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Chocolate culture: Preferences, emotional implications and awareness of Italian consumers

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Running title: *Chocolate culture: emotional implications and preferences*

6 Abstract

7 This paper analyses the preferences and emotional connotations of Italian consumers
8 towards different chocolate types and assesses which label information consumers take into
9 consideration during the purchasing process. A survey was conducted to collect data from 390
10 respondents from two different Italian chocolate production regions (Sicily and Piedmont). The
11 results show that overall, consumers prefer dark, extra-dark and milk chocolate. However, a
12 significantly higher percentage of women and men from Piedmont prefer “Gianduia” (hazelnut-
13 based chocolate), when compared to Sicilians, whereas the type of chocolate formats preferred
14 by consumers differs by gender ($P < 0.05$). Different attitudes before or after chocolate
15 consumption are closely related to a certain type of product, in which gender and the
16 geographical aspect are key influencing factors. Women and men from Piedmont feel unpleasant
17 emotions towards chocolate before and after consumption, this was observed in the correlation
18 analysis where positive correlations between anger emotions before consuming chocolate with
19 guilty and sad emotions after consumption were noted in women and men, respectively ($P <$
20 0.05). In contrast, no significant correlations between feelings reported before and after
21 chocolate consumption of Sicilian men was observed. During decision making, more than 40%
22 of participants are aware of the cocoa quantity, nutritional information and fair-trade certification
23 on the chocolate label. Our findings provide an empirical basis to inform the chocolate industry
24 regarding consumer attitudes towards chocolate, to raise awareness of the social dimension in
25 food labelling and to provide a baseline for the choice of a marketing communication strategy
26 which plays upon emotional claims.

Keywords: dark chocolate, food choices, food labelling, emotions, feelings, consumer behaviour

1. Introduction

What people eat is enforced and formed based on their social and cultural environments (Cicia et al., 2012). Emotions and sensations are key drivers in food preferences, resulting in patterns of food choices within a cultural group (Codeluppi, 2003; Baptista et al., 2021). Several studies in psychology have defined the concepts of feeling (physical sensation) as "readings of the brain's recording of body conditions and changes" and emotions as "interpreted feelings" (Becker-Asano & Wachsmuth, 2009; Scherer, 2005). The differences between emotions and feelings correspond to the distinction between primary (or basic) and secondary emotions. Basic or primary emotions are universal, biologically based and shared by other primates (Ekman, 1999; Leyens et al., 2001). Both positive (fun, surprise, satisfaction) and negative (fear, anger, disgust, sadness and contempt) emotions are classified as basic emotions and are interpreted as a cause or effect (Al-Thubaity et al., 2018; Ekman, 1999; Naik et al., 2020; Wood et al., 2018). Secondary emotions, such as shame, anxiety, loneliness, boredom and tiredness originate from the combination of primary emotions and develop during human growth and social interaction (Kempen et al., 2017; Plutchik, 1994). Happiness, a pleasant emotional state, is characterised by feelings of joy, gratification, satisfaction and well-being. In contrast, the negative emotion of sadness is characterised by feelings of disappointment, despair and disinterest. Thus, a positive emotion results in a positive feeling, just as a negative emotion is linked to a consequent negative feeling (Gruber and Moskowitz, 2014; Cherry, 2020).

Chocolate confectionary is one of the snack food products that uses emotional marketing communication (Gabrielli & Baghi, 2016; Liao et al., 2015). This type of communication strategy focuses on the generation of pleasant experiences at the moment of purchase, and before and after consumption (Zarantonello & Luomala, 2011). The consumption of chocolate has the capacity to (positively or negatively) modify consumer mental states by impacting their emotions and cognitive and sensorial responses (Maleki et al., 2020). Emotional eating is defined as eating in response to negative emotions (Steinsbekk et al., 2018; Sultson et al., 2017) and is often associated with emotional foodstuffs (such as chocolate). Emotional food is perceived as an escape from the experience of unpleasant emotions (Hussain et al., 2020). In the case of chocolate, eating this emotional food often results in the generation of a combination of both positive, yet also negative emotions (shame and guilt, mostly linked to weight gain) induced by moral transgressions (Alberts et al., 2012; Chen et al., 2007). In terms of the purchasing behaviour of chocolate, consumers are driven by feelings, even impulses (desire and stress) characterised by emotions such as fear, sadness and anxiety (Braden et al., 2018; Willem et al., 2020).

Food choices often occur impulsively, involving rapid, automatic, unconscious processes, typically towards savoury and fatty foods. However, present-day consumers also make more meditative and informed decisions based on reasoning, and take into consideration prior knowledge and long-term personal objectives (Kakoschke et al., 2014; Schumacher et al., 2016). The consumption of chocolate generates a state of pleasure of the person recreating a psychological feedback mechanism resulting in a positive feeling, which can even create addiction (Lake, 2015). The characteristics of the individual, mood, previous purchasing, motivation and consumption experiences are factors that influence chocolate consumption and

the emotions that result from it. Socio-demographic and lifestyle determinants have been shown to influence the motivations for choosing emotional foods, such as chocolate, and dietary patterns in general (Krieger et al., 2019; Petrenya et al., 2019).

The chocolate market in Europe is in constant growth, mainly due to the increasing demand for dark chocolate. Overall, the most highly consumed chocolate category in Italy is dark chocolate (42%), followed by, hazelnut chocolate (23%), chocolate with additional ingredients (16%), milk chocolate (15%) and white chocolate (4%) (Statista, 2020). The increase of dark chocolate consumption in recent years, in Italy, as in Europe, is due to the interest of individuals in healthier, but also sustainable and high-quality chocolate alternatives (i.e. certified products) (de Andrade Silva et al., 2017; Del Prete & Samoggia, 2020; Maleki et al., 2020).

Italy has a deep-rooted tradition of chocolate production. For the Piedmont and Sicilian regions, the manufacture of this confectionary snack product still represents a cornerstone of the entire sector at a national level. The production of chocolate in Piedmont began in 1678, but at the beginning of the nineteenth century, the chocolatiers were forced to replace cocoa with hazelnuts, because of the imposition of customs duties for imported goods, such as cocoa, established by the Napoleonic regime. Gianduia (hazelnut-based chocolate) is a well-known product throughout the world and it was created in the Piedmont region (Atlante del cibo, 2017; Magli & Nobolo, 2016). Unlike the Piedmont chocolate tradition, in Sicily, the production of chocolate is differentiated above all in terms of the flavours of the product, but not in the format that is typically the bar or "brick". Modica chocolate is produced in Sicily, and takes its namesake from the municipality of Modica. This chocolate is characterised by the presence of

sugar crystals and a gritty texture resulting from the manner of its production (Lanza et al., 2011).

The continuous differentiation on the market of several types of chocolate varieties results in quality discrimination among chocolate consumers. From the consumer perspective, Italian consumers are purchasing more chocolate made from cocoa beans, often sold at high prices, coming from a single-origin and granted with a Fairtrade and/or organic certification (MarketWatch, 2020; Pay, 2009). According to data from the Centre for the Promotion of Imports from developing countries, consumers purchase chocolate using as the main ingredient cultivated cocoa from the Dominican Republic and Ecuador (CBI, 2020). In addition to the preference towards dark chocolate from specific cocoa-producing countries around the world, consumers are also demanding chocolate with added flavonoids, gluten-free, vegan, products with lower sugar content and dark chocolate with added ingredients (AGR, 2020).

Consumer decision-making processes regarding food choices are deeply influenced by the information provided on the label. In regards to chocolate labelling, European legislation requires the chocolate industry to provide basic information, such as, the percentage of cocoa used to produce chocolate (no lower than 43%), manufacturer information (name and location of the producer or packager or seller of the product), list of ingredients, expiry date and weight of the product (Directive 2000/36/EC, introduced into Italian law by Legislative Decree 178/2003). Other information often included on the packaging is voluntary and can be indicated when the contents of the main ingredients are increased compared to the mandatory recipe.

The present study aimed to investigate and compare the preferences, awareness and perception of the Italian consumer towards different types of chocolate, focusing on the

emotional connotations associated with chocolate choice and consumption, in addition to characterising these aspects in relation to geographical-demographic aspects. A consumer survey was performed in two Italian regions, Piedmont (North Italy) and Sicily (South Italy). These two regions are geographically located at the extremes of the country, characterised by different populations in terms of socio-demographic and lifestyle characteristics (ISTAT, 2020). However, both populations possess a deep-rooted and ancient tradition of chocolate making but are characterised by completely different productions (Giandua and Modica), which can provide us with interesting data reflecting general consumer preferences (Atlante del cibo, 2017; Lanza et al., 2011; Rebonato, 2020). Consumer motivations towards chocolate consumption are constantly evolving, thus it is imperative to evaluate consumer preferences and attitudes towards different types of chocolate to explore emotional marketing strategies, in order to reach consumers on a personal level, so they perceive that they are seen, heard and understood.

For a better understanding of the logical framework of the research, the paper was structured as follows: after an exploratory introduction (section 1), the data collection phase, the employed questionnaire and the statistical analysis are described in section 2 (Methods). The results concerning the participants socio-economics features, chocolate preferences, attitudes towards chocolate, correlation between emotions (before and after consumption) and consumer awareness towards chocolate labelling are described in section 3 (Results). These latter are discussed in section 4 which is followed by the last section of the manuscript (Conclusions, section 5).

2. Methods

2.1 Participants

In order to explore chocolate choice preferences, emotions before and during consumption and consumers' attention to information on the label, a choice experiment was carried out between October and December 2019. Specifically, individuals resident in the two Italian regions (Piedmont and Sicily) were involved and were directly interviewed face-to-face using a self-completed paper questionnaire. The filling in of the questionnaire took 3-4 minutes. Respondents were informed verbally about the study procedure. Interviews were carried out during the survey period from Monday to Sunday, in two time slots (from 8 a.m. to 12 p.m. and from 3 p.m. to 8 p.m.) by randomly intercepting respondents outside several shops of the main Italian large-scale retail chains (Aprile et al., 2016; Massaglia et al., 2019; Merlino et al., 2018). The English version of the questionnaire is available in Supplementary Table 1. All interviewers were graduate students from the research group, who received training on how to conduct research surveys. Our criteria comprised adolescents and adults. The number of female and male interview from the two different location was balanced (Table 1). The study was conducted in accordance with the ethical standards laid out in the Declaration of Helsinki. The participation of all interviewed was voluntary and informed given consent was provided by all participants.

2.2 Questionnaires

The questionnaire included the socioeconomic features of respondents, chocolate consumption and preferences, attitudes towards chocolate and chocolate labelling.

2.2.1 Socioeconomics

Socioeconomic features included participant characteristics such as gender, age, academic qualifications, occupation, family size and monthly household revenue.

2.2.2 *Chocolate consumption and preferences*

Regarding chocolate consumption and preferences, double check-all-that-apply (CATA) questions were asked (Ares and Jaeger, 2015). The frequency of consumption was investigated with the question “How often do you consume chocolate?” providing the following possible answers: daily, several times a week, less than once a week, occasionally (e.g., during holidays). The types of chocolate preferred by the interviewees were explored by asking the multiple-choice question “Which chocolate do you prefer?” providing the following possible answers: extra-dark, dark, white, milk, aromatic, gianduia, and chocolate with added ingredients (cereals, dehydrated or dried fruits, and nuts) as described in Table 2.

In this questionnaire section the question “What kind of chocolate formats do you usually consume?” was also provided to investigate the individual’s preferences towards chocolate formats. The respondents could choose among the following answers: ‘bar’, ‘assorted (pralines)’, ‘spreadable’, ‘culinary preparations (hot chocolate, puddings)’, ‘bakery confectionery (cakes, snacks, biscuits)’, ‘fresh pastries’ and ‘ice cream’.

2.2.3 *Consumer attitudes*

The participants were asked to reply to two check-all-that-apply (CATA) questions in this section. A combination of primary-secondary emotions and/or feelings were proposed to the interviewee in an range of choice: ‘hungry’, ‘craving’, ‘happy’, ‘angry’, ‘bored’, ‘anxious’, ‘tired’, ‘sad’, ‘lonely’ or ‘other’ to indicate the emotional states generated when consuming chocolate (question: “do you consume chocolate when you feel”). Then, participants could indicate the emotions/sensations and/or effects observed after consuming chocolate choosing among: ‘full’, ‘eating more’, ‘energetic’, ‘satisfied’, ‘happy’, ‘angry’, ‘disgusted’, ‘guilty’,

‘anxious’, ‘tired’, ‘sad’ or ‘lonely’ (question: “how do you feel after eating chocolate?”). Participants could select more than one descriptor. The choice of these-descriptor emotions is based on recent literature research which suggests that both physical sensations and emotions have an effect on chocolate consumption (Kandiah et al., 2006; Lagast et al., 2018; Macht & Dettmer, 2006; Steinsbekk et al., 2018; Wansink et al., 2003; Willem et al., 2020).

2.2.4 Chocolate labelling

Regarding the CATA question “How often do you read the chocolate information on the label?”, participants could answer ‘never’, ‘rarely’, ‘sometimes’, ‘often’, and ‘always’. Whereas, the question: “Which chocolate information do you read on the label?”, participants could answer ‘nutritional facts- amount of sugar and/or fat, caloric intake, vitamin and mineral content, etc’, ‘cocoa quantity’, ‘cocoa origin’, ‘environmental certifications’, ‘ethical disclosure’, ‘vegan statement’, ‘organic certification’, ‘fair trade certification’, ‘precautionary allergen statement, gluten-free, lactose-free, etc’, ‘functional claims -supplements, probiotics, etc’. Participants could select more than one descriptor.

2.3 Statistical analysis

Statistical analyses were carried out using generalised linear mixed-effect models (*glmm*). Mixed models were chosen due to their ability to capture both fixed (gender: women and men; and region: Piedmont and Sicily) and random effects (number of subjects, $n=390$). The P -values were adjusted using Bonferroni's method and when the mixed model revealed significant differences ($P < 0.05$), the least significant difference test was applied. Mixed models were built and evaluated according to Crawley (2007) using R version 3.3.2. Correspondence Analysis (CA) was performed from the relative prevalence table, obtained from the preference of

consumers towards different types of chocolate and formats and the attitudes reported before and after chocolate consumption, to visualise similarities and differences among the consumers using the *CA* function (*FactoMineR* package) and plotted through the *Factoextra* package of R version 3.3.2. The Spearman's rank correlation coefficient was obtained as a measure of the association between the attitudes before and after chocolate consumption using the *psych* function and plotted through the *corrplot* package of R.

3. Results

3.1 Participant socioeconomics

In total, 421 participants completed the survey, but only 390 met our selection criteria. Overall, the surveys completed by 284 women (Piedmont = 141 and Sicily = 143) and 109 men (Piedmont = 54 and Sicily = 55) aged between 19 to 63 years, from two different regions in Italy were considered for this study (Table 1). The gender imbalance, in both regions, is probably due to the fact that the interviews were conducted at food shops where, typically in Italy, it is mainly women who represent the household purchasing manager (Bernardi, 2016; Aprile et al., 2016; Massaglia et al., 2019; Merlino et al., 2018). More than 50% of respondents hold a bachelor's degree or high school education. More than 30% of respondents have 4 family members and receive a monthly salary between 2,000 and 4,000€ and between 1,000 and 2,000€ in Piedmont and Sicily, respectively (Table 1).

3.2 Chocolate preferences

The most highly preferred chocolates among responders were dark, extra-dark and milk in both Italian regions (Table 3). However, a significantly higher percentage of women from

Piedmont preferred gianduia and aromatic chocolate and ice cream as a type of chocolate format when compared with women from Sicily. In contrast, a significantly higher percentage of men from Piedmont preferred gianduia and spreadable and culinary preparations as a type of chocolate format when compared with men from Sicily ($P < 0.05$). In addition, a significantly higher percentage of men from Sicily preferred fresh pastries as a type of chocolate format when compared with women from Sicily, whereas a significantly higher percentage of Sicilian women preferred culinary preparations as a type of format, when compared to Sicilian men ($P < 0.05$, Table 3).

Figure 1 shows a representation of the type of chocolate and format preferred by Italian consumers. The CA of the chocolate preference explained 90.9% of the total variance and illustrated that the type of chocolate and the format were closely related to gender and location as key influencing factors. In synthesis, three clusters were identified in this data set, in which the chocolate preferences of male Sicilian consumers differed from Sicilian women and both men and women together of the Piedmont region. Chocolate with added ingredients (nuts and cereals) was found to have a high correspondence with culinary preparations, spreadable and assorted types of chocolate formats preferred by Sicilian women. The preference of (both male and female)-consumers from the Piedmont region was closely related to gianduia, aromatic chocolate and chocolate with added ingredients (dried fruit) and ice cream as a preferable chocolate format. Extra-dark, white and dark chocolate were found to have a high correspondence with bakery and bar types of chocolate formats, while milk chocolate was found to have a high correspondence with fresh pastry as a preferred chocolate format indicated by Sicilian men (Figure 1).

3.3 Attitudes towards chocolate

The attitudes recorded before and after chocolate consumption were assessed to explain the basis of chocolate choices and emotional influences (Figure 2). Overall, both CA showed that different attitudes were closely related to a certain type of chocolate, whereby gender and location were considered key influencing factors. Concerning the attitudes reported before consumption (Figure 2A), the CA explained 94.1% of the total variance and showed a distinction between the attitudes reported before consuming chocolate from the two different Italian regions (Piedmont and Sicily) and gender distinction only in Sicily. Chocolate with added ingredients (nuts, cereal or dried fruit), gianduia and aromatic chocolates were closely related to unpleasant emotions, such as sadness, loneliness, anxiety, tiredness and boredom reported by Piedmont consumers and Sicilian women. In contrast, the attitudes towards white, dark, extra dark and milk chocolate before consumption were closely related to basic emotions (happiness and anger) and sensations connected to the feeling of emptiness (hungry and craving) of Sicilian men.

Regarding the attitudes reported after consumption (Figure 2B), the CA explained 94.4% of the total variance and showed a distinction between attitudes after consuming chocolate of the two different Italian regions (Piedmont and Sicily) and gender distinction only in the Piedmont region. Gianduia, aromatic chocolate and chocolate with added ingredients (dried fruit) were closely related to fullness sensations reported by Piedmont men, while the attitude of women from the same region after the consumption of chocolate with added ingredients (nuts or cereals) was closely related to guilt emotions. The attitudes after consuming dark chocolate were closely related to happiness and satisfaction emotions of Sicilian consumers. Energetic sensations after the consumption of milk chocolate, and the sensation of eating more extra-dark and white chocolate were also closely related to Sicilian consumers.

3.4 Correlations between attitudes reported before and after chocolate consumption

Significant correlations between the attitudes reported before and after chocolate consumption of Piedmont and Sicilian women and Piedmont and Sicilian men were observed ($P < 0.05$, Figure 3). Within each correlation plot of the different attitudes reported by the 4 types of consumers, we observed more significantly positive correlations from Piedmont consumers than Sicilians (Supplementary Table 2). A similar emotional pattern towards chocolate consumption was observed by Italian women regardless of their origin, where craving sensations were positively correlated with feelings of eating more and satisfaction; anger and guilt; tiredness and energetic feelings before and after chocolate consumption. Interestingly, eleven significantly positive correlations were observed in the male Piedmont data set, where only the positive correlation between emotions of boredom and the sensation of eating more, before and after chocolate consumption, also corresponded to women originating from Piedmont (Figure 3, $P < 0.05$). No significant associations between attitudes reported before and after chocolate consumption were found in the data of Sicilian men (data not shown).

3.5 Awareness towards chocolate labelling information

Italian awareness towards chocolate labelling information is reported in Table 4. Overall, most of the participants never read the label. In contrast, the minority of participants that read the label pay attention to the cocoa quantity, nutritional facts and fair-trade certification. Of note, a lower percentage of Sicilian consumers look for environmental certification and ethical disclosure compared to the Piedmont consumers.

4. Discussion

This study compared the preferences and attitudes of chocolate consumers from two different regions of Italy: Piedmont and Sicily. The comparison included the following aspects: chocolate preferences in terms of types and formats available on the market; linking emotional attitudes before and after chocolate consumption and a correlations analysis between the attitudes reported before and after chocolate consumption. The socio-demographic characteristics of the two samples are in accordance with some authors (Bernardi 2016; Aprile et al., 2016; Massaglia et al., 2019; Merlino et al., 2018) in terms of gender composition, while represent the real profiles of randomly chosen purchasers in the selected geographical areas.

In Europe, the chocolates most highly preferred by consumers are dark and extra dark (CBI, 2020). In Italy, the increasing demand for these chocolates has been reported, especially in Sicily (Corriere Etneo, 2018). This trend might be associated with the male preference towards chocolate with a strong and bitter taste, in comparison to female preferences (Harwood et al., 2012). Overall, individuals that tolerate the more bitter tastes exalted by low-fat chocolate, prefer dark and extra-dark chocolate (Metcalf & Vickers, 2002; Harwood et al., 2013). Women have shown significantly higher levels of sensitivity to bitterness than males and are therefore less tolerant, while no difference has been reported in the levels of perception of sweetness between genders (Yoshinaka et al., 2016).

The emotional complexity surrounding food, evocating negative or positive emotions that emerge among individuals is well discriminated between the genders. The distinction between gender preferences towards sweet and caloric products, such as snacks like chocolate and their attitudes has been studied elsewhere (Grogan et al., 1997; Klatzkin et al., 2018; Lombardo et al., 2019). Chocolate is considered one of the main and most preferable comfort foods (foods whose

consumption provides consolation or a feeling of well-being) for women as reported elsewhere (Spence, 2017). Women tend to "eat light", but at the same time have a greater preference towards not only comfort foods but also eating for pleasure or even in response to a negative emotional condition, in comparison to men (Wansink et al., 2003; Spence, 2017). This attitude was also observed in the present study where women prefer to satisfy their palate (positive correlation between cravings and the feeling of eating more). In contrast to this observation, recent literature suggests that men are pleasure seekers *per excellence* when choosing foods such as meat, flour-based foods and others (Lombardo et al., 2019; Spence, 2017). Further research is needed to investigate the consumption of chocolate driven by male attitudes and to monitor the cause–effect of emotions before, during and after chocolate consumption.

According to Nasser *et al.* (2011), males frequently consume chocolate and women only occasionally. However, the tendency to eat calorie-rich foods in an uncontrolled way is a typical female attitude (Lombardo et al., 2019). In the present study, women seem more likely to eat chocolate occasionally, this might be associated with skipping meals during the day causing the impulse to crave foods, such as chocolate. Chocolate cravings are triggered by its physical, chemical and rheological properties, such as fat, sugar, texture and aroma, which can even lead to addictive behaviours, especially in sensitive people (Bruinsma & Taren, 1999; Gearhardt et al., 2014; Rozin et al., 1991; Yanovski, 2003; Franco et al., 2013; Smit et al., 2004). However, chocolate cravings by women are often episodic and fluctuate with hormonal changes (just before and during menstruation) and mood swings, which lead to compulsive behaviours and trigger more chocolate cravings (Bruinsma & Taren, 1999).

Chocolate is one of the main confectionery snack foods consumed in response to a negative mood (Bongers & Jansen, 2017; Bruinsma & Taren, 1999; Hill et al., 1991). This

assertion is also observed in the present study, participants associated feeling tired, bored, anxious and lonely before consuming gianduia and chocolate with added ingredients in the form of ice cream. The feeling of belonging and familiarity after consumption of gianduia chocolate might be associated with a personal reward in a negative emotional moment. In this regard, recent literature highlights the importance of local culinary traditions for Piedmont consumers during the process of food choice decisions (Massaglia et al., 2018; Merlino et al., 2018; Merlino et al., 2020). In general, the consumption of chocolate generates a positive memory after feeling lonely or tired (Macht & Dettmer, 2006). However, negative emotions can also be caused after consumption of a caloric product, such as chocolate. Women indicated feeling a sense of guilt after chocolate consumption (Exline et al., 2012; Grogan et al., 1997; Macdiarmid & Hetherington, 1995). Food choices can be locked in vicious cycles that affect the food consumption patterns of females already at an early age, this behaviour seems to contribute to the increased risk of developing exaggerated concerns about body shape and weight (Cartwright et al., 2007). In contrast, gratifying sensations of fullness prevail after chocolate consumption in males (Drewnowski et al., 2012; Wansink et al., 2003).

The sensation of feeling hungry and tired before eating and then feeling happy, energised and full is typically associated with the consumption of energetic food products to fulfil a physical need (Drewnowski et al., 2012; Finlayson et al., 2007). This assertion is also highlighted in our correlation analysis where Piedmont consumers reported similar attitudes towards the consumption of chocolate (positive correlation: feeling tired before chocolate consumption and feeling happy or energetic after chocolate consumption). One also notes that often, the consumption of caloric foods, rich in fats and sugars, is not followed by a negative emotional state when intake is due to hunger, while it generates negative emotions when

consumed to meet different emotional states (Finlayson et al., 2007). This assertion was also observed in the data obtained from males originating from Piedmont, in which negative emotions were reported before and after chocolate consumption (positive correlation between anxiety and sadness; anger and guilty feelings, and sadness and guilty feelings).

The geographical area and cultural context are well-known factors that influence emotional eating. According to Dubé *et al.* (2005), the consumption of chocolate by French citizens is driven by positive emotions, while negative emotions before chocolate consumption are perceived by women with an English cultural background. The findings of the present study highlight how the geographical area, and therefore the cultural background, affect chocolate preferences and the emotions that revolve around its consumption. Sicilian women reported positive emotions after chocolate consumption (fullness, feeling energetic and satisfied), whereas Piedmont women associated chocolate consumption with negative and addictive emotions (eating more and guilty feelings).

Negative effects of chocolate consumption have been mainly associated with people with disordered eating habits, weight problems, or significant social pressure (Exline et al., 2012; Grogan et al., 1997; Macdiarmid & Hetherington, 1995). Macht and Dettmer (2006) evidenced that chocolate induces both positive and negative emotions in healthy and normal-weight women. While the perception of women towards chocolate consumption is widely studied in terms of emotions perceived, to the best of the authors' knowledge, this is not the case for men. Thus, further research is needed to investigate the emotional connotation of chocolate consumption from a male standpoint, to understand their motivations towards eating chocolate, especially those with a high sugar and cocoa content. This information could help the industry

and academics to understand the nature of the emotional ambivalence caused by chocolate consumption, by both women and men.

4. Conclusions

The present research showed how cultural context and gender determine different emotional perceptions when different types of chocolate are consumed. The results suggest that chocolate preferences are linked to the characteristics of the product, however they also highlight the emotions that can determine the consumption of the product. This research provides a description of the emotional processes of chocolate consumption behaviour and chocolate preferences, which can be used for producers to orient marketing communication strategies based on emotional claims, in order to effectively connect with consumers, responding to concerns and implementing a more personal and non-transactional relationship. Even so, this research highlights some limitations attributable to the composition of the sample, unbalanced in some respects, and its size that could be expanded in future work.

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TABLE LEGENDS

Table 1. Socio-demographic characteristics of participants

Table 2. Chocolate categories provided to the interviewee to investigate the preferences of individuals

Table 3. The prevalence of chocolate preference of Italian consumers

Table 4. Consumer awareness of chocolate labelling expressed as a percentage

FIGURE LEGENDS

Figure 1. Correspondence analysis (CA) of the chocolate preferences of Italian consumers. Dimensional space showing the similarities and dissimilarities of the different types and kinds of chocolate preferred by Italian consumers is shown. Consumer groups based on gender and location are represented in red numbers: 1 represents women from Piedmont (WP); 2 women from Sicily (WS); 3 men from Piedmont (MP) and 4 men from Sicily (MS).

Figure 2. Correspondence analysis (CA) of the chocolate preferences and attitudes towards chocolate from Italian consumers. Panel **A**) Attitudes before consumption of chocolate and **B**) Attitudes after consumption of chocolate. Dimensional space showing the similarities and dissimilarities of the attitudes towards chocolate consumption. Consumer groups based on gender and location are represented in red numbers: 1 represents women from Piedmont (WP); 2 women from Sicily (WS); 3 men from Piedmont (MP) and 4 men from Sicily (MS).

Figure 3. Correlation plot showing Spearman's correlation between attitudes before and after chocolate consumption. Samples are labelled according to the type of consumer **A**) Women from Piedmont, **B**) Women from Sicily and **C**) Men from Piedmont. Significant correlations between chocolate attitudes are only shown ($P < 0.05$). The intensity of the colours represents the degree of correlation between attitudes reported before and after chocolate consumption, as measured by Spearman's correlation, where the colour blue represents a positive degree of correlation and red a negative correlation between attitudes.

669 **Table 1**

	Piedmont		Sicily	
	Women	Men	Women	Men
Participants	n=141	n=54	n=143	n= 55
Socioeconomics				
<i>Age (average)</i>	36.69 y	31.65 y	37.33 y	33.95 y
<i>Education</i>				
· Lower secondary school	43.97%	50.00%	49.65%	38.18%
· Bachelor or master's degree	45.39%	40.74%	31.47%	45.15%
· Upper secondary School	7.80%	7.41%	17.48%	14.55%
· Master/PhD	2.84%	1.85%	1.40%	1.82%
<i>Status</i>				
· Single	8.51%	9.26%	4.90%	7.27%
· 2 family members	18.44%	14.81%	9.09%	7.27%
· 3 family members	21.99%	31.48%	25.87%	14.55%
· 4 family members	40.43%	29.63%	45.45%	52.73%
· More than 5 family members	10.64%	14.81%	14.69%	18.18%
<i>Household monthly income</i>				
· Less than 1,000 €	2.9%	5.1%	12.2%	12.2%
· Between 1,000 and 2,000 €	26.4%	22.0%	30.4%	28.6%
· Between 2,000 and 4,000 €	34.5%	39.0%	16.2%	18.4%
· Between 4,000 and 6,000 €	5.2%	11.9%	6.8%	4.1%
· More than 6,000 €	7.5%	6.8%	9.5%	8.2%
· Prefer not to answer	23.6%	15.3%	25.0%	28.6%
Chocolate consumption				
· Every day	15.63%	18.37%	10.32%	8.51%
· Once a week	15.63%	10.20%	15.08%	19.15%
· Two-three times per week	3.98%	12.25%	8.73%	12.77%
· More than four times per week	40.63%	46.94%	34.92%	36.17%
· Occasionally	18.75%	12.25%	30.95%	23.41%

Source: Authors' survey, 2019

672 **Table 2**

Type of chocolate	Description
Milk chocolate	It is obtained by adding at least 14% of powdered milk, no more than 55% of sucrose and no less than 25% of cocoa.
White chocolate	It is obtained by mixing 20% of cocoa butter, 14% of milk or derivatives, and no more than 55% of sucrose.
Extra-dark chocolate	The percentage of cocoa can exceed 45% of total weight.
Gianduia chocolate	It contains about 32% of cocoa, 20-40 g of ground hazelnuts for every 100 g of product.
Dark chocolate	It contains cocoa paste, cocoa butter and sugar. The percentage of cocoa must be at least 43% and 28% of cocoa butter.
Aromatic	Chocolate with various flavourings, such as mint, vanilla, alcohol, etc.
Chocolate with added ingredients	Chocolate with dehydrated or dried fruits such as, oranges, strawberries, red fruits, etc. Chocolate with various cereals such as, puffed rice, oatmeal, etc. Chocolate with nuts such as hazelnuts, nuts, pistachio, etc

673 **Source:** Timms and Berger (2003); Baresani (2011)

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676

677 **Table 3**

	Piedmont		Sicily	
	Women	Men	Women	Men
Participants	n=141	n=54	n=143	n= 55
Chocolate preference				
Milk chocolate	12.75	15.23	20.43	21.00
White chocolate	5.51	7.95	5.73	7.00
Extra-dark chocolate	15.36	17.22	15.77	23.00
Chocolate with nuts	17.97	9.93	18.28	19.00
Gianduia	16.13 _A	15.89 _A	15.94 _B	11.00 _B
Dark chocolate	14.20	16.56	8.24	9.00
Aromatic chocolate	2.90 _A	3.97	0.72 _B	1.00
Chocolate with dried fruit	4.93	4.64	3.58	2.00
Chocolate with cereals	10.43	7.95	10.39	7.00
Chocolate formats				
Bar	34.56	32.81	37.20	41.00
Assorted	17.43	17.19	15.70	13.00
Spreadable	16.21	17.97 _A	18.77	13.00 _B
Culinary preparations	6.12 _B	7.03 _A	7.85 _{aA}	2.00 _{bB}
Bakery confectionery	9.48	10.16	9.90	11.00
Fresh pastries	6.73	5.47	5.12 _b	12.00 _a
Ice cream	9.48 _A	9.38	5.46 _B	8.00

678 Values are expressed as percentages from frequency tables obtained from the survey. Different letters indicate statistical differences related to the
679 genders from the same region (lower letter) and differences between regions within the gender (capital letter), using the least significant
680 difference test ($P < 0.05$). P -values were adjusted using Bonferroni's method.

681 **Table 4**

	Women		Men	
	Sicily	Piedmont	Sicily	Piedmont
Frequency				
Never	31.06	20.41	27.69	28.00
Sometimes	17.42	24.49	18.46	22.00
Rarely	24.24	18.37	26.15	32.00
Always	6.81	14.29	15.39	8.00
Often	20.35	22.45	12.31	10.00
Items*				
Cocoa quantity	43.36	41.84	49.09	51.85
Fair-trade certification	25.17	27.66	23.64	31.48
Environmental certification	5.59	11.35	9.09	14.81
Ethical disclosure	5.59	9.93	7.27	11.11
Nutritional facts	49.65	42.55	52.73	50.00
Precautionary allergens claim	11.19	6.38	10.91	11.11
Organic certification	4.20	3.55	5.45	3.70
Functional claim	2.10	1.42	3.64	5.56
Vegan statement	0.00	2.84	0.00	0.00

682 **Source:** Authors' survey, 2019. * Multiple choice responses were allowed

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684 **Figure 1**

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686 **Figure 2**

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689 **Figure 3**

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Highlights

- The most highly preferred chocolates in Italy are dark and extra dark
- Chocolate induces different pre- and post-consumption emotional states
- Emotional connotations emerged depending on individual's gender and origin
- Geographical affiliation and gender influence chocolate choices
- The emotional *connotation of male' chocolate consumption merits further assessment*

Chocolate culture: Preferences, emotional implications and awareness of Italian consumers

Implications for gastronomy

The chocolate market in Europe is constantly growing, and the offer is characterized by a widely differentiation of products on the market. Socio-demographic and lifestyle factors have been shown to influence the motivations for choosing emotional foods, such as chocolate desserts, and the composition of individuals' dietary plans. This paper analyzes the preferences and emotional connotations of Italian consumers towards different chocolate types and assesses which information on the label the consumers consider in the purchasing process. The results were based on a choice experiment comparing two geographical areas and woman and men in the chocolate consumption preferences, behavior and emotional experiences. Our results showed how the individuals' characteristics, in particular the gender, previous purchasing, motivation and consumption experiences are factors that influence chocolate consumption. In addition, the emotions that encourage and result from chocolate consumption depend of consumers' gender and the geographical area. In general, also the attention towards label claims depends by individuals' features that, however, were shared by a higher attention to the cocoa quantity and nutritional information followed by the fair-trade certification in the chocolate label. Our findings provide an empirical basis to inform the chocolate industry about the consumer attitudes towards chocolate, raise awareness of the social dimension in food labeling and provide a baseline for choosing a marketing communication strategy considering emotional claims. In addition, this research addresses the question of how the chocolate distribution (Ho.re.ca, large retail chains and producers) can create a sensory and emotional experience considering the individuals characteristics.