RUNNING HEAD: FACTORS INFLUENCING THE CHOICE OF BEER

Factors influencing the choice of beer: A review

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Abstract

Research on those variables that have been shown to influence the consumer's choice of beer is reviewed. The focus is on the choice of whether to drink beer as opposed to a beverage from another category, and to a greater extent, the choice between different types of beer. Inspired by previous research on a diverse array of factors that have been shown to influence food and beverage choice, the review examines how beer choice is driven by consumer variables (covering biological, psychological, and socio-cultural factors), product-intrinsic attributes (the sensory aspects of the beer itself), product-extrinsic attributes (external sensory characteristics, such as packaging), and contextual and environmental influences. These situational factors refer to variables such as the location where choice/consumption takes place (i.e., on- versus off-trade), as well as the context, occasion, and reason for drinking. Current trends related to choice and consumption, such as the emerging interest in beer-food pairing, are also examined. The review groups these attributes which affect people's beer wanting, choice, and purchase in order to understand the beer consumer's choice process. Along with general conclusions, a number of key directions for future research are also presented, given that the relative contribution of each type of factor on consumer's choice behaviour is still unclear.

KEYWORDS: Beer, beer choice, intrinsic factors, extrinsic factors, situational factors, consumer variables, beer-food pairing

1. Introduction

When measured by volume, beer is consistently the most consumed alcoholic beverage in the world (European Beer Guide, 2006; International Wine and Spirits Record, 2018). Considering the size of this market, the number of microbreweries that have recently appeared across the globe (Bentzen & Smith, 2018; Fertő, Fogarasi, Major, & Podruzsik, 2018), and their growing popularity (Vacl, 2014), this review focuses on consumer choice regarding the beer category within alcoholic beverages. Additionally, the last decade or two has seen a number of gradual, but steady, changes in consumers' drinking patterns. This is reflected, for example, in the lower consumption of alcohol in some product categories relative to what was previously the case, or a shift in preferences between types of alcoholic drinks, such as beer and wine. For example, although overall alcohol consumption decreased from 2000 to 2015 in Japan, UK, and USA, wine consumption has been increasing slightly while beer consumption has decreased in these countries (World Health Organization, 2000, 2015). This trend suggests that the decrease in beer consumption is due both to a shift towards other alcoholic beverages, and lower alcohol consumption overall.

Some markets have been affected by a steady decrease in beer consumption, as is the case in Japan; over the last decade or so, there has been a steady rise in new products such as ready-to-drink beverages (e.g., Cocktails, Reuters, 2014). This has been explained, in part, due to how heavily taxed beer is Japan, but this is expected to change with a new legislation that will come into force in 2020 ("Japan: New beer taxation", 2018). Additionally, the rise of the craft beer movement around the world has changed the traditional patterns of beer consumption (Kirin Holdings Company, 2017), as it has been shown to have a different reception across cultures (Gómez-Corona, Lelievre-Desmas, Buendía, Chollet, & Valentin, 2016). This suggests that the craft beer trend has changed consumption habits in the sense that consumers now link the beer they drink to their identity and experiences while drinking it.

Based on these observations, the present review aims to deliver a better understanding of the drivers behind consumer decisions by considering the different variables that can affect beer choice, in reference to the more general food and drink choice behaviour. With these considerations in mind, the aim here is to try and understand those factors driving consumer beer choice, how these factors translate into differences perceived by consumers between different drinks; and how consumer variables, environmental influences, and both product-

intrinsic and product-extrinsic properties associated with the different drinks influence the consumer's beer choice, across a range of different contexts.

This review highlights the key findings of recent research on the putative drivers of beer choice (i.e., what drives the consumption of beer as an alcoholic drink, and what drives the decision to choose a specific brand of beer). Inspiration here is taken from the various factors that have been shown to influence food choice as discussed by, for example, Köster (2009, Figure 1). Note that the present research constitutes one of the few comprehensive lists of the factors that have been described in food and beverage research, with the focus being primarily on the beer category.

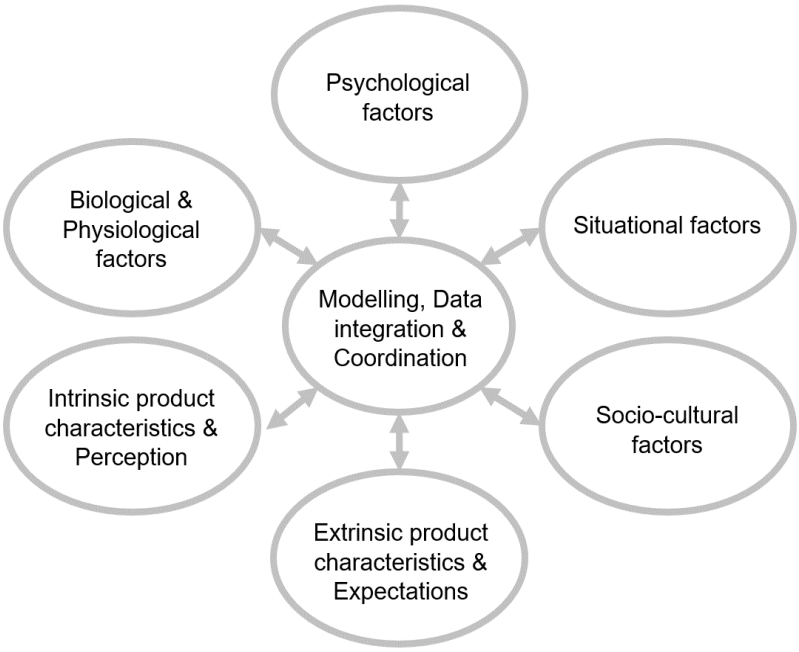

Figure 1. Summary of the various factors that have been suggested to influence the consumers' food and drink behaviours and choice. [Figure based on Köster (2009).]

Motivated by the various factors that are known to influence food and drink choice, the present review aims to examine the existing findings concerning how these influences occur across four main sections. The first, consumer variables, covers biological, psychological, and socio-cultural factors. The second section (product-intrinsic attributes) covers the sensory characteristics of the beer itself. The third section (product-extrinsic attributes) covers the information available to the consumer in relation to the beer, as well as the sensory characteristics of elements accompanying the beer, such as its packaging, design, and container or receptacle (e.g., typically the glass, can, or bottle). The effect of both product-intrinsic and

product extrinsic attributes on people's wanting for beer and their choice behaviour, is examined, as well as how these effects are a result of their interaction with other variables. In the final section (context and environmental influences on beer choice), those situational and contextual factors which are relevant to beer wanting, choice, and purchase are discussed. These situational factors refer to variables such as the location in which choice/consumption takes place. For example, on-trade locations such as bars, pubs, and restaurants versus off-trade locations such as supermarkets and in the home environment. These factors also refer to the context of consumption, such as social gatherings, special occasions, and sporting events.

Current trends related to choice and consumption are also examined, such as the emerging interest in beer-food pairing. Spence (2020) presents a recent review highlighting the growth of interest in flavour pairing. It is worth noting that this approach overlaps to some extent with what Calvo-Porral, Orosa-González, and Blazquez-Lozano (2018) suggest to be the key factors influencing people's beer choice and consumption: Namely, consumer-based, product-based, and situational (purchase/consumption). After reviewing the available literature, discussing the findings and drawing a number of general conclusions, directions for future research are approached. Furthermore, some suggested questions regarding factors that influence beer choice and consumption are outlined, in order to bridge these gaps in knowledge. Some of these include studying the considerations for non-alcoholic beer, as well as the relative contribution of the different factors influencing people's beer choice.

2. Consumer Variables

Several consumer variables are associated with people's food and beverage choice. These include demographic (e.g., age and gender), genetic (e.g., taster status, sweet-liker status), psychological (e.g., personality; Demby, 2011), and behavioural differences (e.g., differing patterns of consumption), which can affect consumer choice in different ways. For example, demographic variables can affect choice by determining the availability or access to certain choices, genetic variables may set specific tendencies or predispositions towards choices regarding taste, while psychological variables can affect how consumers relate to and value their choices. These variables will be discussed in the following sections.

2.1. Demographic variables

Demographic variables have long been used in consumer segmentation research. These variables include sex, gender, age, socio-economic status, education level, country, and ethnicity, among others. Note that whilst several studies on beer wanting and choice have presented results that are specific to different demographic variables as we will see, such variables are usually not the primary focus of the research concerned. This is reflected in the fact that searches on Google Scholar for keywords appearing in titles associated with beer liking, wanting, choice, and demographic variables yield only a few results (Table 1). The number of results reflects the fact that demographics are not usually the primary focus of research on wanting and choice.

Table 1. Google Scholar search results by keywords in title. These metrics were obtained by using the advanced search feature on Google Scholar and by entering the search terms in the title of the article, these results are from May 2020.

Keywords in title	Number of results
Age + beer	109
Age + beer + choice	0
Age + beer + wanting	0
Age + beer + liking	0
Gender + beer	76
Gender + beer + choice	1
Gender + beer + wanting	0
Gender + beer + liking	0
Income + beer	10
Income + beer + choice	0
Income + beer + wanting	0
Income + beer + liking	0

Importantly, the research is clear in highlighting that demographic variables do indeed influence people's food and drink preferences, wanting, and choice in a variety of ways (e.g., Contini et al., 2015; Drewnowski, 1997; Malone & Lusk, 2018c; Ricciuto, Tarasuk, & Yatchew, 2006). For example, in a representative survey conducted in Europe, beer drinking peaked around the age of 30 years, and decreased gradually around the age of 65 years (Holmes, 2017). Though these results suggest that young adults drink beer less frequently, there may be socio-economic

factors explaining this pattern of results. Additionally, the effects of aging may influence the perception, liking, and the intake of food and beverage. Specifically, the decreased sensory perception and appreciation of food and drink in the elderly (e.g., Doets & Kremer, 2016; Mojet, Heidema, & Christ-Hazelhof, 2003; Spence, 2012) may explain shifts in preferences as consumers age. This decline in sensory capacity could mean a change in the patterns of beer consumption, perhaps resulting in a shift towards stronger tastes/flavours that are easier to perceive with diminished sensory ability. However, one must also consider how this decrease in sensory perception may be compensated for by using both mental imagery and memories of taste as well as flavour expectations, as these can serve as "guides" for the tasting experience. It is also important to consider how different age groups have differences in openness to new taste experiences (Jacobson, Green, & Murphy, 2010).

There are few academic studies investigating only, and specifically, the influence of demographic variables on consumers' wanting and choice of beer. This is not all that surprising considering that demographic variables by themselves may not sufficiently characterize consumers' product or brand wanting and choice (Beane & Ennis, 1987; Lin, 2002; van Raaij & Verhallen, 1994; cf. Spence, 2019). Nevertheless, certain researchers have provided hints as to the influence of various demographic variables on consumers' attitudes toward beer, their preferences, and their choices. For example, an Australian study revealed that beer consumption appears to follow an inverted U-shaped relationship with age, such that those between 25-35 years of age represent the group that consumes the most beer (Ramful & Zhao, 2008). Another study which focused on how consumption habits changed through age found that participants began drinking nearly the same amount of beer and wine, then wine consumption increased, while beer consumption decreased slightly (Melo, Colin, Delahunty, Forde, & Cox, 2010). Since consumption preferences can and do change over time and as a function of aging, it is therefore important to track consumer groups over time (Choi & Stack, 2005).

There are some modest sex-based differences in taste (gustation), smell (olfaction), trigeminal, and oral-somatosensory perception (e.g., Brand & Millot, 2001; Gazerani, Andersen, & Arendt-Nielsen, 2005; though see Spence, 2019a), as well as taste evaluations and preferences (Gómez-Corona, Valentin, Escalona-Buendía, & Chollet, 2017; Guinard, Uotani, Mazzucchelli, Taguchi, Masuoka, & Fujino, 2000). For example, Klatsky, Armstrong, & Kipp (1990) conducted a study in the US to understand different consumer groups choosing wine, liquor, or beer. According to these researchers, wine was preferred by young or middle-aged women, who were non-smoking, better educated and with a lower risk of illness, while typically middle-aged

or older males liked liquor, were heavier drinkers, less educated, and at risk for major illnesses; beer likers included young men who were intermediate between wine and liquor likers for most traits. Sex differences have also been found in how responses to stress affect alcohol consumption; In a study conducted by Ayer, Harder, Rose, and Helzer (2011) on a sample of heavy drinking adults, men were found to drink more when they experienced anger as a result of stress, while women were more likely to experience negative feelings after drinking.

Additionally, many studies focused on gender differences have confirmed the intuitive observation that men are more likely to drink beer than women (e.g., Nadeau & Coletto, 2013; Ramful & Zhao, 2008). This might be because men associate beer intake with social assertiveness and positive changes in how they perceive a situation or environment (i.e., "alcohol makes it easier to be with others"), whereas women do not (Kidorf, Sherman, Johnson, & Bigelow, 1995), along with the fact that the volume by serving of beer tends to be larger than for other alcoholic drink options, such as cocktails. However, it is important to consider that these gender differences might be a result of the way in which beer is advertised. Moreover, the subjective experience and associated emotions of beer taste can be quite different between groups of varying age and gender (Chaya, Eaton, Hewson, Vázquez, Fernández-Ruiz, Smart, & Hort, 2015). However, such differences do not clearly point to the division of women and men into two groups when it comes to product development (Spence, 2019a). There are examples of companies developing products explicitly marketed towards women, which soon became unstuck (Spence, 2019b, presents a number of such recent failures, including one specifically in the beer category; Sweney, 2018, mentions BrewDog's pink IPA for girls). It is worth noting though, when companies do not spell it out, but rather answer a specific need, they can work well enough (Black, 2010; Hook, 2009).

It has also been suggested that education level is associated with beverage choice. For example, research in the USA revealed an association between education level and beer drinking, with those who predominantly drink beer having a lower education level than non-beer drinkers (McCann et al., 2003; Paschall & Lipton, 2005). However, these studies might not be sufficient to explain how education level can affect beer choice. Since other factors might better explain this finding (e.g., differences in earnings due to education, differences in social contexts), more research on this topic is needed.

Cultural background is another example of how demographic variables such as age or gender have been shown to lead to different patterns of consumption. The same demographic group may express a different pattern of consumption as a function of their country/culture. For

example, Polish males have been reported to dislike fruity-tasting beers, whereas Spanish and Italian males, by contrast, favour them (Donadini, Fumi, Kordialik-Bogacka, Maggi, Lambri, & Sckokai, 2016). Other studies have also examined beer flavour pairings and preparations; the frequency of the selected ingredients for beer preparations has been shown to vary between countries such as Mexico, Argentina, Colombia, and Peru (Arellano-Covarrubias, Gómez-Corona, Varela, & Escalona-Buendía, 2019). For example, Mexican participants mentioned consuming beer with lime and chili more frequently as compared with those residing in other countries in the study.

Another study on Italian participants found that perceived complexity in alcoholic drinks varied depending on the taster's familiarity with the ingredients, which, in turn, affected liking scores (Pierguidi, Spinelli, Dinnella, Prescott, & Monteleone, 2019), strengthening the case for there being cultural or geographical variations in taste preferences. One must note, however, that the concept of complexity has scarcely been defined. In this study, perceived complexity was conceptualized as the perception of multiple flavours, ingredients, or aromas (some of which may be difficult to identify), as well as the perception of novelty, which may generate some level of surprise. Cultural factors have also been shown to affect consumption trends to the point where an entire nation may change its preferences regarding a drink category, such as the growing market for beer in France, and conversely, the increase in wine consumption in Germany that was documented a decade ago (Aizenman & Brooks, 2008).

It is important to stress here that demographic characterizations may also turn out to be both context- and product-dependent. For example, Wang, Gellynck, and Verbeke (2017) indicated that in China, males characterized to be of a sound financial position and having an advanced level of employment (e.g., meaning those in management positions), living in Shanghai, who were frequent beer consumers, were more likely to consume European beers than were other Chinese consumers. However, it is important to note that this preference for local beers may also be an effect of the lack of availability of imported beers in other regions and to other consumer segments.

While most research seems to focus on country variables, cultural differences may also influence consumption behaviours, and in some cases, transcend country borders. For example, an analysis of American and British beer advertising revealed stark differences in terms of values, tone, language, appeal towards consumers, and consumption occasion. While American advertisements presented values such as individualism, achievement, and modernity, British advertisements tended to include values such as tradition, history, and eccentricity, or at least

they did in the closing years of the last century (Caillat & Mueller, 1996). While content may change throughout time, advertisements where brands appeal towards a sense of cultural identity with consumers are still in use by smaller, craft beer brands, and large breweries alike (Debies-Carl, 2019; Trifonas, 2019).

The association of beer brands with a specific culture not only takes place through advertising, it is also evidenced extensively throughout packaging. In fact, it has been shown across various categories that the use of cultural elements in packaging can influence consumers' preference towards purchasing products originating from a specific cultural background or country (Machiels & Orth, 2019). Beer has also been heavily marketed through sports media, especially in conjunction with the concept of masculinity and male bonding, to the point where it has become part of the cultural identity of sports fans (Lebreton et al., 2017; Wenner, 2009). Beer culture in itself must also be mentioned, as beer festivals, pub culture, and social drinking as a symbol of friendship are cultural phenomena that occur around the world (Brito et al., 2018; McCluskey & Shreay, 2011).

Cultural differences can even emerge within countries. For example, though beer has become an almost intrinsic part of German identity, Germany's long history of beer culture and tradition has led to different beer styles depending on region, which in turn, has affected each region's consumption preferences and habits (McCluskey & Shreay, 2011; Meussdoerffer, 2011). In this sense, tradition and identity have been frequently used to refer to beer brands, as these concepts have become synonymous with craftsmanship, effort, and have been related to festive celebrations and popular customs (Arnaiz, 2011). Lastly, exposure to different cultures might also change beer preference, as shown in a case study on international students living in the United States, where they not only began preferring US beers, but also 46% increased their beer drinking (McCluskey & Shreay, 2011). These studies suggest that culture affects beer choice and consumption, but it may change depending on whether consumers stay within a specific culture or not.

2.2. Genetic variables

Research on genetic differences and beer preference and choice have tended to focus on taster status regarding 6-n-propylthiouracil (PROP) taste sensitivity, sweet-liker status, and thermal taster status. These genetic traits affect the way in which consumers process and perceive the taste of beer (along with other foods and beverages), to the point where they both shape and

predict consumption habits. These findings have even inspired one London brewery to begin offering beer preparations specific to the consumer's genetic profile (Wu, 2016), and they may very well lead to further segmentation in the beer market. The following sections cover the findings from each of these genetic variables.

2.2.1 PROP taster status

The ability to taste PROP distinguishes non-tasters (those with a higher threshold for detecting PROP) from tasters (those with a much lower threshold). Alongside the taste threshold, the perceived intensity of bitterness when tasting PROP subdivides tasters into medium tasters (e.g., those who rate PROP tasting strips as moderately bitter) and supertasters (those who rate PROP as very bitter). Given the fact that, when compared to supertasters, non-tasters experience less negative (e.g., bitterness) and more positive (e.g., sweetness) sensations in alcohol (Duffy et al., 2004), non-taster status (and low PROP taste sensitivity in general) has been found to lead to higher rates of alcoholism, to the point where being a supertaster has even been suggested as a degree of protection from alcoholism (Intranuovo & Powers, 1998).

When it comes to the general perception of alcohol, Duffy, Peterson, and Bartoshuk (2004) reported that those who rate PROP as tasting more bitter, or had the highest numbers of fungiform papillae (on the tip of the tongue), indicated the greatest oral burn from alcohol while those who tasted the least bitterness from PROP tended to consume alcohol more frequently. Such results therefore suggest that there may be a link between orosensory responses and alcohol intake (Lanier, Hayes, & Duffy, 2005; Thibodeau, Bajec, & Pickering, 2017). Additionally, it has been reported previously that women have a higher tendency towards tasting PROP (and possibly other bitter substances) more intensely (Bartoshuk, Duffy, & Miller, 1995), which may explain their preference towards alcoholic beverages that are less bitter (Muggah & McSweeney, 2017).

Indeed, findings for beer specifically suggest that supertasters (those individuals with increased taste sensitivity to bitter substances such as PROP) report higher bitterness and lower liking when tasting beer than do non-tasters. Supertasters also tend to consume significantly less beer than non-tasters at the point in their life where they first start drinking beer (Intranuovo & Powers, 1998). However, these differences were reported to dissipate by the time of the study, and it is important to note that the influence of PROP status on beer intake was indirect, namely via a preference for sweetness over bitterness (Lanier, Hayes, & Duffy, 2005). Note, though, that the proposed relationship between PROP sensitivity and the enjoyment of beer certainly has not gone unquestioned (e.g., Catanzaro, Chesbro, & Velkey, 2013). Nor has the relationship

between the density of papillae and taster status (Garneau et al., 2014). This perhaps reflects the complex relationship that exists between PROP sensitivity and food and drink preferences in general (Negri et al., 2012).

2.2.2. Sweet-liker status

In addition to PROP taster status, the study of consumer choice drivers in beer consumption might also benefit from taking sweet-liker status into account, especially when considering that nearly 40% of the population is not classified as 'sweet-likers' (Frayling, Beaumont, Jones, Yaghootkar, Tuke, Ruth, et al., 2018; Keskitalo, Knaapila, Kallela, Palotie, Wessman, Sammalisto, et al., 2007; Looy, Callaghan, & Weingarten, 1992; Yeomans, Tepper, Rietzchel, & Prescott, 2007). It is important to note that being a sweet-liker has genetic underpinnings, therefore this status should not be considered as a psychological preference. That is, differences in preference between sweet-likers and sweet-dislikers are due to genetically determined mechanisms which may involve peripheral or central taste processing, and may depend on, and change according to, the interaction between genetic and environmental factors (Bachmanov, Bosak, Floriano, Inoue, Li, Lin, & Beauchamp, 2011). Sweet-liker status may also correlate with additional genetic variables, such as sex. For example, the available research suggests that the perceived sweetness/bitterness of beer seems to be a driver of preference for women. They generally prefer sweeter (i.e., less bitter) beers (Muggah & McSweeney, 2017). That said, the fact that this study failed to include a male sample makes it is difficult to know whether or not the same results would also apply to male beer drinkers.

2.2.3. Thermal taster status

Thermal tasters, on the other hand, are those who experience a "phantom" taste sensation after thermal stimulation has been applied to their tongue (Cruz & Green, 2000). Thermal taster status correlates with higher responsiveness to chemical tastants (i.e., sucrose, sodium chloride, citric acid, quinine sulphate, monosodium glutamate [MSG], and PROP) and flavour (Green & George, 2004). This suggests that there might be more factors at play when evaluating differences in sensory perception, and therefore, more variables to consider when trying to meaningfully study consumer choice. Considering that PROP and thermal taster status are genetic factors, these can serve as indicators used to study the shopping patterns of entire families.

It is, though, not totally clear how variations between individuals in terms of thermal taster status influence their alcohol-related behaviours (e.g., consumption frequency). However, thermal taster status has been linked to both sensory and hedonic responses to alcohol (Thibodeau & Pickering, in press). In the case of beer, it would appear that thermal tasters report more intense taste sensations (such as bitter, sour, and sweet), than do thermal non-tasters (Mitchell, Castura, Thibodeau, & Pickering, 2019; Pickering, Bartolini, & Bajec, 2010; Pickering, Moyes, et al., 2010, present similar results from the world of wine). In addition, there is a small, but significant, body of evidence to suggest that thermal non-tasters like beer, spirits, and wine more than thermal tasters (Bajec, 2010). The latter observation may well be linked to thermal tasters' responsiveness to the different oral sensations associated with the temperatures at which these drinks are usually served. While thermal taste effects may be predominantly evident in the absence of "true" tastants, its effects on alcohol consumption preferences are worth studying, considering the low temperatures at which many alcoholic beverages are usually served, and even more so when the presentations themselves include ice, such as in cocktails.

Recently, some researchers have started to study the effects of both PROP and thermal taster status on people's responses to beer. For example, Yang, Dorado, Chaya, and Hort (2018) conducted a relatively small study (n = 60 participants, ranging from 20-62 years of age, with an average age of 31 years) in order to try and assess the relationship between these variables and consumers' emotional responses to two samples of beer (both commercial lager beers of similar age but differing in terms of their bitterness). Their results revealed that thermal tasters had more negative emotional responses to the beers that were sampled in their study than did the thermal non-tasters. Moreover, the research findings indicated that PROP supertasters had more positive emotional responses to the beers than did the non-tasters. These findings reveal that different intensities or capacities in terms of sensory perception may also regulate people's patterns of consumption.

2.3. Psychological variables

The quantitative research of consumers on psychological (as opposed to demographic) dimensions has been called 'psychographics' (Wells, 1975). These dimensions may receive different names, depending on the context in which they are studied. While in a marketing context, these variables are often known as behavioural, profiling research may refer to these variables as habits instead. In any case, psychological variables cover a wide range of content,

including personality traits, values, opinions, attitudes, lifestyles, activities, and interests. Perhaps the simplest way of defining psychographics is through its purpose: using data to know and understand consumers in order to communicate more effectively with them (Gilbert & Warren, 1995). With this in mind, psychographic and behavioural variables are typically used when studying consumers' decisions, in order to better segment, understand, and predict different groups of consumers, as a function of their psychological profiles, behaviours, preferences, and motivations (e.g., Calvo-Porral et al., 2018). Below, some of the most representative academic research on beer segmentation as a function of such variables is presented.

Perhaps a first more fundamental question, though, is why it is that people consume alcohol in the first place. According to an early meta-analysis on the topic reported by Crawford (1987), participants report drinking alcohol mainly for: 1) social reasons, referring to social duties and celebrations; 2) psychological effects or an escape, referring to avoidance of unpleasant situations (such as "forgetting worries" and reducing anxiety) and sensation-seeking; 3) intrinsic reasons or "hedonic aspects", referring to the pleasure that is derived from alcohol *per se*. According to Calvo-Porral (2019), consumers mostly drink beer for social reasons (Thomé, Soares, & Moura, 2017).[1]

Another approach to classifying consumers can be found in the study conducted in Mexico by Gómez-Corona et al. (2016) which was designed to profile beer consumers based on demographic variables and their patterns of beer consumption. According to their analysis, beer consumers could be classified as "industrial", "occasional industrial", and "craft beer". These three clusters correlated with varying demographic characteristics and consumption patterns and preferences, as listed in Table 2.

Table 2. Types of beer consumers (adapted from Gómez-Corona et al., 2016).

Industrial	Occasional Industrial	Craft Beer
Consume 4-6 beers per week	Consume 1-3 beers per week	Consume 10-12 beers per week
18-24 years	Drink at weekends	25-35 years, male
Graduate studies	Medium income level	High income level

[1] Here, it is important to note that there might be more specific motives for drinking particular types of beer. For example, Chrysochou (2014) identified that the motives behind people purchasing light beer usually include taste, health, and weight management. Indeed, a low-calorie count is often a key driver for light beer preference.

Crave at bar	Crave at restaurants	Crave at house, beach
Consume at bar and at family's or friend's house	Consume at restaurants and nightclubs	Knows about and consumes craft beer
	Drink tequila	Consume national craft blond and dark beers
		Buys at specialized store

In another study, Calvo-Porral, Orosa-González, and Blazquez-Lozano (2018) evaluated potential consumer beer segmentation within the Spanish marketplace, based on multiple variables, ranging from demographic to psychographic and behavioural. A summary of the beer consumption-related questions is presented in Table 3, along with the factor loadings of the items and the reliability of the dimension scales; note that Calvo-Porral et al. also included variables such as consumption frequency, place of consumption, preferred beer sensory attributes, beer type, age, and gender in their analysis.

Table 3. Summary of beer consumption questions, factor loadings of items and reliability of dimension scales used in Calvo-Porral et al.'s (2018) study.

Variables	Indicators	Factor loading	Cronbach's α
Product loyalty: (Yoo et al., 2000)	LOYI: even if other beverages had similar characteristics, I would prefer beer	0.778	0.959
	LOY2: even if other beverages had features that were	0.761	
	similar to beer, I would prefer beer instead	0.752	
	LOY3: it makes sense to buy beer, instead of other	0.748	
	beverages available in the market		
	LOY4: if I had to buy a beverage, beer	0.686	
	would be my first option	0.674	
	LOY5: it makes sense to drink beer, instead other		
	beverages available		
	LOY6: I consider myself loyal to beer		
Product image (Netemeyer et al., 2004; Pappu et al., 2005)	IMG1: I have a good image of beer	0.801	0.940
	IMG2: I have a good image of individuals	0.776	
	that drink beer	0.760	
	IMG3: I associate some specific		
	characteristics of beer immediately	0.650	
	IMG4: beer has personality	0.573	
	IMG5: beer is interesting		
Perceived quality (Yoo et al., 2000; Pappu et al., 2005)	QUAL1: beer has higher quality and	0.604	0.932
	attributes	0.666	

	QUAL2: beer offers reliable quality QUAL3: brand X offers trustworthy quality QUAL4: beer has excellent characteristics	0.604 0.626	
Product familiarity (Yoo et al., 2000)	FAM1: beer is familiar to me FAM2: I know about beer FAM3: beer comes immediately to mind when I think about beverages	0.831 0.685 0.823	0.769
Premium price (Netemeyer et al., 2004)	PREM1: I am willing to pay a higher price for beer, rather than for other beverages PREM2: I want to pay more for a beer, rather than for other beverages	0.859 0.771	0.875
Purchase intention (Netemeyer et al., 2004)	INT1: I would buy beer INT2: It is likely that I would by beer INT3: I will buy beer in the next month	0.675 0.671 0.562	0.960
Value For Money (Lassar et al, 1995; Netemeyer et al., 2004).	VM1: beer has a good relationship "value for money" VM2: beer offers high value, compared to its price	0.659 0.636	0.850

Based on these variables, the authors were able to identify five main clusters of consumers based on a sample of 592 participants (Table 4 presents a summary of their findings by cluster). These clusters involved “Beer lovers”, “Circumspect seniors”, “Social drinkers”, “Homelike women”, and “Beer to fuddle” consumers.

Table 4. Consumer clusters defined by Calvo-Porral et al. (2018).

Beer lovers (16% of sample)	Circumspect seniors (14% of sample)	Social drinkers (30% of sample)	Homelike women (17% of sample)	Beer to fuddle (23% of sample)
26-30 years old	Over 51 years old	18-25 years old	Mostly women	18-25 years old
Highly involved with beer, drink several times a week	Moderate beer consumption, not strongly involved with beer	Consume beer occasionally and mostly socially	Usually drink beer at home, mostly once a week	Consume beer between once and several times a week
Value quality and beer-intrinsic attributes	Like alcohol-free beer	Consume beer mostly at home	Focus on flavour as a key element, rate quality as important	Drink mostly out-of-home
Loyal to the product	Moderately loyal to the product	Relatively disloyal to the product	Modestly loyal to the product	Low product loyalty

Show high purchase intent	Show high purchase intent	Show relatively low purchase intent	Show a high purchase intent	Low purchase intent
Are willing to pay a premium	Have a favourable image of product	Moderate product image and perceived quality	Are not willing to pay a premium, have a favourable product image	Poor image and perceived quality for beer products

Perhaps surprisingly, research on the relationship between personality characteristics and alcohol / beer choice has been somewhat limited to date (Martin, 2009; McGregor, Murray, & Barnes, 2003). This, at least when compared with the relatively large body of research on personality, motives for drinking alcohol, and other associated behaviours (Loose, Acier, & El-Baallbaki, 2018; Mezquita, Stewart, & Ruiperez, 2010; Stewart, Loughlin, & Rhyno, 2001, for a number of examples). However, it has been suggested that there may be a relationship between these variables. For example, in an early study by Allsopp (1986), beer and cider consumption were positively linked to measures of impulsiveness and extraversion. Meanwhile, Mortensen, Sørensen, and Grønbaek (2005) conducted a study in Denmark documenting a relationship between intelligence quotient (IQ) and alcohol preference. In particular, high IQ was associated with an expressed preference for wine over beer and spirits (this effect was unrelated to socio-economic factors), though it should be stressed that IQ was not associated with drinking frequency in their study. Another study found a relationship between higher beer consumption and higher levels of neuroticism in males (McGregor, Murray, & Barnes, 2003), raising the question of whether or not personality traits can predict patterns of consumption.

Along with the impact of psychographic variables on consumer choice, it is also worth exploring how consumers' respond to different types of products and categories. For example, Gómez-Corona, Chollet, Escalona-Buendía, and Valentin (2017) evaluated several consumers' processes including the sensory (defined by the authors as the perception of their surroundings), the affective (referring to emotional responses), and the cognitive (which processes information and gives it meaning). In their experiment, participants reacted using cognitive phrases (e.g., "I like to know the style of the beer that I am drinking", "I would like to know who produces this beer") more often to describe their experience drinking craft beers, while sensory, and affective responses appeared more frequently in response to industrial beers.

Regarding the affective system, one study reported that beer was associated with positive valence, high emotional arousal, and concepts such as "adventurous" and "energetic", while non-alcoholic beer evoked neutral and negative emotional arousal and was associated with

concepts such as “rational”, “conscious”, and “disappointed” (Silva, Jager, van Bommel, van Zyl, Voss, Hogg, Pintado, & de Graaf, 2016). This demonstrates the importance of brands choosing between a more emotional or more rational approach when highlighting a product’s traits. Meanwhile, Jaeger, Xia, Le Blond, Beresford, Hedderley, and Cardello (2019) also vouch for the importance of using emotional and cognitive measures in addition to hedonic and perceptual variables (e.g., advertising a product’s pleasantness and taste) as they allowed for a more detailed differentiation of products, which can, in turn, be enhanced by market segmentation.

Note that relative to characterizations of consumers that only involve demographic variables, the aforementioned segmentations involve beer-related behaviours and IQ, but also purchase place, income, and other non-psychographic variables which help provide a more comprehensive image of the different groups of consumers. As is later examined, there are other consumer-based, as well as product-based, variables, such as sensory attributes, health characteristics, packaging and labelling, and other product extrinsic elements that may also help to further the analysis of consumer choice.

3. Product intrinsic attributes

3.1. Sensory attributes

Throughout the world, there has been a marked change in consumers’ beer drinking behaviour, from the traditional popularity of ‘tasteless’ beers, to the emergence of the craft beer movement, where a growing portion of the population are seemingly happy to pay a premium for a flavourful product (Clemons, Gao, & Hitt, 2006; González, McCluskey, & Mittelhammer, 2014; Passy, 2012). Traditional notions of a drink that was simply extra-cool, extra-refreshing (but sometimes tasteless) have been replaced by a desire for complex flavours, craft producers, and lifestyle choices that a growing number of consumers are willing to pay a premium for (e.g., Gabrielyan, McCluskey, Marsh, & Ross, 2014; Thurnell-Read, 2018).

Beers can be described in terms of a number of sensory attributes, with many studies having been published on beer sensory descriptors (e.g., Daems & Delvaux, 1997; Einstein, 1976; Meilgaard, Dalgliesh, & Clapperton, 1979; Langstaff, Guinard, & Lewis, 1991; Langstaff & Lewis, 1993; Parker, 2012). However, research on the influence of different sensory attributes on consumer beer wanting and choice is by no means extensive. The available research would appear to suggest that the basic taste of beer (e.g., sweetness and bitterness) and mouthfeel (e.g.,

fizziness or carbonation) are key to people's beer preferences and choice (Chrysochou, 2004; Thompson & Thompson, 1996).

Note that the influence of sensory attributes on beer wanting and choice may vary as a function of the consumer group under consideration. For instance, Hong, Choi, and Lee (2017) conducted a study in South Korea that was designed to assess the role of different sensory attributes of beer in determining people's preferences. By grouping consumers depending on whether they preferred lager vs. ale, they were able to demonstrate differences between the order of importance that each group gave to the different attributes. For lager consumers, the contribution of each attribute in decreasing order was 'total CO_2, bitterness, duration of aftertaste, aromatic, foam volume, and density'. For ale consumers, by contrast, the attribute contribution was as follows: aromatic, total CO_2, bitterness, duration of aftertaste, density, and foam volume[2]. It is also worth mentioning that when ranking sensory attributes, beer experts pay more attention to visual details (e.g., colour) as signals of quality, focussing more on the appearance of beer than social drinkers (Van Doorn, Watson, Timora, & Spence, 2019).

Indeed, a recent U.S. study on the influence of different sensory attributes on people's willingness to pay for beer suggests that overall taste and hoppiness exert a significant positive effect on people's willingness to pay (Gabrielyan, Marsh, McCluskey, & Ross, 2018). This may vary as a function of the consumer segment, as well as the product type. For example, when it comes to craft beers, flavour attributes would seem to be critical in driving consumer choice (Aquilani, Laureti, Poponi, & Secondi, 2015). This suggests that different groups of consumers may have characteristic taste and flavour preferences. Of course, beer flavour is also dependent on the aroma produced by the chemical compounds in beer. These aromas account for a great deal of beer taste, which is why one must consider how they are released by foam, and how they can be magnified or diminished by the shape of the container (e.g., bottles and cans with small openings, versus glasses with large rims), along with other factors. Additionally, different types of beer have varying degrees and types of aromas, which have been shown to affect consumers' liking and preference (Viejo et al., 2019b).

When taking flavour into account, one must also consider temperature, as more aromas are released at higher temperatures. Similarly, taste properties also become more perceptible when a drink is served at a higher temperature. Specifically, higher temperatures have been found to

[2] One may think of this in terms of the notion of sensory dominance and preferred features. There may be drink-specific features that dominate the choice of drink such as its temperature or aroma profile (Delwiche, 2003). As such, one could ask which sensory features are most important to consumers from different countries.

increase a taster's sensitivity to sweetness (Talavera, Yasumatsu, Voets, Droogmans, Shigemura, Ninomiya, & Nilius, 2005) as well as bitterness (Schmelzle, 2009). In the latter case, reaching maximum taste intensity at a temperature of 10°C. However, when it comes to the effects of varying temperatures in beer tasting, the academic literature is surprisingly scarce. That said, news articles and websites provide a look at the different trends in beer temperature. One of the most salient preferences is for ice-cold beers in the U.S. (also popular for a while in the UK, and for many years in Australia), with industrial/commercial beers being served at very low temperatures, around 3°C to 4°C, as Noel (2015) explains, *"an ideal temperature for the mass-produced brews designed to be refreshingly easy to drink while obscuring the cost-saving ingredients within"*. In contrast, European consumers tend to consume beers at noticeably higher temperatures. Wheaton (2015) suggests that this may be because European beer culture is more "traditional", and was established long before the invention of refrigeration, while American beer culture grew with an emphasis on quantity, rather than necessarily quality. However, with the recent dramatic rise in the craft beer movement, the situation would seem to be changing.

According to Noel (2015), the temperature for craft beers should be at least 5°C to 7°C in order for the more subtle flavours to be noticed, and even goes on to suggest temperatures as high as 10°C to 14°C for beers with a full-bodied flavour and higher alcohol contents, such as imperial stouts and Belgian ales. In relation to this, Errichetti (2014) posits that consumers who are more inclined towards microbrews and craft beers are more likely to enjoy their drinks at warmer temperatures than those who prefer light and refreshing drinks. Given that people like a beverage more when it is at a familiar temperature (Dorado, Chaya, Tarrega, & Hort, 2016; Zellner, Stewart, Rozin, & Brown, 1988), the relation between drink choice, consumption habits, and drink temperature might be stronger than is perhaps imagined. Considering that warm ambient temperatures have been shown to decrease people's preferences for savoury foods (e.g., Motoki, Saito, Nouchi, Kawashima, & Sugiura, 2018), there may also be seasonal factors at play here regarding ambient temperature and beer choice. Consumers' choice of food or drink can also lead to wanting a specific pairing item for consumption (Huh, Vosgerau, & Morewedge, 2016). Given these precedents, the study of the drivers behind consumer choice could establish links between preferences in consumption temperature, type of beer, and country, food pairing, amongst other possible factors in order to tailor strategies to each consumer group or region.

The colour of beer has also been linked with the way in which consumers perceive and experience the product. So, for instance, consumers expect dark beers to have a more bitter taste than light beers (Reinoso-Carvalho, Moors, Wagemans, & Spence, 2017; Reinoso-Carvalho, Dakduk, Wagemans, & Spence, 2019a). However, the extent to which beer colour influences choice, independently of the beer's flavour profile is currently less clear (Van Doorn, Timora, Watson, Moore, & Spence, 2019). What is more, preference for specific visual appearance properties in beer is likely to vary over time and by culture. That being said, a little over two decades ago, Guinard, Souchard, Picot, Rogeaux, and Siefferman (1998) presented evidence suggesting that the colour of beer is negatively associated with a beer's ability to quench thirst (that is, the darker the beer, the less thirst-quenching it was expected to be), something which may be key to consumers' decision-making in this category.

Donadini et al. (2016) presented a cross-cultural study in which they found that beer colour can be a good predictor of expected interest in specialty beer, though in a different manner depending on the country studied. So, for instance, a golden appearance was a good predictor of interest in specialty beers amongst Italian consumers, positively affecting their interest twice as much as a red appearance. A gold or red appearance were also found to be good predictors of interest in speciality beers amongst Spanish men, whereas a dark appearance was found to negatively influence Spanish women's interest in these beers. Finally, Polish consumers' interest in specialty beers was positively influenced when the beers had dark, blonde, or amber colours.

Other visual properties of beer have been studied regarding people's expectations and perception of beer, such as the beer's foam or head (Smythe, O'Mahoney, & Bamforth, 2002), or whether it has a cloudy or clear appearance (Barnett, Juravle, & Spence, 2017, present an assessment of the impact and desirability of using finings in beer, which help avoid a cloudy appearance). However, their relationship with wanting and choice is not always clear and likely varies as a function of culture (Van Doorn, Watson, Timora, & Spence, 2019). In fact, foam preference might even change the consumer's state while drinking beer; Viejo et al. (2019a) found a negative correlation between body temperature (based on infrared thermal imagery) and liking of foam height and stability. That is, consumers had an increase in body temperature when they presented lower liking of the foam height and stability of the beer samples. However, Viejo et al. (2019a) also found that higher foam stability led to greater liking of aroma (explained by foam's capability of releasing aroma compounds). These results suggest that beer

foam characteristics, such as stability, not only affect beer liking, but may even affect it simultaneously in positive and negative ways, depending on consumer preference.

It is worth highlighting that moderate levels of foam/head are perceived as higher quality (Viejo et al., 2018) and appear be more appealing and drinkable (defined as "the likelihood to consume multiple beers in a single sitting") by different groups of consumer including North Americans, Scots, Italians, Brits, and Japanese (Bamforth, 2000; Donadini, Fumi, & Faveri, 2011; Smythe et al., 2002). This preference for a medium level of foam has also been found to be a visual component that affects consumer choice; in Italian consumers, it was rated as the most attractive to consume, and also gave rise to a higher purchase intent (Donadini et al., 2012). When measuring other attributes of beer head more specifically, such as quantity, duration, and lacing (foam residue on the glass), preferences have been found to vary depending on their gender, region, and even race (Evans & Bamford, 2008; Kosin, Savel, Evans, & Broz, 2010).

Beer head has also been shown to affect the flavour of beer (Ono, Hashimoto, Kakudo, Nagami, & Kumada, 2018), as well as customers' purchase decisions, and consumers' expectations regarding flavour (Evans & Sheehan, 2002). Considering that the storage medium and the method of pouring strongly affect the foam's characteristics, the tasting experience is likely to change when it comes to at-home consumption, rather than at a bar or pub where a professional pours the drink.

As the world's most popular alcoholic drink (by volume), one must also consider the alcohol content when examining consumers' beer preferences. While the average beer has around 4.5% alcohol, there is a wide variety, ranging from non-alcoholic, to the strongest beer in the world, with an alcohol content of 67.5% (Brewmeister Snake Venom, 2013). This preference depends not only on consumer's taste and flavour preferences, but also on whether they are seeking inebriation or not. In this respect, consumers have shown widely different preferences, as some prefer to become inebriated quickly, whereas others prefer to avoid this for a variety of reasons; in fact, consumers may even switch from considering beer choices in terms of enjoyment, to considering them in terms of functionality (Chrysochou, 2014). Since inebriation can interfere with activities such as driving and working, consumers might prefer non-alcoholic or low-alcoholic alternatives at moments in which they must perform such activities, but may choose higher alcohol contents when they are at an appropriate time and place in which they do not have these responsibilities.

Consumer preferences regarding sensory attributes not only change as a function of culture, country, or region, and varying demographic groups, but also across time, as shown by the

recent growth of the craft beer market (Mathias, Huyghe, Frid, & Galloway, 2017), suggesting that different marketing and communication strategies can help shape preferences in specific consumer groups. For example, since the craft beer market started out as a niche environment, where consumers were considered enthusiasts (Murray & O'Neill, 2012), support and customer loyalty towards a specific brand were derived from feelings of identity or of belonging to a community (Murray & Kline, 2015). In this sense, the way in which a brand communicates and interacts with a consumer group or segment can influence their preferences, and this can be accomplished (in part) through a brand's label and packaging, considering that research suggests that most consumers find it difficult to differentiate on the basis of taste/flavour.

3.2. Health attributes

While beer provides some essential nutrients, it is typically not considered by consumers in terms of its health-related properties (Marcos, López, & Pascual, 2015; Sohrabvandi, Mortazavian, & Rezaei, 2012). That said, there are certain nutritional and health considerations that various consumer groups may take into account when it comes to beer wanting and choice, such as the alcohol content (or whether it is alcohol free, e.g., Sohrabvandi, Mousavi, Razavi, Mortazavian, & Rezaei, 2010; Wright, Bruhn, Heymann, & Bamforth, 2008a), whether the beer is light or not (e.g., Chrysochou, 2014), and its main ingredients (Waldrop & McCluskey, 2019; Grunert, Hieke, & Juhl, 2018; Wright, Bruhn, Heymann, & Bamforth, 2008b). These considerations have led to market segmentation trends already in practice. For example, there are now "healthy" beers, with a low-to-none alcohol content, targeting more health-conscious shoppers (Averill, 2019; French, 2018).

Given that food portion sizes have been increasing, most notably in US markets (Nestle, 2003), and this has been directly linked to a higher energy intake (Flood, Roe, & Rolls, 2006), obesity, and related illnesses (Young & Nestle, 2002), consumers might take serving size into account when they are considering a beer's health attributes. One effect of this is the downsizing of portions in several categories across the food and beverage categories. In Colombia, for example, this has begun to happen with beer as well, with the Club Colombia brand releasing a smaller (269 ml) presentation of their standard beer can (330 ml) (Cerveza Club Colombia, 2018). This raises the question of whether or not beer brands should use health-focused marketing strategies to attract or maintain their more health-conscious consumers. However, this is one specific example of changing serving sizes, but local tradition seems to reign supreme, as is evidenced by the close association of beer to its serving size (i.e., "going for a

pint" is ubiquitously understood as a pint of beer). Still, one must note that this traditional standard size seems to vary by country, with the pint being the standard size in both the US and UK, but equalling 473 ml in the former, and 568 ml in the latter. Other examples of this variance are the standard schooner in Australia, equal to 425 ml, and the German Maß – a full litre as the standard size, with half-litres being readily available as well (Bramen, 2011).

4. Product Extrinsic Attributes

Beer preference and choice is not only influenced by the sensory characteristics of the products but also by the information available to the consumer in relation to the product, which can influence their expectations and subsequent consumption (Lee, Fredrick, & Ariely, 2006). Such information can relate to the product and brand themselves, the consumers' relationship with them, as well as labels, packaging, and container type (Velasco & Spence, 2019, present a review on the multisensory aspects of packaging design). This information from packaging, labelling, and various communication touchpoints may affect the consumer's choice by influencing their expectations of the brand and product, as well as their loyalty and involvement with the brand.

4.1. Brand image, labelling, and other touchpoints

One key consumer variable that influences beer wanting and choice, which may well extend to other product categories, is the level of involvement that consumers have with the product category and the brand. In the case of beer, for example, one may differentiate "industrial beer consumers" from "craft beer consumers" as a function of their involvement, with the first being less involved than the latter (Aquilani, Laureti, Poponi, & Secondi, 2015; Gómez-Corona et al., 2016). These behaviours can be seen as an expression of brand loyalty (understood as a deep commitment to purchasing a specific brand or product), specifically as associations to a product or its image (Cardello, Pineau, Paisley, Roigard, Chheang, Guo, Hedderley, & Jaeger, 2016). Brand loyalty can be influenced by other factors as well, such as product familiarity (notably brand image), and the way in which consumers perceive a product's quality by evaluating the actual product against their expectations (Calvo-Porral et al., 2018).

One important extrinsic attribute, especially when studying preferences towards craft beer, is the consumers' attitudes towards the category, as well as the type of meaning they find in it. For example, in a study conducted in New Zealand, craft beer drinkers were found to be divided

into flavour-driven segments. However, upon closer inspection, these segments corresponded with different attitudes and behaviours toward craft beers (Jaeger et al., 2020). This suggests that a preference for craft beer might not only be explained by consumers' sensory preferences, but also by the meaning they find in drinking craft beer as opposed to mass-produced beer. Some examples of the meaning of craft beers might relate to a perception of uniqueness, a preference towards supporting smaller and/or more traditional breweries, a search for novel flavours (Malone & Lusk, 2018c), or even a part of consumers' identity (Rivaroli, Hingley, & Spadoni, 2018).

The growing interest and awareness in beer quality (Berkhout et al., 2014; Mejlholm & Martens, 2006) and the subsequent higher demand for local, small, craft brews, have led consumers to show greater preference (or loyalty) towards a certain product or brand. This may be a reflection of their associations revolving around consumption, as well as greater purchase intent (Calvo-Porral et al., 2018). With this in mind, when studying the drivers behind consumer choice, one must also consider consumer's associations regarding consumption, as well as the factors that allow for stronger bonds between brand and consumer.

Though the product itself and the brand's familiarity have been pointed to as key factors when it comes to consumer choice (Cardello et al., 2016; Giacalone, Bredie, & Frøst, 2013; Malone & Lusk, 2018a), consumers tend to be pretty poor at distinguishing between different brands, or picking their favourite brand, under conditions of blind tasting. For instance, an early study by Allison and Uhl (1964) indicated that consumers are relatively inaccurate when it comes to beer taste differentiation in blind tasting, whereas taste evaluation becomes more differentiated when brand information, in this case the brand name, was made available to consumers. In a more recent study conducted in Denmark, researchers found that though Danish beers are largely diverse in terms of sensory characteristics, the more established Danish beers received higher liking scores among participants (Mejlholm and Martens, 2006). These results suggest that taste familiarity and recognition might not occur at a conscious level, but rather may indirectly influence liking.

One must also consider the importance of "rational" variables, as highlighted by Guinard, Uotani, and Schlich (2001). For example, price and brand are product characteristics which can greatly affect consumer choice. In Guinard et al.'s study, these variables significantly changed hedonic ratings for beer in their study, especially for those participants in their twenties. The preference of extrinsic factors may also change depending on the consumer group, for example, Wang, Gellynck, and Verbeke (2017) showed that the consumption of European beer in China

is positively associated with origin, brand, colour, and mouthfeel, while being negatively associated with price and alcohol content.

4.2. Packaging and labelling

Specific brand elements, such as a product's packaging, can also influence beer choice and enjoyment. For instance, presenting beer in a blind vs. a packaging condition has been shown to lead to different associations with the product (Sester, Dacremont, Deroy, & Valentin, 2013; Thong, Thanh, Solgaard, & Yang, 2018). However, Dedge (2014) points out that cans outperform bottles in terms of maintaining a beer's freshness, protecting the product from sun damage, and also offer greater convenience during transportation, as cans are less likely to break and easier to stack on top of each other. These findings could help shape advertising for different presentations, in order to capitalize on the benefits of both types of packaging. For example, one brand has modified the cans themselves, making them "topless", in order to get consumers to favour them over bottles (The Associated Press, 2014). Meanwhile, other brands have focused on innovating packaging design, and specifically directed these changes towards implementing sustainable packaging (Oostendorp, 2011; Hoalst-Pullen, Patterson, Mattord, & Vest, 2014; Brilhuis-Meijer & Saxena, 2015; and Pullman, Greene, Liebmann, Ho, & Pedisich, 2015).

The material and weight of the beer packaging is another factor to consider. In their study, Barnett et al. (2016) argued that the difference in the weight of the packaging might have played a key role, given that consumers normally rate chemosensory stimuli, including food and drink, as tasting better when holding something heavier in their hands. However, given that the study was conducted in the UK, there is also an association in the mind of consumers (cans = commodity beer; bottles = premium brand). The same association might not necessarily be held by consumers in other countries. Note here only how the emerging craft beer movement in North America has been actively trying to change the consumer mindset and push the idea that cans, as a packaging format, can also be associated with a premium product (Velasco & Spence, 2019, for a review of multisensory product packaging).

The design and information (such as alcohol content and sensory descriptors) contained in a beer label have also been found to affect consumer expectations (it is important to note that though alcohol content is an intrinsic attribute, the labelling or information about alcohol content is extrinsic). For example, red and brown labels, along with higher labelled alcohol

content, have led to a higher expectation of bitterness in beer (Blackmore, Hidrio, Godineau, & Yeomans, 2020). Elsewhere, Barnett and Spence (2016) reported that simply changing the colour of the label can lead to a change in the rated intensity of the citrus note in a beer. Similarly, in a study by Sugrue and Dando (2018), the prominent use of red colours in labelling for cider made participants rate it as both sweeter and fruitier. Lastly, in a study by Lick, König, Kpossa, and Buller (2017), consumers were more likely to expect tangy flavours from wine with red and black labels, while red and orange are most associated with fruity and flowery flavours.

Upon exploring the patterns of interest in craft beer, Donadini and Porretta (2017) found that Italian consumers self-reported to place importance on the following elements (from most important to least important): Type of container, brewing technology, raw materials, type of brewery, retail price, where to buy, brew house equipment, and location of the brewery. While not explicitly mentioned in Donadini and Porretta's study, packaging has been extensively found to affect consumers' experience with brands and products, especially in their emotional response towards a specific product, even though the product's sensory attributes also play a clear role in product preference (Chaya, Pacoud, Ng, Fenton, & Hort, 2015). Packaging can also help a brand stand out amongst the competition by using a distinctive 'image mould' This is the case with the Grolsch beer bottle, the Modelo beer bottle, or the Sapporo beer can.

For another example of the role of package design in consumption, beverage packaging was found to increase ratings of palatability for various types of alcoholic and non-alcoholic beverages (including RTDs, mixers, and pre-mixed drinks), with a more significant effect on younger participants (adolescents) (Gates, Copeland, Stevenson, & Dillon, 2007). This effect has led to controversy regarding whether or not there should be restrictions on the way in which an alcoholic beverage is branded and advertised (Hill & Casswell, 2004), given the stronger effect of packaging on alcohol consumption in adolescents. Other examples to consider are Heineken's thermochromic beer bottle label and textured beer can (BevNET, 2011; "Heineken Thermochromic", 2018), as well as Loersch and Bartholow's study (2011) on college students, which found that simply presenting beers in cans that used their university colours caused them to rate beer consumption as less dangerous and rated their in-group's party behaviours as less dangerous. These findings suggest that colours in packaging may be used to encourage or diminish alcohol-related risk taking, and could serve as guidelines for brands to develop age-appropriate packaging designs.

The sound of a specific type of packaging can also influence the consumption experience. It might seem unlikely that the sound of opening of different kinds of beer, or the choice to go for beer as opposed to a sparkling wine, would be driven by the sound of opening of the alcoholic beverage. However, it is worth noting that some specific sounds have become potent brand images and signals of positive attributes, such as the distinct sounds of Grolsch's flip-top, Snapple's pop, and Coke's cracking sound when opening a can (Spence & Wang, 2015, examine the expectations and influence of the sounds of opening and pouring of beverages, and present a recent review in Wang & Spence, 2019). Another effect in the drink category is how the sound of a cork popping is associated with a celebratory mood significantly more than was the sound of a screw-top wine bottle being opened (Wang & Spence, 2017).

4.3 Container type

Since beer can be served and consumed in cans, bottles, and glasses of varying shapes and sizes, it is important to consider how these types of containers affect not only the drinking experience, but the choice itself. For example, Barnett, Velasco, and Spence (2016) demonstrated that consumers (in the UK) rate beer as tasting better when it is presented in a bottle rather than a can. Separately, Wan, Zhou, Mu, and Spence (2015) have also shown that glassware influences the amount that people are willing to pay for beer, as well as the perception of the beer itself (Mirabito, Oliphant, Van Doorn, Watson, & Spence, 2017; Black, 2010). Specifically, participants were shown six different types of clear glasses (a narrow wine glass, a wide wine glass, a stemless wine glass, a highball glass, a rocks glass, and a beer mug), and showed greater willingness to pay when they considered the glass shape to be congruent with the contents; in the case of beer, this happened with the beer mug (and to a lesser extent, with the highball glass in American participants and the rocks glass amongst Chinese participants).

In addition to willingness-to-pay, the shape of a beer glass also directs the consumer's behaviour and can hinder or facilitate taste. D'Costa (2011) points out that different shapes in beer glasses are designed to direct the way the drinker holds the glass. Taking the Stella Artois chalice as an example, the shape directs the grasp towards the stem, keeping the beer colder. Other glass shapes can enhance the sense of smell, or ease tasting of all the flavour complexities a beer may have. The drinking patterns may also be affected by glass shape; Wells (2015) explains that a glass' rim determines the way a person drinks the beer, with narrow rims encouraging sipping, while wide-mouthed rims encourage glugging. Additionally, the inclusion

of volume markings on a beer glass have been found to slow down the speed of consumption (Troy, Attwood, Mayard, Scoot-Samuel, Hickman, Marteau, & Munafò, 2017).

4. Context and Environmental Influences on Beer Choice

Researchers have started to assess how the visual and auditory attributes of the environment (e.g., in a bar), may combine in order to influence consumer behaviour (Sester, Deroy, Sutan, Galia, Desmarchelier, Valentin, & Dacremont, 2013, present a representative example). Sester et al.'s experiments sought to evaluate the effect of context on drink choice. Two studies were carried out, investigating the potential of an immersive approach for understanding the influence of specific contextual factors on drink choice. To generate contextual effects, two bar-like environments (based on the idea of ''having a drink in a bar'') were created: One had furniture with a natural wood grain finish, while the other had blue furniture. Both set-ups had audiovisual video clips projected onto the wall, aiming to change the overall warmth of the ambience and assess its impact on drink choice. In their first experiment, five different clips were projected. Participants in the immersive bars had to choose a drink from a wide range of drinks that was intended to match each projected clip. These elements significantly influenced the alcoholic drinks chosen by participants. Further analysis revealed that drinks were chosen to assimilate with the clips on the basis of perceptual, semantic or cognitive associations between the drink and the clips.

A second experiment confirmed the robustness of this experimental approach. In particular, participants had to choose between five beers in one ambience. Once again, the results revealed that drink choices changed according to the ambience. According to Sester and her colleagues (2013), these findings suggest that the immersive approach they used constitutes an effective tool to explore the integrated influence of contextual variables on food and drink choices. This highlights the way in which external stimuli may affect results when conducting sensory experiments, and furthermore, shows that for these experiments to have results that translate into real-world scenarios, they must start by emulating them.

This kind of approach builds on the results of older research suggesting that playing music increases the length of a consumer's stay at a bar (Drews, Vaughn, & Anfiteatro, 1992), and louder, faster music encourages people to drink faster/more (e.g., Guéguen, Jacob, Le Guellec, Morineau, & Lourel, 2008; Smith, 2008; Spence, Reinoso-Carvalho, Velasco, & Wang, 2019, present a recent review). In part, this may be related to the observation that loud music interferes

with people's ability to discriminate the alcohol content in beer (Stafford, Fernandes, & Agobiani, 2012). There is presumably also a link here to the nationality associated with music/fittings in a bar, building on research showing that people bought more French wine when French accordion music played in supermarket, but bought much more German wine when German bierkeller music was playing instead (North et al., 1997, 1999). Other studies have also shown that the type or style of music can have an influence on people's assessments of the tasting experience itself (e.g., North, 2012; Yeoh & North, 2010), possibly affecting consumption habits as well.

Furthermore, considering the ambience in which beer is frequently served and consumed (i.e., a bar or pub where music is playing, or perhaps a sports match), one must consider how background noise can lead to a preference towards stronger tastes, given the fact that it may diminish taste perception by producing a masking effect (Woods et al., 2011; Van der Wal & van Dillen, 2013; Yan & Dando, 2015, present a study on taste perception under the loud background noise conditions of airplane cabins; Spence, 2017, presents a review). A study of noise levels in restaurants and drinking establishments across different countries could provide an insightful understanding of those factors leading to preferences in taste. In relation to this, studies have shown younger consumers have a higher tolerance for ambient noise, while middle-aged and older consumers showed a preference towards less ambient noise, and cited this as one of the factors that influenced their decision when choosing a restaurant (Zemke, Hertzman, Raab, & Singh, 2011). Building on these findings, one could also posit that younger consumers might be more open to intense tastes when choosing food, and this, in part, may be due to their tolerance towards a noisier ambience.

Something similar has also been seen in the case of beer. Specifically, in a study reported by Reinoso-Carvalho, Wang, Van Ee, and Spence (2016), different soundtracks (intended to evoke sweet, bitter, and sour tastes) were shown to lead to different evaluations of a beer's perceived sweetness, bitterness, sourness, and alcohol content. These soundtracks came from a previous study in which they received the highest number of matches for the tastes that they were meant to evoke (Wang, Woods, & Spence, 2015). Overall, the different soundtracks influenced the participants' rating of the taste and strength of the beers. Furthermore, music has not only been shown to affect the perceived taste of a beer, but also how much it is liked. Beer consumed while listening to music was liked better than when consumed in silence, and this effect was stronger amongst those participants who were familiar with the artist (Reinoso Carvalho, Velasco, van Ee, Leboeuf, & Spence, 2016).

Note that a number of other studies have also reiterated the point that people appear to enjoy drinks more when there is background music as compared to when drinking in silence (Guéguen, 2008; Spence & Shankar, 2010), and specifically for beer, music that induces positive emotions has been shown increase beer liking and willingness to pay (Reinoso-Carvalho, Dakduk, Wagemans, & Spence, 2019b). Additionally, while music can modulate taste, noise has been found to impair the ability to taste food and drink, especially sweet and sour tastes (Spence, 2014, presents a review). These findings suggest that atmospherics play an important role in the tasting experience for beer. Further studies may implement immersive experiment setups such as that put forward recently by Delarue, Brasset, Jarrot, and Abiven (2019), in which product evaluations were conducted in two immersive settings (a nightclub and a beach setting) in order to assess the way consumers evaluate products. Another example is an experiment in which beer and wine were sampled in virtual reality (VR) environments simulating a bar and a winery, with the results suggesting that the perceived appropriateness of the environment positively affected participants' liking of the drink (Picket & Dando, 2019). By simulating real-life scenarios, experimenters can improve ecological validity in studying consumption across different scenarios.

It is also worth remembering here that although not formally documented in an academic setting (at least not as far as the current research shows), the success of Guinness around the globe has, in large part, been put down to the proliferation of Irish-themed bars, according to colleagues in Diageo (Bloodworth, 2017; "Why are Irish pubs Successful?", 2020). While this may not be the only reason for the brand's success, and some consumer clusters have been found to show low sensitivity to purchasing context, others have been found to be strongly influenced by the place where they are buying and consuming beer (Nijman, James, Dehrmann, Smart, Ford, & Hort, 2019). Additionally, the time that consumers spend at a bar increases when in a social setting (Drews, Vaughn, & Anfiteatro, 1992), one may suppose that this affects the amount of drinks consumed as well. Context, in other words, likely matters far more to the consumers' beer wanting and brand choice than any of us realize. It would be interesting to compare the success of the Irish pub concept across different markets around the world.

5. Discussion

Demographic variables serve as an initial source for conceptualizing consumer choice drivers and can be helpful when applying segmentation strategies (e.g., X strategy works best in X

country/region; Y strategy works best in Y age group; Z strategy works best in Z income group). Genetic variables may be useful when conjoined with location-based variables and a product's sensory attributes, these all help determine taster status and taste preferences. Psychographic variables help understand how consumers relate to a product, brand, and/or drinking occasion. These variables can lead to strategies related to certain situations (e.g., a fancy drink for a special occasion, a low-profile drink for relaxing with friends, an indulgence for enjoying at home), as well as drink-type strategies (e.g., making the consumer identify with a type of product: "I am someone who enjoys splurging on quality, so I buy microbrews", or "I am low-maintenance and enjoy a cool, refreshing beer").

Companies can also benefit from studying their consumers in their “natural habitat”. This not only serves as a way of studying behavioural and psychographic variables in context, but also helps pinpoint the root of specific problems, such as falling bar and pub sales (Madsbjerg & Rasmussen, 2014). Sensory attributes provide main ideas for product development, because they indicate consumer's preference towards specific types of beers when defining them by colour, flavour, type, etc. Sensory attributes also help build strategies focused on creating certain sensory experiences (i.e., facilitating consumption according to individual preference regarding temperature, serving size, flavour, etc.). Finally, extrinsic attributes relate to how a brand positions itself and interacts with consumers. These attributes can be positioned across a wide array of moments in the consumer’s journey, even before they are in a context that is specific to purchase and consumption.

When studying the consumer’s journey itself, there is first the question of context, as beer is consumed in a variety of different locations, such as at home, bars/pubs, and restaurants, where homes are typically where most beer is consumed, at least in Europe (Calvo-Porral, 2019). Different kinds of beer may be more or less appropriate for specific contexts (Giacalone et al., 2015), and consumers have shown increased product differentiation in bar-like contexts, when compared to a laboratory setting (Nijman et al., 2019).

To the best of current knowledge, there is no research trying to conceptualize the customer journey of beer consumers in different contexts, as well as the different touchpoints involved in the decision-making process. Nevertheless, research conceptualizing the general customer journey is useful in understanding this process, such as Lemon and Verhoef’s (2016) model for the customer’s experience and journey, which involves three main stages: pre-purchase, purchase, and post-purchase. Generally-speaking, conceptualizing the consumer journey involves specifying the different intrinsic and extrinsic factors that are associated with each step

of the decision process (in this case, associated with beer), something which can be useful when it comes to identifying the weight that each factor has on the final choice. The variables identified in this review as factors influencing beer choice are summarised in Figure 2.

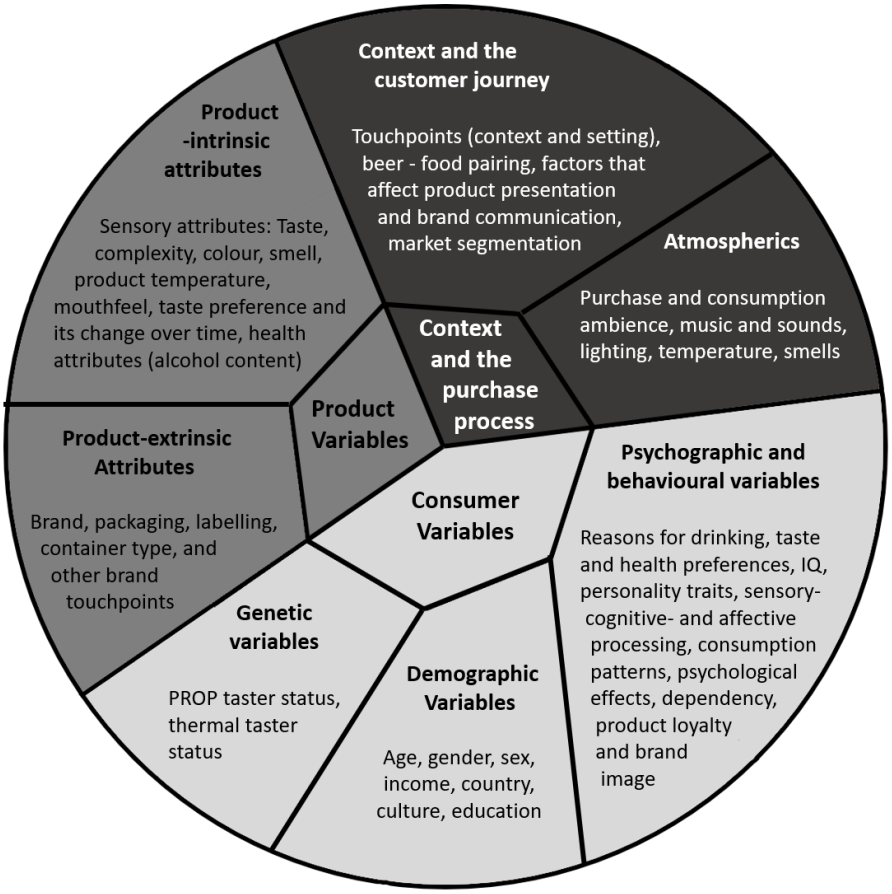

Figure 2. Summary of key variables that influence beer choice. These variables include consumer variables, product variables, and variables related to context and the purchase process. Under each title, we include some salient dimensions that contribute to explain beer choice.

When choosing and consuming beer, the different stages that a consumer goes through in each step vary as a function of context. For example, a customer's journey when shopping for beer at a supermarket is much different to the journey faced by a customer at a bar. The ambience is different for both settings, as is the way their choices are presented, the way the choice itself takes place, as well as the how the product is paid for and consumed. As has been previously mentioned, the bar's ambient factors (e.g., lighting and music) can also affect consumption in terms of choice, liking, speed, and frequency of consumption. Considering that the purchase and consumption experiences for supermarket shoppers and diners at a bar are so different, brands must learn how to target both mindsets.

Additionally, shoppers are ever more subject to "choice overload". Here, a seller can implement certain strategies and interactions to counter this and ease a shopper's decision (Malone & Lusk, 2018b). For example, some supermarkets have started to implement in-store beer sampling and consumption (Thompson, 2019), perhaps as an effort to create a bar/pub-like ambiance at a store, in order to tap into a "consumer" mindset (perhaps a more impulsive, indulgent mindset), rather than a "shopper" one, and it just might work, as this strategy is helping stores become a "gathering place" for shoppers and beer-enthusiasts alike (MacNeill, 2019). Another approach which takes flavour sampling further is Guinness and R/GA's use of VR (virtual reality) to create immersive multisensory environments which complemented the tasting experience of three beer flavours (Kiefer, 2017).

6.1. Topics for future research

Whilst it is clear that beer choice can be influenced by a number of factors, there are still a number of questions that remain to be answered:

1. *How do the different factors that influence beer choice contribute to consumers' beer choices?*

Based on current research, this question has not been answered, because existing studies focus on one of the aforementioned variables (e.g., demographic, psychological, genetic, or contextual). A well-designed survey including questions related to these variables would need to test for the relative contributions of the different factors that influence beer choice.

Even within one dimension of variables (e.g., demographic variables such as age, gender, educational level, or place of residence), the relative contribution of the different factors that influence beer choice has not been well-studied. However, the relative contributions of each of these variables are understood to a lesser degree of specificity. Given that demographic variables are relatively easy for marketers to access (when compared to genetic or personality variables), further research would be needed. The findings reported in this review already suggest some specific links and influences between extrinsic/intrinsic factors and specific choices (e.g., PROP taster status might determine preference in alcohol content), which helps optimize the design and analysis phases of the study. Of course, a study such as this might also result in new and unexpected findings regarding links between these factors and beer choice.

Another factor to consider is the appropriate methods for measuring consumer preferences. A study that evaluated emotional responses to pleasant, unpleasant, and neutral aromas in beer found that while participants did not present much physiological activation (little to no changes in heart rate and skin temperature, some facial muscle activity), nor major differences between their liking scores of the different aromas, an additional measure of self-reported data (through a beer-specific emotional lexicon), was the most discriminating method in evaluating the different aroma samples (Beyts, Chaya, Dehrmann, James, Smart, & Hort, 2017). This indicates that perhaps self-reports could be a helpful instrument in measuring consumer choice and the underlying reasons behind it. This also suggests the need for further research regarding physiological responses and their associations with emotional responses, considering that either the currently available methods and/or equipment must become more sensitive towards responses during consumption, or different measures must be adopted in research.

2. *To what extent does the relative contribution of each of the factors change as a function of consumer group or context?*

Consumers' choice of beer is influenced by context and context sensitivity. A recent study has shown that consumer responses to beer are influenced by context (as evaluated in bar, lab, and imagined bar settings), and that there are individual differences in the extent to which people are influenced by context (i.e., context sensitivity) (Nijman, James, Dehrmann, Smart, Ford, & Hort, 2019). Importantly, the study showed which groups were more sensitive to the context effect; when consumers had clear preferences for a specific type of beer (e.g., lager, ale), they were less likely to be influenced by context where they drink. For example, lager likers are likely to choose lagers, regardless of the context, and the same is true for ale likers (they are likelier to drink ales regardless of context). However, consumers with higher context sensitivity, who had unclear preferences for lager or ale, were likely to change their preference depending on the context. They preferred lager in the bar, but ale in the lab. The findings show that consumers who do not have a specific preference for beer can be more influenced by context, highlighting the importance of consumer segmentation based on consistent preference discrimination.

Similarly, other studies that have been referenced in this review have presented varying degrees of correlation between different variables and consumer preference, including country (Donadini et al., 2016; Gómez-Corona et al., 2016), age (Gates et al., 2007; Zemke et al., 2011), education level (McCann et al., 2003; Paschall & Lipton, 2005), and gender (Bartoshuk, Duffy,

& Miller, 1995; Ramful & Zhao, 2008; Nadeau & Coletto, 2013; Muggah & McSweeney, 2017), to name a few. Considering that, in these cases, the specific variable has been evaluated in isolation as the focus of each study, it is difficult to discern how other variables may have interacted with the evaluated variable, or even how it could have directly affected it. This further supports the case for evaluating how variables interact with each other, in order to create a model that oversees a wide variety of situations. However, one must prioritize the feasibility of such a study, so instead of measuring all variables indiscriminately, one can build on prior findings, in order to identify the most impactful variables (or those likeliest to affect outcomes), and analyse these in detail. It is also important to point out that time is another factor, as this might be a situation that changes as decades go by.

3. Alcoholic vs. Non-alcoholic beer

Most studies referenced in this review investigated the variables influencing alcoholic beer consumption or liking. However, there is scarce research on which variables influence non-alcoholic beer consumption or liking. In one study by Silva, Jager, Voss, van Zyl, Hogg, Pintado and de Graaf (2017), participants consumed alcoholic beer and non-alcoholic beer (NAB) in different settings, and in some of these, the beverages were mislabelled. When consumers drank NAB labelled as alcoholic beer, this significantly increased the liking and made participants feel more fulfilled, while drinking beer labelled as NAB did not affect liking, but did reduce the intensity of six positive emotions, including comfort, happiness, and loving. In another study, participants drank both beer and NAB, presenting no significant differences in brain activation at the moment of tasting (but did present differences after swallowing, in part due to the alcohol content), suggesting that beer flavour (rather than the presence of alcohol) is what mainly affects the consumption experience (Smeets & de Graaf, 2018), much like the conditioned response to coffee taste and aroma rather than caffeine (Flaten & Blumenthal, 1999).

However, even though taste activation might be similar between beer and NAB, consumers still seem to reject NAB as they see it as a lacking substitution of beer. For example, in another study, consumers' conceptualisations (i.e., functional and emotional associations with the product) regarding NAB, regular beer, and wine were evaluated. The study found that NAB had functional associations, as it was considered a substitute, but it lacked the emotional content present in the associations with beer and wine. Beer was found to produce positive high arousal emotional responses (adventurous, energetic), wine evoked positive low arousal emotional

responses (calm, loving), while NAB generated neutral and negative emotional responses (rational, conscious, disappointed) (Silva et al., 2016). These studies suggest that while blind tasting reveals that consumers might enjoy NAB as much as beer, product labelling is a determinant of consumer expectation, choice, and subsequent evaluation, including liking.

6. Conclusions

When studying the different factors affecting beer choice and consumption, it is evident that there are scarcely any clear-cut variables directly predicting choice, but rather choice is the product of various factors interacting with one another. The key variables identified in this review (Figure 2) have all appeared as predictors for certain beer choice behaviours, but most of these have been measured in isolation when they may have been at play with other factors. Both product-intrinsic and product-extrinsic attributes, on their own, usually do not cause an effect on beer wanting and choice behaviour, but rather they interact with consumer variables through psychological, socio-cultural and biological mechanisms. For this reason, a future study is proposed in which the relative contributions of the different factors that influence beer choice can be examined, in which data from the consumer, product, and context is studied. This type of study would allow for deeper understanding of the importance of each factor, as well as how these factors interact.

Context is also a key factor, as the decision process is completely different when comparing shopping and consumer settings, where in turn, different ambiences lead to different outcomes. Considering that some consumer and product variables were shown to interact differently according to location, effective consumer profiling and segmentation will likely vary by region or even country. When using the present review to create feasible guidelines for future studies, it should be borne in mind the relevance and predictive power of variables across locations. Therefore, it is also suggested for future studies to employ more context-specific methodologies, in which different ambiences or locations can be simulated, which will allow for findings that may translate well into real-life scenarios.

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