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Young People and Alcohol: Taste Perceptions, Attitudes and Experiences

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YOUNG PEOPLE AND ALCOHOL: TASTE PERCEPTIONS, ATTITUDES AND EXPERIENCES

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EXECUTIVE SUMMARY

Drinking alcohol is considered a normative behaviour in adolescence, with adolescent drinkers the majority of consumers for some beverages. One of the new and increasingly popular beverages are 'ready to drink' (RTD) preparations. An RTD is a spirit or wine and a non-alcoholic drink, served in a pre-mixed format. The most popular of these products are mixtures of non-alcoholic beverages such as milk and soft drinks with alcoholic beverages, typically spirits. These RTDs are becoming increasingly popular, particularly among adolescent drinkers. This study aimed to determine the palatability of a range of alcoholic and non-alcoholic beverages to teenagers and young adults. Specifically to: (1) determine which beverages are most palatable to the adolescents and young adults; (2) if this pattern changes with age; and (3) the extent to which packaging affects the palatability ratings.

A convenience sample of 350 participants was recruited, 70 in each of five age groups. Participants were grouped according to age into 12–13yrs, 14–15yrs, 16–17yrs, younger adults of 18–23yrs, and older adults of 24–30yrs. The experimental drinks included three sets of RTDs and their components: 1) *Coke*, *Jim Beam Bourbon* and their mix bourbon *& Coke*; 2) chocolate milk, vodka and their mix *Vodka Mudshake*; and3) *Raspberry Fanta*, *Bacardi* and their mix *Watermelon Bacardi Breezer*. Participants also tested popular alcoholic beverages, *Tooheys New Beer*, *Jacobs Creek Chardonnay* and a novel beverage *Wintermelon Tea.*

The study identified that RTDs should not be treated as a homogenous group, as those with different alcohol and non-alcoholic combinations and their packaging are perceived by adolescents in very different ways. As in most aspects of the study, the palatability of alcohol and the appeal of its packaging increased with age; however, chocolate *Mudshake*, and to a lesser extent watermelon *Breezer*, performed more like their soft drink base than their alcohol component. This suggests that great caution should be exercised when using milk as a base for an RTD, particularly with an alcoholic base that is less readily detected by adolescents, such as vodka. Similarly, caution should be exercised when mixing any soft drink base with vodka in an RTD, and further research is urgently required on these issues. Given that a large proportion of very young adolescents felt that RTDs were packaged to appeal to them, awareness should be drawn to the way these products are being markted.

Alcoholic beverages such as wine, beer and bourbon are successful at not targeting adolescents and, therefore, attention should be given to the way these products are being promoted and observed in the future marketing of RTDs.

1.0 INTRODUCTION

Alcohol is the drug of choice among Australian adolescents and young adults and this raises a significant public health concern for their communities (AIHW 2005). Drinking alcohol is considered a normative behaviour in adolescence (Perkins 2002), where adolescent drinkers make up the majority of consumers for some beverages (Jernigan 2001 p2). By the time the average Australian is 17 years of age, approximately 90% have tried alcohol and 50% are current drinkers (White & Hayman 2004). Early alcohol consumption has been associated with significant negative health and social consequences such as increased violence and risky sexual practices (Wells, Horwood, & Fergusson 2004) and increased alcohol-related problems in later life (Grant, 1997; Fergusson, Horwood, & Lynskey 1995). This relationship, however, is mediated via environmental and family influences (Chan, Kramer, Bierut et al. 2005). While the majority of Australian adults use alcohol responsibly, adolescents are more likely to engage in patterns of binge drinking that increase the likelihood of intoxication-related harms (AIHW 2005).

Recently one alcohol product has experienced unparalleled growth: the 'ready to drink' (RTD) preparation. An RTD is any drink that is in part a spirit or wine and a non-alcoholic drink, served in a pre-mixed format (Food Standards Australia and New Zealand 2004). The most popular of these products are mixtures of non-alcoholic beverages such as milk and soft drinks with alcoholic beverages, typically spirits. Table 1 shows some examples of RTD products available in Australia. The percentage of alcohol and number of standard drinks contained per serve has also been included.

Table 1: Examples of RTD products sold in Australia (as at October, 2005)

Non-Alcoholic Component	Alcoholic Component	Drink Name	Percentage Alcohol	Standard Drinks Per Serve
Chocolate Milk	Vodka	*Chocolate Vodka Mudshake*	5%	0.6 (175ml)
Milk	Kahlua	*Kahlua and Milk*	5.5%	0.9 (200ml)
Lemon Squash	Vodka	*Lemon Ruski*	5%	1.2 (300ml)
Lemonade	Vodka	*Double Black*	7%	1.8 (335ml)
Watermelon Soft Drink	Bacardi	*Watermelon Bacardi Breezer*	5.6%	1.2 (275ml)
Carbonated Water	Peach Schnapps	*Archers Aqua Peach*	5%	1.1 (275ml)
Cola	White Rum	*Malibu Chill – Cola*	5%	1.1 (275ml)
Cola	Bourbon	Bourbon and *Coke*	5.5%	1.65 (375ml)
Cola	Bourbon	*Bulleit Bourbon*	9%	2.7 (375ml)

Australia's first pre-mixed drink that was based on a soft drink was marketed as "Two Dogs" lemonade in 1993 (Alcohol Concern 2001). Since then, hundreds of varieties of these drinks have become available (National Liquor News 2003). The RTDs are becoming increasingly popular with younger drinkers in particular. Market analysis studies have shown that, unlike beer or wine, the popularity RTD alcohol steadily declines from the age of 18 years. Typically, 18 year olds make up approximately 46% of the market share, steadily decreasing to 1% for 70 year olds (Liquor Review 2001). An Australian Government Department of Health and Ageing (AGDHA) report on drinking preferences was commissioned to investigate this market (King, Ball & Carroll 2003). This survey randomly sampled households to ensure a large geographic coverage of 15-17 year olds. Face-to-face interviews were conducted over a period of two years with a total of 800 people who had consumed alcohol in the previous 3 months. Two interviews were conducted in the year 2000 and one each in February 2001 and 2002. The participants were divided into two health risk groups based on their drinking habits at the last drinking occasion. Low risk participants were those males who had drank less than 7 standard drinks, and females drinking less than 5 standard

drinks per average drinking occasion. High risk participants were those males who drank 7 or more standard drinks, and females drinking 5 or more standard drinks per drinking occasion. The studies revealed that pre-mixed spirits were the most preferred beverage among females at both low (32% preference) and high health risk (49% preference) drinking. Although males drank beer most frequently, the popularity of pre-mixed spirits almost doubled for low health risk users (from 13% to 21%) and also increased for high risk users (18% to 24%) across the 2 years of the study. The overall proportion of 15-17 year olds drinking pre-mixed spirits also doubled from 14% in February 2000 to 29% in February 2002 (King et al., 2003).

A survey in Scotland of 373 school children aged 14-15 (Barnard & Forsyth 1998) has confirmed the international popularity of mixed drinks. The survey was conducted only 3 months after the RTD products were introduced in that country in 1996. It found that RTD alcohol was the second most popular drink after *beer* for adolescents. The overall popularity of RTDs is reflected in projection of sales figures for spirits over the next year. The Distilled Spirits Industry Council of Australia projected that RTDs will account for 9% of the total liquor market in 2005-06 (DSICA 2005). All these findings indicate that spirit-based RTDs represent a large and growing market among younger drinkers, especially adolescents. This growing market can be analysed in terms of how it influences younger drinkers using "the four P's of marketing" (Mosher 2001): that is, promotion, placement, price and product.

1.1 RTD promotion

Strategies for RTD promotion are likely to be contributing to the desirability of RTDs for young people. While the alcohol industry's stated market is adults aged over 18 years, research shows that alcohol promotion also influences younger age groups. The contribution of alcohol promotion among youths has been shown by the positive impact on drinking habits with its absence. A 2003 US Federal Government economic analysis of youth drinking concluded that a complete ban on alcohol advertising could reduce monthly levels of youth drinking by 24% and youth binge drinking by about 42% (Saffer & Dave 2003). An analysis of actual banning in seventeen countries found that the real effect on consumption may not be significant. The bans, however, did have an impact on brand and beverage shares (Nelson 2001). This might not be surprising, as in 2003 $US1.79 billion was spent on alcohol

advertising in measurable media (such as television, radio, print, outdoor, and newspapers), increasing to $US5.37 billion when including promotions (such as sponsorships and internet advertising) (TNS Media Intelligence, 2003; Federal Trade Commission 2003).

While it is clear that alcohol advertising is a huge industry, it does not necessarily follow that the advertisements are being seen by young people. However, research investigating this issue has demonstrated tha,t in 1998, 48% of 10–13 year olds and 83% of 14–17 year olds could recall at least four alcohol advertisements (aired only after 9pm) after watching television for a week in New Zealand (Wyllie, Zhang & Casswell 1998). This indicates that a significant proportion of youths are seeing these advertisements.

Further study on the promotion of alcohol suggests that young people are an intended market. A study regarding alcohol advertisements in magazines and the impact of youth readership investigated this issue (Garfield, Chung, & Rathouz 2003). From a random selection of 48 major US magazines, 35 were analysed from 1997 to 2001. The number of youths reading these magazines ranged from 1.0 to 7.1 million. The numbers of alcohol advertisements were calculated over the 4 years. After controlling for magazine characteristics, increased youth readership was significantly correlated with an increase in the number of *beer* and distilled spirits advertisements. For each additional 1 million young readers aged 12-19 years, the magazines carried an average of 1.6 times more *beer* advertisements and 1.3 times more distilled spirits advertisements than without these readers.

It is widely assumed that the young people who see these advertisements are likely to be influenced by them. Grube (1993) found that, among 468 fifth and sixth graders, those who reported greater awareness of alcohol advertising had more favorable beliefs about drinking and increased intention to drink. A recent study of 253 10-17 year olds in California reported that the perceived likeability of beer advertisements was a function of the positive affective responses evoked by specific elements featured in the advertisements, such as animal characters, music and humour. Further, the liking of these elements was related to the intention to purchase the item (Chen, Grube, Bersamin et al. 2005).

There is further evidence suggesting that younger age groups *believe* alcohol promotion is targeted toward them. A recent Australian study conducted a survey across two age groups after showing them several advertisements. Of 15-16 year olds, 25% thought that advertisements for alcohol were aimed at people their age, while approximately 50% of 19-21 year olds thought the same ads were aimed at people younger than them (Jones & Donovan 2001). These findings all indicate that media promotion is most likely increasing RTD popularity to youths.

A second significant part of RTD promotion concerns the actual physical properties of the RTD packaging. Some research suggests that RTDs are packaged in containers that are similar in appearance to highly popular soft drinks that appeal to young people (MacKintosh, Hastings, Hughes, Wheeler, Watson & Inglis 1997). MacKintosh et al. (1997) also raised the issue of the RTD packaging size. They suggested that these drinks are likely to be small and portable; factors that facilitate the RTD's illicit consumption among under-age drinkers. An Australian study (Smith, Edwards & Harris 2005) has raised similar concern with RTD packaging. This study questioned staff members from alcohol retailers on their opinion of the RTD packaging. There was general agreement amongst these members of the alcohol industry that the RTD preparations were for young people under the legal drinking age and often termed "kiddie drinks".

1.2 RTD placement

The second marketing strategy contributing to underage drinking concerns the RTD placement. Alcohol is often placed in venues which are located in shopping centres frequented by people of all ages. Within these retailers the RTD products are visually prominent. Smith et al.'s (2005) study reported that over 40% of all glass-door display refrigerators in bottle shops on the central coast of NSW Australia, are dedicated to storing RTDs. This was of some concern as the RTD proportion of market share is around 9% (DSICA 2005). Some staff members indicated that RTD marketers had offered them free fridges to display RTDs with the expectation that they are displayed so that the product can be seen from outside. This study recommended that the display for RTD products be reduced by 75% in order to control for the issue of RTD's popularity to under 18s.

Although a concern for under-age drinking, the placement of RTD preparations is not under investigation in the present study.

1.3 RTD pricing

The third RTD marketing strategy concerns its price. The price of a drink may be of particular concern for adolescents as they have much less purchasing power. According to research by Brain and Parker (1997) the price of alcohol is one of the top three reasons for purchasing a particular alcohol brand along with the strength and taste. The price of a drink becomes more important the more frequently a young person drinks. A qualitative study on 824 12-17 year olds demonstrated that only 30% of the sample thought that the price of an RTD product contributed to its popularity (Hughes et al. 1997). Although interestingly, in Australia, the RTD is the most expensive alcohol per standard drink (Crosbie, Stockwell, Wodak & O'Ferall 2000). The price of a *Bundy and Cola* ($2.23) is approximately twice as expensive as the next most expensive drink - light beer ($1.15). However despite this price differential, the popularity of the RTD products continues to grow.

1.4 RTD product

Despite the level of media and policy attention devoted to RTDs, there is no scientific evidence of their relative palatability across age groups and genders. In particular, the key question remains as to whether RTDs differentially appeal to underage drinkers and whether or not they are liked to the same extent as the sweeter non-alcoholic drinks they are presumably modeled on (e.g. flavoured milks, colas and carbonated drinks). Traditionally, the taste of alcohol has been used as a control, as it has a strong taste and mouth texture and is an acquired taste that deters young people from drinking (Alcohol Concern 2001). This is not the case, however, for the RTDs as the alcohol is masked with the sweeter non-alcoholic base. Hughes et al. (1997) conducted a quantitative and qualitative study in Scotland to investigate RTD popularity. Adolescents aged 12-17 completed questionnaires giving their opinions on RTDs, specifically the market leader in Scotland *MD 20/20*. This drink was said to have a pleasant (41%), sweet taste (58%), popular with peers (47%) and unpopular with older adults (51%). The desirable properties of the drinks made them easily targeted toward an adolescent market that drinks for the alcoholic effect, but dislikes the taste of alcohol (Hughes et al. 1997; Shanahan & Hewitt 1999; White & Haymen 2004).

Several methods are available to assess palatability and the most frequently used is to measure "liking". Although palatability measurements do not indicate a willingness to choose one drink type in preference to another, they do indicate whether one drink is preferred over another and enable comparisons of RTD rating with similar non-alcoholic drinks. Nonetheless, assessing palatability is the most commonly used means of addressing preferences; it is the most efficient and can give some indication of a person's likely behaviour (e.g. Cardello, Schutz, Snow & Lesher 2000). It has been shown that younger people show greater preference for sweeter drinks. A longitudinal study by Desor and Beauchamp (1987) showed, amongst 44 participants, that sucrose was significantly more palatable at age 11-15 than when aged 19-25. A separate study investigated taste preferences of 618 9-15 year olds and 140 adults (Desor, Greene & Maller 1975). The younger groups showed a significantly stronger liking for a sweet taste than did the adults. It could then be assumed that younger people should also prefer the sweeter alcoholic drinks than other types of alcohol. Until the present study, there has been no comparable research on RTD products that had a quantitative measure of taste preferences.

1.5 Aims and hypotheses

This study aims to determine the palatability of a range of alcoholic and non-alcoholic beverages to teenagers and young adults. Firstly, the study aims to determine which alcoholic beverage is the most palatable to the adolescents and young adults. Secondly, the study aims to determine if this pattern changes with age. Thirdly, the study aims to determine the extent to which packaging affects the palatability ratings.

Based on past research (Hughes et al., 1997; King et al., 2003; White & Hayman 2004); it is expected that RTDs will be liked more than other types of alcoholic beverages with the possible exception of beer. When looking at the difference that age makes, it is expected that this preference for RTDs will be greater for the younger age groups, especially for 15-17 year olds. The advertising of alcoholic drinks is also thought to affect drinking patterns. Past research has looked at the effects of media advertising (Jackson et al., 2000; Jones & Donovan, 2001; Grube 1993), yet there has been no research into the effects of packaging on palatability ratings. With some generalisation of media-related RTD promotion, RTD

packaging is expected to increase drink palatability relative to a serving of the same drink without such promotion/packaging.

2.0 METHODS

2.1 Participants

A convenience sample of 350 participants was recruited, 70 in each of five age groups. Participants were grouped according to age into 12-13yrs, 14-15yrs, 16-17yrs, younger adults of 18-23yrs, and older adults of 24-30yrs. Although convenience sampling was used to recruit the participants, each of the age groups was divided so that there would be an approximately equal spread of ages and gender. The entry criterion included being aged between 12 and 30, absence of medication or relevant physical or emotional disorder, residence in the Sydney metropolitan areas and fluency in English. Participants were recruited in two ways depending on age group. Participants in the first 3 age groups, that were younger than 18 years, were recruited from government and non-government schools across Sydney. The older two age groups (i.e. participants older than 18 years) were recruited from advertisements at tertiary education centres, fliers and the popular press.

2.2 Materials

Participants completed the interview in three different sections: firstly the screening sheet, followed by response booklet and questionnaire.

The screening sheet consisted of five questions ascertaining whether the participant had a current viral respiratory tract infection, was taking medication, had diabetes, phenylketonuria, or seizure disorder, was over 12 years old and had parental consent (if under 18yrs).

The response booklet consisted of one set of questions repeated 15 times, and a second set of questions repeated 12 times. The first set of questions (used in the blind testing) used three Likert scales, from 1 to 7 (labelled centrally and at the polar ends). The first scale was designed to ascertain 'palatability ratings' (i.e. how much they liked the drink) and was scaled from 'strongly dislike' to 'indifference' and 'strongly like'. The second scale was designed to ascertain 'exposure estimates' (i.e. if they have had the drink before) and was scaled from 'definitely have not' to 'unsure' and 'definitely have'. The third scale was designed to ascertain 'alcohol estimations' (i.e. how much alcohol they thought the drink contained) and was scaled from 'none' to 'a fair bit' and 'a great deal'. The participant was then asked to

name the beverage if possible, or otherwise describe what it tasted like (whether it was bitter or sweet, etc.). Then the age range of people that would like the drink was described by circling the range of ages that were applicable (in 5 year groupings from '0' to '70+'). Finally the participant was asked which gender would like the drink the most, with the option of neither being available.

The questionnaire included questions on demographics, tobacco usage, patterns of alcohol use and types of alcohol consumed, and finally knowledge of alcohol-related risk was assessed.

2.3 Procedure

Institutional ethical approval was gained from the University of New South Wales Human Ethics Committee and the Macquarie University Human Ethics Committee. For participants under 18yrs, seven schools were approached and informed consent was given by the school Principal. Participants were then tested within the school. Participants over 18yrs were tested on location at NDARC. When the volunteering participants were judged to meet eligibility criteria they were informed of the nature of the study, that their information was to be confidential and they provided informed consent (from parents in addition to their own when the participants were under 18 yrs). Interview forms were marked with a code and were not linked with any identifying information.

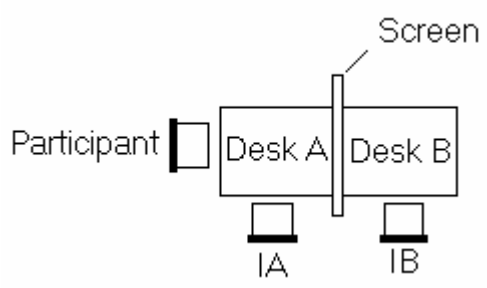
Four social science graduate interviewers were utilised, each trained in the standardised use of the survey and testing procedure. The testing was conducted by teams of one male and one female. The interviews were conducted from July 2004 to July 2005. At the completion of the interview the participants were thanked and received $AU30 (if over 18yrs) or 2 movie tickets (if under 18yrs) as a contribution to travel and related expenses.

2.3.1 Testing environment

Once a room was secured for interviewing, the interviewers observed the layout to find a possible screen to keep one desk in front of the participant (**desk A**) and one desk out of view from the participant (**desk B**). Each of the two interviewers had a different role. One

was the "face" of the interview, conducting the questions and demonstrations (**IA**). The second interviewer prepared the stimuli, and ensured the "flow" of the interview (**IB**).
The seating and screen are shown below in Diagram A.

Diagram A: Seating arrangement



The experimental drinks included three sets of RTDs and their components, some popular alcoholic beverages and a novel beverage. The list below states how the drinks will be referred to throughout the report:
Barcardi (*Barcardi* will hereafter refer to *Superior Barcardi*)
Beer (beer will hereafter refer to *Tooheys New Beer*)
Bourbon (Bourbon will hereafter refer to *Jim Beam Bourbon*)
*Bourbon and Coke (*Bourbon and *Coke* will hereafter refer to *Jim Beam Bourbon and Coke*)
Breezer (Breezer will hereafter refer to Watermelon Barcardi Breezer)
Moove (Moove will hereafter refer to *Chocolate Moove)*
Coke (*Coke* will hereafter refer to *Coca Cola*)
Fanta (Fanta will hereafter refer to *Raspberry Fanta*)
Mudshake (*Mudshake* will hereafter refer to *Chocolate Vodka Mudshake*)
Vodka (vodka will hereafter refer to *Smirnoff Vodka*)
Wine (wine will hereafter refer to *Jacobs Creek Chardonnay*)
Wintermelon Tea (Wintermelon Tea will hereafter refer to *Wintermelon Tea*)

The beverages were each chosen carefully to cover the broadest spectrum, utilising the most popular and well known drinks. The RTDs were chosen according to their alcoholic and non-alcoholic components. To cover a broad spectrum of RTD alcohol, the non-alcoholic

components; milk, coke and a fruity base were chosen. The alcoholic components; vodka, *bacardi*, and bourbon were chosen to represent spirits. The particular RTDs used represented the most popular RTDs found in NSW that represented the combination of these bases. The particular non alcoholic and alcoholic component beverages were then chosen to best represent the taste and configurations of the RTDs. Only the most popular beverages in NSW were selected. The beer and white wine were chosen to represent different popular kinds of alcohol, and the most popular of the NSW brands were selected. Finally the *Winter-Melon Tea* was selected as a beverage that would not be familiar to most participants as it is not sold in most Australian supermarkets and has a sweet but unusual flavour. Such an unfamiliar beverage was required in the study to control for novelty, to ensure that it was not just the unfamiliar taste of alcohol among those naïve to alcohol that was accounting for the taste preferences.

IB closely followed the preparation sheet to ensure the correct order of presentation was used while also ensuring the correct titrations were observed for the spirits. This same number order was used throughout the study and randomised using a chart prepared from random number tables. The preparation sheet also demonstrated how to titrate each of the spirits.

2.3.2. Preparation of the Spirits

2.3.2.1. Preparing the *Smirnoff Vodka*

The vodka was mixed by taking 1.1ml of the vodka and 8.9ml of water and putting it in the cup. This gave an alcohol concentration of 4.1% (compared to 4.0% for the *Vodka Mudshake*).

2.3.2.2 Preparing the *Jim Beam Bourbon*

The bourbon was prepared with 1.5ml of the *Jim Beam* and 8.5ml of water. This gave an alcohol concentration of 5.6% (compared to 5.5% for the *Jim Beam & Cola*).

2.3.2.3. Preparing the Superior Bacardi

The *Bacardi* preparation was 1.3ml of the *Bacardi* and 8.9ml of water, giving an alcohol concentration of 4.9% (compared to 5.0% for the *Bacardi Breezer*).

2.4 The interview introduction and demonstration

IA collected the participant for testing while IB ensured that Desk B was not visible and that the lay out was all in order. Before revealing any of the sample cups, IA seated the student and introduced everyone. IA then explained that the participant must read and sign the consent form before beginning the interview. As the participant read the consent form, key points were elucidated, including aspects of procedure, and the participant was reminded that they may stop the interview at any time without penalty.

Following the consent form, the screening sheet was filled in. IA ensured that the participant did not have any conflicting medications or conditions that should not be mixed with alcohol. If any medication was being currently taken, IA questioned if there was possibility of a negative reaction to the accidental swallowing of alcohol. In the event that some doubt existed, the participant was excluded from the study. Participants were not excluded simply if they had a cold.

The procedure was as follows, step by step:

IA explained that the participant will be handed several beverages in small 10ml doses.

1) IA pointed out the goggles and explained that they are used to "blind you from the beverage colour".
2) As IB handed IA a cup for demonstration, IA explained that the participant should first smell the beverage.
3) IA then mimed the tasting process, explaining that the participant must "roll it around and try his/her best to get a taste for it, but do not swallow it".
4) IA then mimed spitting out the 'content' into the waste bucket and explained again that there was to be no swallowing. If the participant was under 18 years of age, it should be explained that if the participant swallows any beverage the interview would be stopped and their parents and principal informed.
5) IA then demonstrated how to rinse out with the bottle of water and cup provided. Again, it was explained that even the rinsing water should not be swallowed.
6) IA then reviewed the participant response booklet and demonstrated the answering procedure. It was explained in detail ensuring the participant knew

how to use the Likert scale. IA read out what each end of the scale referred to. So, for the first response to the question 'How much did you like or dislike this drink?' IA explained that "the left end of the scale, number one, refers to a 'strong dislike', while the middle of the scale refers to 'indifference' and, finally the right end of the scale refers to a 'strong like"'. Also it was explained that the participant should "circle *any* number from 1 to 7". Further, it was explained that the age scale was designed so that participants could "circle the actual applicable range of ages, and not just one particular age. To answer that nobody would like the drink, the '0' on the age scale should be circled".

7) At that point IA let the participant know that only the first block of drinks (the 3 practice, and 12 beverages) will be conducted using the goggles. IA explained that, after this first block, the second block was done in the non blind fashion. IA then handed the participant the goggles so that they could be worn before testing began.

2.5 The three sample beverages and 'blind' testing

IB handed IA the first of the sample cups: 10ml orange juice. IA then ensured the participant had rinsed, and asked the participant to begin. The participant then followed the demonstrated procedure. If the participant was spending more than about five seconds to get a taste for the beverage, the interviewer asked them politely to spit out. For the first run the interviewer watched very closely to ensure the participant was doing everything correctly. It was ensured that 45 seconds had passed prior to the participant taking the next sample. Following this, the first of the 'blind' samples began.

The procedure remained the same until about the tenth sampling when IA explained that the 'blind' part of the interview was nearly complete. After the twelfth and final sample cup from the blind condition was completed, IA asked the participant to remove the goggles in order to continue with the non blind testing.

2.6 The 'non blind' testing

Before sampling began, IA informed the participant that there was a different question on the response booklet for this section. Instead of asking what the beverage is, the response

booklet questions whether the particular beverage packaging and labelling was designed to appeal to them. The beverages were given in the *same order* as the 'blind' testing as shown on the ordering sheets. At all times IA ensured that the participant was answering the questions in the correct manner and not accidentally leaving some blank. Following the twelfth and final beverage, the participant completed the questionnaire.

2.7 The questionnaire and interview conclusion

After asking if the participant wanted a short break, IA continued with the questionnaire and was breathalysed for alcohol. After the analysis, so long as the participant didn't register any alcohol in their system (0.000), IA reimbursed the participant and thanked them. No participant registered a positive breath-analysis.

2.8 Data analysis techniques

The quantitative and qualitative data in this study was analysed using SPSS (version 12.0). Simple linear regression techniques were used to determine the relationship between rating scales and the predictor variable age (continuous variable). The relationship between gender and rating scales was explored using one-way analysis of variance techniques. To explore differences between age groups, this variable was recoded into five 'dummy' variables. Four of these variables were used in univariate analysis of variance, with the fifth variable used for reference. Chi–Square analysis was utilised to ensure random distribution of variables such as whether or not participants had a cold. This type of analysis was also utilised to determine the relationship between categorical variables such as frequency of use and age groups. In interpretation of these analyses, significant relationships were taken at $p < 0.05$.

3.0 RESULTS

3.1 Participants' demographic characteristics

3.1.1 Age

The sample was comprised of three adolescent age groups (12–13 years, 14–15 years, and 16–17 years) and two adult age groups (18–23 years, and 24–30 years). The breakdown of participants by age is presented in Table 2 for the adolescent groups and Table 3 for the adult groups.

Table 2: Breakdown of sample into year groups for participants aged 12–17

Adolescent Groups	Age in Years	Percentage of Participants
Age Group 1	12	44.3
(n = 70)	13	55.7
Age Group 2	14	51.4
(n = 70)	15	48.6
Age Group 3	16	58.6
(n = 70)	17	41.4

Table 3: Breakdown of sample into year groups for participants aged 18–30

Age in Years (Younger Adults)	Percentage of Participants (n = 70)	Age in Years (Older Adults)	Percentage of Participants (n = 70)
18	17.1	24	25.7
19	22.9	25	17.1
20	22.9	26	11.4
21	11.4	27	10.0
22	10.0	28	11.4
23	15.7	29	11.4
		30	12.9

3.1.2 Cultural background

The majority of adolescent participants (n = 210) were born in Australia (94.3%), with over half (60.5%) indicating that both their parents were also born in Australia. Less than one in 20 (4.8%) reported that they were of Aboriginal or Torres Strait Islander origin. Almost all (97.1%) of the adolescents in the sample preferred to speak English at home. A majority (79.5%) were living with both parents and some (14.8%) with their mother alone.

The adult participants (n = 140) were less likely to be Australian born (60%), with less than one half (40.7%) indicating that both their parents were also born in Australia. Only 2.1% reported that they were of Aboriginal or Torres Strait Islander descent. The majority, (89.3%) preferred to speak English at home. Less than one in two (43.6%) were living with friends, with only one fifth living with their parents (20%).

3.1.3 Tobacco use

Among the adolescent age groups only 15.8% indicated that they had ever smoked a full cigarette. Among those who had ever tried tobacco, over half (57.6%; n = 19) did not smoke and about one in ten (12.1%; n = 4) were daily smokers at the time of interview.

Of the adult sample, the majority (76.4%) indicated that they had smoked before, although about half (47.4%; n = 52) did not smoke and about three in ten (29.1%; n = 32) were daily smokers at the time of interview.

3.2 Patterns of alcohol use

3.2.1 Initiation to alcohol

3.2.1.1 First full serve

The total sample most commonly reported that full strength beer (30.2%), followed by wine (25.7%) was the alcohol they had as their first full serve.

This trend was not consistent across participant age group or gender. The percentages of participants choosing particular drinks as their first full serve are detailed in Table 4 by age group and gender.

Table 4: Percentages of participants' reporting first full serve alcohol type and mean age of initiation to alcohol

Age Group	Gender	N	Mean Age of Initiation (SD)	Premixed Spirits	Bottled Spirits	Wine	Beer
12–13 yrs	Male	2	11.5 (2.1)	50.0	50.0	-	-
	Female	8	12.3 (1.0)	37.5	37.5	25.0	-
		10	12.1 (1.2)	40.0	40.0	20.0	-
14–15 yrs	Male	17	13.6 (0.9)	41.2	17.6	16.7	23.5
	Female	13	13.0 (1.9)	46.2	7.7	30.8	-
		30	13.3 (1.4)	43.3	13.3	23.3	20.0
16 –17 yrs	Male	26	12.7 (2.5)	26.9	11.5	19.2	42.3
	Female	29	13.8 (1.9)	37.9	27.6	27.5	6.9
		55	13.3 (2.3)	32.7	20.0	23.7	23.6
18–23 yrs	Male	33	13.5 (2.7)	9.1	18.2	21.2	51.5
	Female	37	14.7 (2.7)	13.5	37.8	27.0	21.6
		70	14.1 (2.8)	11.4	28.6	24.3	35.8
24–30 yrs	Male	37	13.6 (2.6)	5.4	18.9	21.6	54.1
	Female	33	13.7 (2.7)	3.0	30.3	45.5	21.2
		70	13.6 (2.7)	4.3	24.3	32.9	38.5
		235	**13.6 (2.4)**	**19.6**	**23.8**	**25.7**	**30.2**

Beer was the most common beverage that initiated alcohol use by males in the 16–17, 18–23 and 24–30 year age groups. Males were more likely to prefer *beer* than females in every age group.

Wine was also a common initiation to alcohol (25.7%); however, the only group where this type of alcohol was the most popular choice was among females in the 24–30 year age group. Wine was chosen by more females than males in each age group.

Bottled spirits were also a common choice across the total sample (23.8%); however, the only group where this type of alcohol was the most popular choice was for females in the 18–23 year age group. It was the least common choice for females in the 14–15 year and 16–17 year age groups.

Among adolescents, pre-mixed spirits was the most popular choice for the adolescent groups, dropping off slightly at the 16–17 year age group. Pre-mixed spirits were most preferred by females with the exception of the 12–13 year age group and adult age groups. Pre-mixed spirits were the least common choice among the adult groups.

3.2.1.2 Initiation to alcohol use

For the total sample reporting having used alcohol, the mean initiation age was 13.6 years (SD = 2.4). The mean age of initiation by age and gender is reported in Table 4.

Participants (n = 235) most commonly initiated their alcohol use at the age of 15 years (23.2%), followed by 14 years (18.5%) and 13 years (16.7%). If the participants' parents were responsible for initiating them to alcohol use, the mean age of initiation decreases significantly ($t = -4.08$, $df = 231$, $p < 0.001$) from a mean age of 14.1 (SD = 2.4) years to a mean of 12.8 (SD = 2.3) years.

There were no significant age ($p = 0.1$) or gender ($p = 0.1$) differences in the age of initiation to alcohol.

Participants were most likely to initiate their alcohol use at home (40.4%), followed by a private party (20.4%) or friend's house (17.9%). This pattern was different for adult groups where other options, like public places, became more common. The places of initiation to alcohol are detailed in Table 5 across age group and gender.

Table 5: Place of initiation to alcohol

Age Group	Gender	N	%Home	%Private Party	%Friend's House	% Other
12–13 yrs	Male	2	50.0	-	50.0	-
	Female	8	50.0	12.5	12.5	25.0
		10	50	10	20	20
14–15 yrs	Male	17	35.3	29.4	29.4	5.9
	Female	13	46.2	23.1	30.8	-
		30	40	26.7	30	3.3
16–17 yrs	Male	26	38.5	15.4	23.1	23.0
	Female	29	58.6	27.6	6.9	6.8
		55	49.1	21.8	14.5	14.6
18–23 yrs	Male	33	57.6	6.1	15.2	21.2
	Female	37	29.7	35.1	13.5	21.6
		70	42.9	21.4	14.3	21.4
24–30 yrs	Male	37	24.3	16.2	24.3	35.1
	Female	33	36.4	18.2	12.1	33.3
		70	42.9	21.4	14.3	21.4
		235	**40.4**	**20.4**	**17.9**	**21.3**

Parents and friends (school or other) were equally likely (36.2%) to be the source of the participants' first alcohol. The percentage breakdown of the source to initiation to alcohol across age groups and gender is presented in Table 6.

Table 6: Initiation source to alcohol

Age Group	Gender	N	%Parents	%Friends	%Other Family	% Stole It	% Other
12–13 yrs	Male	2	50.0	50.0	-	-	-
	Female	8	37.5	-	37.5	25.0	-
		10	40.0	10.0	30.0	20.0	-
14–15 yrs	Male	17	52.9	23.5	5.9	11.8	5.9
	Female	13	61.5	15.4	7.7	15.4	-
		30	56.7	20.0	3.3	13.3	6.7
16–17 yrs	Male	26	46.2	26.9	15.3	11.5	-
	Female	29	48.3	34.4	13.8	-	3.4
		55	47.3	30.9	14.6	5.5	1.7
18–23 yrs	Male	33	39.4	30.3	18.2	6.1	6.1
	Female	37	18.9	54.0	13.5	5.4	8.1
		70	28.6	42.8	15.7	5.7	7.2
24–30 yrs	Male	37	16.2	45.9	10.8	16.2	10.8
	Female	33	36.4	42.5	12.2	3.0	6.1
		70	25.7	44.3	11.5	10.0	8.5
		235	**36.2**	**36.2**	**13.6**	**8.5**	**5.5**

Almost half (48%; n=95) of adolescent groups obtained the alcohol from parents followed by friends (20.3%). With the exception of males in the 18–23 year age group, adult groups (n = 140) most commonly obtained the alcohol from friends (49.2%) followed by parents (22.3%).

3.2.2 Frequency of alcohol use

In the three months prior to interview, among the participants that had tried alcohol most were drinking 1 or 2 days in the week (30.7%), or less often than monthly (26%). The percentage breakdown across age groups and gender for frequency of alcohol use is presented in Table 7.

Table 7: Frequency of alcohol use

Age Group	Gender	N	%Almost Every Day	%3 – 4 Days/Week	%1 – 2 Days/Week	%1 day /Month	%Less Often
12–13 yrs	Male	2	-	-	-	50	50
	Female	6	-	-	-	-	100
		8	0.0	0.0	0.0	12.5	87.5
14–15 yrs	Male	17	-	-	5.9	35.3	58.8
	Female	11	-	-	9.1	9.1	81.8
		28	0.0	0.0	7.1	25.0	67.9
16–17 yrs	Male	26	-	3.8	23.1	23.1	50.0
	Female	29	-	-	10.3	31.0	58.6
		55	0.0	1.8	16.4	27.3	54.5
18–23 yrs	Male	33	6.0	18.2	54.5	18.2	3.0
	Female	37	5.4	24.3	45.9	18.9	5.4
		70	5.7	21.4	50.0	18.6	4.3
24–30 yrs	Male	37	5.4	40.5	43.2	8.1	2.7
	Female	33	15.2	39.4	27.3	18.2	-
		70	10.0	40.0	35.7	12.9	1.4
		231	**4.8**	**19.0**	**30.7**	**19.5**	**26.0**

There were significant differences (χ^2 = 141.54, df = 20, p <0.001) between age groups in the frequency of drinking. Those participants drinking less often than monthly decreased with age from 87.5% at 12–13 years to 1.4% at 24–30 years. Conversely, those participants drinking 3–4 days in the week increased with age from zero at 12–13 and 14–15 years to 40% at 24–30 years.

While not significant, there was a trend ($p = 0.6$) towards gender differences. With the exception of the 24–30 year age group, more females than males were drinking less often than monthly. Conversely, with the exception of the 14–15 year age group, males were more often drinking 1 or 2 days in the week than females.

Adolescent (12–17 years) age groups ($n = 91$) were most likely to have been drinking less than once a month (70%), or 1 day a month (21.6%). Adult (18–23 years) age groups ($n = 140$) were most likely to have been drinking 1 or 2 days a week (42.9%), or 3 or 4 days a week (30.7%).

3.2.3 Quantity of average alcohol use

When drinking alcohol, the majority (79.7%) of participants reported that they drank between 1 to 5 standard drinks per day on average, with only a small number (20.3%) drinking more than this amount. See Table 8 for a detailed breakdown.

Table 8: Quantity of average alcohol use (standard drinks)

Age Group	Gender	N	%1 or 2	%3 – 5	%6 - 10	%Over 10
12–13 yrs	Male	2	50.0	50.0	-	-
	Female	6	66.7	-	-	33.3
		8	62.5	12.5	0.0	25.0
14–15 yrs	Male	17	70.6	17.7	11.8	-
	Female	11	81.8	18.2	-	-
		28	75.0	17.8	7.1	0.0
16–17 yrs	Male	26	30.8	34.6	15.4	19.2
	Female	29	51.7	44.9	3.4	0.0
		55	41.8	40.1	9.1	9.1
18–23 yrs	Male	33	18.2	54.5	18.2	9.1
	Female	37	21.6	46	29.7	2.7
		70	20.0	50	24.3	5.7
24–30 yrs	Male	37	18.9	64.9	13.5	2.7
	Female	33	33.3	48.5	15.2	3.0
		70	25.7	57.1	14.3	2.9
		231	**35.1**	**44.6**	**14.7**	**5.6**

There were significant differences ($\chi^2 = 94.52$, df = 24, $p < 0.001$) between age groups and the quantity of alcohol consumed when drinking. The majority (61.5%) of adolescent (12 – 17 years) participants (n = 91) reported that they drank less than 3 standard drinks on average per day, with very few (1.7%) reporting that they drank more than 10 standard drinks on average per day. Just under half (40.7%) of the adult participants (n = 140) reported that they drank less than 3 standard drinks on average per day, with very few (4.3%) reporting that they drank an average of more than 10 standard drinks per day.

There were no significant gender differences ($p = 0.3$) in the quantity of alcohol used.

3.2.3.1 Quantity of alcohol use on last drinking occasion

The last time the participants were drinking, the majority (46.3%) reported that they had less than 3 standard drinks, and about one-third (27.7%) had over 5 standard drinks. Of that group 8.2% had more than ten drinks, with 16-17 year old males being over-represented among this heaviest drinking group (26.9%). The percentage breakdown across age group and gender for the quantity of alcohol use on the last drinking occasion is presented in Table 9.

Table 9: Quantity of alcohol use in standard drinks at last drinking occasion

Age Group	Gender	N	1 or 2	3–5	6–10	Over 10
12–13 yrs	Male	2	50.0	50.0	-	-
	Female	6	100.0	-	-	-
		8	87.5	12.5	0.0	0.0
14–15 yrs	Male	17	58.8	29.4	11.8	-
	Female	11	90.9	-	9.1	-
		28	71.4	17.9	10.0	0.0
16–17 yrs	Male	26	38.5	19.2	15.4	26.9
	Female	29	44.8	24.1	27.6	3.4
		55	41.8	21.8	21.8	14.5
18–23 yrs	Male	33	33.3	30.4	27.3	9.1
	Female	37	43.2	32.4	18.9	5.4
		70	38.6	31.4	22.9	7.1
24–30 yrs	Male	37	40.5	24.3	21.6	13.5
	Female	33	45.5	33.4	18.2	3.0
		70	42.9	28.6	20.0	8.6
		231	**46.3**	**26.0**	**19.5**	**8.2**

There were significant differences ($\chi^2 = 43.72$, df = 24, $p < 0.01$) between age groups and the quantity of alcohol consumed when drinking on the last occasion. The number of participants reporting that they drank 1 or 2 standard drinks the last time they were drinking

was greatest for the 12–13 and 14–15 year age groups and then decreased and leveled off in the 16–17, 18–23 and 24–30 year age groups. In each age group, participants were most likely to report drinking only 1 or 2 standard drinks the last time they had alcohol.

There were no significant gender differences in the quantity of alcohol consumed on the last drinking occasion.

3.2.4 Usual type of alcohol consumed

The participants were asked to indicate what type of alcoholic beverage they usually consume when they have alcohol. Participants had the option of choosing more than one drink; the percentages in Table 10 indicate the number of people that mentioned each drink as at least one of their choices. Amongst those participants that drink alcohol, the most common usual drink was full strength *beer* (46.3%) or bottled spirits (42.4%). This trend was not consistent across age group or gender. Table 10 shows the most usual drinks consumed detailed by age group and gender.

Table 10: Usual alcoholic beverage

Age Group	Gender	N*	Premixed Spirits	Bottled Spirits	Wine	Beer
12–13 yrs	Male	2	50.0	50.0	-	-
	Female	6	50.0	33.3	16.7	-
		8	50.0	37.5	12.5	0.0
14–15 yrs	Male	19	36.8	31.6	10.5	21.1
	Female	17	47.1	23.5	17.6	11.8
		36	41.7	27.8	13.9	16.7
16–17 yrs	Male	44	22.7	22.7	11.4	43.2
	Female	43	39.5	41.9	11.6	7.0
		87	31.0	32.2	11.5	25.3
18–23 yrs	Male	53	20.8	22.6	13.2	43.4
	Female	64	23.4	25.0	32.8	18.8
		117	22.2	23.9	23.9	29.9
24–30 yrs	Male	67	6.0	23.9	28.4	41.8
	Female	61	14.8	21.3	37.7	26.2
		128	10.2	22.7	32.8	34.4
		376	**22.6**	**26.1**	**22.9**	**28.5**

* The total N is greater than 350 as it reflects the number of times a choice was made, not the number of participants

Pre-mixed spirits were the most common usual alcoholic beverage for participants in the 12–13 and 14–15 year age groups (50% and 41.7% respectively). In these age groups, females were more likely to indicate the pre-mixed spirits as one of their usual drinks. In the adult groups, males were more likely than females to indicate the pre-mixed spirits as one of their usual drinks.

Throughout each age group, bottled spirits were commonly chosen as a usual drink. It was only among females in the 16–17 year age group however, that bottled spirits appear as the most commonly indicated usual drink.

Beer was the most commonly chosen usual drink for males 16–17 years through to the older adults. Wine was the most commonly mentioned usual drink among adult females.

3.2.5 Preferred alcoholic beverage

For the sample overall, participants most preferred bottled spirits (36.1%) followed by pre-mixed spirits (29.6%). Table 11 shows the most preferred beverage by age group and gender.

Table 11: Preferred alcoholic beverage

Age Group	Gender	N	Premixed Spirits	Bottled Spirits	Wine	Beer
12–13 yrs	Male	2	50	50	-	-
	Female	6	83.3	16.7	-	-
		8	75	25	0.0	0.0
14–15 yrs	Male	17	47.1	35.3	-	17.6
	Female	11	63.6	18.2	9.1	9.1
		28	53.6	28.6	3.6	14.3
16–17 yrs	Male	26	15.4	34.6	7.6	42.3
	Female	29	55.2	41.4	-	3.4
		55	36.3	38.2	3.6	21.8
18–23 yrs	Male	33	21.2	45.5	9.1	24.2
	Female	37	35.1	32.4	18.9	13.5
		70	28.6	38.6	14.3	18.6
24–30 yrs	Male	37	8.1	37.8	24.3	29.7
	Female	32	12.5	34.4	43.8	9.4
		69	10.1	36.2	33.3	20.3
		230	**29.5**	**36.1**	**15.6**	**18.7**

There were significant differences (χ^2 = 63.87, df = 28, p <0.001) between age groups and their preferred alcohol. Pre-mixed spirits were the most preferred alcoholic beverage for participants in the 12–13 and 14–15 year age groups, while bottled spirits were most

preferred among the other age groups. There were two exceptions to this trend. Males in the 16–17 year age group preferred *beer* and 24 – 30 year old females preferred wine.

There were significant differences (χ^2 = 46.49, df = 7, p <0.001) between the genders and their preferred alcohol. In each age group more females than males preferred the pre-mixed spirits. In each age group more males than females preferred *beer*.

3.3 **Knowledge and experiences of alcohol risk**

3.3.1 The decision to drink less alcohol

Of those participants that had had alcohol (n = 231), over half (64.5%) had decided at some time that they should drink less alcohol. Participants had the option of indicating more than one reason for this decision; therefore, the percentages in Table 12 show the number of people that mentioned a particular reason as contributing to their decision. As participant age increased there was more chance that they had decided to drink less alcohol and more variability in the reasoning behind their decision. The most commonly indicated reasons being health concerns (61.1%), not liking the effects of alcohol (16.3%) or not wanting to be drunk (14.2%).

Over half (67.5%) of the male participants in the study had decided to drink less alcohol. The most common reason was health concerns (61%), followed by having adverse experiences (14.3%). Slightly fewer (61.1%) females indicated they had made the decision to drink less alcohol. The most common reasons were also health concerns (61.1%), followed by not liking the effects (19.4%).

Table 12: Reasons for the decision to drink less alcohol

Reasoning	12–13 yrs (n = 4)*	14–15 yrs (n = 11)*	16–17 yrs (n = 38)*	18–23 yrs (n = 45)*	24–30 yrs (n=51)*
Health Concerns	25%	9.1%	52.6%	66.7%	76.5%
Don't Like The effects	25%	18.2%	23.7%	13.3%	9.8%
Don't Want to Get Drunk	-	63.6%	7.9%	6.7%	3.9%
Safety Concerns	25%	9.1%	10.5%	2.2%	3.9%
Legal Concerns	25%	-	2.6%	-	2.0%
Parents' Insistence	-	9.1%	5.3%	-	3.9%
Effect on Sport	-	-	5.3%	6.7%	2.0%
Effect on Study	-	-	13.2%	13.3%	7.8%
Bad Experiences	-	-	21.1%	15.6%	9.8%
Money Problems	-	-	-	15.6%	13.7%
Drunk Driving	-	-	-	6.7%	13.7%
School discipline	-	-	-	-	2.0%

* Participants could select more than one option

3.3.2 Concerns as a result of alcohol use

Those participants that indicated that they had not made the decision to drink any less alcohol (n = 82) were asked if they had any concerns regarding their alcohol use. The vast majority indicated that they had no concerns (90.2%) with very few showing health (8.5%) and safety (4.9%) concerns.

3.3.3 Knowledge of the term 'standard drink'

The majority of participants (72.1%) had heard of the term 'standard drink'. The highest proportion of participants that had heard of the term was in the 18–23 year age group. The percentages of participants that have heard of the term are detailed in Table 13 by age group and gender.

Table 13: Knowledge of the term 'standard drink'

Age Group	Gender	N	Percentage That Had Heard of a 'Standard Drink'
12 – 13 yrs	Male	35	45.7
	Female	35	28.6
		70	37.1
14 – 15 yrs	Male	35	40.0
	Female	35	77.1
		70	58.6
16 – 17 yrs	Male	34	85.3
	Female	35	97.1
		69	91.3
18 – 23 yrs	Male	33	97.0
	Female	37	94.6
		70	95.7
24 – 30 yrs	Male	37	81.1
	Female	33	75.0
		69	78.3
		348	72.1

3.3.4 Knowledge of the risks and effects of alcohol use

Participants were asked whether they believed someone of their age and gender consuming four alcoholic drinks in one hour was risking their health. Most (88.3%) agreed with this statement. The percentage of participants that considered having four alcoholic drinks in one hour to be a health risk significantly ($\chi^2 = 36.8$, df = 4, $p < 0.001$) decreased in the adult groups. This trend was significantly ($\chi^2 = 6.22$, df = 1, $p < 0.01$) greater for male participants. These results are detailed in Table 14 by age group and gender.

Table 14: Percentage of participants that perceive health risk in drinking four alcoholic drinks in one hour

Age Group	Gender	N	Percentage That Perceive Risk
12–13 yrs	Male	35	97.1
	Female	35	97.1
		70	97.1
14–15 yrs	Male	35	97.1
	Female	35	94.3
		70	95.7
16–17 yrs	Male	34	94.3
	Female	35	100
		69	97.1
18–23 yrs	Male	33	69.7
	Female	37	86.5
		70	78.6
24–30 yrs	Male	37	62.2
	Female	33	84.8
		69	72.9
		348	**88.3**

Most participants reported that they knew either an average amount (42%) or a lot (46%) about the risks and effects of alcohol use. There was no significant difference in this trend across age groups (p = 0.1) and gender (p = 0.2) as detailed by percentage in Table 15.

Table 15: Knowledge of the risks and effects of alcohol use

Age Group	Gender	N	Nothing	A Little	Average Amount	A Lot	Everything
12–13 yrs	Male	35	-	14.3	45.7	37.1	2.9
	Female	35	-	17.1	45.7	31.4	5.7
		70	0.0	15.7	45.7	34.3	4.3
14–15 yrs	Male	35	-	5.7	48.6	45.7	
	Female	35	-	2.9	54.3	37.1	5.7
		70	0.0	4.3	55.7	97.1	2.9
16–17 yrs	Male	34	2.9	2.9	37.1	54.3	2.9
	Female	35	-	2.9	28.6	62.9	5.7
		70	1.4	2.9	32.9	58.6	4.3
18–23 yrs	Male	33	-	6.1	45.5	48.5	
	Female	37	-	5.4	32.4	56.8	5.4
		70	0.0	5.7	38.6	52.9	2.9
24–30 yrs	Male	37	-	10.8	48.6	37.8	2.7
	Female	33	-	12.1	33.3	48.5	6.1
		70	0.0	11.4	41.4	42.9	4.3
		350	**0.3**	**8.0**	**42.0**	**46.0**	**3.7**

3.4.0 The milk-based RTD group

3.4.1 Prior exposure to *Chocolate Vodka Mudshake*

One-quarter (27.7%) of the sample reported having tried *Mudshake* before. This previous encounter occurred at a mean age 19 years (SD = 4.0). The age at first use increased significantly across age groups from 14.2 years at the 14 – 15 year age group to 24.1 years at the 24–30 year age group. There were no significant ($p = 0.3$) gender differences in the age at first use.

When asked if participants had become drunk using *Mudshake*, about one quarter (28.3%) of the sample answered in the affirmative. Although this difference was not significant, there was a trend in the percentages of participants reporting being drunk using *Mudshake*. There is an increase with age from 7.5% at the 14–15 year age group to 38.6% at the 24–30 year age group. The percentage of participants reporting being drunk using *Mudshake* was significantly ($\chi^2 = 0.05$, $df = 1$, $p < 0.04$) greater for males across each age group.

Table 16: Age at first use and ever been drunk drinking *Mudshake*

Age Group	Gender	N	Mean Age at First Use (SD)	% Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	0	-	-
		0	-	-
14–15 yrs	Male	1	14.0 (0.0)	0.0
	Female	4	14.3 (1.0)	0.0
		5	14.2 (0.8)	0.0
16–17 yrs	Male	12	15.2 (0.8)	33.3
	Female	21	15.8 (0.6)	9.5
		33	15.6 (0.8)	18.2
18–23 yrs	Male	16	18.9 (1.6)	11.8
	Female	16	18.6 (1.6)	0.0
		32	18.7 (1.6)	5.9
24–30 yrs	Male	14	24.3 (3.0)	14.3
	Female	13	24.5 (1.9)	7.7
		27	24.4 (2.5)	11.1
		97	**19.0 (4.0)**	**11.1**

Participants that had tried a *Mudshake* also reported on the frequency of their use. There were no significant differences between age groups ($p = 0.7$) or gender ($p = 0.3$), as detailed in Table 17.

Table 17: Percentage frequency of *Mudshake* use

Age Group & Gender		N	Rare	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	M	0	-	-	-	-	-	-	-
	F	0	-	-	-	-	-	-	-
		0	-	-	-	-	-	-	-
14–15	M	1	100	-	-	-	-	-	-
	F	4	75.0	25.0	-	-	-	-	-
		5	80.0	20.0	-	-	-	-	-
16–17	M	12	75.0	8.3	16.7	-	-	-	-
	F	21	52.4	14.3	33.3	-	-	-	-
		33	60.6	12.1	27.3	-	-	-	-
18–23	M	17	47.1	35.3	17.6	-	-	-	-
	F	17	70.6	11.8	17.6	-	-	-	-
		34	58.8	23.5	17.6	-	-	-	-
24–30	M	14	78.6	14.3	7.1	-	-	-	-
	F	13	61.5	15.4	23.1	-	-	-	-
		27	70.4	14.8	14.8	-	-	-	-
		99	**63.6**	**16.2**	**20.2**	-	-	-	-

3.4.2 Prior exposure to *Smirnoff Vodka*

Half (53.4%) of the sample reported having tried *vodka* prior to the interview. This previous encounter occurred at a mean age of 15.9 years (SD = 2.2). The age at first use significantly increased across age groups from 12 years at the 12–13 year age group to 16.5 years at the 24–30 year age group. There were no significant ($p = 0.7$) gender differences in the age at first use.

The majority of participants (74.6%) reported that they had ever got drunk using *vodka*. This percentage significantly (χ^2 = 35.84, df = 4, p < 0.001) increased across age groups from 28.6% at the 12–13 year age group to 84.1% at the 24–30 year age group. There were no significant (p = 0.9) gender differences.

Table 18: Age at first use and percentage used and been drunk drinking vodka

Age Group	Gender	N	Mean Age at First Use (SD)	Percent Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	1	12.0 (0.0)	0.0
		1	12.0 (0.0)	0.0
14–15 yrs	Male	8	14.0 (1.1)	25.0
	Female	6	13.8 (0.8)	33.3
		14	13.9 (0.9)	28.6
16–17 yrs	Male	19	14.4 (1.1)	68.4
	Female	21	15.4 (0.9)	42.9
		40	14.9 (1.1)	55.0
18–23 yrs	Male	31	16.5 (1.6)	87.9
	Female	32	16.2 (1.5)	87.5
		63	16.3 (1.5)	87.7
24–30 yrs	Male	36	16.3 (3.2)	77.8
	Female	33	16.6 (2.5)	90.9
		69	16.5 (2.9)	84.1
		187	**15.9 (2.2)**	**74.6**

Participants that had ever tried *vodka* also reported on the frequency of their use. The reported frequencies were significantly (χ^2 = 54.09, df = 16, p <0.001) different across age groups. Participants rarely reported using *vodka* in the 14–15 and 16–17 year age groups. In the adult groups participants were most likely to use *vodka* on a monthly basis. There were no significant gender differences (p = 0.1).

Table 19: Percentage frequency of *vodka* use

Age Group & Gender		N	Rare	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	M	0	-	-	-	-		-	-
	F	1	-	100	-	-		-	-
		1	-	100	-	-		-	-
14–15	M	8	75.0	-	25.0	-		-	-
	F	6	66.7	-	33.3	-		-	-
		14	71.4	-	28.6	-		-	-
16–17	M	19	68.4	5.3	21.1	-	5.3	-	-
	F	21	57.1	14.3	28.6	-	-	-	-
		40	62.5	10.0	25.0	-	2.5	-	-
18–23	M	33	24.2	12.1	39.4	21.2	3.0	-	-
	F	32	15.6	12.5	25.0	28.1	18.8	-	-
		65	20.0	12.3	32.3	24.6	10.8	-	-
24–30	M	36	36.1	13.9	27.8	8.3	13.9	-	-
	F	33	18.2	12.1	27.3	12.1	30.3	-	-
		69	27.5	13.0	27.5	10.0	21.7	-	-
189			**35.4**	**11.6**	**28.6**	**6.6**	**6.6**	**-**	**-**

3.4.3 Palatability ratings

3.4.3.1 Blind condition

In the blind condition, *Chocolate Moove* was found to be very palatable (rating > 4), with a mean palatability rating of 5.5 (SD = 1.6). There were no significant differences in palatability ratings across age (p = 0.4), or gender (p = 0.2).

The base alcohol of this group of beverages, vodka, was found to be less palatable (rating < 4) with a mean palatability rating of 3.6 (SD = 1.6). There was a significant relationship

[R^2 = 0.02, F(1,348) = 6.14, p < 0.02] between the participant's age and palatability rating for vodka, such that, as age increased by one year, ratings increased by 0.04 units. Palatability ratings did not significantly differ (p = 0.9) between genders.

The RTD *Mudshake* was found to be slightly more palatable than the *Moove* when presented to the participant in the blind condition, with a mean palatability rating of 5.5 (SD = 1.48). Palatability ratings did not significantly differ across age (p = 0.4) or gender (p = 0.8).

Table 20: Mean palatability ratings for milk-based RTD group in the blind condition

Age Group	**Gender**	**N**	**Chocolate Moove Mean (SD)**	**Vodka Mean (SD)**	**Mudshake Mean (SD)**
12–13 yrs	Male	35	5.2 (1.8)	3.2 (1.8)	5.3 (1.5)
	Female	35	5.4 (1.6)	3.5 (2.0)	5.3 (1.5)
		70	5.3 (1.7)	3.3 (1.9)	5.3 (1.5)
14–15 yrs	Male	35	5.2 (1.8)	3.5 (1.6)	5.3 (1.6)
	Female	35	5.6 (1.5)	3.5 (1.7)	5.2 (1.7)
		70	5.4 (1.7)	3.5 (1.6)	5.3 (1.6)
16–17 yrs	Male	35	5.2 (1.9)	3.6 (1.3)	5.4 (1.6)(n = 34)
	Female	35	5.7 (1.4)	3.7 (1.6)	5.8 (1.6)
		70	5.5 (1.6)	3.7 (1.4)	5.6 (1.6) n = 69)
18–23 yrs	Male	33	5.6 (1.3)	3.8 (1.3)	6.0 (1.0)
	Female	37	5.4 (1.6)	3.2 (1.3)	5.6 (1.3)
		70	5.5 (1.5)	3.7 (1.3)	5.6 (1.2)
24–30 yrs	Male	37	5.5 (1.5)	4.0 (1.7)	5.5 (1.5)
	Female	33	5.6 (1.2)	4.1 (1.5)	5.6 (1.3)
		70	5.5 (1.4)	4.1 (1.6)	5.5 (1.4)
		350	**5.5 (1.6)**	**3.6 (1.6)**	**5.5 (1.5)(n = 349)**

3.4.3.2 Non blind condition

When presented in the non blind condition, the *Moove* was significantly ($t = -9.87$, $df = 349$, $p < 0.001$) more highly palatable, with a mean rating of 6.2 (SD = 1.2). Analysis indicated a significant relationship [$R^2 = 0.02$, $F = 7.83$ (1,348), $p < 0.005$] between palatability ratings and age, such that, as age increased by one year, ratings decreased by 0.04 units. No significant relationship between ratings and gender ($p = 0.2$) was found.

By contrast, vodka did not significantly ($p = 0.3$) vary when participants were not blinded to visual cues of the beverage, with a mean rating of 3.5 (SD = 1.7). There was a significantly positive relationship [$R^2 = 0.11$, $F = 42.79$ (1,348), $p < 0.001$] between palatability ratings and age, such that, as age increased by one year, ratings increased by 0.11 units. No significant relationship between ratings and gender ($p = 0.7$) was found.

In the non blind condition, the *Mudshake* palatability ratings did not differ significantly ($p = 0.1$) with a mean rating of 5.6 (SD = 1.6). There was no significant difference in palatability ratings across age ($p = 0.6$) or gender ($p = 0.1$).

The individual palatability ratings across age groups for each of the milk based RTD group beverages in the non blind condition are detailed in Table 21 below.

Table 21: Mean palatability ratings for chocolate-based RTD group in non blind condition

Age Group	Gender	N	Chocolate Moove Mean (SD)	Vodka Mean (SD)	Mudshake Mean (SD)
12–13 yrs	Male	35	6.3 (1.0)	2.6 (1.5)	5.3 (2.0)
	Female	35	6.6 (0.9)	2.7 (1.9)	5.8 (1.5)
		70	6.5 (1.0)	2.7 (1.7)	5.5 (1.8)
14–15 yrs	Male	35	6.2 (1.2)	3.2 (1.5)	5.7 (1.6)
	Female	35	6.7 (0.6)	3.0 (1.7)	5.4 (1.8)
		70	6.5 (0.9)	3.1 (1.6)	5.5 (1.7)
16–17 yrs	Male	35	6.1 (1.3)	3.6 (1.5)	5.1 (1.8)
	Female	35	6.3 (1.4)	3.5 (1.7)	6.3 (1.3)
		70	6.2 (1.3)	3.6 (1.6)	5.7 (1.7)
18–23 yrs	Male	33	6.0 (1.2)	4.2 (1.4)	6.0 (0.9)
	Female	37	5.9 (1.5)	3.6 (1.2)	5.7 (1.1)
		70	5.9 (1.4)	3.9 (1.3)	5.9 (1.0)
24–30 yrs	Male	37	6.0 (1.3)	4.1 (1.6)	5.5 (1.6)
	Female	33	6.0 (1.3)	4.6 (1.6)	5.7 (1.5)
		70	6.0 (1.3)	4.3 (1.6)	5.6 (1.5)
		350	**6.2 (1.2)**	**3.5 (1.7)**	**5.6 (1.6)**

3.4.4 Previous exposure estimates for the milk-based RTD group

3.4.4.1 Blind condition

After the participants had smelled and tasted the beverage while blinded to visual cues, they were asked how sure they were that they had had that beverage previously where 1 is definitely not, 4 is unsure and 7 is definitely have. On average participants were quite sure that they had had the *Chocolate Moove* previously (mean = 5.5; SD = 1.8). Analysis revealed a

significant relationship [R^2 = 0.034 F(1,347) = 12.37, p<0.001] between exposure estimate and age, such that, for every increase in age by one year, exposure estimates increased by 0.07 units. In this condition, females showed significantly (F(1,347) = 6.54, p < 0.01) higher exposure estimates for *Moove* than did males.

Participants were less sure they had tasted *vodka* previously (mean = 4.3; SD = 2.1). Analysis revealed a significant positive relationship [R^2 = 0.087, F(1,347) = 33.03, p<0.000] between exposure estimates and age, such that, for every increase in age of one year, exposure estimates increased by 0.12 units. There were no gender differences (p = 0.5).

When the *Mudshake* was presented in the blind condition, exposure estimates were similar to *Moove* (mean = 5.5, SD = 1.84). In this condition, analysis revealed a significant relationship [R^2 = 0.043, F(1,346) = 15.42, p<0.001] between exposure estimates and age, such that, with every increase in age of one year, exposure ratings increased by 0.07 units. There were no gender differences (p = 0.4).

The blind condition exposure estimates for each of the beverages from the chocolate-based RTD group are detailed in Table 22 across age and gender.

Table 22: Beverage exposure estimate means for milk-based RTD group in the blind condition

Age Group	Gender	N	Chocolate Moove	Vodka	Mudshake
12–13 yrs	Male	34	4.9 (2.0)	3.0 (1.9)	4.8 (2.0)
	Female	35	5.2 (1.9)	3.5 (2.1)	5.0 (2.0)
		69	5.0 (2.0)	3.3 (2.0)	4.9 (2.0)
14–15 yrs	Male	35	4.9 (2.3)	3.8 (2.3)	4.9 (2.1)
	Female	35	5.6 (1.7)	3.8 (2.3)	4.9 (2.0)
		70	5.2 (2.1)	3.8 (2.2)	4.9 (2.0)
16–17 yrs	Male	35	5.4 (1.9)	4.5 (2.0)	5.7 (1.6) (n = 34)
	Female	35	6.0 (1.6)	4.8 (2.0)	5.9 (1.9)
		70	5.7 (1.8)	4.6 (2.0)	5.8 (1.8) (n = 69)
18–23 yrs	Male	33	5.5 (1.7)	4.6 (2.1)	5.9 (1.7)
	Female	37	5.8 (1.7)	4.4 (1.7)	6.0 (1.5)
		70	5.6 (1.7)	4.5 (1.9)	6.0 (1.6)
24–30 yrs	Male	37	5.9 (1.5)	5.1 (1.9)	5.9 (1.5)
	Female	33	6.4 (1.0)	5.4 (1.6)	6.2 (1.4)
		70	6.1 (1.3)	5.3 (1.8)	6.0 (1.5)
		349	**5.5** (1.8)	**4.3** (2.1)	**5.5** (1.8)*

* n = 348

3.4.4.2 Non blind condition

When presented with the packaging, exposure estimates for the *Chocolate Moove* were significantly ($t = -11.46$, $df = 348$, $p < 0.001$) higher (mean = 6.7; SD = 1.2). In this condition, there was no significant difference between exposure estimates across age ($p = 0.3$) or gender ($p = 0.1$).

When presented with the packaging, the exposure estimates for the *vodka* were not significantly different ($p = 0.1$) and were again only moderate (mean = 4.5; SD = 2.6).

Analysis revealed a significant [R^2 = 0.34, F(1,348) = 178.1, p<0.01] relationship between exposure estimates and age, such that, with every increase in age of one year, exposure estimates increased by 0.29 units. Exposure estimates did not differ significantly (p = 0.3) between genders.

When presented with the *Mudshake* packaging, exposure estimates significantly (t = 8.39, df = 347, p < 0.001) dropped by one unit to a mean of 4.3 (SD = 2.6). In this condition, there was no significant difference between exposure estimates across age (p = 0.1), or gender (p = 0.2).

Table 23: Beverage exposure estimate means for milk-based RTD group in the non blind condition

Age Group	Gender	N	Chocolate Moove	Vodka	Mudshake
12–13 yrs	Male	34	6.9 (0.8)	2.1 (1.6)	3.2 (2.3)
	Female	35	6.8 (0.9)	2.5 (2.0)	3.9 (2.5)
		69	6.8 (0.9)	2.3 (1.8)	3.6 (2.4)
14 –15 yrs	Male	35	6.6 (1.4)	2.9 (2.2)	4.6 (2.3)
	Female	35	6.8 (1.0)	2.6 (2.0)	3.4 (2.3)
		70	6.7 (1.2)	2.7 (2.1)	4.0 (2.3)
16–17 yrs	Male	35	6.7 (1.1)	4.7 (2.6)	4.1 (2.8)
	Female	35	6.8 (0.9)	5.2 (2.3)	5.4 (2.4)
		70	6.8 (1.0)	5.0 (2.3)	4.8 (2.7)
18–23 yrs	Male	33	6.4 (1.6)	6.1 (1.8)	4.9 (2.6)
	Female	37	6.8 (0.7)	6.2 (1.6)	5.0 (2.6)
		70	6.6 (1.2)	6.2 (1.7)	4.9 (2.6)
24–30 yrs	Male	37	6.4 (1.7)	6.2 (1.5)	4.1 (2.6)
	Female	33	6.8 (1.0)	6.9 (0.4)	4.8 (2.6)
		70	6.6 (1.4)	6.5 (1.2)	4.4 (2.6)
		350	**6.7 (1.2)**	**4.5 (2.6)**	**4.3 (2.6)**

3.4.5 Alcohol estimations for the milk-based RTD group

3.4.5.1 Blind condition

Participants were asked to judge how much alcohol each beverage contained, where a score of 1 indicates no alcohol, 4 a fair bit and 7 a great deal. Without visual cues, over half (62%) of the sample were able to distinguish the lack of alcohol in *Chocolate Moove*, with a mean rating of 1.9 (SD = 1.4). Blind alcohol estimations did not significantly ($p = 0.7$) differ with participant age. Alcohol content estimations by males, however, were significantly ($F(1,348) = 4.58$, $p < 0.03$) higher than female ratings.

In the blind condition, approximately half (54.9%) of the sample were able to taste the alcohol present in the vodka, with a mean rating of 2.2 (SD = 1.4). Alcohol estimations were consistently low, with no significant difference across age ($p = 0.4$) or gender ($p = 0.7$).

Around half (52%) of the sample were able to taste the alcohol present in the *Mudshake*, with a mean rating of 2.3 (SD = 1.5). Alcohol estimations were consistently low, with no significant difference across age ($p = 0.7$) or gender ($p = 0.3$).

Alcohol estimations made by age groups for the beverages in the milk based RTD group are detailed in Table 24. The *Chocolate Moove* alcohol estimations were significantly lower than estimations for *vodka* ($t = 3.33$, $df = 349$, $p < 0.002$) and for *Mudshake* ($t = -5.05$, $df = 347$, $p < 0.001$). However the alcohol estimations for the *vodka* and *Mudshake* were not significantly different from each other ($p = 0.3$).

Table 24: Alcohol estimation means for milk-based RTD group in the blind condition

Age Group	Gender	N	Chocolate Moove	Vodka	Mudshake
12–13 yrs	Male	35	2.3 (1.5)	2.2 (1.6)	2.4 (1.8)
	Female	35	1.8 (1.2)	2.4 (1.4)	2.1 (1.4)
		70	2.0 (1.4)	2.3 (1.5)	2.3 (1.6)
14–15 yrs	Male	35	2.0 (1.4)	2.1 (1.3)	2.5 (1.5) (n = 34)
	Female	35	1.6 (1.3)	1.9 (1.1)	1.8 (1.1) (n = 34)
		70	1.8 (1.4)	2.0 (1.2)	2.1 (1.4) (n = 68)
16–17 yrs	Male	35	1.6 (1.1)	2.4 (1.5)	2.6 (1.6)
	Female	35	1.7 (1.4)	2.3 (1.6)	2.7 (1.7)
		70	1.7 (1.3)	2.3 (1.5)	2.6 (1.7)
18–23 yrs	Male	33	2.1 (1.5)	2.3 (1.5)	2.2 (1.5)
	Female	37	1.5 (0.8)	2.2 (1.4)	2.2 (1.3)
		70	1.7 (1.2)	2.3 (1.5)	2.2 (1.4)
24–30 yrs	Male	37	2.1 (1.5)	2.1 (1.5)	2.3 (1.6)
	Female	33	1.9 (1.6)	2.0 (1.4)	2.2 (2.1)
		70	2.0 (1.5)	2.1 (1.5)	2.2 (1.6)
		350	**1.9 (1.4)**	**2.2 (1.4)**	**2.3 (1.5)(n = 348)**

3.4.5.2 Non blind condition

As expected, a significantly ($t = 11.26$, $df = 349$, $p < 0.001$) greater majority (98.9%) of participants reported that there was no alcohol in the *Chocolate Moove* when the packaging was presented. Alcohol estimations were consistent with no significant difference across age ($p = 0.4$) or gender ($p = 0.3$)

In non blind conditions, participants estimated the alcohol content of *vodka* to be significantly ($t = -23.24$, $df = 349$, $p < 0.001$) greater (mean = 4.7; SD = 1.7). Analysis showed no significant difference in alcohol estimations across age ($p = 0.9$) and gender ($p = 0.9$).

When packaging was presented, participants thought that the *Mudshake* contained significantly ($t = -13.98$, $df = 347$, $p < 0.001$) more alcohol (mean = 4.5; SD = 1.3). Alcohol estimations were consistent with no significant difference across age ($p = 0.4$) or gender ($p = 0.1$).

Alcohol estimations made by age groups for the beverages in the milk-based RTD group are detailed in Table 25. The *Chocolate Moove* alcohol estimations were significantly lower than estimations for *vodka* ($t = 39.93$, $df = 349$, $p < 0.001$) and for *Mudshake* ($t = -35.22$, $df = 349$, $p < 0.001$). The alcohol estimations for the *vodka* were significantly greater ($t = 12.23$, $df = 349$, $p < 0.001$) than the estimations for *Mudshake*.

Table 25: Alcohol estimation means for milk-based RTD group in the non blind condition

Age Group	Gender	N	Chocolate Moove	Vodka	Mudshake
12–13 yrs	Male	35	1.0 (0.0)	4.4 (1.6)	3.1 (1.4)
	Female	35	1.0 (0.2)	4.6 (1.8)	3.7 (1.6)
		70	1.0 (0.1)	4.5 (1.7)	3.4 (1.5)
14–15 yrs	Male	35	1.0 (0.0)	4.7 (1.6)	3.6 (1.5)
	Female	35	1.0 (0.0)	4.6 (1.7)	4.1 (1.4)
		70	1.0 (0.0)	4.6 (1.6)	3.8 (1.4)
16–17 yrs	Male	35	1.2 (0.7)	4.9 (1.9)	3.8 (1.4)
	Female	35	1.0 (0.0)	5.3 (1.4)	4.0 (1.3)
		70	1.1 (0.5)	5.1 (1.6)	3.9 (1.4)
18–23 yrs	Male	33	1.0 (0.0)	4.7 (1.8)	3.4 (1.2)
	Female	37	1.0 (0.0)	4.3 (1.7)	3.5 (1.0)
		70	1.0 (0.0)	4.5 (1.8)	3.5 (1.1)
24–30 yrs	Male	37	1.0 (0.2)	4.8 (1.8)	3.4 (1.2)
	Female	33	1.0 (0.0)	4.6 (1.7)	3.4 (1.0)
		70	1.0 (0.1)	4.7 (1.7)	3.4 (1.1)
		350	**1.0 (0.3)**	**4.7 (1.7)**	**3.6 (1.3)**

3.4.5.3 Difference in alcohol estimation means from blind to non blind conditions for the milk-based RTD group

The blind alcohol estimations were subtracted from the non blind alcohol estimations giving a numerical value that represents the effect of packaging on alcohol estimation ratings. *Chocolate Moove* shows negative results as participants could see that it was a non-alcoholic drink and were likely to lower ratings by an average of 0.8 units. When packaging is presented, the alcohol estimation ratings increased for *vodka* by two times (mean increase of 2.5 units) that of the *Mudshake* increase (mean increase of 1.3 units). The effect of packaging on alcohol estimation ratings is detailed in Table 26 across age groups and gender.

Table 26: Difference in alcohol estimation means from blind to non blind conditions for the milk-based RTD group

Age Group	Gender	Chocolate Moove	Vodka	Mudshake
12–13 yrs	Male	-1.3	2.2	0.7
	Female	-0.8	2.3	1.6
		-1.0	2.2	1.1
14–15 yrs	Male	-1.0	2.6	1.1
	Female	-0.6	2.7	2.3
		-0.8	2.6	1.7
16–17 yrs	Male	-0.4	2.5	1.2
	Female	-0.7	3.1	1.3
		-0.6	2.8	1.3
18–23 yrs	Male	-1.1	2.4	1.2
	Female	-0.5	2.1	1.4
		-0.7	2.2	1.3
24–30 yrs	Male	-1.1	2.7	1.1
	Female	-0.9	2.6	1.2
		-1.0	2.6	1.2
		-0.8	**2.5**	**1.3**

3.4.6 Predicted appeal to genders for the milk-based RTD group

3.4.6.1 *Chocolate Moove*

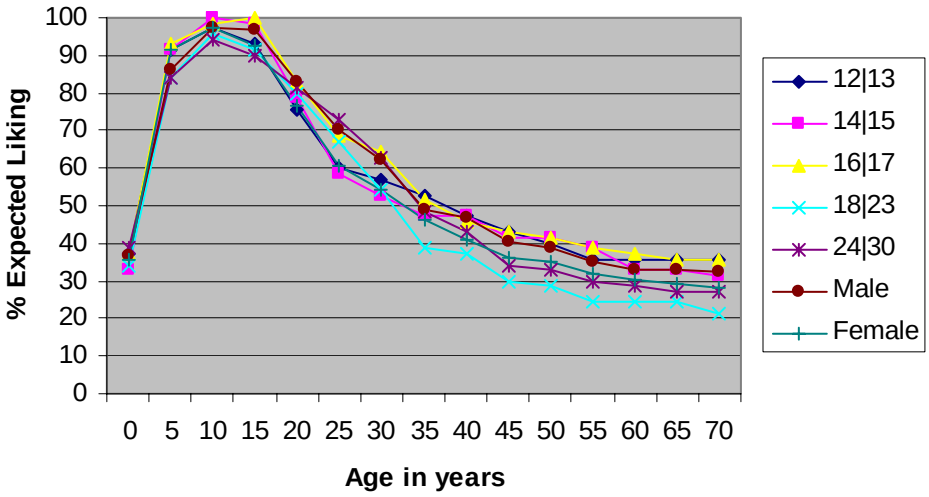
When asked which gender would prefer the *Moove*, participants were most likely (91.1%) to respond that neither gender would prefer the beverage over the other. There was no significant difference in this response across age groups ($p = 0.3$) or gender ($p = 0.5$). The responses across age group and gender are presented in Table 27.

Table 27: Participant opinion of package appeal to gender for *Chocolate Moove*

Age Group	Gender	N	% Male	% Female	% Neither
12–13 yrs	Male	35	11.4	0.0	88.6
	Female	35	0.0	8.6	91.4
		70	5.7	4.3	90
14–15 yrs	Male	35	5.7	0.0	94.3
	Female	35	5.7	0.0	94.3
		70	5.7	0.0	94.3
16–17 yrs	Male	35	0.0	2.9	97.1
	Female	35	2.9	0.0	97.1
		70	1.4	1.4	97.2
18–23 yrs	Male	33	3.0	3.0	93.9
	Female	37	2.7	2.7	94.6
		70	2.9	2.9	94.3
24–30 yrs	Male	37	18.9	5.4	75.7
	Female	33	6..1	9.1	84.8
		70	12.9	7.1	80.0
		350	**5.7**	**3.1**	**91.1**

When asked to indicate the ages that *Chocolate Moove* would appeal to, participants from each age group, and both genders, indicated a peak at around 10–20 years, as detailed in Figure 1 by age and gender.

Figure 1: Predicted appeal of *Chocolate Moove* by age and gender



3.4.6.2 *Smirnoff Vodka*

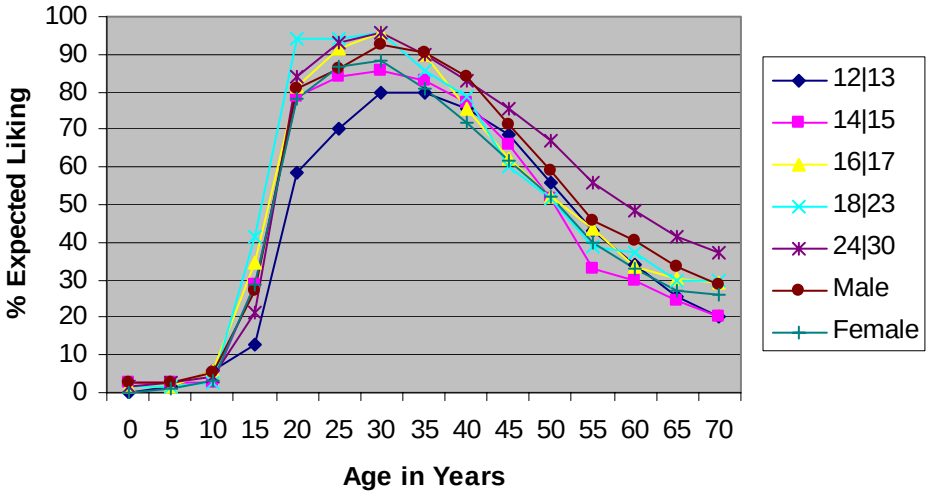
When asked which gender would prefer the *vodka*, the majority (63.4%) of the participants indicated that neither gender would prefer the beverage over the other. There was no significant difference in this response across age groups ($p = 0.8$) or gender ($p = 0.1$). The responses detailed across age group and gender are presented in Table 28.

Table 28: Participant opinion of package appeal to gender for vodka

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	31.4	20.0	48.6
	Female	35	20.0	20.0	60.0
		70	25.7	20.0	54.3
14–15 yrs	Male	35	17.1	17.1	65.7
	Female	35	22.9	14.3	62.9
		70	20.0	15.7	64.3
16–17 yrs	Male	35	20.0	11.4	68.6
	Female	35	22.9	22.9	54.3
		70	21.4	17.1	61.4
18–23 yrs	Male	33	27.3	9.1	63.6
	Female	37	8.1	21.6	70.3
		70	17.1	15.7	67.1
24–30 yrs	Male	37	18.9	8.1	73.0
	Female	33	9.1	24.2	66.7
		70	14.3	15.7	70.0
		350	**19.7**	**16.9**	**63.4**

When asked to indicate the ages that vodka would appeal to, participants from each age group, and both genders, indicated a peak at around 30–40 years, as detailed in Figure 2 by age and gender. The average predicted appeal for vodka was generally lower for those in the 12–13 year age group.

Figure 2: Predicted appeal of vodka by age and gender



3.4.6.3 *Chocolate Vodka Mudshake*

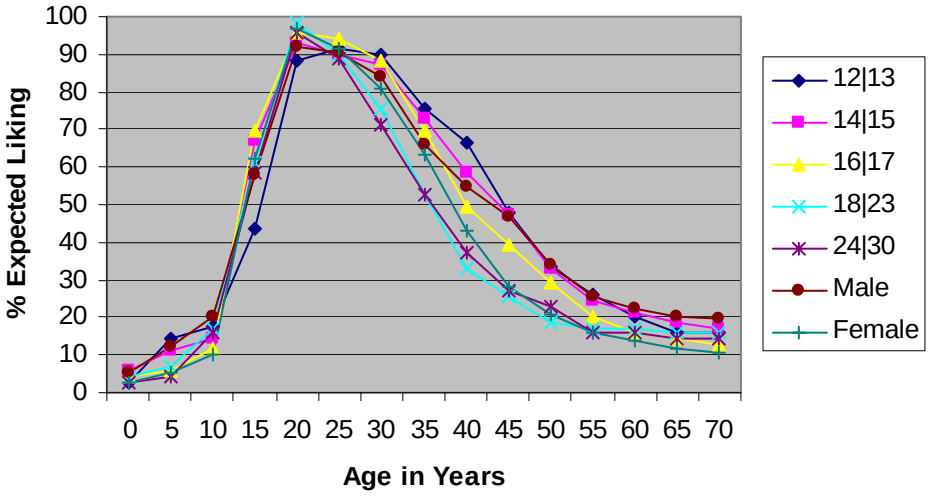
When asked which gender would prefer the *Mudshake*, over half (58.2%) of the sample indicated that females would prefer the beverage over males. Males were significantly more likely ($\chi^2 = 10.58$, df = 2, $p < 0.005$) to rate *Mudshake* as not appealing to either gender than were females. The group of participants that thought the *Mudshake* would appeal more to females decreased significantly ($\chi^2 = 31.33$, df = 8, $p < 0.001$) from 12–23 years but then increased slightly in the older adults (24–30 years). The responses, detailed across age group and gender, are presented in Table 29.

Table 29: Participant opinion of package appeal to gender for *Mudshake*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	2.9	31.4	65.7
	Female	35	0.0	48.6	51.4
		70	1.4	40.0	58.6
14–15 yrs	Male	35	5.7	37.1	57.1
	Female	35	2.9	58.8	38.2
		70	4.3	47.8	47.8
16–17 yrs	Male	35	11.4	42.9	45.7
	Female	35	2.9	77.1	20.0
		70	7.1	60.0	32.9
18–23 yrs	Male	33	3.0	75.8	21.2
	Female	37	5.4	78.4	16.2
		70	4.3	77.1	18.6
24–30 yrs	Male	37	5.4	62.2	32.4
	Female	33	3.0	69.7	27.3
		70	4.3	65.7	30.0
		350	**4.3**	**58.2**	**37.5**

When asked to indicate the ages that the *Mudshake* would most appeal to, participants from each age group, and both genders, indicated a peak at around 20–30 years, as detailed in Figure 3 by age and gender. The 12 -13 year age group thought that the *Mudshake* would also appeal to most 30–40 year olds.

Figure 3: Predicted appeal of *Chocolate Vodka Mudshake* by age and gender



3.4.7 Predictors of exposure estimate for having drunk *Chocolate Vodka Mudshake*

A linear regression was conducted to determine the best predictor for *Mudshake* exposure estimates. The regression used the co-variates age, gender, as well as palatability scales and exposure estimate scales for the RTD's component beverages.

Using the blinded condition data, the strongest predictor of believing you have consumed the *Mudshake* was having drunk the milk base *Moove* [$R^2 = 0.38$, $F(6,341) = 34.23$, $p < 0.001$], as detailed in Table 30.

Table 30: Predictors of exposure estimate for *Mudshake* use in the blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	1.55	0.2	0.005
Gender	1	0.61	0.4	0.002
Palatability Rating Moove	1	9.70	0.002	0.028
Exposure Estimate Moove	1	125.57	0.000	0.269
Palatability Rating Vodka	1	4.71	0.031	0.014
Exposure Estimate Vodka	1	11.07	0.001	0.031

Using the non blind data, the strongest predictor of believing you have drunk *Mudshake* was having drunk vodka [$R^2 = 0.19$, $F(6,343) = 13.08$, $p < 0.001$], as detailed in Table 31.

Table 31: Predictors of exposure estimate for *Mudshake* use in the non blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	9.01	0.003	0.26
Gender	1	0.17	0.7	0.000
Palatability Rating Moove	1	0.18	0.7	0.001
Exposure Estimate Moove	1	1.60	0.2	0.001
Palatability Rating Vodka	1	2.16	0.1	0.006
Exposure Estimate Vodka	1	64.32	0.000	0.158

3.4.8 General appeal of packaging for the milk-based RTD group

3.4.8.1 *Chocolate Moove*

The majority of participants (72.3%) reported that the *Moove* packaging was designed to appeal to them. There was a significant difference between age groups ($\chi^2 = 45.34$, df = 8, $p < 0.001$) and appeal of packaging, where the appeal decreased with age from 80% at 12–13 years, to 48.6% at 24–30 years, as detailed in Table 32. Decisions as to whether packaging was designed to appeal to the participant did not differ significantly ($p = 0.9$) with gender.

Table 32: Participant opinion of *Moove* packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	74.3	11.4	14.3
	Female	35	85.7	8.6	5.7
		70	80.0	10.0	10.0
14–15 yrs	Male	35	80.0	14.3	5.7
	Female	35	94.3	5.7	0.0
		70	87.1	10.0	2.9
16–17 yrs	Male	35	88.6	8.6	2.9
	Female	35	80.0	17.1	2.9
		70	84.3	12.9	2.9
18–23 yrs	Male	33	66.7	24.2	9.1
	Female	37	56.8	24.3	18.9
		70	61.4	24.3	14.3
24–30 yrs	Male	37	51.4	40.5	8.1
	Female	33	45.5	42.4	12.1
		70	48.6	41.4	10.0
		350	**72.3**	**19.7**	**8.0**

3.4.8.2 *Smirnoff Vodka*

A little more than half (54.9%) of the participants thought that the vodka packaging was designed to appeal to them. There was significant difference ($\chi^2 = 87.99$, df = 8, $p < 0.001$) between age groups and decisions as to whether the packaging was designed to appeal. The percentage of participants that thought the packaging was designed to appeal to them increased with age from 25.7% at 12–13 years, to 85.7% at 24–30 years, as detailed in Table 33. Decisions as to whether packaging was designed to appeal to the participant did not differ significantly ($p = 0.6$) with gender.

Table 33: Participant opinion of vodka packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	37.1	51.4	11.4
	Female	35	14.3	71.4	14.3
		70	25.7	61.4	12.9
14–15 yrs	Male	35	31.4	48.6	20.0
	Female	35	34.3	54.3	11.4
		70	32.9	51.4	15.7
16–17 yrs	Male	35	48.6	42.9	8.6
	Female	35	51.4	25.7	22.9
		70	50	34.3	15.7
18–23 yrs	Male	33	87.9	12.1	0.0
	Female	37	73.0	10.8	16.2
		70	80	11.4	8.6
24–30 yrs	Male	37	75.7	16.2	8.1
	Female	33	97.0	3.0	0.0
		70	85.7	10.0	4.3
		350	**54.9**	**33.7**	**11.4**

3.4.8.3 *Chocolate Vodka Mudshake*

Over half (60%) of the participants thought that the *Mudshake* packaging was designed to appeal to them. There was a significant difference ($\chi^2 = 24.76$, df = 8, $p < 0.002$) between age groups and decisions as to whether the packaging was designed to appeal to them. The percentage of participants that thought the packaging was designed to appeal to them steadily increased from 50% at 12–13 years, to 75.7% at 18–23 years and then markedly dropped to 54.3% at 24–30 years, as detailed in Table 34. Decisions as to whether packaging was designed to appeal to the participant did not differ significantly ($p = 0.2$) with gender.

Table 34: Participant opinion of *Mudshake* packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	45.7	28.6	25.7
	Female	35	54.3	28.6	17.1
		70	50	28.6	21.4
14–15 yrs	Male	35	54.3	34.3	11.4
	Female	35	60.0	31.4	8.6
		70	51.4	35.7	12.9
16–17 yrs	Male	35	60.0	31.4	8.6
	Female	35	77.1	14.3	8.6
		70	68.6	22.9	8.6
18–23 yrs	Male	33	69.7	30.0	0.0
	Female	37	81.1	18.9	0.0
		70	75.7	24.3	0.0
24–30 yrs	Male	37	48.6	40.5	10.8
	Female	33	60.6	87.9	0.0
		70	54.3	34.3	11.4
		350	**60.0**	**29.1**	**10.9**

3.5.0 The fruit-based RTD group

3.5.1 Prior exposure to *Bacardi Breezer*

Half (50.3%) of the sample reported having tried a *Breezer* prior to the interview. This previous encounter occurred at a mean age of 17.78 (SD = 3.6) years. The age at first use increased across age groups from 12.5 years at the 12–13 year age group to 21.1 years at the 24–30 year age group. There were no significant ($p = 0.1$) gender differences in the age at first use.

Around one–quarter (24.7%) of participants reported having become drunk using *Breezers*. There were no significant differences between age groups ($p = 0.1$) or gender ($p = 0.4$). The percentage of participants reporting being drunk using *Breezers* was greatest for females in the adult age groups.

Table 35: Age at first use and percentage used and been drunk drinking *Breezer*

Age Group & Gender		N	Mean Age at First Use (SD)	% Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	2	12.5 (0.7)	0.0
		2	12.5 (0.7)	0.0
14–15 yrs	Male	10	13.7 (0.9)	10.0
	Female	6	14.0 (0.9)	0.0
		16	13.8 (0.9)	6.3
16–17 yrs	Male	15	14.3 (1.5)	26.7
	Female	25	15.4 (0.9)	16.0
		40	15.0 (1.3)	20.0
18–23 yrs	Male	26	17.8 (2.2)	21.4
	Female	31	17.2 (2.0)	25.8
		57	17.5 (2.1)	23.7
24–30 yrs	Male	33	21.7 (3.3)	24.2
	Female	28	20.4 (3.0)	46.4
		61	21.1 (3.2)	34.4
		176	**17.8 (3.6)**	**24.7**

Those participants that had tried a *Breezer* also reported on the frequency of their use. There were no significant differences between age groups ($p = 0.9$) or gender ($p = 0.3$) as detailed in Table 36.

Table 36: Percentage frequency of *Breezer* use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	0	-	-	-	-	-	-	-
	Female	2	50.0	50.0	-	-	-	-	-
		2	50.0	50.0	-	-	-	-	-
14–15	Male	10	50.0	30.0	10.0	10.0	-	-	-
	Female	6	33.3	33.3	33.3	-	-	-	-
		16	43.8	31.3	18.8	6.3	-	-	-
16–17	Male	15	60.0	20.0	20.0	-	-	-	-
	Female	25	44.0	16.0	24.0	16.0	-	-	-
		40	50.0	17.5	22.5	10.0	-	-	-
18–23	Male	28	60.7	21.4	10.7	7.1	-	-	-
	Female	31	51.6	16.1	25.8	6.5	-	-	-
		59	55.9	18.6	18.6	6.8	-	-	-
24–30	Male	33	54.5	21.2	15.2	9.1	-	-	-
	Female	28	50.0	10.7	21.4	10.7	3.6	3.6	-
		61	52.5	16.4	18.0	9.8	1.6	1.6	-
		178	**52.2**	**19.1**	**19.1**	**8.4**	**0.6**	**0.6**	**-**

3.5.2 Prior exposure to *Bacardi*

Approximately half (46%) of the sample reported having ever tried *Bacardi* at a mean age of 16.8 (SD = 2.3) years. The age at first use increased across age groups from 13 years at the 12–13 year age group to 17.9 years at the 24–30 year age group. There were no significant ($p = 0.2$) gender differences in the age at first use.

Fewer than half (42.6%) the sample reported having become drunk drinking *Bacardi*. The percentage of participants reporting being drunk drinking *Bacardi* was greater for males in the adolescent groups and greater for females in the adult groups. The percentage of participants

also increased significantly ($\chi^2 = 11.36$, df = 4, $p < 0.03$) with age from 18.2% at the 12–13 year age group to 51.6% at the 24–30 year age group.

Table 37: Age at first use and percentage used and been drunk drinking *Bacardi*

Age Group	Gender	N	Mean Age at First Use (SD)	% Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	1	13.0 (0.0)	0.0
		1	13.0 (0.0)	0.0
14–15 yrs	Male	8	13.4 (0.7)	25
	Female	3	13.7 (0.6)	0.0
		11	13.5 (0.7)	18.2
16–17 yrs	Male	10	14.2 (0.9)	50.0
	Female	15	15.1 (1.0)	0.0
		25	14.8 (1.1)	20.0
18–23 yrs	Male	29	17.6 (1.6)	43.3
	Female	31	17.0 (1.7)	51.6
		60	17.3 (1.7)	47.5
24–30 yrs	Male	33	17.6 (2.3)	45.5
	Female	31	18.1 (2.4)	58.1
		64	17.9 (2.4)	51.6
		161	**16.8 (2.3)**	**42.6**

Participants that had tried *Bacardi* also reported on the frequency of their use. There were no significant differences in the frequency of use across age groups ($p = 0.4$) or gender ($p = 0.6$), as detailed in Table 38.

Table 38: Percentage frequency of *Bacardi* use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	0	-	-	-	-	-	-	-
	Female	1	100	-	-	-	-	-	-
		1	100	-	-	-	-	-	-
14–15	Male	8	87.5	12.5	-	-	-	-	-
	Female	3	66.7	-	33.3	-	-	-	-
		11	81.8	9.1	9.1	-	-	-	-
16–17	Male	10	70	10	20	-	-	-	-
	Female	15	46.7	26.7	26.7	-	-	-	-
		25	56.0	20.0	24.0	-	-	-	-
18–23	Male	30	56.7	13.3	16.7	10.0	3.3	-	-
	Female	31	35.5	6.5	35.5	19.4	3.2	-	-
		61	45.9	9.8	26.2	14.8	3.3	-	-
24–30	Male	37	48.5	21.2	24.2	3.0	3.0	-	-
	Female	31	64.5	12.9	16.1	3.2	3.2	-	-
		68	56.83	17.2	20.3	3.1	3.1	-	-
		162	**54.3**	**14.2**	**22.2**	**6.8**	**2.5**	**-**	**-**

3.5.3 Palatability ratings for the fruit-based RTD group

3.5.3.1 Blind condition

Raspberry Fanta was found to be very palatable when presented to participants in the blind condition, with a mean palatability rating of 5.4. (SD = 1.4). The palatability ratings for *Fanta* significantly [$R^2 = 0.04$, $F(1,348) = 13.79$, $p < 0.001$] decreased with age, such that, with an increase in age by one year, ratings decreased by 0.06 units. No significant ($p = 0.1$) gender differences were found.

Bacardi was found to be slightly unpalatable when presented to the participant in the blind condition, with a mean palatability rating of 3.2 (SD = 1.6). In this condition, there was no significant difference between palatability ratings for age (p = 0.1) or gender (p = 0.2).

The *Bacardi Breezer* was found to have a similar palatability profile to *Fanta*, with a mean palatability rating of 4.5 (SD = 1.6). Analysis revealed a significant peak [$R^2 = 0.06$, F (4,344) = 5.63, $p < 0.001$] in palatability ratings for the 16–17 years group, and a trough at the 12–13 year age group and 24–30 year age group. Details of this analysis are presented in Table 39, using the older adult group as the reference. No significant (p = 0.9) gender differences were present.

Table 39: Regression showing predicted effect of age on *Breezer* palatability in the blind condition

Age groups	df	F	Significance	Partial Eta Squared
12–13 yrs	1	4.25	0.04	0.012
14–15 yrs	1	1.89	0.170	0.005
16–17 yrs	1	3.83	0.051	0.011
18–23 yrs	1	3.17	0.076	0.009

Each of the blind palatability ratings for the beverages in the fruit-based RTD group are detailed in Table 40 across age group and gender.

Table 40: Mean palatability ratings for the fruit-based RTD group in the blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	5.2 (1.8)	2.6 (1.6)	3.7 (2.0)
	Female	35	5.7 (1.4)	2.8 (1.7)	3.8 (1.8)
		70	5.5 (1.6)	2.7 (1.6)	3.8 (1.9)
14–15 yrs	Male	35	5.4 (1.5)	3.3 (1.4)	4.8 (1.3)
	Female	35	5.8 (1.2)	3.0 (1.6)	4.5 (1.6)
		70	5.6 (1.4)	3.2 (1.5)	4.7 (1.5)
16 –17 yrs	Male	35	5.3 (1.3)	3.4 (1.6)	4.8 (1.2)
	Female	35	6.1 (0.9)	3.3 (1.7)	4.9 (1.5)
		70	5.7 (1.2)	3.4 (1.6)	4.8 (1.3)
18–23 yrs	Male	33	5.5 (1.1)	3.7 (1.3)	5.1 (1.2)
	Female	37	5.3 (1.3)	2.9 (1.4)	4.6 (1.8) (n = 36)
		70	5.4 (1.2)	3.3 (1.4)	4.8 (1.5) (n = 69)
24–30 yrs	Male	37	4.9 (1.7)	3.4 (1.5)	4.1 (1.6)
	Female	33	4.6 (1.6)	3.4 (1.5)	4.5 (1.8)
		70	4.7 (1.6)	3.4 (1.5)	4.3 (1.7)
		350	**5.4 (1.4)**	**3.2 (1.6)**	**4.5 (1.6)***

* n = 349

3.5.3.2 Non blind condition

When tasted in the context of the packaging, the *Fanta* was rated to be significantly ($t = -4.94$, $df = 349$, $p < 0.001$) more palatable, with a mean rating of 5.7 (SD = 1.5). The palatability ratings for *Fanta* significantly [$R^2 = 0.17$, $F(1,348) = 70.74$, $p < 0.001$] decreased with age, such that, with an increase in age by one year, ratings decreased by 0.12 units. No significant ($p = 0.9$) gender differences were found.

When presented alongside the packaging, the palatability ratings for the *Bacardi* were not significantly different ($p = 0.2$), with a mean rating of 3.3 (SD = 1.6). The palatability ratings

for *Bacardi*, however, significantly [R^2 = 0.04, F (1,348) = 15.07, p < 0.001] increased with age, such that, with an increase in age by one year, ratings increased by 0.06 units. No significant (p = 0.4) gender differences were found.

When presented with the packaging, the palatability ratings for the *Breezer* increased significantly (t = -5.81, df = 348, p < 0.001) to a mean of 5.0 (SD = 1.7). A linear regression showed a significant peak [R^2 = 0.04, F (4,344) = 3.83, p < 0.005] in palatability ratings between 14–17 years with a trough at the 12–13 year age group and 24–30 year age group. This analysis is detailed in Table 41 using the 24–30 year group as reference. No significant (p = 0.7) gender differences were found.

Table 41: Regression showing predicted effect of age on *Breezer* palatability in the non blind condition

Age groups	df	F	Significance	Partial Eta Squared
12–13 Years	1	0.22	0.6	0.001
14–15 yrs	1	9.57	0.002	0.027
16–17 yrs	1	8.04	0.005	0.023
18–23 yrs	1	1.77	0.2	0.005

Each of the non blind palatability ratings for the beverages in the fruit-based RTD group are detailed in Table 42 across age group and gender.

Table 42: Mean palatability ratings for the fruit-based RTD group in the non blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	6.3 (1.1)	2.4 (1.6)	4.8 (1.8)
	Female	35	6.3 (1.4)	2.8 (1.6)	4.6 (1.9)
		70	6.3 (1.3)	2.6 (1.6)	4.7 (1.8)
14–15 yrs	Male	35	6.2 (0.9)	3.3 (1.4)	5.4 (1.6)
	Female	35	6.3 (1.2)	2.7 (1.7)	5.4 (1.2)
		70	6.2 (1.1)	3.0 (1.5)	5.4 (1.4)
16–17 yrs	Male	35	5.8 (1.6)	3.1 (1.6)	4.9 (1.8)
	Female	35	6.4 (0.9)	3.5 (1.6)	5.7 (1.4)
		70	6.1 (1.3)	3.3 (1.6)	5.3 (1.7)
18–23 yrs	Male	33	5.6 (1.2)	4.4 (1.2)	4.9 (1.4)
	Female	37	5.0 (1.5)	3.7 (1.5)	4.9 (1.5) (n = 36)
		70	5.3 (1.4)	4.0 (1.4)	4.9 (1.5) (n = 69)
24–30 yrs	Male	37	4.8 (2.0)	3.7 (1.6)	4.7 (1.6)
	Female	33	4.6 (1.8)	3.4 (1.4)	4.4 (2.0)
		70	4.7 (1.9)	3.5 (1.5)	4.5 (1.8)
		350	**5.7 (1.5)**	**3.3 (1.6)**	**5.0 (1.7) (n = 349)**

3.5.4 Previous exposure estimates for the fruit-based RTD group

3.5.4.1 Blind condition

When *Fanta* was presented in the blind condition, exposure estimates were fairly high (mean = 5.5; SD = 1.8) and increased significantly [$R^2 = 0.02$, $F(1,347) = 7.22$, $p < 0.02$] with age, such that, with every increase in age of one year, exposure estimates increased by 0.05 units. There was no significant gender difference ($p = 0.1$) in *Fanta* exposure estimates.

When *Bacardi* was presented in this condition, exposure estimates were low (mean = 3.9, SD = 2.1). They increased significantly [$R^2 = 0.11$, $F(1,347) = 40.51$, $p < 0.001$], however, with

age such that, with every increase in age by one year, exposure estimates increased by 0.13 units. There was no significant gender difference (p = 0.9) in *Bacardi* exposure estimates.

When the *Breezer* was presented in the blind condition, participants, exposure estimates were in the mid range (mean = 4.5, SD = 2.0). Exposure estimates for the *Breezer* increased significantly [$R^2 = 0.12$, $F(1,347) = 47.22$, $p < 0.001$] with age, such that, with every increase in year, exposure estimates increased by 0.13 units. There was no significant gender difference (p = 0.9) in *Breezer* exposure estimates.

Table 43: Beverage exposure estimate means for fruit-based RTD group in the blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	5.1 (2.0)	2.6 (1.9) (n = 35)	3.0 (2.0)
	Female	35	4.9 (2.0)	2.8 (2.0)	3.4 (1.5)
		69	5.0 (2.0)	2.7 (1.9) (n = 70)	3.2 (1.8)
14–15 yrs	Male	35	4.9 (2.1)	3.9 (1.9)	4.1 (1.9)
	Female	35	5.5 (1.9)	2.9 (2.0) (n = 34)	3.1 (1.8)
		70	5.2 (2.0)	3.4 (2.0) (n = 69)	3.6 (1.9)
16–17 yrs	Male	35	5.4 (1.5)	3.5 (2.2)	4.6 (2.0)
	Female	35	6.1 (1.2)	4.2 (1.8)	5.1 (1.8)
		70	5.8 (1.4)	3.9 (2.0)	4.9 (1.9)
18–23 yrs	Male	33	5.6 (1.7)	4.9 (1.7)	5.3 (2.0)
	Female	37	6.2 (1.2)	4.9 (1.7)	5.6 (1.6) (n = 36)
		70	5.9 (1.5)	4.9 (1.7)	5.4 (1.8) (n = 69)
24–30 yrs	Male	37	5.8 (1.8)	4.5 (2.0)	5.3 (1.7)
	Female	33	5.8 (1.8)	4.8 (1.9)	5.4 (2.0)
		70	5.8 (1.8)	4.7 (2.0)	5.3 (1.8)
		349	**5.5 (1.8)**	**3.9 (2.1)**	**4.5 (2.0) (n = 348)**

3.5.4.2 Non blind condition

When presented with packaging, exposure estimates for *Fanta* were significantly ($t = -6.53$, $df = 348$, $p < 0.001$) higher (mean = 6.3; SD = 1.7). In this condition, estimates significantly [$R^2 = 0.04$, $F(1,348) = 15.08$, $p < 0.001$] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.07 units. There was no significant gender differences ($p = 0.3$) in *Fanta* exposure estimates.

When presented with packaging, exposure estimates for the *Bacardi* increased significantly ($t = -2.6$, $df = 347$, $p < 0.02$), with a mean rating of 4.3 (SD = 2.6). In this condition, *Bacardi* exposure estimates significantly increased [$R^2 = 0.29$, $F(1,347) = 143.5$, $p < 0.001$] with age, such that, with every increase in age by one year, ratings increased by 0.27 units. There was no significant gender difference ($p = 0.14$) in *Bacardi* exposure estimates.

When presented with packaging, exposure estimates for the *Breezer* did not significantly ($p = 0.2$) change, with a mean rating of 4.6 (SD = 2.5). In this condition, *Breezer* exposure estimates significantly [$R^2 = 0.13$, $F(1,347) = 53.63$, $p < 0.001$] increased with age, such that, with every increase in one year, ratings increased by 0.18 units. There was no significant gender difference ($p = 0.9$) in *Breezer* exposure estimates between genders.

Table 44: Beverage exposure estimates means for fruit-based RTD group in the non blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	6.5 (1.5)	1.7 (1.3)	2.7 (2.0)
	Female	35	6.4 (1.6)	2.3 (2.0)	2.4 (2.0)
		70	6.5 (1.6)	2.0 (1.7)	2.6 (2.0)
14–15 yrs	Male	35	6.6 (1.4)	3.0 (2.3)	4.3 (2.7)
	Female	35	6.5 (1.4)	2.4 (1.9) (n = 34)	3.3 (2.2)
		70	6.5 (1.4)	2.7 (2.1) (n = 69)	3.8 (2.5)
16–17 yrs	Male	35	6.8 (1.0)	4.2 (2.6)	4.8 (2.5)
	Female	35	6.3 (1.9)	4.9 (2.2)	5.7 (2.1)
		70	6.5 (1.5)	4.6 (2.4)	5.3 (2.3)
18–23 yrs	Male	33	6.3 (1.4)	5.8 (2.2)	6.3 (1.6)
	Female	37	6.0 (1.8)	6.1 (1.7)	5.9 (1.8) (n = 36)
		70	6.2 (1.6)	5.9 (1.9)	6.1 (1.7) (n = 69)
24–30 yrs	Male	37	5.6 (2.0)	5.6 (2.2)	5.2 (2.3)
	Female	33	5.6 (2.3)	6.5 (1.1)	5.9 (2.0)
		70	5.6 (2.2)	6.0 (1.8)	5.5 (2.2)
		359	**6.3 (1.7)***	**4.3 (2.6)**	**4.6 (2.5)**

* n = 350

3.5.5 Alcohol estimations for the fruit-based RTD group

3.5.5.1 Blind condition

In the absence of visual cues, most participants (61.1%) were able to distinguish the lack of alcohol in *Fanta*, with a mean rating of 1.8 (SD = 1.3). The ratings were consistently low with no significant difference in ratings across participant age ($p = 0.4$). Males gave significantly greater estimation ratings [$F(1,348) = 8.24$, $p < 0.004$] than did females.

In this condition, the majority (84%) were able to detect the alcohol present in the *Bacardi* sample, with a mean rating of 3.3 (SD = 1.6). The ratings did not differ significantly across age ($p = 0.4$) or gender ($p = 0.7$).

In the blind condition the majority (82.8%) were able to taste the alcohol present in the *Breezer* sample, with a mean rating of 3.1 (SD = 1.4). Alcohol estimation ratings for the *Breezer* decreased significantly [$R^2 = 0.01$, $F(1,347) = 4.48$, $p < 0.04$] with age, such that, for every increase in age by one year, ratings decreased by 0.03 units. There was no significant ($p = 0.1$) gender difference in alcohol estimations.

Alcohol estimations made by age groups for the beverages in the fruit-based RTD group are detailed in Table 45. The *Fanta* alcohol estimations were significantly lower than estimations for *Bacardi* ($t = 13.60$, $df = 349$, $p < 0.001$) and for *Breezer* ($t = -14.98$, $df = 348$, $p < 0.001$). The alcohol estimations for the *Bacardi* were significantly greater ($t = 2.31$, $df = 348$, $p < 0.03$) than the estimations for *Breezer*.

Table 45: Alcohol estimation means for the fruit-based RTD group in the blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	2.4 (1.5)	3.3 (1.7)	3.4 (1.4)
	Female	35	1.7 (1.3)	3.4 (1.6)	3.1 (1.6)
		70	2.0 (1.4)	3.3 (1.6)	3.4 (1.5)
14–15 yrs	Male	35	1.9 (1.2)	2.9 (1.4)	2.9 (1.3)
	Female	35	1.5 (0.9)	3.5 (1.6)	2.9 (1.5)
		70	1.7 (1.1)	2.9 (1.5)	3.2 (1.4)
16–17 yrs	Male	35	2.0 (1.3)	2.8 (1.9)	3.7 (1.4)
	Female	35	1.7 (1.3)	3.4 (1.5)	3.5 (1.3)
		70	1.8 (1.3)	3.6 (1.7)	3.1 (1.4)
18–23 yrs	Male	33	1.9 (1.1)	2.9 (1.6)	2.9 (1.3)
	Female	37	1.5 (1.3)	3.5 (1.5)	2.9 (1.3) (n = 36)
		70	1.8 (1.2)	3.4 (1.6)	3.0 (1.3) (n = 69)
24–30 yrs	Male	37	2.0 (1.4)	2.8 (1.7)	3.7 (1.5)
	Female	33	1.7 (1.1)	3.4 (1.8)	3.5 (1.4)
		70	1.7 (1.3)	3.4 (1.8)	2.9 (1.5)
		350	**1.8 (1.3)**	**3.1 (1.6)**	**3.3 (1.4) (n = 349)**

3.5.5.2 Non blind condition

As expected, a significantly ($t = 11.09$, $df = 349$, $p < 0.001$) greater majority (97.4%) of participants could tell there was no alcohol in the *Fanta* in the context of the packaging being revealed. Participant age did not effect alcohol estimations overall ($p = 0.6$); however, males gave significantly [$F(1,348] = 4.72$, $p < 0.03$] greater alcohol estimations than did females.

When presented with the packaging, participants reported that *Bacardi* contained a significantly ($t = -12.69$, $df = 349$, $p < 0.001$) greater amount of alcohol (mean = 4.7; SD = 1.5). There was no significant difference in estimations of the alcohol content in *Bacardi* across age ($p = 0.9$), or gender ($p = 0.8$).

When packaging was presented, participants thought that the *Breezer* contained a significantly ($t = -9.46$, $df = 348$, $p < 0.001$) greater amount of alcohol (mean = 3.9; SD =1.2). There was no significant difference in estimations of the alcohol content in *Breezers* across age ($p = 0.4$), or gender ($p = 0.6$).

Alcohol estimations made by age groups for the beverages in the fruit-based RTD group are detailed in Table 46. Estimations of the alcohol content were significantly different across the beverages. The *Fanta* alcohol estimations were significantly lower than estimations for *Bacardi* ($t = 41.16$, $df = 349$, $p < 0.001$) and for *Breezer* ($t = -40.77$, $df = 348$, $p < 0.001$). Estimations of the alcohol content in *Bacardi* were significantly ($t = 9.98$, $df = 348$, $p < 0.001$) greater than for *Breezer* estimates.

Table 46: Alcohol estimation means for the fruit-based RTD group in the non blind condition

Age Group	Gender	N	Fanta (SD)	Bacardi (SD)	Breezer (SD)
12–13 yrs	Male	34	1.2 (0.7)	4.7 (1.2)	3.9 (1.3)
	Female	35	1.1 (0.2)	4.6 (1.7)	4.1 (1.5)
		70	1.1 (0.5)	4.6 (1.4)	4.6 (1.4)
14–15 yrs	Male	35	1.0 (0.0)	4.6 (1.4)	3.8 (1.3)
	Female	35	1.0 (0.0)	4.6 (1.4)	4.0 (1.3)
		70	1.0 (0.0)	4.6 (1.4)	3.9 (1.3)
16–17 yrs	Male	35	1.2 (0.9)	4.5 (2.0)	4.1 (1.3)
	Female	35	1.0 (0.0)	5.2 (1.4)	4.3 (1.1)
		70	1.1 (0.6)	4.9 (1.7)	4.2 (1.2)
18–23 yrs	Male	33	1.1 (0.3)	4.9 (1.7)	3.5 (1.1)
	Female	37	1.0 (0.0)	4.5 (1.3)	3.8 (1.1)
		70	1.0 (0.2)	4.7 (1.5)	3.6 (1.1)
24–30 yrs	Male	37	1.1 (0.5)	4.7 (1.8)	4.0 (1.1)
	Female	33	1.0 (0.0)	4.5 (1.4)	3.6 (1.1)
		70	1.0 (0.4)	4.6 (1.6)	3.8 (1.1)
		350	**1.1 (0.4)**	**4.7 (1.5)**	**3.9 (1.2)**

3.5.5.3 Differences between blind to non blind condition alcohol estimation means

Taking the blind alcohol estimations from the non blind alcohol estimations gives a numerical value that represents the effect of packaging. *Fanta* shows negative results as participants could see that it was a non-alcoholic drink, and likely to reduce their alcohol ratings by an average of 0.8 units. When packaging is presented, the alcohol estimation ratings increased for *Bacardi* by two times compared to that of the *Breezer* increase (mean increase of 1.6 units against 0.6 units). The effect of packaging on alcohol estimations is presented in Table 47 across age group and gender.

Table 47: Difference between alcohol estimate means from blind to non blind conditions for the fruit-based RTD group

Age Group	Gender	Fanta	Bacardi	Breezer
12–13 yrs	Male	-1.2	1.4	0.5
	Female	-0.7	1.1	0.9
		-0.9	-2.2	-2.2
14–15 yrs	Male	-0.9	1.7	0.9
	Female	-0.5	1.1	1.1
		-0.7	1.7	0.7
16–17 yrs	Male	-0.8	1.8	0.4
	Female	-0.7	1.8	0.7
		-0.7	1.3	1.1
18–23 yrs	Male	-0.8	2.1	0.6
	Female	-0.5	1.0	0.9
		-0.8	1.3	0.7
24–30 yrs	Male	-1.0	1.9	0.3
	Female	-0.7	1.1	0.1
		-0.7	1.2	1.0
		-0.8	**1.6**	**0.6**

3.5.6 Predicted gender appeal of the fruit-based RTD group

3.5.6.1 *Rasberry Fanta*

When asked which gender would prefer the *Fanta*, participants were most likely (83.7%) to respond that neither gender would prefer the beverage over the other. There was no significant difference in this response across age groups ($p = 0.1$). For the few participants that thought the *Fanta* did appeal more to a particular gender, the participant's own gender significantly ($\chi^2 = 7.77$, $df = 2$, $p < 0.02$) influenced their decision. Male participants were more likely to think *Fanta* appealed to males, and female participants were more likely to

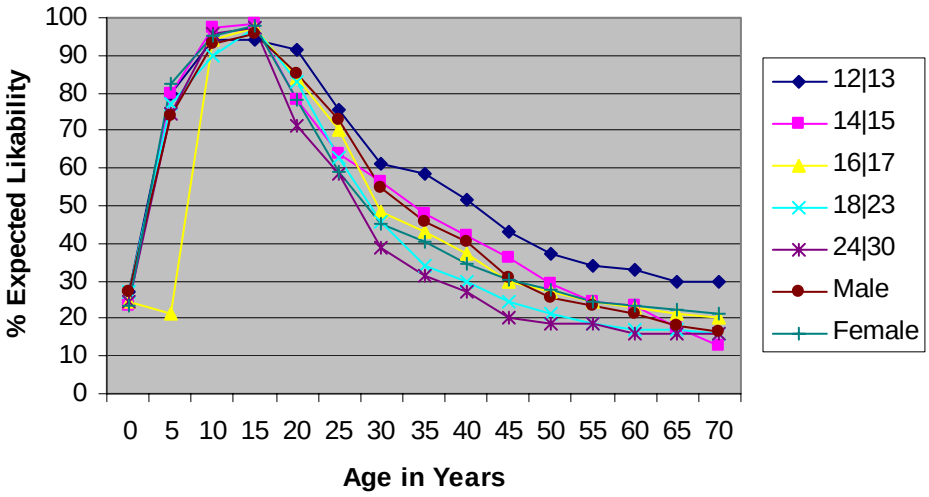
think *Fanta* appealed to females. The responses across age group and gender are presented in Table 48.

Table 48: Participant opinion of package appeal to gender for *Fanta*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	0.0	2.9	97.1
	Female	35	0.0	22.9	77.1
		70	0.0	12.9	87.1
14–15 yrs	Male	35	8.6	0.0	91.4
	Female	35	0.0	11.4	88.6
		70	4.3	5.7	90.0
16–17 yrs	Male	35	0.0	11.4	88.6
	Female	35	0.0	14.3	85.7
		70	0.0	12.9	87.1
18–23 yrs	Male	33	6.1	21.2	72.7
	Female	37	0.0	21.6	78.4
		70	2.9	21.4	75.7
24–30 yrs	Male	37	2.7	16.2	81.1
	Female	33	3.0	21.2	75.8
		70	2.9	18.6	78.6
		350	**2.0**	**14.3**	**83.7**

When asked to indicate the ages that *Fanta* would most appeal to, participants from each age group, and both genders, indicated a peak at around 10–20 years, as detailed in Figure 4 by age and gender. Participants in the 12–13 year age group felt the *Fanta* would be more appealing to older participants than did other groups.

Figure 4: Predicted appeal of *Raspberry Fanta* by age and gender



3.5.6.2 *Bacardi*

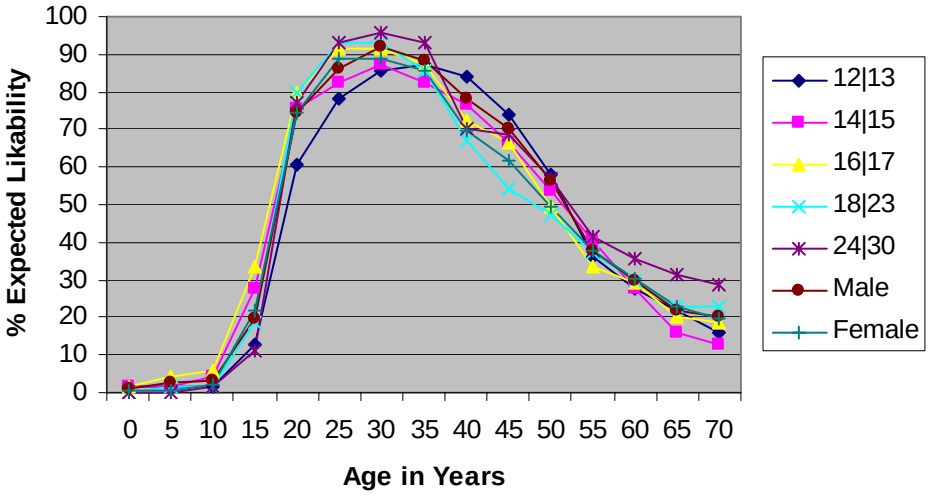
The majority (59.7%) of participants indicated that neither gender would prefer *Bacardi* over the other. There was no significant difference in this trend across age group ($p = 0.9$) or gender ($p = 0.4$), as detailed in Table 49.

Table 49: Participant opinion of package appeal to gender for *Bacardi*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	25.7	25.7	48.6
	Female	35	14.3	20.0	65.7
		70	20.0	22.9	57.1
14–15 yrs	Male	35	14.3	17.1	68.6
	Female	35	17.1	28.6	54.3
		70	15.7	22.9	61.4
16–17 yrs	Male	35	22.9	20.0	57.1
	Female	35	22.9	22.9	54.3
		70	22.9	21.4	55.7
18–23 yrs	Male	33	33.3	15.2	51.5
	Female	37	10.8	21.6	67.6
		70	21.4	18.6	60.0
24–30 yrs	Male	37	13.5	16.2	70.3
	Female	33	21.2	21.2	57.6
		70	17.1	18.6	64.3
		350	**19.4**	**20.9**	**59.7**

When asked to indicate the ages that *Bacardi* would appeal to, participants from each age group, and both genders, indicated a peak at around 25–35 years, as detailed in Figure 5 by age and gender.

Figure 5: Predicted appeal of *Bacardi* by age and gender



3.5.6.3 *Watermelon Bacardi Breezer*

Almost 8 in 10 (79.1%) of participants reported that females would prefer *Breezer* over males. There was a significant (χ^2 = 43.21, df = 8, p< 0.001) difference between decisions across age groups. Participants aged 16–30 were significantly more likely than participants aged 12–15 years to think that the beverage appealed to females than to both genders equally.

There was a significant difference (χ^2 = 9.31, df = 2, p < 0.01) between the participants' own gender and decisions as to which gender would prefer the *Breezer*. Male participants were more likely than females to think the *Breezer* would appeal to either males or both genders equally.

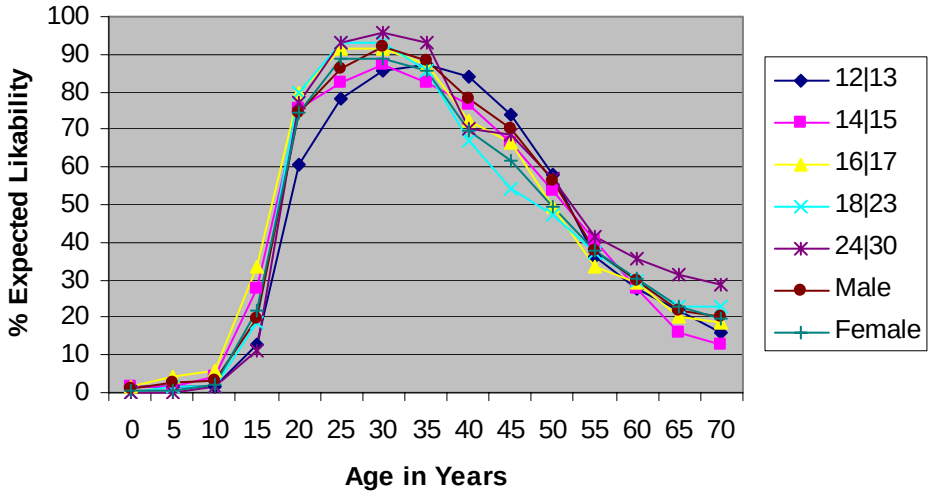
The percentages of participants that thought the *Breezer* would be preferred by males, females or both genders equally are presented in Table 50 across age group and gender.

Table 50: Participant opinion of package appeal to gender for *Breezer*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	2.9	54.3	42.9
	Female	35	5.7	65.7	28.6
		70	4.3	60.0	35.7
14–15 yrs	Male	35	5.7	51.4	42.9
	Female	35	0.0	80.0	20.0
		70	2.9	65.7	31.4
16–17 yrs	Male	35	0.0	77.1	22.9
	Female	35	0.0	94.3	5.7
		70	0.0	85.7	14.3
18–23 yrs	Male	33	6.1	93.9	0.0
	Female	37	0.0	97.2	2.8
		70	2.9	95.7	1.4
24–30 yrs	Male	37	2.7	86.5	10.8
	Female	33	0.0	90.9	9.1
		70	1.4	88.6	10.0
		350	**2.3**	**79.1**	**18.6**

When asked to indicate the ages that a *Breezer* would most appeal to, participants from each age group, and both genders, indicated a peak at around 25–30 years, as detailed in Figure 6 by age and gender. The 12–13 year age group peaked slightly later than other groups at around 35 years.

Figure 6: Predicted appeal of *Watermelon* Barcardi *Breezer* by age and gender



3.5.7 Predictors of exposure estimates for having drunk *Watermelon Bacardi Breezer*

A linear regression was conducted to determine the best predictor for *Breezer* exposure estimates. The regression used the co-variates age, gender, as well as the palatability scales and exposure estimates for the *Breezer* components - Bacardi and Fanta.

Using the blind data, the greatest predictor of having higher exposure estimates for the *Breezer* was having drunk *Fanta* [$R^2 = 0.36$, $F(6,340) = 32.34$, $p < 0.001$], as detailed in Table 51.

Table 51: Predictors of exposure estimates for the *Breezer* in the blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	17.94	0.000	0.05
Gender	1	0.08	0.8	0.000
Palatability Rating Bacardi	1	0.12	0.7	0.000
Exposure Estimate Bacardi	1	19.74	0.000	0.055
Palatability Rating Fanta	1	0.99	0.3	0.003
Exposure Estimate Fanta	1	58.25	0.000	0.146

Using the non blind data, the greatest predictor of *Breezer* exposure estimate was having drunk *Bacardi* [$R^2 = 0.42$, $F(6,341) = 41.34$, $p < 0.001$], as detailed in Table 52.

Table 52: Predictors of exposure estimates for the *Breezer* in the non blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	6.17	0.013	0.018
Gender	1	0.93	0.3	0.003
Palatability Rating Bacardi	1	0.02	0.9	0.000
Exposure Estimate Bacardi	1	105.62	0.000	0.236
Palatability Rating Fanta	1	4.86	0.03	0.014
Exposure Estimate Fanta	1	10.63	0.001	0.03

3.5.8 General appeal of packaging of the fruit-based RTD group

3.5.8.1 *Raspberry Fanta*

Most (85.7%) of the participants thought that the *Fanta* packaging was designed to appeal to them. There was a significant difference ($\chi^2 = 45.74$, df = 8, $p < 0.002$) between age groups and decisions on the packaging appeal. The percentage of participants reporting that the packaging was designed to appeal to them remains high (81.4% minimum) from the 12–13 year to 18–23 year age groups but drops to 64.3% at 24–30 years, as detailed in Table 53. No significant ($p = 0.6$) gender differences were present.

Table 53: Participant opinion of *Fanta* package appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	82.9	8.6	8.6
	Female	35	94.3	2.9	2.9
		70	88.6	5.7	5.7
14–15 yrs	Male	35	97.1	2.9	0.0
	Female	35	97.1	2.9	0.0
		70	97.1	2.9	0.0
16–17 yrs	Male	35	97.1	2.9	0.0
	Female	35	97.1	2.9	0.0
		70	97.1	2.9	0.0
18–23 yrs	Male	33	84.8	12.1	3.0
	Female	37	78.4	16.2	5.4
		70	81.4	14.3	4.3
24–30 yrs	Male	37	62.2	27.0	10.8
	Female	33	66.7	15.2	18.2
		70	64.3	21.4	14.3
		350	**85.7**	**9.4**	**4.9**

3.5.8.2 *Bacardi*

Around half (51.1%) of the participants thought that the *Bacardi* packaging was designed to appeal to them. There was a significant difference ($\chi^2 = 49.84$, df = 8, $p < 0.001$) between age groups and decisions on the packaging appeal. The percentage of participants that thought the packaging was designed to appeal to them increased with age from 30% at 12–13 years, to 74.3% at 24–30 years, as detailed in Table 54. No significant ($p = 0.2$) gender differences were present.

Table 54: Participant opinion of *Bacardi* package appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	42.9	51.4	5.7
	Female	35	17.1	65.7	17.1
		70	30.0	58.6	11.4
14–15 yrs	Male	35	40.0	42.9	17.1
	Female	35	28.6	48.6	22.9
		70	34.3	45.7	0.0
16–17 yrs	Male	35	51.4	42.9	5.7
	Female	35	51.4	42.9	5.7
		70	51.4	42.9	5.7
18–23 yrs	Male	33	66.7	21.2	12.1
	Female	37	64.9	24.3	10.8
		70	65.7	22.9	11.4
24–30 yrs	Male	37	78.4	13.5	8.1
	Female	33	69.7	18.2	12.1
		70	74.3	15.7	10.0
		350	**51.1**	**37.1**	**11.7**

3.5.8.3 *Watermelon Bacardi Breezer*

Around three-quarters (75.4%) of the participants thought that the *Breezer* packaging was designed to appeal to them. There was a significant difference ($\chi^2 = 28.13$, df = 8, $p < 0.001$) between age groups and decisions on the packaging appeal. The percentage of participants that thought the packaging was designed to appeal to them steadily increased from 55.7% at 12–13 years to 89.9% at 18 – 23 years and then dropped to 78.6% at 24–30 years, as detailed in Table 55. The packaging was significantly more likely to appeal to females ($\chi^2 = 6.78$, df = 2, $p < 0.04$).

Table 55: Participant opinion of *Breezer* package appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	62.9	20.0	17.1
	Female	35	48.6	25.7	25.7
		70	55.7	22.9	21.4
14–15 yrs	Male	35	68.6	17.1	14.3
	Female	35	77.1	8.6	14.3
		70	72.9	12.9	14.3
16–17 yrs	Male	35	68.6	28.6	2.9
	Female	35	91.4	2.9	5.7
		70	80	15.7	4.3
18–23 yrs	Male	33	87.9	9.1	3.0
	Female	36	91.7	0.0	8.3
		69	89.9	4.3	5.8
24–30 yrs	Male	37	67.6	18.9	13.5
	Female	33	90.9	9.1	0.0
		70	78.6	14.3	7.1
		349	**75.4**	**14.0**	**10.6**

3.6.0 The *Coke*-based RTD group

3.6.1 Prior exposure to *Jim Beam Bourbon*

Almost half (49.7%) of the sample reported having ever tried bourbon prior to interview at a mean age of 16.5 years (SD = 2.6). The age at first use increased across age groups from 13.9 years at the 14–15 year age group to 17.6 years at the 24–30 year age group. There were no significant ($p = 0.4$) gender differences in reported age at first use.

Over half (58.3%) the sample reported that they had become drunk drinking bourbon, with males significantly ($\chi^2 = 9.05$, $df = 1$, $p < 0.003$) more likely to report this than females. The

percentage also increased significantly ($\chi^2 = 10.78$, df = 3, $p < 0.01$) across age groups from 18.2% at the 14–15 year age group to 69.2% at the 24–30 year age group.

Table 56: Age at first use and percentage used and been drunk drinking bourbon

Age Group	Gender	N	Mean Age at First Use (SD)	% Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	0	-	-
		0	0.0	0.0
14–15 yrs	Male	7	14.1 (0.4)	14.3
	Female	4	13.5 (1.9)	25
		11	13.9 (1.1)	18.2
16–17 yrs	Male	18	14.5 (1.2)	72.2
	Female	18	15.5 (1.1)	38.9
		36	15.0 (1.2)	55.6
18–23 yrs	Male	31	16.6 (1.5)	67.6
	Female	31	16.8 (1.8)	38.7
		62	16.7 (1.6)	56.5
24–30 yrs	Male	36	17.5 (2.7)	75
	Female	29	17.7 (4.1)	62.1
		65	17.6 (3.4)	69.2
		174	**16.5 (2.6)**	**58.3**

Participants that had tried bourbon also reported on the frequency of their use (detailed in Table 57). There was no significant difference ($p = 0.7$) between age groups and the frequency they drink bourbon as it was generally rarely used. Male participants were significantly ($\chi^2 = 26.55$, df = 4, $p < 0.001$) more likely than females to use it monthly to weekly.

Table 57: Percentage frequency of bourbon use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	0	-	-	-	-	-	-	-
	Female	0	-	-	-	-	-	-	-
		0	-	-	-	-	-	-	-
14–15	Male	7	71.4	2.9	2.9	-	-	-	-
	Female	4	100	-	-	-	-	-	-
		11	81.4	9.1	9.1	-	-	-	-
16–17	Male	18	66.7	-	16.7	5.6	11.1	-	-
	Female	18	77.8	5.6	11.1	5.6	-	-	-
		36	72.2	2.8	13.9	5.6	5.6	-	-
18–23	Male	31	21.9	15.6	25.0	15.6	21.9	-	-
	Female	31	80.6	3.2	6.5	9.7	-	-	-
		62	50.8	9.5	15.9	12.7	11.1	-	-
24–30	Male	36	44.4	11.1	13.5	13.5	13.5	-	-
	Female	29	75.9	10.3	3.4	3.4	3.4	-	-
		65	58.5	10.8	12.3	9.2	9.2	-	-
		175	**60.0**	**8.6**	**13.7**	9.1	**8.6**	**-**	**-**

3.6.2 Prior exposure to bourbon and *Coke*

Approximately half (48%) of the sample reported having ever tried a bourbon and *Coke* prior to interview at a mean age of 16.9 (SD = 3.2) years. The age at first use increased across age groups from 12.8 years in the 12–13 year age group to 18.9 years in the 24–30 year age group. There were no significant ($p = 1.0$) gender differences in the age at first use.

Half (50%) of the sample reported having been drunk using bourbon and *Coke*. Males were significantly ($\chi^2 = 6.15$, $df = 1$, $p < 0.013$) more likely than females to report this experience across each age group than were females.

Table 58: Age at first use and percentage used and been drunk drinking bourbon *and Coke*

Age Group	Gender	N	Mean Age at First Use (SD)	Percent Drunk Using (Ever)
12–13 Yrs	Male	1	13.0 (0.0)	0.0
	Female	4	12.8 (0.5)	50.0
		5	12.8 (0.4)	40.0
14–15 Yrs	Male	7	14.1 (0.4)	42.9
	Female	6	13.8 (1.6)	16.7
		13	14.0 (1.1)	30.8
16–17 Yrs	Male	20	14.2 (1.4)	55.0
	Female	16	15.6 (1.1)	31.3
		36	14.8 (1.4)	44.4
18–23 Yrs	Male	33	17.5 (1.8)	60.6
	Female	25	16.8 (1.7)	44.0
		58	17.2 (1.8)	53.4
24–30 Yrs	Male	31	18.7 (4.0)	64.5
	Female	25	19.2 (4.0)	44.0
		56	19.0 (4.0)	55.4
		168	**16.9 (3.2)**	**50.0**

Participants that had tried bourbon and *Coke* also reported on the frequency of their use. There were no significant differences ($p = 0.3$) in the frequency of bourbon and *Coke* use across age groups. Participants reported using bourbon and *Coke* rarely across each of the age groups with the exception of adolescent males who reported using it monthly.

Table 59: Percentage frequency of bourbon and *Coke* use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	1	-	-	100	-	-	-	-
	Female	4	100	-	-	-	-	-	-
		5	80	-	20	-	-	-	-
14–15	Male	7	42.9	14.3	42.9	-	-	-	-
	Female	6	100	-	-	-	-	-	-
		13	69.2	7.7	23.1	-	-	-	-
16–17	Male	20	25.0	25.0	35.0	15.0	-	-	-
	Female	16	56.3	12.5	31.3	-	-	-	-
		36	38.9	19.4	33.3	8.3	-	-	-
18–23	Male	33	24.2	15.2	33.3	18.2	9.1	-	-
	Female	25	56.0	12.0	12.0	8.0	12.0	-	-
		58	37.9	13.8	24.1	13.8	10.3	-	-
24–30	Male	31	41.9	12.9	25.8	6.5	12.9	-	-
	Female	25	76.0	16.0	4.0	4.0	-	-	-
		56	57.1	14.3	16.1	5.4	7.1	-	-
		168	**48.2**	**14.3**	**23.2**	**8.3**	**6.0**	**-**	**-**

3.6.3 Palatability ratings for the *Coke*-based RTD group

3.6.3.1 Blind condition

Coke was found to be palatable when presented in the blind condition, with a mean palatability rating of 5.5. (SD = 1.6). There was no significant difference in palatability ratings across participant age ($p = 0.4$). Male participants found *Coke* to be significantly [$F(1,348) = 9.65$, $p < 0.002$] more palatable than females.

Bourbon was found to be slightly unpalatable when presented to the participant in the blind condition, with a mean palatability rating of 2.8 (SD = 1.7). A linear regression showed that the bourbon palatability ratings increase significantly [$R^2 = 0.03$, $F(1,348) = 9.87$, $p < 0.002$] with age, such that, with every increase in age by one year, ratings increased by 0.05 units. Male participants found bourbon to be significantly [$F(1,348) = 22.13$, $p < 0.001$] more palatable than females.

The bourbon and *Coke* had a palatability rating between its two components with a mean palatability rating of 3.8 (SD = 1.9). Regression analysis revealed a significant [$R^2 = 0.06$, $F(1,348) = 20.76$, $p < 0.001$] increase in bourbon and *Coke* palatability ratings with age, such that, with every increase in age by one year, ratings increased by 0.09 units. Male participants found bourbon and *Coke* to be significantly [$F(1,348) = 11.09$, $p < 0.001$] more palatable than females.

Table 60: Palatability ratings for the *Coke*-based RTD group in the blind condition

Age Group	Gender	N	Coke	Bourbon	B + Coke
12–13 yrs	Male	34	5.6 (1.6)	2.4 (1.7)	2.8 (1.7)
	Female	35	5.4 (2.1)	1.9 (1.4)	2.7 (1.8)
		70	5.5 (1.8)	2.2 (1.5)	2.8 (1.8)
14–15 yrs	Male	35	5.9 (1.3)	2.7 (1.5)	3.8 (2.0)
	Female	35	5.0 (1.8)	2.2 (1.5)	3.1 (2.0)
		70	5.5 (1.6)	2.5 (1.5)	3.4 (2.0)
16–17 yrs	Male	35	5.7 (1.4)	3.5 (1.8)	3.9 (1.8)
	Female	35	5.5 (1.8)	2.7 (1.8)	4.0 (1.5)
		70	5.6 (1.6)	3.1 (1.8)	3.9 (1.6)
18–23 yrs	Male	33	5.9 (1.1)	4.2 (1.5)	5.2 (1.3)
	Female	37	5.4 (1.4)	2.4 (1.3)	3.7 (1.7)
		70	5.7 (1.3)	3.3 (1.6)	4.4 (1.7)
24–30 yrs	Male	37	5.6 (1.1)	3.4 (1.5)	4.8 (1.7)
	Female	33	4.8 (1.6)	2.8 (1.6)	3.7 (1.9)
		70	5.2 (1.4)	3.1 (1.6)	4.3 (1.9)
		350	**5.5 (1.6)**	**2.8 (1.7)**	**3.8 (1.9)**

3.6.3.2 Non blind condition

When presented with packaging, the *Coke* was reported to be significantly ($t = -6.54$, $df = 348$, $p < 0.001$) more palatable, with a mean rating of 6.0 (SD = 1.4). The palatability ratings, however, decreased significantly [$R^2 = 0.05$, $F(1,347) = 17.64$, $p < 0.001$] with age, such that, with every increase in age by one year, ratings decreased by 0.06 units. Male participants found *Coke* to be significantly [$F(1,347) = 10.0$, $p < 0.002$] more palatable than females.

When presented in the context of the packaging, the bourbon was reported to be significantly ($t = -3.39$, $df = 349$, $p < 0.002$) more palatable, with a mean rating of 3.1 (SD = 1.9). The palatability ratings increased significantly [$R^2 = 0.04$, $F(1,348) = 15.31$, $p < 0.01$] with age, such that, with every increase in age by one year, ratings increased by 0.08 units.

Male participants found bourbon to be significantly [$F(1,348) = 19.79$, $p < 0.001$] more palatable than females.

When tasted alongside the packaging, the bourbon and *Coke* was reported to be significantly ($t = -4.79$, $df = 349$, $p < 0.001$) more palatable, with a mean rating of 4.1 ($SD = 2.0$). Analysis revealed that the palatability ratings for bourbon and *Coke* increased significantly [$R^2 = 0.04$, $F(1,348) = 13.76$, $p < 0.001$] with age, such that, for every increase in age by one year, ratings increased by 0.08 units. Male participants found bourbon and *Coke* to be significantly [$F(1,348) = 19.32$, $p < 0.001$] more palatable than females.

Table 61: Palatability rating means for *Coke*-based RTD group in the non blind condition

Age Group	Gender	N	Coke	Bourbon	B + Coke
12–13 yrs	Male	35	6.3 (1.0) (n = 34)	2.2 (1.5)	3.3 (2.0)
	Female	35	6.4 (1.4)	2.1 (1.7)	2.9 (1.9)
		70	6.3 (1.2)	2.2 (1.6)	3.1 (2.0)
14–15 yrs	Male	35	6.5 (0.9)	3.3 (1.7)	4.6 (1.4)
	Female	35	5.9 (1.7)	2.7 (1.7)	3.4 (2.1)
		70	6.2 (1.4)	3.0 (1.7)	4.0 (1.9)
16–17 yrs	Male	35	6.1 (1.5)	3.9 (2.0)	4.7 (1.9)
	Female	35	6.2 (1.2)	3.0 (1.9)	4.3 (1.8)
		70	6.2 (1.3)	3.4 (2.0)	4.5 (1.8)
18–23 yrs	Male	33	6.2 (1.0)	4.5 (1.8)	5.6 (1.6)
	Female	37	5.4 (1.5)	2.5 (1.4)	3.8 (1.8)
		70	5.7 (1.4)	3.4 (1.9)	4.6 (1.9)
24–30 yrs	Male	37	6.0 (1.4)	4.0 (1.9)	4.9 (1.9)
	Female	33	4.9 (1.6)	3.1 (1.9)	4.1 (2.0)
		70	5.5 (1.6)	3.6 (1.9)	4.5 (2.0)
		350	**6.0 (1.4) (n = 349)**	**3.1 (1.9)**	**4.1 (2.0)**

3.6.4 Exposure estimates for the *Coke*-based RTD group

3.6.4.1 Blind condition

When *Coke* was presented in the blind condition, participants' exposure estimates were high with a mean of 6.0 (SD = 1.7). Exposure estimates significantly [$R^2 = 0.30$, $F(1,347) = 10.58$, $p < 0.002$] increased with age, such that, for every increase in age by one year, exposure estimates increased by 0.06 units. Exposure estimates were consistent across participant gender with no significant difference ($p = 0.7$).

When bourbon was presented in the blind condition, exposure estimates were moderate with a mean of 4.1 (SD = 2.2). Exposure estimates significantly [$R^2 = 0.22$, $F(1,347) = 100.18$, $p < 0.001$] increased with age, such that, for every increase in one year, exposure estimates increased by 0.21 units. Exposure estimates were consistent across participant gender with no significant difference ($p = 0.4$).

When the bourbon and *Coke* was presented in the blind condition, exposure estimates were moderate with a mean of 4.8 (SD = 2.3). Exposure estimates significantly [$R^2 = 0.20$, $F(1,347) = 87.67$, $p < 0.001$] increased with age, such that, for every increase in age by one year, exposure estimates increased by 0.06 units. Exposure estimates were consistent across participant gender with no significant differences ($p = 0.7$).

Table 62: Beverage exposure estimates for *Coke*-based RTD group in the blind condition

Age Group	Gender	N	Coke (SD)	Bourbon (SD)	B + Coke (SD)
12–13 yrs	Male	34	5.4 (2.1)	2.6 (1.9)	3.2 (2.4)
	Female	35	5.6 (1.8)	2.2 (1.8)	3.0 (2.0)
		69	5.5 (2.0)	2.4 (1.9)	4.5 (2.2)
14–15 yrs	Male	35	5.7 (2.0)	2.9 (1.7)	4.2 (2.1)
	Female	35	5.3 (1.8)	2.6 (2.0)	3.1 (2.3)
		70	5.5 (1.9)	2.8 (1.9)	4.3 (2.3)
16–17 yrs	Male	35	6.1 (1.6)	4.5 (2.2)	4.7 (2.2)
	Female	35	6.3 (1.5)	4.2 (2.1)	5.3 (1.5)
		70	6.2 (1.5)	4.3 (2.1)	4.3 (1.9)
18–23 yrs	Male	33	6.3 (1.6)	5.6 (1.8)	6.2 (1.6)
	Female	37	6.6 (0.7)	5.2 (1.6)	6.2 (1.1)
		70	6.5 (1.2)	5.3 (1.7)	4.4 (1.3)
24–30 yrs	Male	37	6.4 (1.3)	5.2 (1.9)	5.9 (1.7)
	Female	33	6.3 (1.4)	5.6 (1.4)	6.2 (1.3)
		70	6.3 (1.4)	5.4 (1.7)	4.5 (1.6)
		349	6.0 (1.7)	4.1 (2.2)	4.8 (2.3)

3.6.4.2 Non blind condition

When presented with packaging, *Coke* exposure estimates significantly ($t = -10.02$, $df = 347$, $p < 0.001$) increased to a mean rating of 6.8 (SD = 0.9). There was no significant difference in exposure estimates across participant age ($p = 0.3$) or gender ($p = 0.9$)

In the context of the packaging bourbon, exposure estimates increased significantly ($t = -5.68$, $df = 348$, $p < 0.001$) to a mean of 4.6 (SD = 2.6). Exposure estimates significantly [$R^2 = 0.273$, $F(1,348) = 130.68$, $p < 0.001$] increased with age such that, for every increase in age by one year, exposure estimates increased by 0.26 units. There were no significant gender differences ($p = 0.5$).

When presented with packaging, bourbon and *Coke* exposure estimates did not differ significantly ($p = 0.145$), with a mean of 4.9 (SD = 2.5). Exposure estimates significantly [$R^2 = 0.22$, $F(1,348) = 98.7$, $p < 0.001$] increased with age, such that, for every increase in age by one year, exposure estimates increased by 0.23 units, with no gender differences ($p = 0.4$).

Table 63: Beverage exposure estimate means for the *Coke*- based RTD group in the non blind condition

Age Group	Gender	N	Coke (SD)	Bourbon (SD)	B + Coke (SD)
12–13 yrs	Male	35	7.0 (0.0) (n = 34)	2.3 (1.9)	3.3 (2.4)
	Female	35	6.8 (0.9)	2.4 (2.1)	2.9 (2.3)
		70	6.9 (0.7) (n = 69)	5.1 (2.0)	4.4 (2.3)
14–15 yrs	Male	35	6.6 (1.4)	3.6 (2.5)	4.2 (2.3)
	Female	35	6.8 (1.1)	2.9 (2.3)	3.3 (2.4)
		70	6.7 (1.2)	5.4 (2.4)	4.3 (2.4)
16–17 yrs	Male	35	6.8 (1.1)	4.9 (2.7)	4.9 (2.7)
	Female	35	6.8 (1.0)	5.1 (2.4)	5.4 (2.3)
		70	6.8 (1.0)	5.1 (2.5)	4.4 (2.5)
18–23 yrs	Male	33	6.8 (1.0)	6.5 (1.5)	6.5 (1.4)
	Female	37	7.0 (0.3)	5.9 (2.0)	6.0 (1.9)
		70	6.9 (0.8)	5.0 (1.8)	4.1 (1.7)
24–30 yrs	Male	37	7.0 (0.2)	6.3 (1.5)	6.3 (1.7)
	Female	33	6.9 (0.5)	6.5 (1.3)	6.7 (0.9)
		70	6.9 (0.4)	4.8 (1.4)	4.4 (1.4)
		350	**6.8 (0.9) (n = 349)**	**4.6 (2.6)**	**4.9 (2.5)**

3.6.5 Alcohol content estimations for *Coke*- based RTD group

3.6.5.1 Blind condition

In this condition, most participants (77.4%) were able to distinguish the lack of alcohol in *Coke,* with a mean rating of 1.5 (SD = 1.1). The ratings were consistently low with no significant difference across participant age ($p = 0.1$) or gender ($p = 0.4$).

In the blind condition, the majority (93.1%) were able to taste the alcohol present in the bourbon sample, with a mean rating of 3.9 (SD = 1.6). There was no significant difference across participant age ($p = 0.1$) or gender ($p = 0.6$).

Similarly, the majority of participants (96.3%) were able to taste the alcohol present in the bourbon and *Coke* sample, with a mean rating of 4.4 (SD = 1.4) with no significant difference across participant age ($p = 0.7$) or gender ($p = 0.5$).

Alcohol estimations made by age groups for the beverages in the *Coke*-based RTD group are detailed in Table 64. The *Coke* alcohol estimations were significantly lower than estimations for bourbon ($t = -22.75$, $df = 348$, $p < 0.001$) and for bourbon and *Coke* ($t = -32.25$, $df = 348$, $p < 0.001$). The alcohol estimations for the bourbon and *Coke* were significantly greater ($t = -5.27$, $df = 349$, $p < 0.001$) than the estimations for bourbon.

Table 64: Alcohol content estimations for the *Coke*-based RTD group in the blind condition

Age Group	Gender	N	Coke (SD)	Bourbon (SD)	B + Coke (SD)
12–13 yrs	Male	35	1.7 (1.3)	3.9 (1.5)	4.7 (1.6)
	Female	35	1.6 (1.1)	3.9 (1.5)	4.3 (1.7)
		70	1.6 (1.2)	3.9 (1.5)	4.5 (1.6)
14–15 yrs	Male	35	1.6 (1.1) (n = 34)	3.3 (1.7)	4.2 (1.5)
	Female	35	1.8 (1.6)	3.6 (1.7)	4.5 (1.4)
		70	1.7 (1.3) (n = 69)	3.5 (1.7)	4.3 (1.4)
16–17 yrs	Male	35	1.6 (1.2)	4.0 (1.7)	4.5 (1.4)
	Female	35	1.5 (1.3)	3.9 (1.4)	4.2 (1.3)
		70	1.5 (1.2)	4.0 (1.5)	4.3 (1.4)
18–23 yrs	Male	33	1.3 (0.8)	4.3 (1.6)	4.4 (1.2)
	Female	37	1.5 (1.1)	4.1 (1.6)	4.4 (1.5)
		70	1.4 (1.0)	4.2 (1.6)	4.4 (1.4)
24–30 yrs	Male	37	1.2 (0.7)	4.3 (1.6)	4.5 (1.3)
	Female	33	1.5 (1.1)	4.0 (1.6)	4.5 (1.1)
		70	1.3 (0.9)	4.2 (1.6)	4.5 (1.2)
		350	**1.5 (1.1) (n = 349)**	**3.9 (1.6)**	**4.4 (1.4)**

3.6.5.2 Non blind condition

A significantly ($t = 7.3$, $df = 347$, $p < 0.001$) greater majority (96.8%) of participants reported that there was no alcohol in the *Coke* when the packaging was presented, with a mean rating of 1.0 (SD = 0.4). The ratings were consistently low with no significant difference across participant age ($p = 0.3$) or gender ($p = 0.8$).

When packaging was presented, the alcohol content estimations for bourbon increased significantly ($t = -12.61$, $df = 349$, $p < 0.001$) to a mean of 5.1 (SD = 1.5). There were no significant differences across participant age ($p = 0.1$) or gender ($p = 0.6$).

In the context of the packaging, participants reported that the alcohol content estimations for bourbon and *Coke* did not significantly ($p = 0.2$) differ (mean = 4.3; SD = 1.3). There were no significant differences across participant age ($p = 0.8$) or gender ($p = 0.1$).

Alcohol estimations made by age groups for the beverages in the *Coke*-based RTD group are detailed in Table 65. The *coke* alcohol estimations were significantly lower than estimations for bourbon ($t = -49.33$, $df = 348$, $p < 0.001$) and for bourbon and *Coke* ($t = -45.66$, $df = 348$, $p < 0.001$). The alcohol estimations for the bourbon were significantly greater ($t = -9.69$, $df = 349$, $p < 0.001$) than the estimations for bourbon and *Coke*.

Table 65: Alcohol estimations for the *Coke*-based RTD group in the non blind condition

Age Group	Gender	N	Coke (SD)	Bourbon (SD)	B + Coke (SD)
12–13 yrs	Male	35	1.0 (0.2) (n = 34)	5.2 (1.4)	4.1 (1.7)
	Female	35	1.1 (0.3)	5.1 (1.3)	4.6 (1.2)
		70	1.1 (0.2) (n = 69)	5.1 (1.3)	4.4 (1.5)
14–15 yrs	Male	35	1.0 (0.0)	5.4 (1.5)	4.1 (1.3)
	Female	35	1.1 (0.3)	5.3 (1.3)	4.5 (1.4)
		70	1.0 (0.2)	5.4 (1.4)	4.3 (1.4)
16–17 yrs	Male	35	1.1 (0.5)	4.7 (1.8)	4.2 (1.3)
	Female	35	1.0 (0.0)	5.4 (1.4)	4.5 (1.1)
		70	1.0 (0.4)	5.1 (1.6)	4.4 (1.2)
18–23 yrs	Male	33	1.1 (0.3)	5.1 (1.5)	4.1 (1.3)
	Female	37	1.0 (0.0)	4.9 (1.5)	4.0 (1.3)
		70	1.0 (0.2)	5.0 (1.5)	4.1 (1.3)
24–30 yrs	Male	37	1.1 (0.5)	4.7 (1.7)	4.4 (1.1)
	Female	33	1.2 (0.9)	5.0 (1.6)	4.4 (1.1)
		70	1.1 (0.7)	4.8 (1.6)	4.4 (1.1)
		350	**1.1 (0.4) (n = 349)**	**5.1 (1.5)**	**4.3 (1.3)**

3.6.5.3 Differences in alcohol estimation means from blind to non blind conditions for the *Coke*-based RTD group

Taking the blind alcohol estimations from the non blind alcohol estimations gives a numerical value that represents the effect of packaging. *Coke* shows negative results with an average reduction in alcohol estimation ratings of 0.5. bourbon and *Coke* also shows negative values (0.1 unit decrease) suggesting that when participants are given packaging information they are likely to think it contains less alcohol than when they are judging by taste alone. Females in the adolescent age groups were the only exception to this trend. When packaging is presented, the alcohol estimation ratings increased for bourbon by an average of 1.2 units.

Table 66: Difference in alcohol estimation means from blind to non blind conditions for the *Coke*-based RTD group

Age Group	Gender	N	Coke	Bourbon	B + Coke
12–13 yrs	Male	35	-0.6 (n = 34)	1.4	-0.5
	Female	35	-0.5	1.2	0.3
		70	-0.6	1.3	-0.1
14–15 yrs	Male	35	-0.6	2.1	-0.1
	Female	35	-0.7	1.7	0.0
		70	-0.7	1.9	-0.1
16–17 yrs	Male	35	-0.5	0.7	-0.3
	Female	35	-0.5	1.5	0.3
		70	-0.5	1.1	0.0
18–23 yrs	Male	33	-0.2	0.8	-0.3
	Female	37	-0.5	0.9	-0.3
		70	-0.4	0.8	-0.3
24–30 yrs	Male	37	-0.1	0.4	-0.1
	Female	33	-0.3	1.0	-0.1
		70	-0.2	0.7	-0.1
		350	**-0.5**	**1.2**	**-0.1**

3.6.6 Predicted appeal to gender for the *Coke*-based RTD group

3.6.6.1 *Coke*

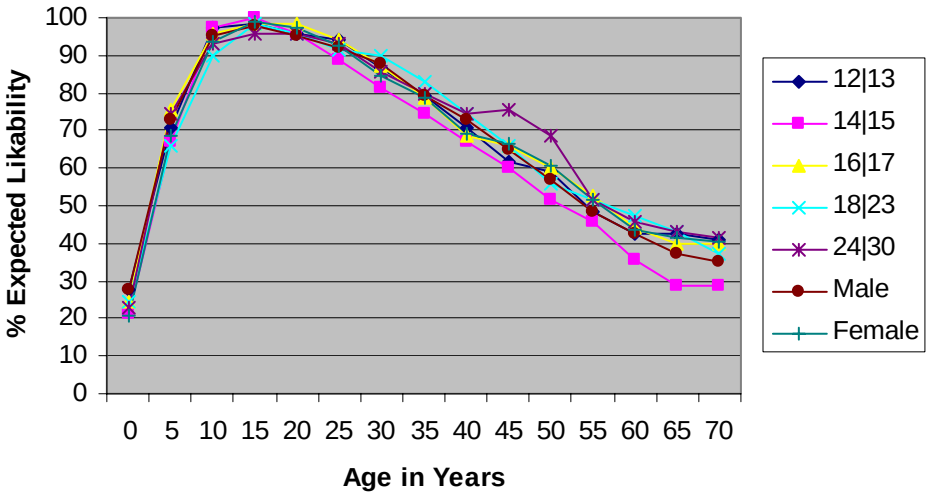
When asked which gender would prefer the *Coke*, participants strongly (96.3%) responded that neither gender would prefer the beverage over the other. There was no significant difference in this response across age groups (p = 0.8) or gender (p = 0.7).

Table 67: Participant opinion of package appeal to gender for *Coke*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	34	5.9	0.0	94.1
	Female	35	5.7	0.0	94.3
		69	5.8	0.0	94.2
14–15 yrs	Male	35	2.9	0.0	97.1
	Female	35	2.9	2.9	94.3
		70	2.9	1.4	95.7
16–17 yrs	Male	35	2.9	2.9	94.3
	Female	35	0.0	0.0	100.0
		70	1.4	1.4	97.1
18–23 yrs	Male	33	3.0	0.0	97.0
	Female	37	2.7	0.0	97.3
		70	2.9	0.0	97.1
24–30 yrs	Male	37	2.7	2.7	94.6
	Female	33	0.0	0.0	100.0
		70	1.4	1.4	97.1
		349	**2.9**	**0.9**	**96.3**

When asked to indicate the ages that *Coke* would appeal to, participants from each age group, and both genders, indicated a peak at around 10 – 20 years, as detailed in Figure 7 by age and gender. More participants in the 24–30 year age group thought that the *Coke* would appeal to a greater percentage of 40–50 year old people.

Figure 7: Predicted appeal of *Coke* by age and gender



3.6.6.2 Bourbon

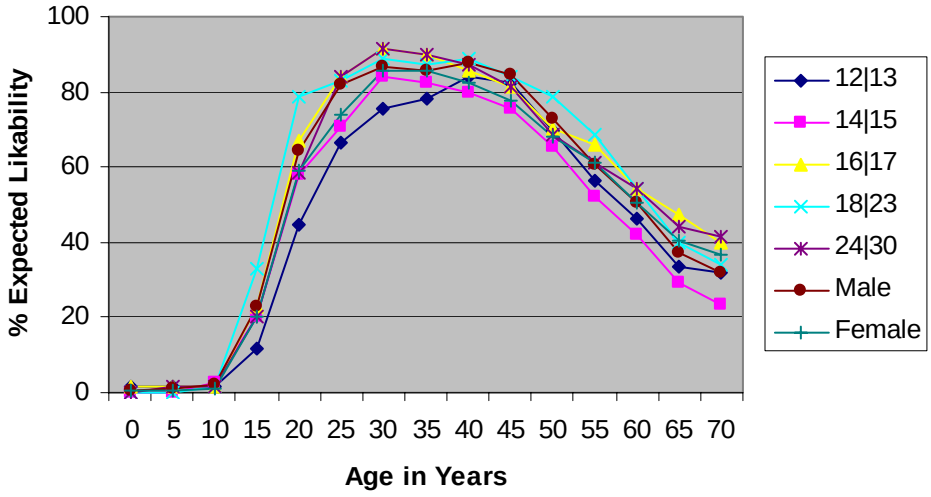
When asked which gender would prefer the bourbon, participants were most likely (72.9%) to respond that males would prefer bourbon over females. There was no significant difference in this response across age groups ($p = 0.1$) or gender ($p = 0.4$). The responses across age group and gender are presented in Table 68.

Table 68: Participant opinion of package appeal to gender for bourbon

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	54.3	2.9	42.9
	Female	35	62.9	2.9	34.3
		70	58.6	2.9	38.6
14–15 yrs	Male	35	71.4	2.9	25.7
	Female	35	74.3	0.0	25.7
		70	72.9	1.4	25.7
16–17 yrs	Male	35	62.9	2.9	34.3
	Female	35	82.9	2.9	14.3
		70	72.9	2.9	24.3
18–23 yrs	Male	33	87.9	0.0	12.1
	Female	37	86.5	0.0	13.5
		70	87.1	0.0	12.9
24–30 yrs	Male	37	73.0	2.7	24.3
	Female	33	72.7	0.0	27.3
		70	72.9	1.4	25.7
		350	**72.9**	**1.7**	**25.4**

When asked to indicate the ages to which bourbon would most appeal, participants from each age group, and both genders, indicated a peak at around 30–40 years. The peak age indicated by the 12 -13 year age group was slightly older at 40–45 years, as detailed in Figure 8 by age and gender.

Figure 8: Predicted appeal of bourbon by age and gender



3.6.6.3 Bourbon and *Coke*

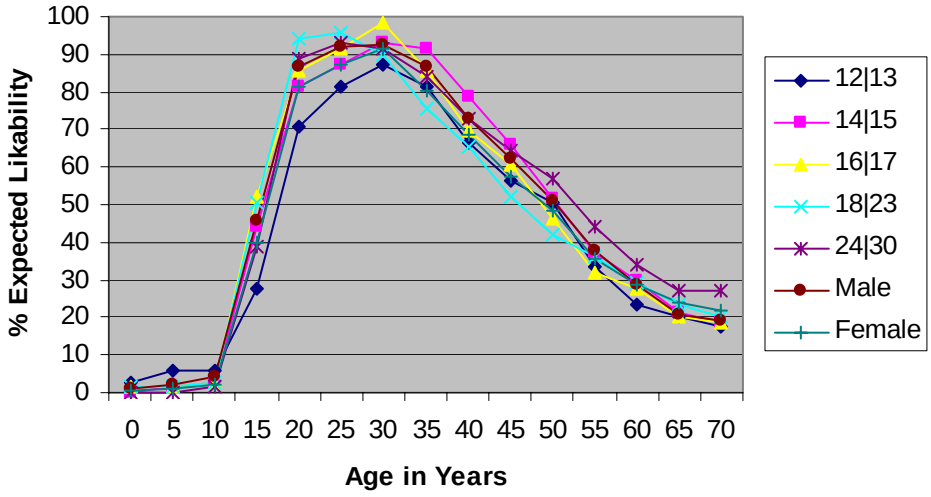
When asked which gender would prefer the bourbon and *Coke*, around three-quarters (66.3%) of the sample responded that males would prefer the beverage over females. There was no significant difference in this response across age groups ($p = 0.5$) or gender ($p = 0.4$).

Table 69: Participant opinion of package appeal to gender for bourbon and *Coke*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	60.0	8.6	31.4
	Female	35	68.6	2.9	28.6
		70	64.3	5.7	30.0
14–15 yrs	Male	35	62.9	2.9	34.3
	Female	35	60.0	0.0	40.0
		70	61.4	1.4	37.1
16–17 yrs	Male	35	62.9	2.9	34.3
	Female	35	71.4	5.7	22.9
		70	67.1	4.3	28.6
18–23 yrs	Male	33	75.8	3.0	21.2
	Female	37	73.0	0.0	27.0
		70	74.3	1.4	24.3
24–30 yrs	Male	37	67.6	2.7	29.7
	Female	33	60.6	0.0	39.4
		70	34.3	1.4	34.3
		350	**66.3**	**2.9**	**30.9**

When asked to indicate the ages that the bourbon and *Coke* packaging would most appeal to, participants from each age group, and both genders, indicated a peak at around 25–35 years, as detailed in Figure 9 by age and gender.

Figure 9: Predicted appeal of bourbon and *Coke* by age and gender



3.6.7 Predictors of exposure estimates for having drunk bourbon and *Coke*

A linear regression was conducted to determine the best predictor for estimating prior exposure to bourbon and *Coke*. The regression used the co-variates age, gender, palatability scales as well as the exposure estimates for the RTD's components of bourbon and the *Coke*.

In the blind condition the strongest predictor of reporting prior exposure to bourbon and *Coke* was having drunk bourbon [$R^2 = 0.51$, $F(6,342) = 59.72$, $p < 0.001$]. This analysis is detailed in Table 70.

Table 70: Predictors of exposure estimates for bourbon and *Coke* in the blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	16.57	0.000	0.046
Gender	1	0.39	0.5	0.001
Palatability Rating Bourbon	1	8.61	0.004	0.004
Exposure Estimate Bourbon	1	70.76	0.000	0.171
Palatability Rating Coke	1	2.23	0.1	0.006
Exposure Estimate Coke	1	26.93	0.000	0.073

In the non blind condition the greatest predictor of reporting the prior exposure to bourbon and *Coke* was also having drunk bourbon [$R^2 = 0.68$, $F(6,342) = 118.3$, $p < 0.001$]. This analysis is detailed in Table 71.

Table 71: Predictors of exposure estimates for bourbon and *Coke* in the non blind condition

Predictor	df	F	Significance	Partial Eta Squared
Age	1	1.35	0.3	0.004
Gender	1	0.15	0.7	0.000
Palatability Rating Bourbon	1	5.56	0.019	0.016
Exposure Estimate Bourbon	1	355.39	0.000	0.51
Palatability Rating Coke	1	5.76	0.017	0.017
Exposure Estimate Coke	1	2.87	0.1	0.008

3.6.8 General appeal of packaging for the *Coke*-based RTD group

3.6.8.1 *Coke*

The majority (85.4%) of the participants thought that the *Coke* packaging was designed to appeal to them. There was a significant (χ^2 = 28.64, df = 8, p <0.001) difference between views on the *Coke* packaging across age groups. The percentage of participants that believed the *Coke* packaging was designed to appeal to them peaked at the 16–17 years age group (95.7%), with troughs at the 12–13 year age group (76.8%) and the 24–30 year age group (75.7%). There were no significant (p = 0.851) gender differences present.

Table 72: Participant opinion of package appeal for *Coke*

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	34	70.6	14.7	14.7
	Female	35	82.9	8.6	8.6
		69	76.8	11.6	11.6
14–15 yrs	Male	35	80.0	8.6	11.4
	Female	35	91.4	2.9	5.7
		70	85.7	5.7	8.6
16–17 yrs	Male	35	97.1	2.9	0.0
	Female	35	94.3	2.9	2.9
		70	95.7	2.9	1.4
18–23 yrs	Male	33	93.9	6.1	0.0
	Female	37	91.9	8.1	0.0
		70	92.9	7.1	0.0
24–30 yrs	Male	37	81.1.	18.9	0.0
	Female	33	69.7	21.2	9.1
		70	75.7	20.0	4.3
		349	**85.4**	**9.5**	**5.2**

3.6.8.2 Bourbon

Participants were equivocal about whether the bourbon packaging was designed to appeal to them. There was no significant difference between decisions on packaging appeal and age groups ($p = 0.1$). Males, however, were significantly ($\chi^2 = 21.96$, $df = 2$, $p < 0.001$) more likely to report that the packaging was designed to appeal to them, while females were likely to report that the packaging did not appeal to them. Beliefs as to whether or not the packaging was designed to appeal to participants are detailed in Table 73 across age group and gender.

Table 73: Participant opinion of package appeal for bourbon

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	35	48.6	37.1	14.3
	Female	35	25.7	62.9	11.4
		70	37.1	50.0	12.9
14–15 yrs	Male	35	40.0	48.6	11.4
	Female	35	22.9	60.0	17.1
		70	31.4	54.3	14.3
16–17 yrs	Male	35	51.4	40.0	8.6
	Female	35	25.7	71.4	2.9
		70	38.6	55.7	5.7
18–23 yrs	Male	33	69.7	18.2	12.1
	Female	37	32.4	59.5	8.1
		70	50.0	40.0	10.0
24–30 yrs	Male	37	59.5	35.1	5.4
	Female	33	45.5	45.5	9.1
		70	52.9	92.9	7.1
		350	**42.0**	**48.0**	**10.0**

3.6.8.3 Bourbon and *Coke*

Participants were also equivocal about whether the bourbon and *Coke* packaging was designed to appeal to them. There was a significant ($\chi^2 = 17.91$, df = 8, $p < 0.02$) difference between decisions on packaging appeal and age groups. The percentage of participants that thought the packaging was designed to appeal to them steadily increased from 31.4% at 12–13 years to 57.1% at 24–30 years. There was also a significant ($\chi^2 = 38.0$, df = 2, $p < 0.001$) difference between decisions on packaging appeal and participant gender. Males were more likely to think that the packaging was designed to appeal to them than were females. The decisions on whether or not the packaging was designed to appeal to participants are detailed in Table 74 across age group and gender.

Table 74: Participant opinion of package appeal for bourbon and *Coke*

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	35	45.7	42.9	11.4
	Female	35	17.1	60.0	22.9
		70	31.4	51.4	17.1
14–15 yrs	Male	35	57.1	34.3	8.6
	Female	35	31.4	51.4	17.1
		70	44.3	42.9	12.9
16–17 yrs	Male	35	65.7	34.3	0.0
	Female	35	34.3	60.0	5.7
		70	50.0	47.1	2.9
18–23 yrs	Male	33	75.8	18.2	6.1
	Female	37	37.8	48.6	13.5
		70	55.7	34.3	10.0
24–30 yrs	Male	37	75.7	21.6	2.7
	Female	33	36.4	48.5	15.2
		70	57.1	34.3	8.6
		350	**47.7**	**42.0**	**10.3**

3.7.0 Other drinks group: beer, wine and novel beverage (*Wintermelon Tea*)

3.7.1 Previous exposure to white wine

Just over half (56.3%) of the sample reported having ever tried white wine prior to interview at a mean age of 14.8 years (SD = 2.9). The age at first use increased across age groups from 12 years at the 12–13 year age group to 15.5 years at the 24–30 year age group and then decreased to 15.4 at the 24–30 year age group. No significant ($p = 1.0$) gender differences in the age at first use were present.

More than half (64%) of participants reported having become drunk using wine. The percentage of participants significantly ($\chi^2 = 62.1$, $df = 4$, $p < 0.001$) increased with age from

18.8% at the 12–13 year age group to 83.6% at the 24–30 year age group. There were no significant ($p = 0.8$) gender differences. However, males in the 16–17 year age group were noticeably more likely to have become drunk drinking wine than were females.

Table 75: Age at first use and percentage been drunk drinking wine

Age Group	Gender	N	Mean Age at First Use (SD)	Percent Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	1	12.0 (0.0)	0.0
		1	12.0 (0.0)	0.0
14–15 yrs	Male	11	13.1 (1.4)	9.1
	Female	3	10.3 (1.2)	33.3
		14	12.5 (1.7)	14.3
16–17 yrs	Male	22	13.6 (2.2)	40.9
	Female	21	13.4 (1.9)	9.5
		43	13.5 (2.0)	25.6
18–23 yrs	Male	33	15.4 (2.7)	75.8
	Female	36	15.6 (2.6)	75.0
		69	15.5 (2.6)	75.4
24–30 yrs	Male	37	15.5 (3.2)	83.8
	Female	33	15.3 (3.5)	87.9
		70	15.4 (3.3)	85.7
		197	**14.8 (2.9)**	**63.5**

Participants that had tried wine also reported on the frequency of their use. There were significant differences in frequency of use between participant age group ($\chi^2 = 83.17$, df = 24, $p < 0.001$) and gender ($\chi^2 = 13.4$, df = 6, $p < 0.05$). Adolescent groups were more likely to report using wine rarely. This trend was greater for males. Younger adults were more likely to report using wine monthly. This trend was greatest for males. Older adults were more likely to report using wine weekly. This trend was greatest for females. Females in the 18–23

year age group were the only exception to the above trends and were most likely to report using wine weekly.

Table 76: Percentage frequency of wine use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	0	-	-	-	-	-	-	-
	Female	1	-	-	100	-	-	-	-
		1	-	-	100	-	-	-	-
14–15	Male	11	63.6	18.2	18.2	-	-	-	-
	Female	3	33.3	-	-	66.7	-	-	-
		14	57.1	14.3	14.3	14.3	-	-	-
16–17	Male	22	54.5	22.7	13.6	4.5	4.5	-	-
	Female	21	38.1	23.8	28.6	4.8	4.8	-	-
		43	46.5	23.3	20.9	4.7	4.7	-	-
18–23	Male	33	12.1	9.1	33.3	24.2	15.2	-	6.1
	Female	36	8.3	2.8	25.0	27.8	33.3	2.8	-
		69	10.1	5.8	29.0	26.1	24.6	1.4	2.9
24–30	Male	37	10.8	5.4	32.4	10.8	32.4	8.1	-
	Female	33	9.1	9.1	-	27.3	45.5	9.1	-
		70	10.0	2.9	21.4	18.6	38.6	8.6	-
		197	**21.3**	**9.1**	**23.9**	**17.8**	**23.4**	**3.6**	**1.0**

3.7.2 Previous exposure to beer

Approximately half (53.1%) of the sample reported having ever tried beer prior to interview at a mean age of 14.5 years (SD = 2.9). The age at first use increased across age groups from 13 years at the 14–15 year age group to 15 years at the 24–30 year age group and then decreased to 14.5 years at the 24–30 year age group. Females were significantly ($F(1,183) = 7.04$, $p < 0.01$) older than males the first time they drank beer.

Almost two-thirds (64%) of the sample reported having been drunk on beer. The percentage of participants significantly ($\chi^2 = 37.28$, df = 3, $p < 0.001$) increased with age from 18.8% at the 12–13 year age group to 83.6% at the 24–30 year age group. With the exception of older adults, the percentage of participants reporting becoming drunk using beer was significantly ($\chi^2 = 10.65$, df = 1, $p < 0.001$) greater for males across each age group.

Table 77: Age at first use and percentage been drunk drinking beer

Age Group	Gender	N	Mean Age at First Use (SD)	% Drunk Using (Ever)
12–13 yrs	Male	0	-	-
	Female	0	-	-
		0	-	-
14–15 yrs	Male	9	13.4 (1.2)	22.2
	Female	7	12.4 (1.7)	14.3
		16	13.0 (1.5)	18.8
16–17 yrs	Male	21	13.2 (2.5)	61.9
	Female	16	14.1 (1.9)	6.3
		37	13.6 (2.3)	37.8
18–23 yrs	Male	33	14.3 (2.8)	87.9
	Female	33	15.7 (3.6)	51.5
		66	15.0 (3.2)	69.7
24–30 yrs	Male	36	14.2 (2.6)	83.3
	Female	31	15.6 (3.4)	83.9
		67	14.9 (3.1)	83.6
		186	**14.5 (2.9)**	**64.0**

Participants that had tried beer also reported on the frequency of their use. There were significant differences in the frequency of use across participant age group ($\chi^2 = 75.77$, df = 10, $p < 0.001$) and gender ($\chi^2 = 15.38$, df = 6, $p < 0.02$). Adolescent participants were more

likely to drink beer rarely or yearly; this trend was stronger for males. Adult participants were more likely to drink beer monthly to weekly; this trend was stronger for females.

Table 78: Percentage frequency of beer use

Age Group	Gender	N	Rarely	Yearly	Monthly	Fortnightly	Weekly	Almost Daily	Daily
12–13	Male	0	-	-	-	-	-	-	-
	Female	0	-	-	-	-	-	-	-
		0	-	-	-	-	-	-	-
14–15	Male	9	44.4	22.2	22.2	-	11.1	-	-
	Female	7	71.4	14.3	14.3	-	-	-	-
		16	56.3	18.8	18.8	-	6.3	-	-
16–17	Male	21	28.6	-	38.1	4.8	28.6	-	-
	Female	16	62.5	12.5	25.0	-	-	-	-
		37	43.2	5.4	32.4	2.7	16.2	-	-
18–23	Male	33	9.1	6.1	9.1	15.2	51.5	6.1	3.0
	Female	33	21.2	18.2	12.1	6.1	39.4	3.0	-
		66	15.2	12.1	10.6	10.6	45.5	4.5	1.5
24–30	Male	36	-	-	8.3	11.1	63.9	16.7	-
	Female	31	16.1	3.2	6.5	12.9	45.2	16.1	-
		67	7.5	1.5	7.5	11.9	55.2	16.4	-
		186	**21.5**	**7.5**	**14.5**	**8.6**	**39.8**	**7.5**	**0.5**

3.7.3 Palatability ratings for the other drinks group

3.7.3.1 Blind condition

In the blind condition, wine was not palatable with a mean palatability rating of 3.2 (SD = 1.9). Palatability ratings for wine increased significantly [$R^2 = 0.12$, $F(1,344) = 47.41$, $p < 0.001$] with age, such that, with every increase in age by one year, ratings increased by 0.13 units. No significant ($p = 0.7$) gender differences were present.

In the blind condition, beer was also not palatable, with a mean palatability rating of 3.3 (SD = 2.0). A regression analysis revealed that palatability ratings for beer increased significantly [$R^2 = 0.09$, $F(1,341) = 32.76$, $p < 0.001$] with age, such that, for every increase in age by one year, ratings increased by 0.11 units. Male participants rated beer as significantly [$F(1,341) = 13.58$, $p < 0.001$] more palatable than did females.

In the blind condition, the novel beverage *Wintermelon Tea* was also not palatable, with a mean palatability rating of 3.8 (SD = 1.9). A regression analysis revealed that palatability ratings for the novel beverage increased significantly [$R^2 = 0.04$, $F(1,337) = 14.5$, $p < 0.001$] with age, such that, for every increase in age by one year, ratings increased by 0.07 units. No significant ($p = 0.2$) gender differences were present.

Each of the blind palatability ratings for the wine, beer and *Wintermelon Tea* are detailed in Table 79 across age group and gender.

Table 79: Palatability rating means for the other drinks group in the blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	2.2 (1.5)	35	2.4 (1.5)	35	3.7 (2.1)
	Female	35	2.2 (1.7)	35	1.9 (1.5)	35	3.1 (1.8)
		70	2.2 (1.6)	70	2.2 (1.5)	70	2.2 (2.0)
14–15 yrs	Male	35	2.6 (1.4)	34	3.1 (1.8)	35	3.7 (1.9)
	Female	35	2.5 (1.8)	31	2.7 (1.8)	35	2.9 (1.7)
		70	2.6 (1.6)	65	2.9 (1.8)	70	2.9 (1.8)
16–17 yrs	Male	35	3.1 (1.7)	35	4.1 (1.8)	28	3.4 (1.4)
	Female	34	3.4 (1.9)	35	2.4 (1.9)	31	4.0 (1.9)
		69	3.3 (1.8)	70	3.2 (2.0)	59	3.2 (1.7)
18–23 yrs	Male	33	3.9 (1.8)	33	4.5 (1.8)	33	4.7 (1.4)
	Female	37	4.2 (2.0)	35	3.8 (2.0)	37	3.6 (2.0)
		70	4.1 (1.9)	68	4.1 (1.9)	70	4.1 (1.8)
24–30 yrs	Male	35	4.2 (1.8)	37	4.2 (1.9)	37	4.1 (1.7)
	Female	32	4.0 (2.0)	33	3.6 (1.8)	33	4.7 (1.8)
		67	4.1 (1.9)	70	3.9 (1.9)	70	4.4 (1.8)
		346	**3.2 (1.9)**	**343**	**3.3 (2.0)**	**339**	**3.8 (1.9)**

3.7.3.2 Non blind condition

When tasted in the context of the packaging, palatability ratings for wine were not significantly ($p = 0.159$) different from the blind, with a mean palatability rating of 3.3 (SD = 1.9). As in the blind condition, palatability ratings for wine increased significantly [$R^2 = 0.127$, $F(1,344) = 50.07$, $p < 0.001$] with age such that, with every increase in age by one year, ratings increased by 0.14 units. No significant ($p = 0.5$) gender difference was present.

When presented alongside the packaging, beer was significantly ($t = -2.16$, $df = 241$, $p < 0.04$) more palatable, with a mean palatability rating of 3.4 (SD = 2.1). Palatability ratings for beer increased significantly [$R^2 = 0.17$, $F(1,343) = 68.13$, $p < 0.001$] with age, such that, with

every increase in age by one year, ratings increased by 0.16 units. Males found beer to be significantly [$F(1,343) = 25.73$, $p < 0.001$] more palatable than females.

When presented with the packaging, the palatability ratings for *Wintermelon Tea* were not significantly ($p = 0.1$) different, with a mean palatability rating of 3.6 (SD = 2.0). Palatability ratings for *Wintermelon Tea* increased significantly [$R^2 = 0.03$, $F(1,337) = 11.21$, $p < 0.001$] with age, such that, with every increase in age by one year, ratings increased by 0.07 units. No significant ($p < 0.2$) gender difference was present.

Each of the non blind palatability ratings for wine, beer and *Wintermelon Tea* are detailed in Table 80 across age group and gender.

Table 80: Palatability rating means for the other drinks group in the non blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	2.4 (1.9)	35	2.5 (1.7)	35	3.9 (2.1)
	Female	35	2.1 (1.6)	35	1.9 (1.5)	35	2.6 (1.9)
		70	2.2 (1.7)	70	2.2 (1.6)	70	3.3 (2.1)
14–15 yrs	Male	35	2.6 (1.2)	35	3.3 (1.7)	35	3.3 (1.9)
	Female	35	3.0 (1.8)	31	2.4 (2.0)	35	3.1 (1.7)
		70	2.8 (1.6)	66	2.9 (1.9)	70	3.2 (1.8)
16–17 yrs	Male	35	3.4 (1.8)	35	4.1 (2.1)	28	3.2 (1.7)
	Female	34	3.1 (1.9)	35	2.3 (1.8)	31	3.9 (2.0)
		69	3.3 (1.8)	70	3.2 (2.1)	59	3.6 (1.9)
18–23 yrs	Male	33	4.0 (1.8)	33	4.9 (1.5)	33	4.6 (1.6)
	Female	37	4.4 (1.9)	35	3.8 (1.9)	37	3.4 (1.9)
		70	4.2 (1.8)	68	4.3 (1.8)	70	4.0 (1.9)
24–30 yrs	Male	35	4.1 (2.0)	37	5.1 (1.7)	37	3.8 (2.1)
	Female	32	4.5 (1.8)	33	3.9 (2.0)	33	4.6 (1.9)
		67	4.3 (1.9)	70	4.5 (1.9)	70	4.1 (2.0)
		346	**3.3 (1.9)**	**345**	**3.4 (2.1)**	**339**	**3.6 (2.0)**

3.7.4 Previous exposure estimates for the other drinks group

3.7.4.1 Blind condition

In blind conditions, exposure estimates for wine were only moderate with a mean rating of 5.0 (SD = 2.3). The wine exposure estimates significantly [$R^2 = 0.19$, $F(1,343) = 82.04$, $p < 0.001$] increased with age, such that, with every increase in age by one year, ratings increased by 0.2 units. No significant gender differences were present.

In blind conditions, beer exposure estimates were moderately high with a mean rating of 5.2 (SD = 2.3). The beer exposure estimates significantly [R^2 = 0.16, F (1,340) = 63.25, p < 0.001] increased with age, such that; with every increase in age by one year, ratings increased by 0.17 units. No significant gender differences were present.

Exposure estimates for the *Wintermelon Tea* were fairly low in blind conditions, with a mean rating of 3.1 (SD = 1.8). The *Wintermelon Tea* exposure estimates significantly [R^2 = 0.06, F (1,337) = 22.07, p < 0.001] increased with age, such that, with every increase in age by one year, ratings increased by 0.09 units. No significant gender differences were present.

Table 81: Beverage exposure estimate means for the other drinks group in the blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	3.5 (2.5)	34	3.5 (2.0)	35	2.5 (1.9)
	Female	35	3.0 (2.1)	35	2.9 (2.2)	35	2.5 (1.6)
		70	3.2 (2.3)	69	3.2 (2.1)	70	2.5 (1.7)
14–15 yrs	Male	35	3.9 (2.3)	34	4.8 (2.3)	35	3.2 (2.0)
	Female	35	3.9 (2.2)	31	4.3 (2.5)	35	2.3 (1.5)
		70	3.9 (2.2)	65	4.5 (2.4)	70	2.7 (1.8)
16–17 yrs	Male	35	5.4 (2.0)	35	5.8 (1.9)	28	3.3 (1.5)
	Female	34	5.3 (1.8)	35	5.5 (2.2)	31	3.2 (1.8)
		69	5.4 (1.9)	70	5.7 (2.0)	59	3.3 (1.7)
18–23 yrs	Male	33	6.5 (1.5)	33	6.4 (1.6)	33	3.4 (1.8)
	Female	37	6.1 (1.7)	35	6.3 (1.5)	37	3.3 (1.5)
		70	6.3 (1.6)	68	6.3 (1.5)	70	3.3 (1.7)
24–30 yrs	Male	35	6.2 (1.5)	37	6.0 (1.6)	37	3.3 (2.0)
	Female	31	6.2 (1.1)	33	6.5 (1.4)	33	4.4 (1.7)
		66	6.2 (1.3)	70	6.2 (1.5)	70	3.8 (2.0)
		345	**5.0 (2.3)**	**342**	**5.2 (2.3)**	**339**	**3.1 (1.8)**

3.7.4.2 Non blind condition

When wine was presented with the packaging, exposure estimates significantly ($t = -4.4$, $df = 344$, $p < 0.001$) increased to a mean rating of 5.4 (SD = 2.3). A regression analysis revealed a significant difference [$R^2 = 0.22$, $F(1,344) = 94.03$, $p < 0.001$] between ratings and age, such that, with an increase in age by one year, exposure estimates increased by 0.21 units. No significant gender differences were present.

When beer was presented with packaging, exposure estimates significantly ($t = -3.68$, $df = 340$, $p < 0.001$) increased to a mean rating of 5.5 (SD = 2.3). In this condition, the exposure estimates increased significantly [$R^2 = 0.19$, $F(1,345) = 79.98$, $p < 0.001$] with age, such that, with an increase in age by one year, exposure estimates increased by 0.19 units. No significant gender differences were present.

When *Wintermelon Tea* was presented with packaging, exposure estimates significantly ($t = 7.79$, $df = 338$, $p < 0.001$) decreased to a mean rating of 2.2 (SD = 1.8). However, ratings increased significantly [$R^2 = 0.02$, $F(1,337) = 5.89$, $p < 0.02$] with age, such that, with an increase of one year, exposure estimates increased by 0.05 units. No significant gender differences were present.

Table 82: Beverage exposure estimate means for the other drinks group in the non blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	3.5 (2.5)	34	4.3 (2.4)	35	2.7 (2.0)
	Female	35	3.0 (2.3)	35	3.1 (2.6)	35	1.5 (1.2)
		70	3.2 (2.4)	69	3.7 (2.5)	70	2.0 (1.7)
14–15 yrs	Male	35	4.8 (2.4)	35	5.3 (2.3)	35	1.9 (1.7)
	Female	35	4.5 (2.2)	33	4.2 (2.6)	35	2.0 (1.7)
		70	4.7 (2.3)	68	4.8 (2.5)	70	1.9 (1.7)
16–17 yrs	Male	35	5.9 (1.9)	35	5.5 (2.5)	28	1.9 (1.8)
	Female	34	5.6 (2.1)	35	6.1 (1.8)	31	2.1 (1.7)
		69	5.8 (2.0)	70	5.8 (2.2)	59	2.0 (1.7)
18–23 yrs	Male	33	6.7 (1.1)	32	6.7 (1.1)	33	2.6 (2.4)
	Female	37	6.7 (1.1)	37	6.8 (1.0)	37	2.2 (1.8)
		70	6.7 (1.1)	69	6.7 (1.1)	70	2.4 (2.1)
24–30 yrs	Male	35	6.4 (1.5)	37	6.7 (1.2)	37	2.5 (2.1)
	Female	32	6.8 (0.6)	33	6.7 (0.8)	33	2.6 (1.9)
		67	6.6 (1.1)	70	6.7 (1.0)	70	2.6 (2.0)
		346	**5.4** (2.3)	**347**	**5.5** (2.3)	**339**	**2.2** (1.8)

3.7.5 Alcohol estimations for the other drinks group

3.7.5.1 Blind condition

In the absence of visual cues, the vast majority (99.7%) of participants were able to taste the alcohol content in the wine sample, with a mean rating of 4.6 (SD = 1.3). However, alcohol content estimations significantly [$R^2 = 0.03$, $F(1,344) = 8.91$, $p < 0.003$] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.04 units. No significant gender differences were present.

In the blind condition, the vast majority (98.8%) of participants were able to taste the alcohol content in *beer* with a mean rating of 4.4 (SD = 1.3). However, alcohol estimations significantly [$R^2 = 0.08$, $F(1,341) = 28.78$, $p < 0.001$] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.07 units. No significant gender differences were present.

In this condition only one-third (32.4%) of the sample was able to distinguish the lack of alcohol in the novel beverage*Wintermelon Tea*, with a mean rating of 2.4 (SD = 1.4). Alcohol estimations did significantly [$R^2 = 0.06$, $F(1,337) = 21.72$, $p < 0.001$] decrease with age, such that with every increase in age by one year, ratings decreased by 0.06 units. No significant gender differences were present.

The *Wintermelon Tea* alcohol estimations were significantly lower than estimations for wine ($t = 23.96$, $df = 334$, $p < 0.001$) and for beer ($t = -22.55$, $df = 341$, $p < 0.001$). The alcohol estimations for the wine were significantly greater ($t = 2.59$, $df = 338$, $p < 0.02$) than the estimations for beer.

Table 83: Alcohol estimation means for the other drinks group in the blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	4.8 (1.5)	35	5.1 (1.5)	35	3.2 (1.6)
	Female	35	5.3 (1.3)	35	5.1 (1.4)	35	3.2 (1.4)
		70	5.0 (1.4)	70	5.1 (1.4)	70	3.2 (1.5)
14–15 yrs	Male	35	4.6 (1.4)	34	4.4 (1.2)	35	2.4 (1.2)
	Female	35	4.8 (1.4)	31	4.9 (1.5)	35	2.5 (1.2)
		70	4.7 (1.4)	65	4.7 (1.4)	70	2.5 (1.2)
16–17 yrs	Male	35	4.5 (1.5)	35	4.5 (1.4)	28	2.5 (1.3)
	Female	34	4.7 (1.0)	35	4.4 (1.1)	31	1.9 (1.1)
		69	4.6 (1.3)	70	4.4 (1.3)	59	2.2 (1.2)
18–23 yrs	Male	33	4.4 (1.2)	33	3.9 (1.3)	33	2.4 (1.5)
	Female	37	4.5 (1.1)	35	4.2 (1.2)	37	2.0 (1.0)
		70	4.4 (1.1)	68	4.1 (1.3)	70	2.2 (1.3)
24–30 yrs	Male	35	4.2 (1.1)	37	3.9 (1.2)	37	1.9 (1.1)
	Female	32	4.4 (1.4)	33	6.9 (1.0)	33	2.0 (1.4)
		67	4.3 (1.2)	70	3.9 (1.1)	70	2.0 (1.3)
		346	**4.6 (1.3)**	**343**	**4.4 (1.3)**	**339**	**2.4 (1.4)**

3.7.5.2 Non blind condition

When presented in the context of packaging, estimations on the alcohol content of wine significantly ($t = 3.08$, $df = 344$, $p < 0.003$) decreased to a mean estimation of 4.4 (SD = 1.2). Alcohol estimations also significantly [$R^2 = 0.01$, $F(1,343) = 4.91$, $p < 0.027$] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.03 units. No significant gender differences were present.

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When presented with packaging, participants rated the alcohol content of *beer* to be significantly ($t = 4.57$, $df = 341$, $p < 0.001$) lower, with a mean estimation of 4.1 (SD = 1.2). As with the blind data, alcohol estimations significantly [$R^2 = 0.05$, $F(1,346) = 19.19$, $p <$

0.001] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.06 units. Females gave significantly [F (1,346) = 9.7, $p < 0.002$] greater estimations of the alcohol content in beer than did males.

As expected, there was a significant ($t = 17.48$, $df = 338$, $p < 0.001$) increase in the percentage (90.9%) of participants that estimated there was no alcohol in the *Wintermelon Tea* when presented with packaging (mean = 1.1; SD = 0.5). Alcohol estimations significantly [$R^2 = 0.02$, F (1,337) =7.454, $p < 0.007$] decreased with age, such that, with every increase in age by one year, ratings decreased by 0.02 units. No significant gender differences were present.

Estimations of the alcohol content were significantly different across the beverages. The *Wintermelon Tea* alcohol estimations were significantly lower than estimations for wine ($t = 48.82$, $df = 333$, $p < 0.001$) and for *beer* ($t = -43.76$, $df = 336$, $p < 0.001$). Estimations of the alcohol content in wine were significantly ($t = 4.87$, $df = 342$, $p < 0.001$) greater than for beer.

Table 84: Alcohol estimation means for the other drinks group in the non blind condition

Age Group	Gender	N	Wine (SD)	N	Beer (SD)	N	*Wintermelon Tea* (SD)
12–13 yrs	Male	35	4.6 (1.4)	35	4.3 (1.6)	35	1.3 (0.6)
	Female	35	4.9 (1.2)	35	4.8 (1.3)	35	1.5 (0.8)
		70	4.8 (1.3)	70	4.5 (1.5)	70	1.4 (0.7)
14–15 yrs	Male	35	4.3 (1.1)	35	4.0 (1.2)	35	1.1 (0.4)
	Female	35	4.6 (1.5)	34	4.9 (1.3)	35	1.3 (0.8)
		70	4.5 (1.3)	69	4.4 (1.3)	70	1.2 (0.6)
16–17 yrs	Male	34	4.5 (1.4)	35	3.9 (1.1)	28	1.1 (0.3)
	Female	34	4.3 (1.0)	35	4.4 (1.0)	31	1.0 (0.0)
		68	4.4 (1.2)	70	4.2 (1.1)	59	1.0 (0.2)
18–23 yrs	Male	33	4.3 (0.9)	32	3.7 (1.1)	33	1.0 (0.0)
	Female	37	4.1 (1.3)	37	3.9 (1.1)	37	1.1 (0.6)
		70	4.2 (1.1)	69	3.8 (1.1)	70	1.1 (0.4)
24–30 yrs	Male	35	4.3 (0.9)	37	3.7 (0.9)	37	1.0 (0.2)
	Female	32	4.3 (1.2)	33	3.8 (1.0)	33	1.1 (0.5)
		67	4.3 (1.0)	70	3.7 (1.0)	70	1.1 (0.4)
		345	**4.4** (1.2)	**348**	**4.1** (1.2)	**339**	**1.1** (0.5)

3.7.5.3 Differences between blind and non blind alcohol estimation ratings

Taking the mean of the blind alcohol estimations from the mean of non blind alcohol estimations gives a numerical value that represents the effect of packaging. Each of the beverages in the group showed negative results indicating that, when presented with the packaging, participants rated the alcohol content lower than for when judgments were made from taste alone. When packaging is presented, the alcohol estimation ratings for wine and beer decreased by an average of 0.2 and 0.3 units respectively. The ratings decreased by 1.3

units for the novel beverage. The effect of packaging on alcohol estimations is presented in Table 85 across age group and gender.

Table 85: Difference in alcohol estimation means from blind to non blind conditions for the other drinks group

Age Group	Gender	Wine	Beer	*Wintermelon Tea*
12–13 yrs	Male	-0.2	-0.8	-1.9
	Female	-0.3	-0.4	-1.7
		-0.3	-0.6	-1.8
14–15 yrs	Male	-0.3	-0.4	-1.3
	Female	-0.2	-0.1	-1.2
		-0.3	-0.2	-1.3
16–17 yrs	Male	-0.0	-0.5	-1.5
	Female	-0.4	0.0	-0.9
		-0.2	-0.2	-1.2
18–23 yrs	Male	-0.1	-0.3	-1.4
	Female	-0.4	-0.3	-0.8
		-0.2	-0.3	-1.1
24–30 yrs	Male	0.1	-0.2	-0.9
	Female	-0.2	-0.2	-0.9
		-0.1	-0.2	-0.9
		-0.2	**-0.3**	**-1.3**

3.7.6 Predicted appeal to gender of the other drinks group

3.7.6.1 Wine

When asked which gender would prefer the wine, just over half (54.5%) of the participants responded that neither gender would prefer the beverage over the other. There was no significant difference in responses across age groups ($p = 0.6$). However, there was a

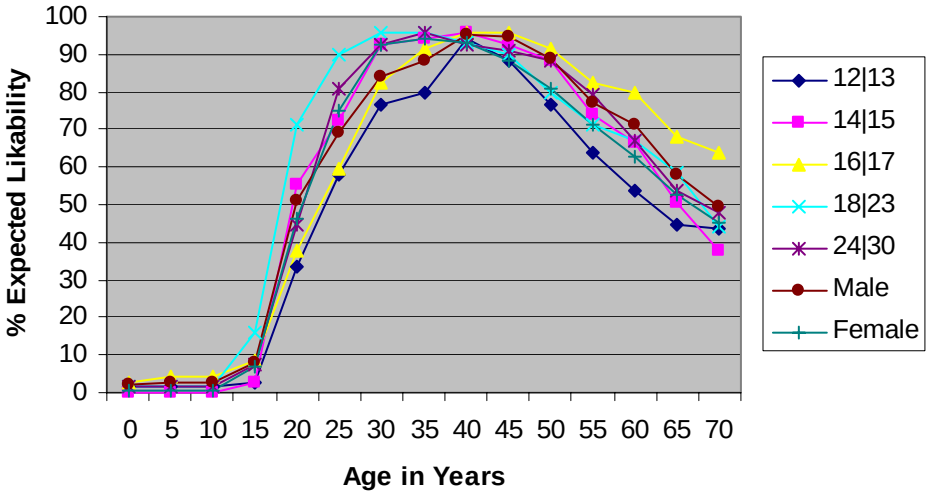
significant (χ^2= 8.40, df = 2, p < 0.015) difference between the genders. Of those participants that thought the wine did appeal to a particular gender, males were more likely to think that males would prefer wine, and females were more likely to think that females would prefer wine. The responses across age group and gender are presented in Table 86.

Table 86: Participant opinion of gender package appeal for wine

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	11.4	28.6	60.0
	Female	35	5.7	54.3	40.0
		70	8.6	41.4	50.0
14–15 yrs	Male	35	5.7	37.1	57.1
	Female	35	5.7	40.0	54.3
		70	5.7	38.6	55.7
16–17 yrs	Male	34	5.9	20.6	73.5
	Female	34	0.0	55.9	44.1
		68	2.9	38.2	58.8
18–23 yrs	Male	33	12.1	42.4	45.5
	Female	37	2.7	29.7	67.6
		70	7.1	35.7	57.1
24–30 yrs	Male	35	2.9	40.0	57.1
	Female	32	0.0	56.3	43.8
		67	1.5	47.8	50.7
		345	**5.2**	**40.3**	**54.5**

When asked to indicate the ages that the packaging would appeal to, participants from each age group, and both genders, indicated a peak at around 35–45 years, as detailed in Figure 10 by age and gender. Participants in the adult age groups indicated a peak slightly earlier at around 30–35 years

Figure 10: Predicted appeal of wine by age and gender



3.7.6.2 Beer

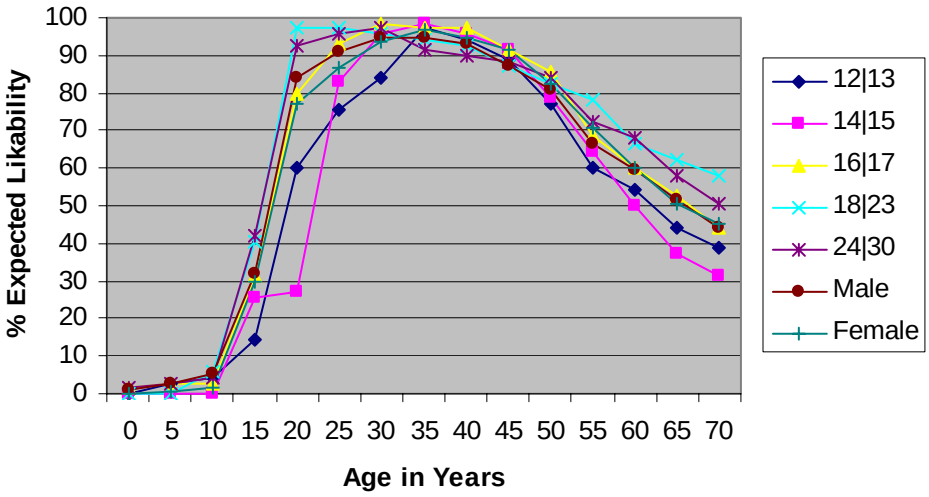
When asked which gender would prefer *beer*, participants were most likely (86%) to indicate that it would appeal to males. There was a significant (χ^2= 24.76, df = 8, p < 0.002) difference in ratings on the appeal of beer between age groups. The percentage of participants that thought beer would appeal to males appeared to peak in the 16–17 year (97.1%) and 18–23 (92.8%) year age groups. The trough for this peak was at its lowest in the 24–30 year age group (74.3%). No significant (p = 0.5) gender difference was found.

Table 87: Participant opinion of package appeal to gender for beer

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	77.1	0.0	22.9
	Female	35	94.3	0.0	5.7
		70	85.7	0.0	14.3
14–15 yrs	Male	35	82.9	0.0	17.1
	Female	35	80.0	0.0	20.0
		70	81.4	0.0	18.6
16–17 yrs	Male	35	97.1	0.0	2.9
	Female	35	97.1	0.0	2.9
		70	97.1	0.0	2.9
18–23 yrs	Male	32	96.9	0.0	3.1
	Female	37	89.2	2.7	8.1
		69	92.8	1.4	5.8
24–30 yrs	Male	37	75.7	0.0	24.3
	Female	33	72.7	0.0	27.3
		70	74.3	0.0	25.7
		349	**86.0**	**0.3**	**13.5**

When asked to indicate the ages that the packaging would appeal to, participants from each age group, and both genders, indicated a peak at around 30–40 years, as detailed in Figure 11 by age and gender.

Figure 11: Predicted appeal of *beer* by age and gender



3.7.6.3 *Wintermelon Tea*

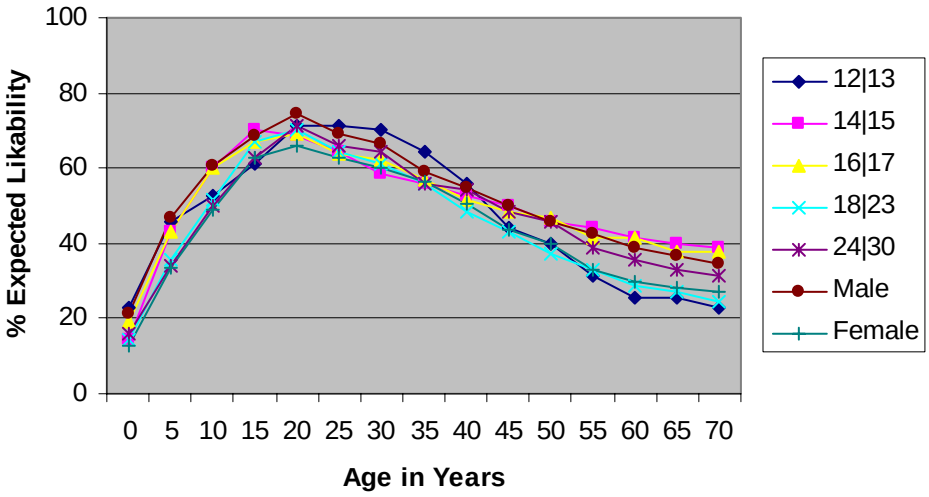
When asked which gender would prefer the *Wintermelon Tea*, participants were most likely (70.8%) to respond that neither gender would prefer the beverage over the other. Of those that thought the packaging did appeal to a particular gender, females were the overwhelming choice. There was no significant difference in responses across age groups ($p = 0.1$) or gender ($p = 0.1$) as detailed in Table 88.

Table 88: Participant opinion of package appeal to gender for *Wintermelon Tea*

Age Group	Gender	N	% Males	% Females	% Both
12–13 yrs	Male	35	0.0	28.6	71.4
	Female	35	5.7	20.0	74.3
		70	2.9	24.3	72.9
14–15 yrs	Male	35	2.9	11.4	85.7
	Female	35	2.9	25.7	71.4
		70	2.9	18.6	78.6
16–17 yrs	Male	28	7.1	0.0	92.9
	Female	31	3.2	29.0	67.7
		59	1.7	18.6	79.7
18–23 yrs	Male	33	0.0	36.4	63.6
	Female	37	2.7	37.8	59.5
		70	1.4	37.1	61.4
24–30 yrs	Male	37	0.0	35.1	64.9
	Female	33	0.0	39.4	60.6
		70	0.0	37.1	62.9
		339	**1.8**	**27.4**	**70.8**

When asked to indicate the ages that the packaging would appeal to, participants from each age group, and both genders, indicated a peak at around 20 - 25 years, as detailed in Figure 12 by age and gender.

Figure 12: Predicted appeal of *Wintermelon Tea* by age and gender



3.7.7 General appeal of packaging of the other drinks group

3.7.7.1 Wine

Over half (57.8%) of the sample thought that the wine packaging was not designed to appeal to them, with a small group unsure (12.4%). There was a significant difference (χ^2= 45.41, df = 8, p <0.001) in opinions of packaging between age groups. The percentage of participants that thought the packaging was designed to appeal to them increased with age from 18.6% at 12–13 years, to 52.2% at 24–30 years. Conversely, the percentage of participants that thought the packaging was not designed to appeal to them decreased with age from 61.4% at 12–13 years, to 32.8% at 24–30 years. No significant (p = 0.2) gender differences were present.

The percentage of participants that thought the wine packaging was designed to appeal to them is presented in Table 89, detailed across age group and gender.

Table 89: Participant opinion of wine packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	35	17.1	62.9	20.0
	Female	35	20.0	60.0	20.0
		70	18.6	61.4	20.0
14–15 yrs	Male	35	14.3	74.3	11.4
	Female	35	17.1	74.3	8.6
		70	15.7	74.3	10.0
16–17 yrs	Male	35	20.0	77.1	2.9
	Female	35	20.6	67.6	11.8
		70	20.3	72.5	7.2
18–23 yrs	Male	33	27.3	54.5	18.2
	Female	37	56.8	40.5	2.7
		70	42.9	47.1	10.0
24–30 yrs	Male	37	48.6	37.1	14.3
	Female	33	56.3	28.1	15.6
		67	52.2	32.8	14.9
		346	**29.8**	**57.8**	**12.4**

3.7.7.2 Beer

Just under half (49.6%) of the sample thought that the beer packaging was not designed to appeal to them, with a small group unsure (13.2%). There was a significant difference (χ^2= 18.17, df = 8, p <0.02) in opinions of packaging between age groups. The percentage of participants that thought the packaging was designed to appeal to them increased with age from 27.1% at 12 -13 years, to 48.6% at 24–30 years. Conversely, the percentage of participants that thought the packaging was not designed to appeal to them increased with age from 48.6% at 12 -13 years, to 61.4% at 16 - 17 years and then decreased to 41.4% at 24–30 years.

Males were significantly (χ^2= 28.07, df = 2, p < 0.001) more likely to think the beer packaging was designed to appeal to them.

Table 90: Participant opinion of beer packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	35	34.3	37.1	28.6
	Female	35	20.0	60.0	20.0
		70	27.1	48.6	24.3
14–15 yrs	Male	35	37.1	45.7	17.1
	Female	35	34.3	57.1	8.6
		70	35.7	51.4	12.9
16–17 yrs	Male	35	45.7	51.4	2.9
	Female	35	17.1	71.4	11.4
		70	31.4	61.4	7.1
18–23 yrs	Male	32	65.6	25.0	9.4
	Female	37	24.3	62.2	13.5
		70	43.5	44.9	11.6
24–30 yrs	Male	37	70.3	24.3	5.4
	Female	33	24.2	60.6	15.2
		67	48.6	41.4	10.0
		349	**37.2**	**49.6**	**13.2**

3.7.7.3 *Wintermelon Tea*

Just over half (54.6%) of the sample thought that the *Wintermelon Tea* packaging was not designed to appeal to them, with a small group unsure (16.8%). The percentages of participants that thought the *Wintermelon Tea* packaging was designed to appeal to them did not significantly differ between age group (p = 0.4) or gender (p = 0.1).

Table 91: Participant opinion of *Wintermelon Tea* packaging appeal

Age Group	Gender	N	% Yes	% No	% Unsure
12–13 yrs	Male	35	31.4	40.0	28.6
	Female	35	40.0	51.4	8.6
		70	35.7	45.7	18.6
14–15 yrs	Male	35	34.3	51.4	14.3
	Female	35	34.3	45.7	20.0
		70	34.3	48.6	17.1
16–17 yrs	Male	35	28.6	53.6	17.9
	Female	31	19.4	61.3	19.4
		66	23.7	57.6	18.6
18–23 yrs	Male	33	30.3	54.5	15.2
	Female	37	27.0	64.9	8.1
		70	28.6	60.0	11.4
24–30 yrs	Male	37	16.2	56.8	27.0
	Female	33	24.2	66.7	9.1
		67	20.0	61.4	18.6
		339	**28.6**	**54.6**	**16.8**

Table 92: Summary table of alcohol palatability ratings by gender among adolescent participants

Age Group	12–13 yrs		14–15 yrs		16–17 yrs	
	Male (N = 35)	**Female (N = 35)**	**Male (N = 35)**	**Female (N = 35)**	**Male (N = 35)**	**Female (N = 35)**
Mudshake	5.26	5.80	5.66	5.43	5.14	**6.26***
Breezer	4.77	4.57	5.37	5.43	4.94	5.71
B + Coke	3.31	2.91	**4.63***	3.37	4.66	4.29
Beer	2.49	1.86	3.26	2.42	**4.09***	2.34
Vodka	2.6	2.71	3.17	3.03	3.63	3.49
Wine	2.37	2.09	2.6	2.97	3.4	3.12
Bacardi	2.6	2.71	3.17	3.03	3.06	3.54
Bourbon	2.2	2.14	3.26	2.66	3.89	2.97

* statistically significant at p< .05

4.0 DISCUSSION

This study of 350 12–30 year olds examined the palatability of a range of RTDs, their component beverages and other popular alcoholic drinks. Among the youngest age groups in the study, RTDs were most commonly the first used and the most preferred alcoholic beverage (see Table 91). The mean age of initiation to alcohol use for the total sample was 13.6 years; however, where parents introduced the young person to alcohol their age at alcohol initiation was significantly younger at 12.8 years. On the last drinking occasion more than one in four (27.7%) reported having drunk in excess of 5 standard drinks.

Approximately half the sample reported trying each of the alcoholic beverages that were used in the study prior to interview. The only exception found was the *Mudshake*, where only one quarter (27.7%) of the sample reporting having tried the beverage, with exposure estimates decreasing when the beverage was presented with packaging.

This study offers two approaches to investigate the palatability of RTDs and other popular alcoholic beverages. A particular beverage could be found to be palatable judging from taste alone, or judging the taste in the context of the packaging in which it is marketed. In both of these contexts, RTDs with vodka and white rum bases received the highest palatability ratings, comparable to chocolate milk and sweet beverages such as *Coca Cola*. Across both beverage presentation conditions, the pre-mixed spirits generally received the highest palatability ratings, the greatest of which was for the *Mudshake*. The palatability ratings for the pre-mixed spirits generally were stable across age and gender with two exceptions. The *Breezer* palatability ratings peaked for participants in the 14–15 year and 16–17 year age groups. The bourbon and *Coke* ratings increased with age and were greater for males. The palatability ratings for the spirits, wine and beer generally increased with age.

The extent to which the packaging effects palatability ratings was demonstrated by the significant difference in the ratings across the blind (taste only) and non blind (packaging included) conditions of beverage presentation. When packaging was revealed, the mean palatability ratings for all alcoholic drinks increased, but this was only a significant increase for the *Breezer*, bourbon and *Coke,* bourbon, and beer. Although there was an increase in mean palatability rating, revealing the packaging had no significant effect on palatability

ratings for the *Mudshake,* white rum, vodka or wine. Participant age moderated beliefs about whether the packaging was designed to appeal to their age group.

When presented in the context of packaging, the palatability ratings for the pre-mixed spirits differed with participant age. Overall, the *Mudshake* and *Breezer* RTDs were found to be the most palatable alcoholic drinks regardless of age or beverage presentation condition.

Participants were able to distinguish the content of alcohol in each of the alcoholic beverages judging from taste alone. The alcohol estimation ratings increased in the general order of pre-mixed spirits, spirits, beer and then wine. An exception was the RTD product, Bourbon and *Coke,* where alcohol estimations were rated above that of the bourbon. When judging in the context of packaging, the alcohol estimations were more distinct between beverage classes. In this condition the pattern of increasing alcohol estimations followed the order of pre-mixed spirits, beer, wine and then the spirits.

4.1 Age effects on RTD palatability

The first hypothesis that participants under 18 years of age would rate RTD products as more palatable than other types of alcohol was supported. When investigating palatability ratings across both beverage presentation conditions, the RTD products were found to be highly palatable, even amongst adult groups. While the *Mudshake* remained stable across age groups, the bourbon and *Coke* palatability ratings increased with age. Preference for one RTD product, the *Breezer*, was greater for younger participants. The watermelon flavoured *Bacardi Breezer* showed a peak in palatability ratings amongst participants 14–17 years as predicted. When taken as a generalized group, RTD products are preferred by younger participants. When investigated at the level of individual beverages, adolescent participants show greater palatability ratings for only one RTD product, the *Breezer*.

4.2 Gender effects on RTD palatability

The hypothesis that girls under 18 years would demonstrate a significantly higher palatability rating for RTDs than boys in that age group was not supported for all RTD beverages. There were no gender differences in the palatability of watermelon flavoured *Bacardi Breezer* and the *Chocolate Mudshake* was only significantly more popular among the 16–17 year age

group. Conversely the bourbon and *Coke* was significantly more popular among 14–15 year old boys compared with girls in that age group. There were no gender differences in palatability ratings for any other alcoholic beverage in the adolescent age groups.

4.3 Packaging effects on RTD palatability

The hypothesis that beverage packaging would increase palatability ratings was found to be partially true. Each alcoholic beverage was found to increase in palatability when packaging was revealed; however, this increase was not always significant. The increase was significant for the *Breezer,* bourbon*,* bourbon and *Coke*, beer and *Bacardi* for adult participants. In contrast, the packaging had no significant effect on palatability ratings for the *Mudshake,* vodka and wine.

For each of the alcoholic drinks the percentage of participants that considered the packaging to be designed to appeal to them increased with age. The majority of participants, in each age group, thought that the pre-mixed spirit packaging was designed to appeal to them, where half of the 12-13 age group felt that *Chocolate Mudshake* and watermelon *Breezer* packaging was designed to appeal to their age group. This is in contrast to *Bacardi* and *Coke* where less than a third of the youngest age group thought the packaging was designed to appeal to them. Only amongst older adults was the packaging for wine and beer thought to be designed to appeal to their age group.

4.4 RTDs and initiation to alcohol

The design of this study limits the conclusions that can be drawn by comparing age and beverage type of initiation, as there is a constraint on the number of younger participants that had ever tried alcohol which artificially lowers the age of initiation among the adolescent age groups. In addition, the RTD beverages have only increased in availability in the past 5-10 years. Despite this, among the youngest age groups in the study, RTDs were most commonly the first used and the most preferred alcoholic beverage compared with the older age groups who more commonly had beer as their first full serve of alcohol. There was no significant difference between ages of initiation among the age groups.

4.5 Predictors of estimating prior exposure to RTDs

A series of linear regressions examined the predictors of the participants in the blind condition believing they have drunk this RTD before, including age, gender, exposure to the RTD and its components, and palatability. This showed that the strongest predictor for estimating prior exposure to *Chocolate Mudshake* and *Watermelon Breezer* in the blind condition was having drunk the base soft drink. Conversely, for the other RTD it was prior exposure to the alcohol base of bourbon that best predicted estimates of prior exposure to the bourbon and *Coke* RTD.

4.6 Conclusions

In the past the RTD products have been referred to as a type or class of alcohol, specifically the mix of alcohol with a non-alcoholic base. In this study, each RTD group had similar alcohol estimations, palatability ratings and exposure estimates. The results of this study have revealed three different RTD products that perform differently depending on the focus of investigation. When looking at palatability, each is highly palatable; however, this is not consistent across age. The palatability of bourbon and *Coke* increases with age. The palatability of the *Breezer* peaks for participants aged 14–17 years. The palatability for the *Mudshake* remains stable with age. When looking at alcohol estimation judgments made from taste alone, the bourbon and *Coke* is thought to have a higher content of alcohol than its spirit base. When looking at exposure estimates, the *Mudshake* ratings actually drop when packaging is revealed while the bourbon and *Coke* and *Breezer* each increase. Each of these products performs in such a way that classifying them into a singular category of RTD products loses its meaning. As such, RTD products are best investigated as individual beverages.

The results from the present study revealed one particularly palatable RTD product, the *Chocolate Mudshake*. This beverage is the combination of chocolate milk with vodka. Only one quarter of the sample that had tried alcohol prior to interview had also tried the *Mudshake*, and reportedly consumed it only on rare occasions. Despite its infrequent consumption and the study participants believing the beverage to be preferred by females, the *Mudshake* palatability ratings were the greatest of any alcohol across *all* age groups and *both* genders. This can possibly be attributed to the high palatability of its non-alcoholic base, chocolate

milk. Also, the perception of alcohol in this beverage is low with only about half (52%) of the sample capable of detecting the alcohol content judging from taste alone. Alcohol estimation ratings did not vary with age or gender. The same is found for the base spirit, vodka. Judging by taste alone, vodka had reportedly lower alcohol estimations than did white rum and bourbon. Judgments made in the context of packaging revealed vodka as having alcohol estimation ratings equal to that of *Bacardi*. The vodka palatability ratings and exposure estimates are greater than both *Bacardi* and bourbon, irrespective of the beverage presentation condition. The resulting combination of these highly palatable non-alcoholic beverages produces a similarly palatable drink, irrespective of age and gender. The impact of this RTD preparation on young people, however, cannot not be concluded without further studies using multiple vodka-and milk-based RTD products. In terms of the present study, however, the milk-and vodka-based RTD may be of particular concern as adolescent drinkers are more prone to be usually drinking and initiating their alcohol use with similar RTD products.

This study identified that RTDs should not be treated as a homogenous group, as those with different alcohol and non-alcoholic combinations and their packaging are perceived by adolescents in very different ways. As in most aspects of the study, the palatability of alcohol and the appeal of its packaging increased with age; however, chocolate *Mudshake*, and to a lesser extent watermelon *Breezer*, performed more like their soft drink base than their alcohol component. This suggests that great caution should be exercised when using milk as a base for an RTD, particularly with an alcoholic base that is less readily detected by adolescents, such as vodka. Similarly, caution should be exercised when mixing any soft drink base with vodka in an RTD and further research is urgently required on these issues. Given that a large proportion of very young adolescents felt that RTDs were packaged to appeal to them, awareness should be drawn to the way these products are being marketed. Alcoholic beverages such as wine, beer and bourbon are successful at not targeting adolescents and therefore attention should be given to the way these products are being promoted and observed in the future marketing of RTDs.

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