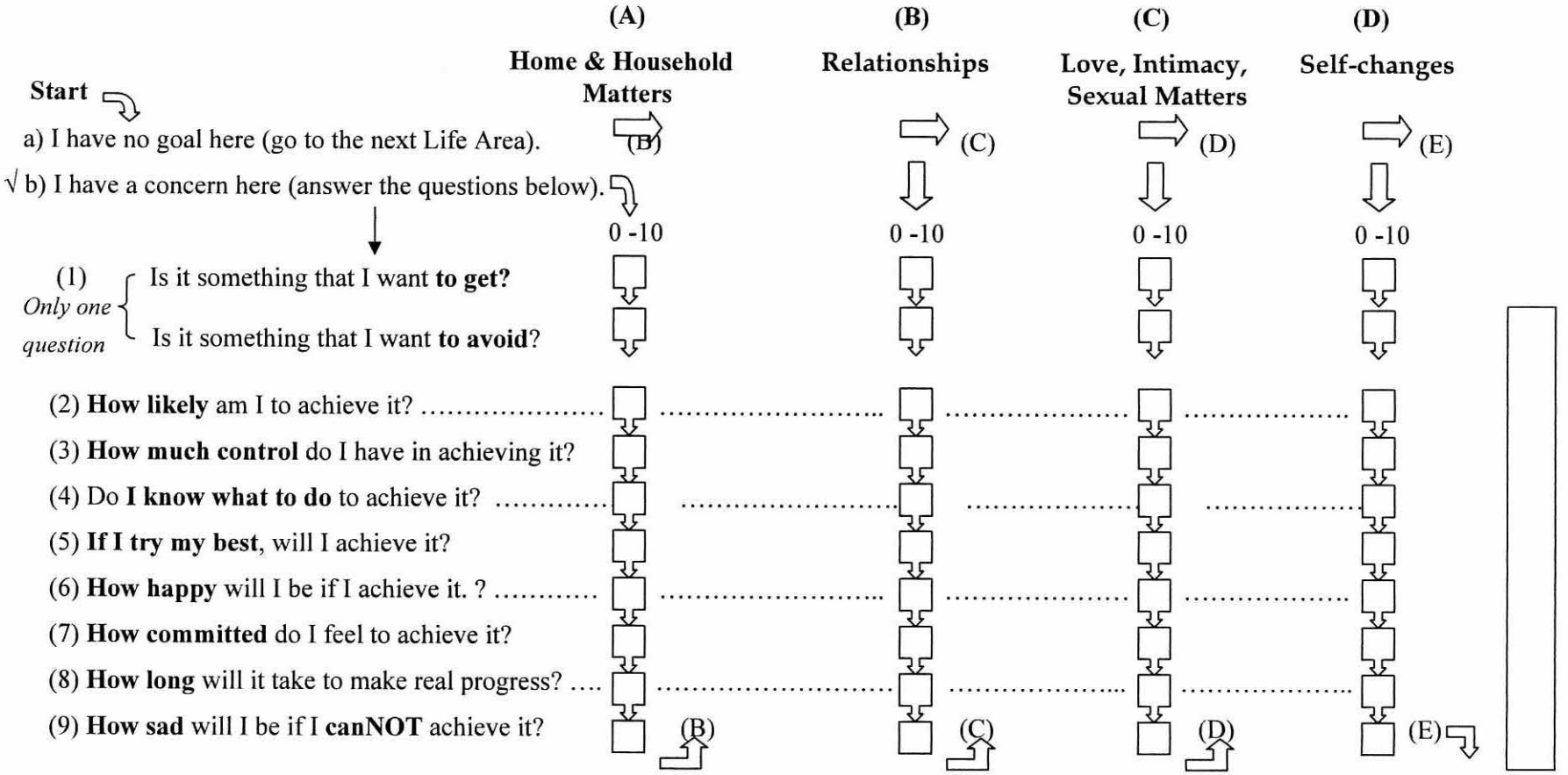
Now, on the ANSWER SHEETS, write a number from **0 to 10** in each box. 0 is for the 'least amount'; 10 is for the 'greatest amount'.

Please, feel free to refer to this EXAPMLE SHEET.

ANSWER SHEET

(page 1)

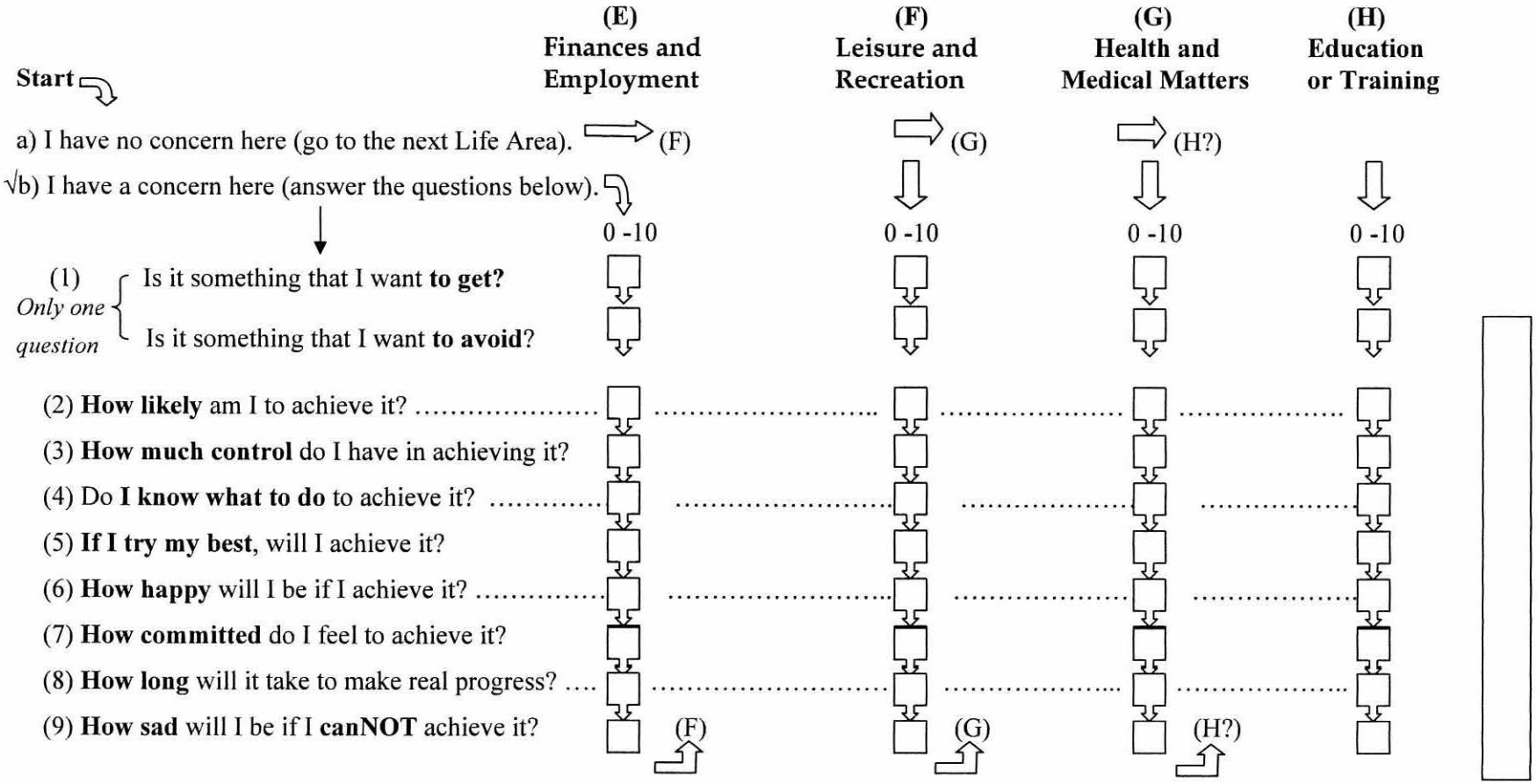
Please rate your answers to the following questions when you are thinking about each Area of life (A, B, C, etc.), in which you might have concerns, goals, wishes or aspirations. You should write a number from **0 to 10** in each box below. 0 is for the least amount; 10 is for the greatest amount. If you have a concern in one Life Area, be sure to fill in all the boxes for that area (e.g., Home and Household) before going on to the next Area of life.



Continued

ANSWER SHEET

(page 2)



APPENDIX 12

Drinking Motives Questionnaire- Revised (DMQ-R)

Motives Questionnaire

The following questionnaire lists a number of reasons people sometimes give for drinking alcohol. Thinking of all the times you drink, how often would you say that you drink for the following reasons? Please tick the answer of your choice to each question. **Your answers are completely private and confidential.**

		almost never /never	some of the time	half of the time	most of the time	almost always /always
1	To forget your worries.					
2	Because your friends pressure you to drink.					
3	Because it helps you to enjoy a party.					
4	Because it helps you when you feel depressed or nervous.					
5	To be sociable					
6	To cheer up when you are in a bad mood.					
7	Because you like the feeling.					
8	So that others won't kid you about *not* drinking.					
9	Because it's exciting					
10	To get high.					
11	Because it makes social gatherings more fun.					
12	To fit in with a group you like.					
13	Because it gives you a pleasant feeling.					
14	Because it improves parties and celebrations.					
15	Because you feel more self-confident and sure of yourself.					

Motives Questionnaire

The following questionnaire lists a number of reasons people sometimes give for drinking alcohol. Thinking of all the times you drink, how often would you say that you drink for the following reasons? Please tick the answer of your choice to each question. **Your answers are completely private and confidential.**

		almost never /never	some of the time	half of the time	most of the time	almost always /always
16	To celebrate a special occasion with friends.					
17	To forget about your problems.					
18	Because it's fun.					
19	To be liked.					
20	So you won't feel left out.					

APPENDIX 13

Motives for Abstaining from Alcohol Questionnaire (MAAQ)

MAAQ (Stritzke & Butt, 2001)

The following statements are reasons given by people for not "drinking" alcoholic beverages on a particular occasion or for not drinking alcohol at all. Please indicate how important each statement is to "You" personally as a reason for not drinking alcohol at all.

0 = not at all important

1 = slightly important

2 = moderately important

3 = very important

4 = extremely important

MAAQ (Stritzke & Butt, 2001)

0 = not at all important, 1 = slightly important, 2 = moderately important 3 = very important, 4 = extremely important

. Drinking may interfere with my academic or work performance	0	1	2	3	4
. I have a medical condition that is made worse by alcohol	0	1	2	3	4
. My family gets upset when I drink alcohol	0	1	2	3	4
. My religion does not allow alcoholic beverages	0	1	2	3	4
. I have no desire to drink alcohol	0	1	2	3	4
. Alcohol impairs peoples' control of themselves, and I like to be in full control	0	1	2	3	4
. I have or used to have a drinking problem	0	1	2	3	4
. I was brought up to abstain from alcoholic beverages	0	1	2	3	4
. Drinking alcohol is against my moral, spiritual, and religious beliefs	0	1	2	3	4
0. I do not like the taste or smell of alcohol	0	1	2	3	4
1. I need my money for things other than alcohol	0	1	2	3	4
2. I don't want to act like people I' ve encountered who re drunk	0	1	2	3	4
3. My doctor told me not to drink	0	1	2	3	4
4. My family disapproves of drinking alcohol	0	1	2	3	4
5. Being intoxicated or drunk may make me vulnerable and put me at risk of harm	0	1	2	3	4
6. I was taught not to drink alcohol	0	1	2	3	4
7. One or both of my parents have or have had a drinking problem	0	1	2	3	4
8. I have a genetic problem which makes it hard for my body to handle alcohol	0	1	2	3	4
9. Alcohol may affect my studies or work	0	1	2	3	4

APPENDIX 14

Typical and Atypical Drinking Diary (TADD)

Typical and Atypical Drinking Diary (TADD)

Participant Name: _____

1. Please select which beverage(s) you drank in the LAST THREE MONTHS, and the size of the container you normally use when drinking the beverage(s), by ticking in the appropriate box.

Beverage	Alcohol content	Usual container size									
							Bottle				
		single	double	glass	can	pint	330 ml	750 ml	1 litre	2 litre	3 litre
Alcopops	5%	----	----	----	----	----		----	----	----	----
Beer (normal)	3.7%	----	----	----				----			
Beer (strong)	5%	----	----	----				----			
Beer (super)	9%	----	----	----				----			
Cider	7.5%	----	----	----							
Wine (white)	9-13%*	----	----		----	----				----	----
Wine (red)	9-13%†	----	----		----	----					----
Fortified wine	17%	----	----		----	----	----		----	----	----
Spirits	40%			----	----	----	----			----	----
Other (please state)											

* If known, please state the exact alcohol content

† If known, please state the exact alcohol content

Some people drink regular amounts of alcohol each week whereas others do not. Below are two weekly diaries to record your drinking—one for weeks when you drank **typical** amounts and one for weeks when you drank **greater** or **lesser** amounts.

- Please record your **TYPICAL** weekly amount (in the PAST THREE MONTHS) in the first diary.
- If you drank *differently (e.g., more or less)* than your *typical* weekly amount (in the PAST THREE MONTHS), please record this **ATYPICAL** weekly amount in the second diary.

3. Please estimate what you drank in a **TYPICAL** week in the past three months. For each day, state the type and amount of beverage consumed. For an example of a drink diary, see page 4.

Day	Beverage	%	Total amount drunk
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

4. How many weeks in the past three months have you drunk this **TYPICAL** amount? (please tick in the appropriate box)

0	1	2	3	4	5	6	7	8	9	10	11	12

5. Please estimate what you drank in an **ATYPICAL** week in the past three months. For each day, state the type and amount of beverage consumed. For an example of a drink diary, see page 4.

Day	Beverage	%	Total amount drunk
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

6. How many weeks in the past three months have you drunk this **ATYPICAL** amount?
(please tick in the appropriate box)

0	1	2	3	4	5	6	7	8	9	10	11	12

An Example of a Typical and Atypical Drinking Diary

Day	Beverage	%	Total amount drunk
Monday	Beer	3.7	4 pints
Tuesday	Wine	12	1 bottle
Wednesday			
Thursday			
Friday	Beer	3.7	5 pints
	Spirits	40	2 doubles
Saturday			
Sunday	Beer	3.7	4 pints

How many weeks in the past three months have you drunk this **TYPICAL** amount?
(please tick in the appropriate box)

0	1	2	3	4	5	6	7	8	9	10	11	12
								X				

Day	Beverage	%	Total amount drunk
Monday	Beer	3.7	5 pints
Tuesday	Wine	12	1 bottle
Wednesday			
Thursday			
Friday	Beer	3.7	5 pints
	Spirits	40	2 doubles
Saturday	Beer	5	4 cans
	Beer	3.7	5 pints
	Alcopops	5	2 bottles
Sunday	Beer	3.7	4 pints
	Beer	5	4 cans

How many weeks in the past three months have you drunk this **ATYPICAL** amount?
(please tick in the appropriate box)

0	1	2	3	4	5	6	7	8	9	10	11	12
				X								

APPENDIX 15

Demographics Questionnaire for Study 2

Demographics Sheet

Name: _____

Sex: M or F

Age: _____

Native English speaker? YES NO

Total number of years of education: _____

Educational level (undergraduate or postgraduate): _____

Department of study: _____

Age you first decided to drink alcohol: _____

How many years have you been drinking alcohol on a regular basis? _____

Did you take part in the first study? YES NO

****

Thank you for completing the personal details.

APPENDIX 16

Debriefing Sheet for Study 2

Debriefing Sheet for Study 2

Thank you for taking part in this study. The addictive behaviours literature often states that certain personality traits (e.g., anxiety), unhealthy coping behaviours (e.g., avoidance coping), and emotional problems (e.g., not being able to regulate negative emotions) are risk factors for excessive drinking. This study investigated the relationships between these risk factors. It is expected that some of these risk factors will combine to predict students' alcohol use.

If you are concerned about your current drinking behaviour:

(1) Please speak to your Doctor (GP).

(2) Please speak to your personal tutor at the university.

(3) Please speak to Student Counselling Services. The counselling service is in Glanrafon Flat, a building attached to the end of the Students' Union. Please contact Kelly Snowden, Administrator on k.a.snowden@bangor.ac.uk or 01248 382024 for an appointment.

Other useful contact numbers:

CAIS	0870 5134902 or 01492 872014
Alcoholics Anonymous	0845 7697555
Drug Advice Service	01248 351829
National Drugs Helpline	0800 776600

Thank you for Participating in this study! Please feel free to contact the researcher if you require any further information about the study.[1]

---

[1] Mr Simon Cook, School of Psychology, 45 College Rd. 01248 351151, pspe@bangor.ac.uk

APPENDIX 17

Consent Form and Information Sheet for Study 3

Consent Form

I, ..., hereby agree to participate in a scientific study of Professor Miles Cox, and Mr. Simon Viktor. The study and my part in the study have been fully explained to me and I understand this explanation. I will complete a number of personality based questionnaires, and then participate in a memory recall task and beverage taste-test. The procedures of this study and their risks have been answered to my satisfaction. Please tick the boxes below.

- I understand that I am free not to answer specific items or questions in interviews or on questionnaires. ☐
- I understand that I am agreeing to participate in a memory recall task. ☐
- I understand that I am agreeing to participate in a beverage taste-test. ☐
- I understand that all data will remain confidential with regard to my identity. ☐
- I understand that I am free to withdraw my consent and terminate my participation at any time without penalty. ☐
- I understand that I may request a summary of the results of this study. ☐
- Please write your e-mail address below in the space provided if you would like to receive a copy of your results from this study:_____

In the case of any complaints concerning the conduct of research, these should be addressed to Professor R. Hastings, Acting Head of School, School of Psychology, University of Wales, Bangor, Gwynedd, LL57 2AS.

.....

Date Participant's Signature

I, the undersigned, have fully explained the investigation to the above individual.

.....

Date Experimenter's Signature

Information sheet for personality and beverage preference study

This research is designed to study the relationships among personality, motivation, affective states, and beverage preference. In this session, you will be asked to complete a number of personality-based questionnaires, a short memory recall task, and a beverage taste-test. During the taste-test, you will be presented with four beverages, such as a soft drink. All you have to do is provide ratings on the qualities of these beverages on four rating scales. Next, you will be asked to complete a form so we can evaluate the experimental procedures employed in this study. The session should take between 60 and 90 minutes to complete. If you are a psychology student, you will receive 3 course credits and £6 worth of printer credits. If you are a student from another department, you will receive £10 in cash for your participation.

If you are pregnant, or do not drink alcohol, or have been drinking alcohol before attending the research session, please inform the researcher now so that you can be discharged from the study before it commences. If you have been drinking alcohol you will be asked to schedule another session if you still wish to participate in the study.

If you would like to receive a summary copy of your results from this study, please write your **e-mail address** on the **Consent Form.** Your personal information will not be disclosed to third parties. We will keep the data of this research confidential. Only the student researcher and their supervisor, Professor Miles Cox, will have access to the data.

If you have any questions about this study, please feel free to ask the researcher.

APPENDIX 18

Positive and Negative Affect Schedule (PANAS)

PANAS (A)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the response on the scale below that indicates how well each adjective or phrase describes your present mood. Use the following scale to record your answers.

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

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

Overall, my present mood is:

Very Unhappy — Very Happy

−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10

APPENDIX 19

Desires for Alcohol Questionnaire (DAQ)

DAQ (Adapted from Willner *et al*, 2005)

Listed below are statements that ask about your feelings about drinking. The words "drinking" and "drank" refer to having a drink containing *alcoho*l, such as beer, wine, or spirits. Please indicate how strongly you agree or disagree with each statement by placing a circle around one of the scale numbers. For example, the number '**7**' indicates that you strongly agree with the statement; the number '**1**' indicates that you strongly disagree with the statement. There are no wrong or right answers. Please read each statement carefully, but do not think too long about your answer. Please complete every statement. We are interested in how you are thinking or feeling *right now* as you are filling out the questionnaire.

1) Drinking now would make the good things in my life appear even better

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

2) It would feel as if the bad things in my life had completely disappeared if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

3) Even major problems in my life would not bother me now if I drank

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

4) Drinking now would make me feel on top of the world

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

5) Drinking now would make me feel less tense

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

6) Drinking now would make the bad things in my life seem less bad

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

DAQ (Adapted from Willner *et al*, 2005)

7) Drinking would make me feel good

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

8) If I drank now the small daily hassles would feel less important

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

9) I would probably feel less worried about my daily problems if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

10) Drinking would make me feel less stressed

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

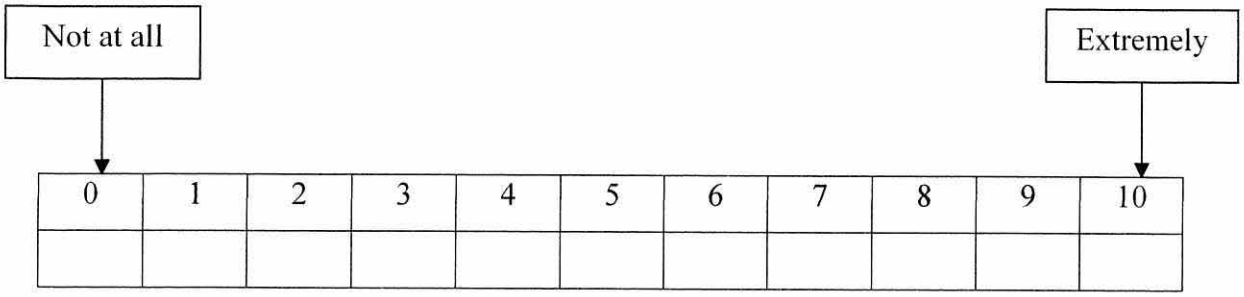
11) Drinking now would make things seem just perfect

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

12) All my tension would completely disappear if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

13) How *rewarding* do you expect it will be to drink alcohol today?



DAQ (Adapted from Willner *et al*, 2005)

Listed below are statements that ask about your feelings about drinking. The words "drinking" and "drank" refer to having a drink containing *alcohol*, such as beer, wine, or spirits. Please indicate how strongly you agree or disagree with each statement by placing a circle around one of the scale numbers. For example, the number '**7**' indicates that you strongly agree with the statement; the number '**1**' indicates that you strongly disagree with the statement. There are no wrong or right answers. Please read each statement carefully, but do not think too long about your answer. Please complete every statement. We are interested in how you are thinking or feeling *right now* as you are filling out the questionnaire.

1) Drinking now would make the good things in my life appear even better

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

2) It would feel as if the bad things in my life had completely disappeared if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

3) Even major problems in my life would not bother me now if I drank

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

4) Drinking now would make me feel on top of the world

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

5) Drinking now would make me feel less tense

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

6) Drinking now would make the bad things in my life seem less bad

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

DAQ (Adapted from Willner *et al*, 2005)

7) Drinking would make me feel good

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

8) If I drank now the small daily hassles would feel less important

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

9) I would probably feel less worried about my daily problems if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

10) Drinking would make me feel less stressed

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

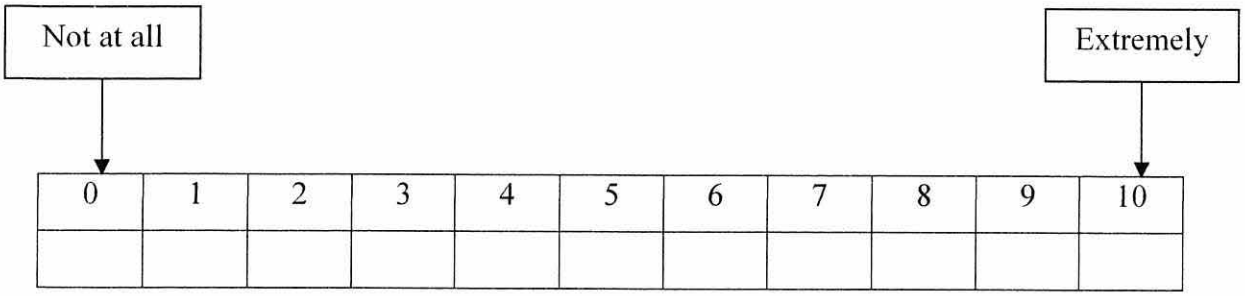
11) Drinking now would make things seem just perfect

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

12) All my tension would completely disappear if I drank now

Strongly disagree: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly agree

13) How *rewarding* was it to drink alcohol today?



APPENDIX 20

Prior Experiences Sheets

Prior Experiences Sheet (A)

'I'm interested in your memory for particular events that have happened to you. By a particular event, I mean something that happened on a particular day. The memory you recall could be from a long time ago or very recent, that doesn't matter. It could be something very important, or something very ordinary. But the main thing is that, if you can, let it be a memory of something that happened on a particular day. Please **take a minute** to think of events (or experiences) from your own life when you **felt very upset or distressed**. You may have been feeling any number of negative feelings (i.e., sadness, guilty, hopeless, rejected, lonely, grief, ashamed, and hurt) or a combination of these negative feelings. Write down a brief description of the three memories that come to mind, in the order they occur to you. Try to remember each event as vividly as possible and after each memory write how you felt about the event at the time. Your responses will be kept strictly confidential.

Example: I bumped into a friend the other day who had borrowed some money off me about a month ago; who has still not paid it back yet and I could do with the money because I am……

Event 1:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

a) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

b) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 2:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

c) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

d) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 3:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

e) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

f) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Prior Experiences Sheet (B)

'I'm interested in your memory for particular events that have happened to you. By a particular event, I mean something that happened on a particular day. The memory you recall could be from a long time ago or very recent, that doesn't matter. It could be something very important, or something very ordinary. But the main thing is that, if you can, let it be a memory of something that happened on a particular day. Please **take a minute** to think of events (or experiences) from your own life when you **felt very happy or elated.** You may have been feeling any number of positive feelings (i.e., relieved, excited, pleased, hopeful, glorious, sunny, proud, and eager) or a combination of these positive feelings. Write down a brief description of the three memories that come to mind, in the order they occur to you. Try to remember each event as vividly as possible and after each memory write how you felt about the event at the time. Your responses will be kept strictly confidential.

Example: I went to a dinner party at a friend's house. I was sat; talking with people I like and have known for a very long time. I was enjoying myself .....

Event 1:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

a) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

b) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 2:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

c) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

d) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 3:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

e) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

f) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Prior Experiences Sheet (C)

'I'm interested in your memory for particular events that have happened to you. By a particular event, I mean something that happened on a particular day. The memory you recall could be from a long time ago or very recent, that doesn't matter. It could be something very important, or something very ordinary. But the main thing is that, if you can, let it be a memory of something that happened on a particular day. Please **take a minute** to think of events (or experiences) from your own life when you **felt neutral**. You may have been feeling neither **sad nor happy**. Try to recall events or experiences that are **not** associated with any significant emotion. Write down a brief description of the three memories that come to mind, in the order they occur to you. Try to remember each event as vividly as possible and after each memory write how you felt about the event at the time. Your responses will be kept strictly confidential.

Example: I was at the local laundrette sorting out my clothes before I put then in a washing machine. The place was very busy but I was able to find a washing machine.....

Event 1:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

a) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

b) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 2:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

c) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

d) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

Event 3:

_____

_____

_____

How did you feel about the event at the time?

_____

_____

_____

e) How strong are your current feelings related to this event?

Not Strong: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very Strong

f) How difficult was it for you to recall this event?

No Difficulty: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Extremely Difficult

APPENDIX 21

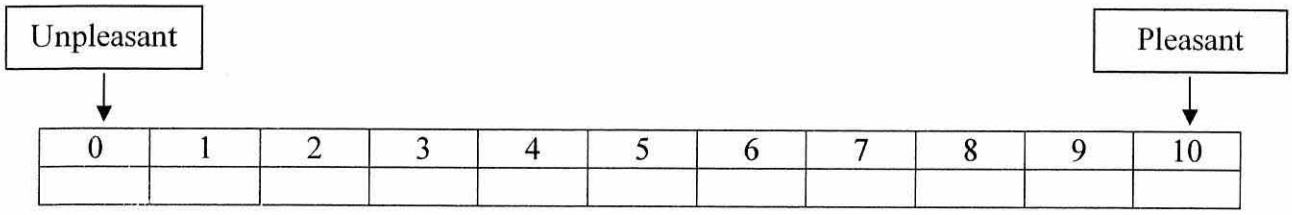
Beverage Rating Scale

Beverage Rating Scale (adapted from Field & Eastwood, 2005)

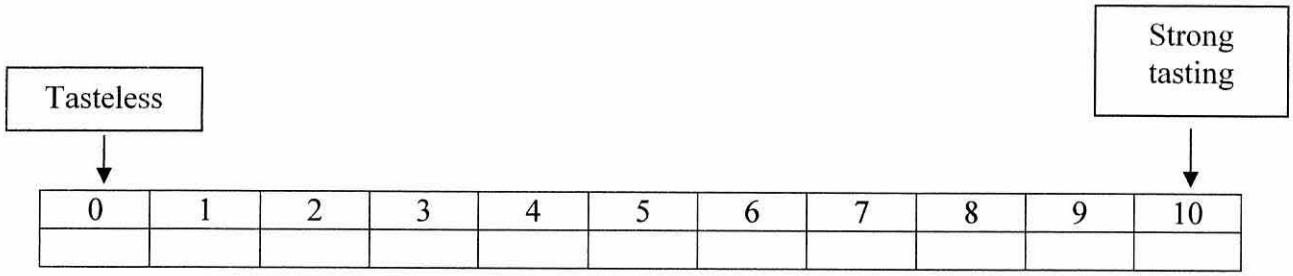
Please write here_____ the letter of the beverage that you are evaluating (e.g., A).

"Please record your answer to each statement by ticking the appropriate box on the scale below each question".

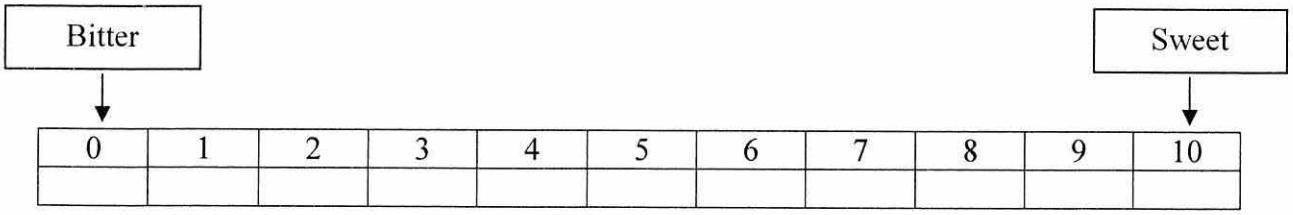
1. How *pleasant* did you find the beverage?



2. How *tasty* did you find the beverage?



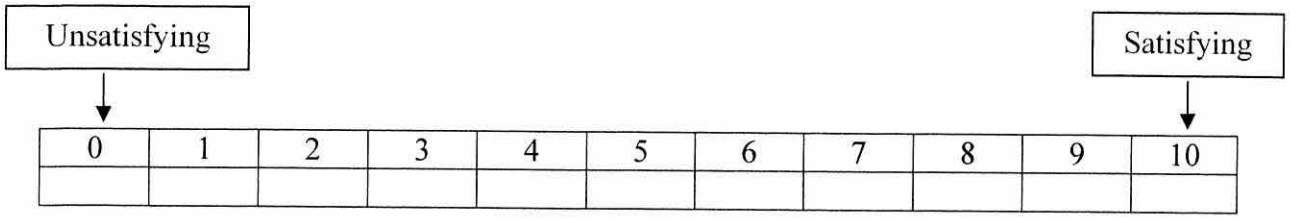
3. How *sweet* did you find the beverage?



Please turn over the page and complete the rest of this form!

Beverage Rating Scale (adapted from Field & Eastwood, 2005)

4. How *satisfying* did you find the beverage?



5. Are there any other comments that you would like to make about the beverage?

_____

_____

_____

_____

_____

_____

_____

Thank you for completing this form!

APPENDIX 22

Beverage Preference Rating Scale

Beverage Preference Rating

Please rank order the beverages from 1 (most preferred beverage) to 4 (least preferred beverage). Please use the appropriate number between 1 and 4, use each number only once.

	Ranking value
Beverage A	_____
Beverage B	_____
Beverage C	_____
Beverage D	_____

APPENDIX 23

Mood-induction and Taste-test Evaluation Form

Mood induction and taste-test evaluation form

We are interested in getting your opinions about the mood induction and taste-test techniques. Please take a few minutes to record your responses to the questions below.

1) How *happy* did the *memory recall task* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

2) How *sad* did the *memory recall task* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

3) How *angry* did the *memory recall task* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

4) How *irritated* did the *memory recall task* make you feel?

Not at all → Very

0	1	2	3	4	5	6	7	8	9	10

5) How *frustrated* did the *memory recall task* make you feel?

Not at all → Very

0	1	2	3	4	5	6	7	8	9	10

Mood appropriate music evaluations

1) How *happy* did the *music* make you feel?

Not at all → Very

0	1	2	3	4	5	6	7	8	9	10

2) How *sad* did the *music* make you feel?

Not at all → Very

0	1	2	3	4	5	6	7	8	9	10

3) How *angry* did the *music* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

4) How *irritated* did the *music* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

5) How *frustrated* did the *music* make you feel?

Not at all — Very

0	1	2	3	4	5	6	7	8	9	10

6a) Which of the *mood induction* techniques *affected your mood state* the most?

Please tick only one statement:

a) The memory recall task? _____

b) The mood appropriate music (played during the taste-test? _____

c) The combined technique (memory recall task and mood music)? _____

d) Your mood state was not affected by any of the mood induction techniques? _____

6b) Did the taste-test cause a shift in your mood state? **Yes** **NO**

Please state below how it made you feel:

_____

_____

_____

6c) Do you have any particular ideas about what the researcher is expecting to find?

Please state them below if you do:

_____

_____

_____

Thank you for taking the time to give us your valuable feedback!

APPENDIX 24

Demographics Questionnaire for Study 3

Demographics Sheet

Please provide answers to the following questions:

Name: _____

Age: _____

Gender (please circle): Male Female

Year of study (i.e. 1st year): _____

Which department or school are you studying in (i.e. psychology):

_____

Please provide answers to the following questions:

1) At what age did you first decided to drink alcoholic beverages: _____
2) Total number of years you have been consuming alcoholic beverages on a regular basis: _____
3) What is your preferred drink (or what to do you normally drink when you drink alcohol?): _____

Thank you for completing this form!

APPENDIX 25

Debriefing Sheet for Study 3

Debriefing sheet for Study 3

Thank you for taking part in the present study, which was designed to explore the relationships between personality, motivation, affective states, and alcohol consumption.

Duty of care issues: Please avoid driving or engaging in any activities that might be strenuous or dangerous for at least an hour after participating in the beverage-taste test. This is in order to let the alcohol metabolise out of the body.

Tasks undertaken: First, you were asked to complete a short personality and mood questionnaire. Second, you were asked to undertake a memory recall task, in which you were asked to recall and record three life-events. The memory recall task was designed to cause a temporary shift in your current negative, or positive, or neutral mood state (depending on the group you were in). Third, we attempted to enhance the affects of the memory recall task by leaving you alone to listen to the mood appropriate music (negative, or positive, or neutral), whilst the beverages were prepared for the taste-test. Fourth, you were asked to undertake a beverage taste-test and provide ratings for the beverages. Fifth, you were asked to complete an experimental evaluation form and a drinking diary.

Study purpose(s): We are investigating whether, or not, if different personality types (anxious or impulsive) drink more alcohol when they are in a negative or positive mood state (affective state). It is predicted that when an anxious person is in a negative mood state that they will drink alcohol to reduce or alleviate their negative mood state (negative motivation to drink). Along similar lines, it is predicted that when an impulsive person is in a positive mood state that they will drink alcohol to further enhance their positive mood state (positive motivation to drink).

What are we measuring: We are measuring the amount of alcohol you consumed during the beverage taste-test rather than your beverage preference.

If you are concerned about your current drinking behaviour:

(1) Please speak to your Doctor (GP).

(2) Please speak to your personal tutor at the university.

(3) Please speak to Student Counselling Services. The counselling service is in Glanrafon Flat, a building attached to the end of the Students' Union. Please contact Kelly Snowden, Administrator on k.a.snowden@bangor.ac.uk or 01248 382024 for an appointment.

Other useful contact numbers:

Wales Drug and Alcohol Helpline (DAN 24/7)	
	0800 6335588
CAIS	0870 5134902 or 01492 872014
Alcoholics Anonymous	0845 7697555
Drug Advice Service	01248 351829
National Drugs Helpline	0800 776600

Thank you for Participating in this study! Please do not tell other students' about the nature of this study! Please feel free to contact the researcher if you require any further information about the study[1]

[1] Mr Simon Viktor, School of Psychology, 45 College Rd. 01248 351151 ex 8715, pspe3e@bangor.ac.uk