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Junk Food Packaging on Healthy Food

A matter of Children's Perceptions

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Abstract

While there is extensive research regarding the impact of television on food choices, much less is focused on an instrument able to change beliefs at the point-of-purchase: **packaging**.

This study aims to understand how food packaging can influence children's attitudes and purchase decisions towards healthier choices. Therefore, the appealing components of *junk food* packaging will be transferred to healthy food in order to understand its effect on children: *Package Evaluation, Attention to Packaging, Attitude toward the Product, Perceived Healthiness, and Purchase Intention*. To measure these variables, structured questionnaires were conducted to a sample composed by 408 Portuguese children aged between 10 and 14 years old from 5th to 9th grades.

This study suggests that packaging can be a way to increase the appeal of healthy food to children and, consequently, improve their food choices, taking into consideration their values and preferences.

Key words – child obesity, packaging, children, healthy food

Introduction

Children are a major market for the food industry. In fact, this is the product category on which they spend most of their own money (McNeal, 1992). Being aware of that, marketers are increasingly targeting children directly (instead of their parents) through messages, logos, characters, etc. that emphasize a cool, fun image (Wechsler, 1997). Given children's increasing purchasing power throughout age (*Appendix A*), they have an escalating control over what and when they eat, especially from middle school onwards (Farrell and Shields, 2007). Such independence frequently leads to erratic eating behaviors which ultimately result in a major concern affecting many developed countries: *child obesity* (WHO, 2009). There are many reasons for being concerned with this matter that may lead to worrying consequences. An obese child has higher risk of being overweight or obese at 35 years old, with this risk increasing with age (Guo *et al.*, 2002). Additionally, there is a relation of childhood overweight to adverse risk health factors such as chronic diseases (e.g. diabetes), hypertension, and others (Freedman *et al.*, 1999).

Despite efforts made by national and international entities, rates of overweight and obesity are still rising (WHO, 2009) as the diet of a typical adolescent has low levels of important nutrients such as calcium and is high in saturated fat, sugar and salt (Gregory and Lowe, 2000). The disappointing ineffectiveness of many interventions to improve children's dietary habits can partially be explained by the fact that they do not like to feel that they are being told to do something ("eat fruit") and they will probably have the opposite behavior (McKinley *et al.*, 2005). Additionally, as stated in an International Obesity Task Force (IOTF) report, there are several problematic social trends that

contribute to child obesity and one of them is related to an overwhelming energy-dense foods intake (IOFT, 2004).

In the specific case of Portugal, literature reveals that there were strong increases in Body Mass Index (BMI) among Portuguese children between 1970 and 2002, especially when changes in weight exceeded changes in height (Padez *et al.*, 2004). Recent studies also state that 20% of Portuguese children are obese or overweight (Fundação Portuguesa de Cardiologia (FCP), 2009).

These alarming results highlight the need to improve children's eating behaviors through innovative solutions that take into consideration their values, preferences and, most importantly, factors that affect their food choice decisions (Sepherd *et al.*, 1996). As McNeal suggests, most packaging (including healthy food), tends to be clustered towards adult-only. On the other hand, potato chip bags represent a good example of how packaging can communicate from the shelf to young consumers through colors, words and symbols (McNeal, 1992) and such strategy can be used to promote healthy food as well. Despite studies have demonstrated the importance of packaging in influencing purchase decisions, especially in the case of children's products (Young, 2004), few entities take advantage of such approach to promote healthy food.

Population

This study focuses on children with ages from 10 to 14 years old, corresponding to 5th to 9th grades. The choice of the age group was done considering the fact that, at this stage, children become increasingly independent and most of their food intake is made outside home (Truswell and Darnton-Hill, 1981). Moreover, adolescence is a time of changes and can be a great opportunity to explore ways to influence food choices towards

healthier options. Furthermore, it has been suggested that the dietary habits that emerge during childhood and adolescence remain, at least in part, as a person progresses into adulthood (Birch, 1987; Prattala, 1989), which highlights the importance of intervention while these habits are being formed.

Finally, the influence of peer pressure in a social experience, such as eating, starts to become increasingly important at this age. In fact, considering that children participating in this study are at the **Formal Operational Stage** (Appendix B), their product decisions are clearly influenced by peers as they have already developed certain social sensitivities and cognitive skills (Piaget and Inhelder, 1972). Children from 9, 10 years old onwards become knowledgeable about other people perspectives and realize that they may differ from their own. Moreover, they understand that people draw inferences about others based on purchase decisions and possessions (Bachmann *et al.*, 1993), on which food and eating behaviors are included.

Literature Review

Food Choice – the appeal of Junk Food

What children choose to buy is a consequence of many influential factors that change as they become more autonomous throughout age. Such expression of independency can result in changing of eating habits.

Several studies (Nestle *et al.*, 1998; John, 1999) try to explain what factors affect children's food choice and most of them include characteristics of the individual (e.g. gender, age, and mood) and environmental factors (e.g. availability, and culture).

In fact, some of these elements are at the base of the appeal of *junk food*¹ to children:

¹ Any various prepackaged snack food high in calories but low in nutritional value (<http://medical-dictionary.thefreedictionary.com/junk+food>)

Taste: Noble *et al.* (2000) found an inverse relationship between children's rank orders of food "healthiness" and their perceived taste.

Advertisement: The most recent study reveals that in 2009 Portuguese children aged from 4 to 14 years old watched television, on a daily basis, for about 3 hours (Lopes, 2009). However, during this time, most TV advertisements are promoting high energy-dense products, such as chocolates and fast-food (Marktest, 2005). Moreover, many studies suggest that children's snack and breakfast food preferences are related to their TV advertisement exposure of this kind of food (Goldberg, 1990; Goldberg *et al.*, 1978). Unfortunately, advertisements that promote fruit and vegetables intake are rare or inexistent (Deco/ PRO TESTE, 2005).

Availability: Children not only find *junk food* in supermarkets, where they are deeply involved in family purchase decisions (Neuborne, 1999; Ward and Wackman, 1972) and influence up to 80% of food budget (Hunter 2002; Roy 2004), they also have these high energy-dense products available at school. An American study conducted by Gallup Youth Survey to children aged from 13 to 17 years old reported that three in four teens were able to purchase soda or candy at school and nine in ten teens could purchase chips or other similar snacks. Among other findings (Appendix C), this study also confirmed that this availability of *junk food* increases with age (McMurray, 2004).

Fun Product: Fun Food denotes a food category as belonging to children and often communicates as being so through packaging (Elliot, 2008). Moreover, "How a preadolescent sees the world is determined by a whole host of factors, many of them social: "what's fun to do", "what's "in" and "cool" and what "looks good" to his peers" (Acuff and Reiher, 1997: 96). In this sense emerges the concept of *eatertainment*

(Gottdiener, 1997) which highlights the amusement part of food that is clearly children-oriented and takes advantage of shapes, colours, packaging and textures.

Peers: As a socialization activity, on which friends play an important role, especially, regarding publicly consumed items (Bachmann, 1993), eating behaviours become extremely influenced by others' opinions and some consider the consumption of *junk food* an expression of the teenage subculture (Prattala, 1989). In contrast, healthy eating and foods are generally connected to family and less with friends and other social situations (Croll *et al.*, 2001).

The Role of Packaging

Two thirds of all stimuli reach the brain through the visual system
(Zaltman, 1997)

Here lies the importance of packaging. Time has passed since packaging was used as a storage instrument only (Klimchuk, and Krasovec, 2006). Nowadays, the basic functions of packaging are defined by their role in either *logistics* or *marketing*. The first one is related to protection of the product throughout distribution channels. The latter refers to the use of attractive messages or images to draw consumers' attention (Prendergast and Pitt, 1996). Moreover, this often undervalued marketing tool is able to communicate product benefits, change consumer beliefs, and encourage the purchase (Underwood *et al.*, 2002, and Schoormans *et al.*, 1996).

Likewise, packaging can be a differentiating factor among all TV advertised products in the place where most of the consumers' decisions are made: the point-of-purchase (Connolly, and Davidson, 1996). In fact, the tangible value of packaging can be an advantage over ephemeral messages transmitted by the media (Natalia *et al.*, 2007).

As an attribute that is product-related but not the product itself, packaging is considered

an extrinsic cue (Olson and Jacoby, 1972). As Richardson (1994) proposes, consumers use such extrinsic cues to evaluate products when (1) the brand is unfamiliar (e.g. uncertainty), (2) consumer does not have enough opportunities to evaluate intrinsic cues, and (3) consumer cannot readily evaluate intrinsic attributes (Zeithaml, 1988).

However, it is important to choose the right amount and type of information in packaging. Otherwise, it can have a negative impact on consumers' perceptions of products' ability to deliver a desired benefit, defined as *dilution effect* (Meyvis, and Janiszewski, 2002).

How can packaging be a vehicle to communicate with children?

As suggested by McNeal (1992), the most rewarding product strategy for children is to create products based on *kid-ness*, and some good examples of products reaching *kid-only point* are potato chip bags and cereal boxes.

When targeting children, packaging - the properly called "salesman on the shelf" (Pilditch, 1972) - must follow four principles (Sensbach, 2000):

Understand the market: kids are not a homogenous market – their purchase influences shift through age, gender, social trends and peer perceptions. Packaging design has to communicate fun and taste;

Use their language combining colour, typography, graphic symbols, shapes, and characters;

Capitalize on the power of media, namely through high-visibility licensed characters;

Consider the packages' nature using entertaining strategies (e.g. games in cereal boxes).

In addition, to better understand children and to draw their attention, any kind of communication should be done by taking into consideration that children's cognitive

capabilities evolve throughout years. Given children's limitations in processing information, it is crucial to avoid overloading information and simplify as much as possible. In this sense, visual aids or symbols seem to be an effective way to highlight important product benefits and attract attention to the package (John and Cole, 1986).

Hypotheses

Packaging Design, Packaging Evaluation & Attention to Packaging

Although package design refers to functional and visual attributes (Bloch, 1995), the focus of the study will be on visual appearance. Package design can have strong impact on attention to the brand and brand choice in the cases of low familiarity brands with high levels of experiential benefits, such as chocolates (Underwood *et al.*, 2001). As children find *junk food* visually more attractive, well packaged and better promoted in comparison to healthy food (McKinley, 2005), it will be expectable that:

H₁: Healthy food with packaging similar to junk food products has:

- ***Positive effect on Packaging evaluation;***
- ***Positive effect on Attention to Packaging.***

Packaging Design & Product Evaluation

Ghoshal *et al.* (2009) found that more appealing packaging positively impacts product evaluation. In fact, emotions evoked by appealing packaging are stronger and more positive than those evoked by ordinary packaging. Moreover, the Elaboration Likelihood Model (Petty and Cacioppo, 1981), is an attitude change theory that suggests that peripheral route – on which consumers make product evaluations by the attractiveness of the peripheral cues (such as product packaging) – is valued by low-involved consumers. Although none of the referred studies addressed children, it will be

hypothesized that the same will happen to children within the target age group, and therefore:

H₂: Healthy food with packaging similar to junk food products will have a positive effect on Attitude toward the Product.

Packaging Design & Perceived Healthiness

Most children do not read products' nutritional information (unless they are bored while eating them) and do not make choices based on it (Neeley and Petricone, 2006). However, at this advanced cognitive stage, they present an increased nutritional knowledge, they are aware that fruit and vegetables are healthy (Croll *et al.*, 2001) and their ability to infer is quite developed (Piaget and Inhelder, 1972). Therefore, it will be expectable that the packaging design similar to *junk food* will not affect children's perceived healthiness of healthy food, as they already recognize them as being healthy:

H₃: Healthy food with packaging similar to junk food products will have the same perceived healthiness as a normal packaging.

Packaging Design & Purchase Intention

Extrinsic product attributes such as labeling and packaging have a particular role in children's purchasing behavior (Valkenburg and Cantorb, 2001). This intention is actually extremely influenced by what is communicated at the point-of-purchase (mostly in packaging) when consumers have not thought about the product before entering the store. "The package becomes a critical factor in the consumer decision-making process because it communicates to consumers at the time they are actually deciding in the store" (Pynia and Speece, 2007: 1496).

H₄: Healthy food with packaging similar to junk food products will have a positive effect on Purchase Intention.

Methodology

In order to test our hypotheses, an experiment was conducted in fall 2010, taking into account the following items:

Legal and Ethical issues

All legal requirements were satisfied by gathering the proper consent from the Portuguese Education Ministry (Appendix D), the schools where the study was conducted (Appendix E) and the participating children's parents (Appendix F).

Also, all ethical issues regarding the use of children in research were addressed, such that all children's rights and interests were taken into consideration, following The Convention on the Rights of the Child and UNICEF's guidelines for children's participation in research (UNICEF, 2002).

Sample

The studied population is composed by Portuguese children aged between 10 and 14 years old corresponding to 5th to 9th grades. In order to get a representative sample, **588** consent forms were sent to children's parents of **three** public schools within the Lisbon district, resulting in **408** authorizations and a response rate of 69%. Girls represented 50,7% of the sample and boys 49,3% (Appendix G).

Research Design

Structured Questionnaires were the chosen method for this study. As children in these ages are in an advanced cognitive stage, they are able to make evaluations about packaging and answer to paper questionnaires (Greig *et al.*, 2007).

Nevertheless, informal interviews with specialists within the area of interest of this study and a focus group with the target audience were conducted to complement and better understand quantitative data.

In order to perform the best research method to children within the referred cognitive stage, a child psychologist² was interviewed. She gave important guidelines to assess children's opinions and routines through questionnaires, on which the use of the target language was crucial not only for them to understand it but, most importantly, keep them motivated to answer it.

Moreover, a *pre-test* questionnaire was performed to five children within the target's age in order to verify their ability to understand each question and its relevance. As most of this study's measures are based on studies performed to adults, several changes were made in order to align the questionnaire semantic with the target's cognitive skills, as it will be explained in a subsequent chapter.

The final questionnaire incorporated techniques to reduce method bias (Podsakoff *et al.*, 2003), namely it highlighted the respondents' anonymity and mentioned that there were no right or wrong answers as a way to increase respondents' honesty. Additionally, the questions order was counterbalanced as well as the items order to make sure that respondents were focused and did not answer randomly.

Treatment Design

In order to create a package of healthy food appealing to children, a three-step process was performed on which interviews were conducted to: a) a child psychologist, b) a brand manager, and c) children within the target age.

² **Sílvia Coutinho**, Specialized in Psychological Support, Psychotherapy and Family Therapy, acknowledged by *Sociedade Portuguesa de Terapia Familiar (SPTF)*. Currently, she works in kinder gardens and has a private office for appointments with children, teenagers and adults.

The same child psychologist mentioned in the previous chapter also provided advices regarding the type of communication that the new package should use. In this sense, she stated the following considerations to have while designing it:

- At this age, friends are more important than family. Therefore, it is important to create a package that makes children comfortable buying it publically;
- Bright colors should be used to draw attention;
- The package must communicate *originality* and *young* – communication style must be aligned with the age group.

In addition, another interview was conducted to *Matutano*³'s brand manager *Ana Moura* in order to get a deeper understanding of packaging elements that specifically target children. In other words, the aim of the interview was to benchmark practices followed by a successful brand of *junk food* and apply them to healthy food packaging. Some of the advices were actually quite similar to the ones provided by the child psychologist. Both stated the alignment of the package with the desired positioning, but the brand manager also stated the importance of bright colors when targeting children vs. gourmet and glamorous colors when targeting adults (e.g. black layout with golden letters). It was also referred the value of consumer assessment before and after the package is launched, and the importance (and legality) of nutritional information in the back.

The final step to create the perfectly suited package for children was the execution of a *focus group* with ten children aged from 10 to 14 years old. This experiment allowed a deeper understanding of the target preferences as children were able to evaluate three existing *junk food* packages and explain what they liked and what they would improve (*Appendix H*).

³ Spanish and Portuguese snack distributor of brands such as *Cheetos*.

Using all the considerations above and resorting to the help of a design student, the final package design was created, with a new brand name “Békos” (*Appendix I*). Due to the high costs of doing a real packaging, the design was printed in a material that was pasted over a chip bag in order to look as similar to an actual chip package as possible (*Appendix J*). The final prototype was tested with children before the actual experiment took place and they did not find any difference from other widely sold packages. Such procedure did not affect the perceived quality of the package, as it will be confirmed in the final results.

Currently, the Portuguese market has only **one** brand that sells packaged sliced apples⁴: “Maçã de Alcobaça” (*Appendix K*). Considering a recent study that shows that elementary school and middle school students consume more apples that are sliced and ready-to-eat packaged than whole apples (McCool *et al.*, 2006), this already is a good strategy to induce children to eat healthy food. However, it is still not enough to compete with available and well promoted *junk food*. Thus, this product will be exhaustively compared with “Békos” throughout the study.

Procedure

In each one of the three schools different classes from 5th to 9th grades were assigned to participate in the study (*Appendix L*). In each class, students were randomly split into two groups that were allocated into two separate classrooms with one professor each. After a small presentation, one of the groups observed “Maçã de Alcobaça” and the other observed “Békos” with no time constraints. Afterwards, the questionnaire (*Appendix M*) was read to all participants in order to assure their understanding of each question and clarify the procedure to answer it.

⁴ McDonalds also sells sliced apples, but they are only available in the company’s restaurants. Therefore, these will not be considered for the purpose of the study.

Measures

The choice of appropriate scales was done considering previous studies that measured the same variables. However, as most of them were addressed to adults, several scales were adapted to fit the target's cognitive skills.

In order to verify each hypothesis, the following measures were used in the final questionnaire performed to both groups ("Maçã de Alcobaça" and "Békos"):

Package evaluation was assessed through two 5-point semantic differential scales, regarding the package itself: "ugly-beautiful" and "does not confer quality-confers quality". Such measures were based on a study performed by Schoormans and Robben (1996), which hypothesized about the effect of new package design on adults. Actually, this study used three 5-point semantic differential scales that included the two scales previously mentioned, and also assessed package in terms of "badly finished - very well finished" (Cronbach's Alpha=0.71). However, this last scale had to be discarded given that children who participated in the pre-test did not understand the purpose of the question.

The appraisal of the variable **attention to package** was based on the referred study, which used six 5-point semantic differential scales of "inconspicuous-conspicuous" and "does not draw attention-draws attention" for *color of the package*, *form of the package*, and *package as a whole* (Cronbach's Alpha=0.79). Once again, the pre-test experiment with such measurement confirmed that children considered that when the package as a whole is being evaluated the questions regarding its color and form are irrelevant. Therefore, the questionnaire applied only two 5-point semantic differential scales on

which the package as a whole was evaluated in terms of “inconspicuous-conspicuous” and “does not draw attention-draws attention”.

To measure **attitude toward the product**, children were asked to evaluate the item in three 5-point semantic differential scales in terms of being “boring-fun”, “unfamiliar-familiar” and “tastes bad-tastes good”. Such measure was based on a study about the effectiveness of TV advertisement on children’s food preferences (Dixon *et al.*, 2007) that used the exact same semantic scales (Cronbach’s Alpha=0.72-0.85), except the last one, which was “yucky-yummy”. Considering the advise given by the child psychologist, the words were “too childish” and, consequently, were changed to “tastes bad-tastes good”.

To assess **perceived healthiness**, participants were asked to rate the product they observed in terms of how healthy they think it is to eat that food in a 5-point semantic scale on which 1 represented “very unhealthy” and 5 represented “very healthy”. This measure is in accordance with the one used by Dixon *et al.* (2007) in the study mentioned above.

To measure **purchase intention**, two dimensions were considered in a 5-point likert scale: the probability to buy that product or ask parents to buy them (Friedman and Friedman, 1979) and the probability to consume the same product (Phelps and Hoy, 1996).

Results

This study was conducted to **408** participants from three different schools, with **93** 5th graders, **66** 6th graders, **92** 7th graders, **88** 8th graders, and **69** 9th graders. The distribution of males and females was on average equal for each package:

		<i>Package</i>			
			“Alcobaça”	“Békos”	Total
<i>Gender</i>	Female	#	99	108	207
		% within Grade	50,5%	50,9%	50,7%
	Male	#	97	104	201
		% within Grade	49,5%	49,1%	49,3%
Total	#	196	212	408	

The resulting information from the structured questionnaires performed to all participants was analyzed in the statistical program SPSS.

All tests performed in this study are *parametric* given that the variables of interest (dependent variables) are measured on an interval scale (i.e. semantic scale and likert scale).

Package Evaluation

The used scale (two-items) presented a Cronbach's Alpha of 0,729, thus confirming its reliability.

To test the first hypothesis, descriptive statistics were firstly analyzed. Regarding the first item of the dependent variable “Package Evaluation”, on which participants rated the package on a semantic scale “(1)ugly - (5)beautiful”, “Maçã de Alcobaça” presented a mean of **3,15** and “Békos” presented a mean of **3,79**. The second assessed item was related to whether the package conferred quality or not and “Maçã de Alcobaça” obtained a mean of **3,24** and “Békos” a mean of **3,69** (*Exhibit N*).

These results show higher scores for “Békos”. In order to statistically confirm the effect of package design on package evaluation a One-Way Analysis of Variance (ANOVA with one treatment) was performed, after testing homogeneity of variances in both questions. This was the chosen parametric test given that the aim of the experiment was to analyze the significance of the effect of the dependent variable on package evaluation, on which there was only one treatment (i.e. packaging design).

The ANOVA actually showed evidence that there is an effect of packaging design on both items of the dependent variable ($F = 37,765$ and $p < 0,000$; $F = 14,344$ and $p < 0,000$), observable in *Appendix O*. Therefore the results demonstrate that packaging design has a positive effect on package evaluation, as one can infer by the descriptive statistics which present higher scores for “Bekos”.

Attention to Packaging

As previously mentioned, the dependent variable “Attention to Packaging” was measured by asking participants to rate the package they observed on two semantic scales: “(1) inconspicuous - (5)conspicuous” and “(1)does not draw attention – (5)draws attention” (Cronbach's Alpha = 0,885). Descriptive statistics show that “Békos” package presents higher scores in both items with a mean of 4,01 (vs. \bar{x} “Maçã de Alcobaça” = 2,55) and 3,95 (vs. \bar{x} “Maçã de Alcobaça” = 2,43) in the first and second items, respectively (*Exhibit N*).

To statistically verify such effect, a One-Way ANOVA was performed on which *package attention* was the dependent variable and *package design* (“Maçã de Alcobaça” vs. “Békos”) was the independent variable. Once again, packaging design was the only treatment of the experiment. Considering that both questions presented homogeneity in

variances, the ANOVA statistically confirmed the effect of *package design* on both items ($F = 194,370$ and $p < 0,000$; $F = 196,244$ and $p < 0,000$), observable in *Exhibit P*.

Attitude toward the product

This variable was measured with a three-item semantic scale on which participants rated the product with the following anchor words: “(1) boring- (5) fun”, “(1) tastes bad-(5) tastes good” and “(1) unfamiliar-(5) familiar” (Cronbach's Alpha = 0,502).

The results for this variable are quite doubtful. When analysing the means in each question for each package (*Exhibit N*) we can see that “Békos” presents, on average, higher scores in the first question ($\bar{x}_{Békos} = 3,71$ vs. $\bar{x}_{Alcobaça} = 3,15$). However, the remaining two questions present a very small difference. The mean score for *Békos*' perceived taste is **4,12** and **4,09** for “Maçã de Alcobaça” and the familiarity of the product of each brand was, on average, **4,83** and **4,90**, respectively.

Considering that participants' answers for the three mentioned questions did not present equal variances, a t-test for independent samples was performed to verify if the difference in means was statistically significant. The choice of the test was done considering that the variables of interest are parametric and the individuals that observed each package were randomly assigned. *Exhibit Q* presents the results of the test and shows, as expectable, that the difference in means is statistically significant only in the first question ($p < 0,000$). In the last two questions, such difference is not significant, presenting $p = 0,811$ and $p = 0,210$, respectively.

Perceived healthiness

The measurement of this variable was performed by asking only one question “How healthy do you think is to eat this product?” which resulted in a mean score of **4,64** for “Békos” and **4,83** for “Maçãs de Alcobaça”, presented in *Exhibit N*.

Once again, a t-test for independent variables was performed in order to verify the statistical significance in the means difference. As shown in *Exhibit R*, the test for equality of means was rejected ($t(332,256) = 2,791$ and $p=0,006$).

Purchase Intention

Purchase Intention was measured by asking participants to rate the probability to consume and buy (or ask their parents to buy) the product in a 5-point likert scale. This two-item scale presented a Cronbach's Alpha of 0,895.

Regarding the question “Would you like to eat this product?”, “Békos” presented a mean score of **3,69** whereas “Maçã de Alcobaça” had a mean score of **3,00**. The following question “Would you like to buy this product or ask your parents to buy it?” presented a higher dissimilarity in means, on which “Békos” had an average score of **3,41** and “Maçã de Alcobaça” an average of **2,80** (*Exhibit S*).

As both items did not present equal variances, a t-test for independent samples was performed in order to statistically confirm the mean differences in both packages. As both questions present $p<0,000$ with $t(405,963) = -5,707$ and $t(406) = -5,122$, respectively (*Exhibit T*), the difference in both means of each question is statistically relevant.

Discussion and Conclusions

There is little literature that studies the impact of packaging on consumers, especially young consumers. Despite this, it has been proven that such instrument in the product mix is able to draw consumers' attention and change their beliefs at the point-of-purchase (Underwood *et al.*, 2002, and Schoormans *et al.*, 1996). Given that children are becoming increasingly autonomous in their eating behaviors as they progress in age, it is very important to take advantage of alternative and innovative actions that transform healthy food into fun and child-oriented products.

The aim of this study was to understand how children can be influenced by an appealing packaging and whether such stimuli can influence their perceptions (regarding the package and the product itself) and purchase intention towards healthier options⁵.

H₁: Healthy food with packaging similar to junk food products has:

- ***Positive effect on Packaging evaluation***
- ***Positive effect on Attention of Packaging***

The comparison between “Maçã de Alcobaça” and “Békos” in terms of *Packaging Evaluation* resulted in a clear advantage for “Békos”. Such lead was also proven to be true regarding *Packaging Attention*. Considering the fact that literature suggests the effect of these variables on purchase intention (Valkenburg and Cantorb, 2001) – which will be discussed afterwards –, it is important to stress the importance of colorful and fun packaging that communicates directly to children as they find them more appealing. Therefore, although the current offer (“Maçã de Alcobaça”) is already an improvement in its practical benefit (McCool *et al.*, 2006), children are not attracted to it as when the exact same product is presented in a packaging similar to *junk food*. The results can

⁵ The summary table of all hypotheses and respective evidence is presented in *Appendix U*.

have managerial consequences such that companies and/or fruit producers should improve the appeal of their packaging, especially when targeting healthy products to children.

H₂: Healthy food with packaging similar to junk food product has:

- Positive effect on Attitude toward the Product

As the great majority of children recognized apples inside both packages and they already find this fruit tasty – also confirmed by other studies such as Edwards and Hartwell (2002) –, the appeal of “Békos” packaging did not alter most of their perceptions. However, this study proved the existence of an effect on one item of Attitude toward the Product. When children rated the product as “boring-fun”, “Békos” presented superior scores, which is an important achievement given that children are driven by fun (Acuff and Reiher, 1997) and such fact can be decisive in their purchase decisions.

H₃: Healthy food with packaging similar to junk food products will have the same perceived healthiness as a normal packaging.

This hypothesis was not proven to be true in this study, given that the means of perceived healthiness for “Maçã de Alcobaça” and “Békos” were statistically different. Nevertheless, they were quite high in both cases and very close to 5 (4,83 for “Maçã de Alcobaça” and 4,64 for “Békos”). Hence, although there is a divergence it is very small and the product inside the *junk food* packaging is still perceived as healthy.

H₄: Healthy food with packaging similar to junk food products will have a positive effect on Purchase Intention.

This study’s most important dependent variable was, indeed, Purchase Intention. Although it is very important to confirm the appeal of product packaging with the

referred features, it is crucial to study if packaging will, in fact, increase children's willingness to purchase healthy food.

As results show, there was a significant increase in children's purchase intention which ultimately means that if companies/fruit producers want to sell healthy food to children they have to make these products fun, and they can do so by redesigning their packaging.

Limitations and Future Research

This study was conducted to children from 10 to 14 years old, belonging to the formal operational stage. As most of the hypotheses were proven to be true within this target, future research should be performed in order to verify whether such assumptions hold true in previous cognitive stages and, consequently, effectively influence children's eating behavior as soon as possible.

In addition, this study only analyzed public schools and future research should also assess private schools and verify if there are any differences among students from different social environments.

Furthermore, this research only assessed the effectiveness of packaging on making healthy products more appealing to children. However, additional research should study this tool and combine it with powerful media such as TV advertisement and even Internet advertisement (as junk food brands do) in order to capitalize the power of media (Sensbach, 2000).

This research only approached children's opinions before they experimented the product. Therefore, further research should conduct evaluations on the product itself, to

see if packaging is also able to change perceptions on the taste of the product, and the intention to buy it after trying it.

Finally, given that child obesity is a current issue affecting developed societies, legislation may limit the selling of energy-dense products and may promote and support healthy food. The results of this study show that, bottom line, (healthy) products have to communicate fun in order to become attractive to children and they can do so through packaging.

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A Work Project presented as part of the requirements for the Award of a Masters Degree in Management
from the Faculdade de Economia da Universidade Nova de Lisboa.

Junk Food Packaging on Healthy Food

A matter of Children's Perceptions

Appendices

Carla Sofia Gomes Pires, 495

*A Project carried out on Children Consumer Behaviour, with the supervision of:
Professor Luísa Agante*

January 2010

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Appendix A – Expenditure behaviour of 1,786 British school-aged children in 2007, using their diary information (expenses with their own money only) as a part of the British Family Expenditure Survey (FES).

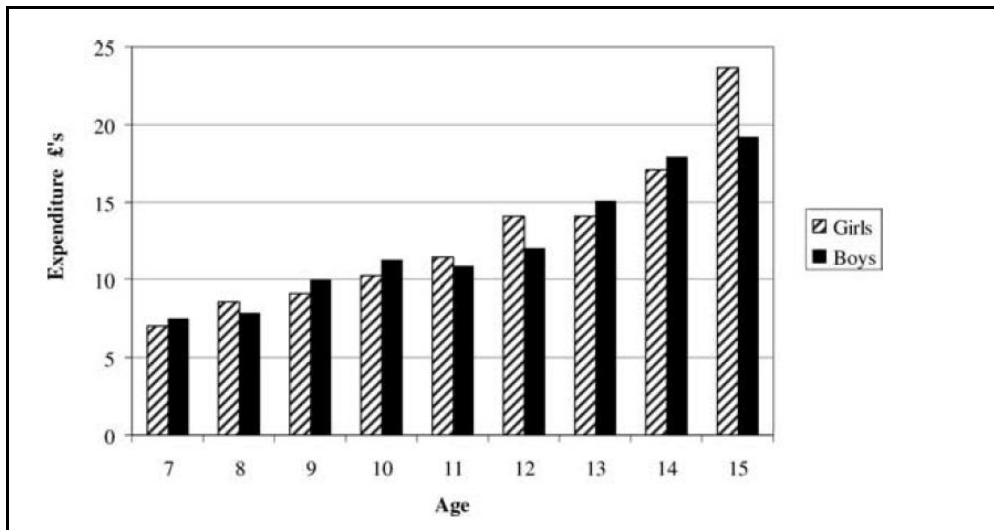


Figure 1 Total expenditures by age and gender. This graph highlights the trend of increasing expenses with age and the relative small difference among genders (except with children with 15y.o – females expend significantly more).

£/week	Unconditional mean expenditure	Conditional mean expenditure*	Participation rate (%)
Drinks	0.70 (0.03)	1.06 (0.03)	66.1
Leisure	1.28 (0.07)	2.77 (0.09)	46.3
Vice	0.20 (0.04)	3.55 (0.15)	5.5
Sweets	1.27 (0.03)	1.42 (0.03)	89.4
Food/snacks	2.18 (0.07)	2.96 (0.07)	75.4
Clothes	2.41 (0.17)	9.34 (0.27)	25.8
Travel	0.71 (0.05)	2.33 (0.07)	30.5
Electrical goods	1.40 (0.14)	5.22 (0.25)	26.8
Books/magazines	0.95 (0.04)	1.75 (0.04)	53.1
Toys	0.51 (0.04)	2.24 (0.07)	22.6
Sample		1786	

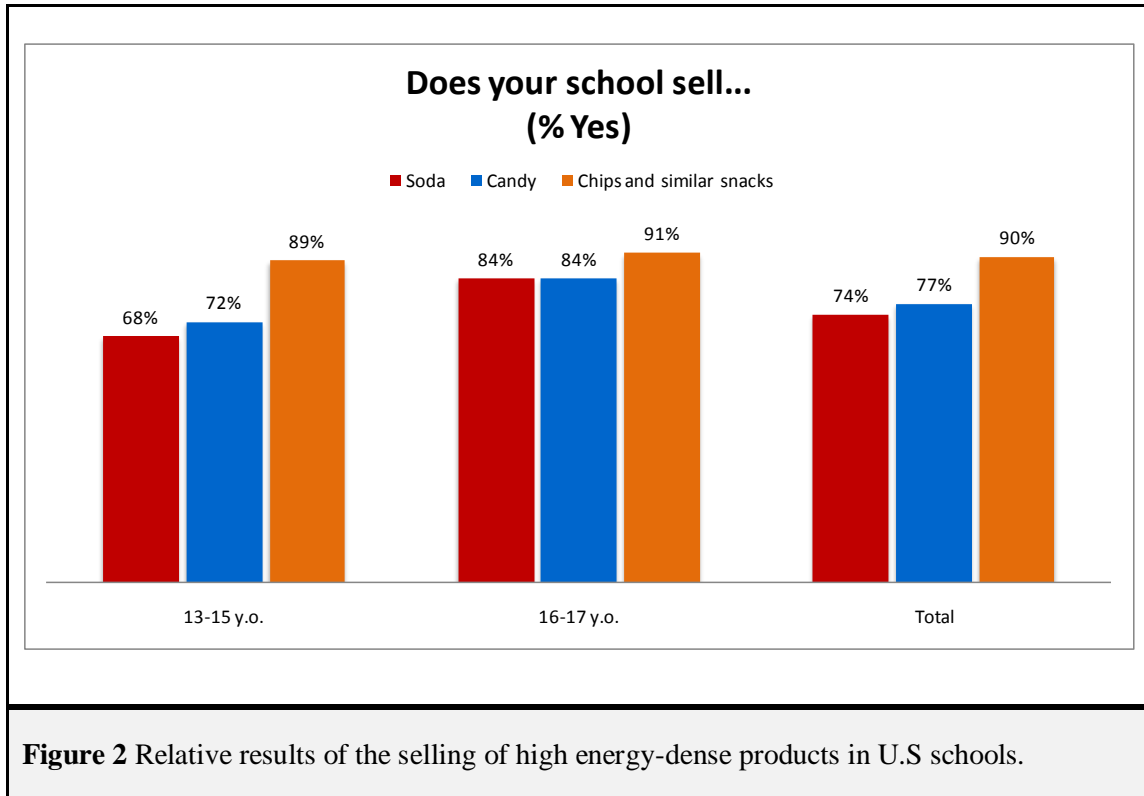
NOTES: Standard error of mean value in parentheses. *Expenditure conditional on at least one purchase within the given expenditure category.

Table 1 Child expenditure by 10 commodity groups (£/week).

Appendix B - Summary table of all four Cognitive Stages considered by Piaget and Inhelder (1972).

<i>Cognitive Stage</i>	<i>Description</i>
Sensory-motor stage <i>(Birth – 2 years)</i>	<ul style="list-style-type: none">- Differentiates self from objects and recognizes self as agent of action- Achieves object permanence: realizes that things continue to exist even when no longer present to the sense- Egocentric thinking
Pre-operational <i>(2-7 years)</i>	<ul style="list-style-type: none">- Child learns to represent objects by images and words (use of language)- Thinking is still egocentric- Object classification considering a single feature
Concrete operational <i>(7 – 11 years)</i>	<ul style="list-style-type: none">- Logical thinking about objects and events- Development of rational judgments- Object classification considering several features
Formal operational <i>(11 years - adulthood)</i>	<ul style="list-style-type: none">- Logical thinking about abstract propositions- Ability to infer- Concern with hypothetical problems

Appendix C – Results adapted from the Gallup Youth Survey conducted via Internet to 439 U.S respondents, aged between 13 and 17, in August 2004.



How often do you buy _____ at your school?

	<i>Soda</i>	<i>Candy</i>	<i>Chips/ Other Snacks</i>
Once a day or more	15%	8%	12%
A few times a week	28%	20%	26%
A few times a month	14%	19%	22%
Rarely	29%	36%	28%
Never	14%	17%	12%

Table 2 Relative results of the consumption of high energy-dense products in U.S. schools.

Appendix D – *Consent given by the Portuguese Education Ministry to perform the study's structured questionnaires in public schools.*

Monotorização de Inquéritos em Meio Escolar: Inquérito nº 0154000001

Caixa de entrada | X

☆ mime-noreply@gepe.min-edu.pt para mim [mostrar detalhes](#) 8 Nov Responder

Exmo(a)s. Sr(a)s.

O pedido de autorização do inquérito n.º 0154000001, com a designação *Questionário para estudo "Junk Food Packaging on Healthy Food: a matter of children's perceptions"*, registado em 25-10-2010, foi aprovado.

Avaliação do inquérito:

Exmo(a). Senhor(a) Dr(a) Carla Sofia Gomes Pires

Venho por este meio informar que o pedido de realização de questionário em meio escolar é autorizado uma vez que, submetido a análise, cumpre os requisitos de qualidade técnica e metodológica para tal devendo, no entanto, ter em atenção as observações aduzidas.

Com os melhores cumprimentos

Isabel Oliveira

Directora de Serviços de Inovação Educativa

DGIDC

Observações:

Pedir autorização aos pais.

Pode consultar na Internet toda a informação referente a este pedido no endereço <http://mime.gepe.min-edu.pt>. Para tal terá de se autenticar fornecendo os dados de acesso da entidade.

Appendix E – Example of a consent request given to a school director to perform the structured questionnaire.

Quarta-feira, 27 de Outubro de 2010

Exmo. Sr. Director,

Sou aluna de Mestrado de Gestão na Faculdade de Economia da Universidade Nova de Lisboa e estou a fazer uma tese no âmbito do *Comportamento do Consumidor Infantil*. Mais concretamente, o tema da minha tese é “Comida Saudável com Embalagem de *Junk Food*: uma questão de percepção”. O objectivo deste estudo será, então, perceber se uma embalagem mais atractiva (como a de *Junk Food*) fará as crianças quererem comprar mais comida saudável. Dado que as crianças têm cada vez mais independência na escolha de comida (nomeadamente, a partir do ensino preparatório), será relevante perceber como podemos transformar as suas escolhas mais saudáveis.

Deste modo, venho por este meio solicitar a vossa colaboração para a realização de questionários a crianças com idades entre os 10 e os 14 anos, isto é, do 5º ao 9º ano. A aplicação do questionário terá as seguintes fases:

- Serão seleccionados aleatoriamente dois grupos de crianças: um observará uma maçã normal e outro observará uma maçã com uma embalagem apelativa.
- Será feito um questionário às crianças para avaliar as suas percepções e intenções de compra em relação a cada embalagem.

Todas as folhas de ambos os questionários são entregues na escola e as fotocópias serão tiradas previamente por mim. Desta forma, a escola não terá qualquer trabalho nem encargo com o formulário dos questionários. A sua administração decorrerá conforme for a política da escola. Tenho preferência a ser eu a administrar os questionários na sala de aula (com a presença do professor da disciplina ou director de turma, como for preferível). No entanto, não haverá problema se os questionários tiverem de ser administrados pelos professores.

Penso que estão indicadas todas as informações necessárias mas, caso precisem de mais esclarecimentos, não hesite em contactar. Poderei, também, agendar uma reunião onde serão explicados detalhadamente todos os processos e contexto do estudo.

Agradecia resposta ao pedido para o meu email (carlaspires@gmail.com) ou através do contacto telefónico (917078864).

Agradeço desde já a atenção.

Com os melhores cumprimentos,
Carla Pires

Appendix F – *Consent form given to parents to authorize their children to participate in the study.*



Carla Pires, Aluna de Mestrado de Gestão
Faculdade de Economia Universidade Nova de Lisboa
Campus de Campolide
1099-032, Lisboa

Contactos: carlaspires@gmail.com | 917078864

Assunto:

Pedido de Autorização para participação em estudo sobre Hábitos Alimentares

Exmo. Sr. Encarregado de Educação,

Sou aluna do Mestrado em Gestão da Faculdade de Economia da Universidade Nova de Lisboa e estou a realizar a minha investigação na área de Comportamento do Consumidor Infantil.

Para esse efeito, estou a levar a cabo um estudo sobre os hábitos alimentares das crianças e formas de torná-los mais **saudáveis**, nomeadamente através de embalagens mais apelativas. Deste modo, necessito que o(a) seu educando(a) preencha um questionário na escola. Os dados recolhidos serão analisados por mim e a sua **confidencialidade é total**, sendo apenas publicados na tese os resultados do estudo sem referência aos dados dos alunos (o questionário é **anónimo**, apenas é pedido o sexo e a idade da criança), e sem a identificação das escolas onde o estudo foi realizado. Este destacável serve apenas como **autorização e não haverá qualquer tipo de identificação da criança no questionário**.

Os resultados do estudo poderão também ser apresentados em conferências, artigos/livros ou notícias relacionadas com o tema, e serão enviados para as escolas que participam no estudo podendo ser consultados por todos os encarregados de educação.

Com os melhores cumprimentos,

Carla Pires

Autorizo o(a) meu filho(a) _____ do ___º ano, turma _____ a participar neste estudo.

_____, ____ de _____, de 2010

Assinatura do Encarregado de Educação:

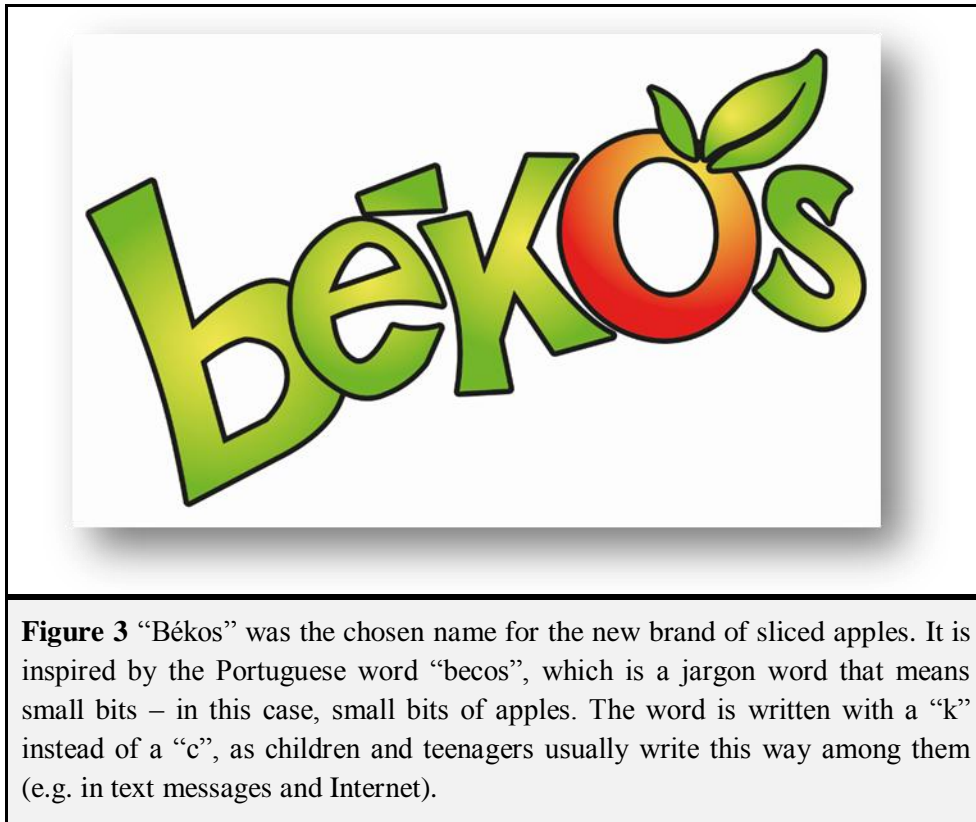
Appendix G – Gender and Grade distributions of the Sample.

		<i>Grade</i>					
<i>Gender</i>		5 th	6 th	7 th	8 th	9 th	Total
	Female	#	49	32	43	51	32
% within Grade		52,7%	48,5%	46,7%	58,0%	46,4%	50,7%
Male	#	44	34	49	37	37	201
	% within Grade	47,3%	51,5%	53,3%	42,0%	53,6%	49,3%
Total	#	93	66	92	88	69	408

Appendix H – Quotes (translated) from the focus group on which ten children discussed three existing junk food packages presented in a computer screen.

		
<i>It is young.</i>	<i>I like the character playing football!</i>	<i>It should have a character.</i>
<i>I don't like these chips.</i>	<i>The tiger is crazy.</i>	<i>I really do not like the color purple</i>
<i>In the package, they look like real potatoes.</i>	<i>I like the color: it is for boys and girls.</i>	<i>It looks a bit girly!</i>
<i>They are healthier than the other two.</i>	<i>Although the tiger is playing football, the food is not healthy.</i>	<i>I like the logo, it is edgy.</i>

Appendix I – “Békos” logo.



Appendix J – Final package design and picture of the final package.



Figure 4 Final package design (front side and back side).



Figure 5 Picture of the final package (front side and back side).

Appendix K – “Maçã de Alcobaça” packaging and logo.



- pôr na references

Figure 6 Picture of the current packaging of sliced “Maçã de Alcobaça” and logo (from left to right).

“Maçã de Alcobaça” is produced by *Associação de Produtores de Maçã de Alcobaça* (APMA) which is a Portuguese Association of apple producers with a capacity of over 30,000 tons and representing 600 producers¹.

¹ Source: <http://www.macadealcobaca.pt/new/home.asp>

Appendix L – *Schedule of the experiment in three schools.*

	<i>Class</i>	<i>Date</i>	<i>Time</i>	<i># students</i>	<i># consents</i>	<i>Observed Packaging</i>
SCHOOL A	9° F	08/11/2010	9:00	25	20	Alcobaça/ Békos
	9° D	04/11/2010	8:15	24	18	Alcobaça/ Békos
	8° H	11/11/2010	15:15	22	15	Alcobaça/ Békos
	8° G	05/11/2010	14:15	26	25	Alcobaça/ Békos
	8° B	08/11/2010	17:00	27	7	Alcobaça/ Békos
	7° D	03/11/2010	13:30	22	14	Alcobaça/ Békos
	7° B	05/11/2010	10:00	20	12	Alcobaça/ Békos
	7° H	11/11/2010	11:45	22	15	Alcobaça/ Békos
	7° C	11/11/2010	12:30	26	18	Alcobaça/ Békos
SCHOOL B	5° L	8/11/2010	13:25	27	24	Alcobaça/ Békos
	5° G	09/11/2010	12:25	29	29	Alcobaça/ Békos
	6° J	12/11/2010	15:15	29	20	Alcobaça/ Békos
	6° B	15/11/2010	10:00	28	22	Alcobaça/ Békos
SCHOOL C	9° A	16/11/2010	14:00	25	16	Alcobaça/ Békos
	9° B	18/11/2010	11:30	27	15	Alcobaça/ Békos
	7° A	17/11/2010	15:00	28	20	Alcobaça/ Békos
	7° B	16/11/2010	15:00	26	13	Alcobaça/ Békos
	8° A	17/11/2010	15:45	24	22	Alcobaça/ Békos
	8° B	18/11/2010	15:00	26	19	Alcobaça/ Békos
	5° A	17/11/2010	11:30	26	16	Alcobaça/ Békos
	5° B	18/11/2010	8:45	27	24	Alcobaça/ Békos
	6° A	19/11/2010	9:45	24	13	Alcobaça/ Békos
	6° B	15/11/2010	15:00	28	11	Alcobaça/ Békos

Appendix M – Structured Questionnaire presented to children after they observed either “Békos” or “Maçã de Alcobaça” packaging.

nº | _ | _ | _ | _



Carla Pires, Aluna de Mestrado de Gestão
Faculdade de Economia Universidade Nova de Lisboa
Campus de Campolide
1099-032, Lisboa

Dados do Aluno

Idade: ____

Sexo: F / M

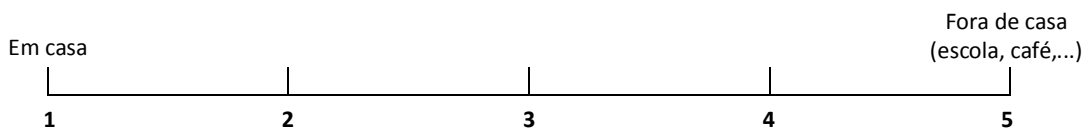
____º ano

QUESTIONÁRIO

ATENÇÃO! Neste questionário não há respostas certas nem erradas.
Apenas quero saber a tua opinião...

1. Numa semana normal, com que frequência tomas o teu pequeno-almoço...

(Coloca um círculo à volta da tua resposta. 1 = todos os dias em casa, 3 = umas vezes em casa e outras fora de casa, 5 = sempre fora de casa)



2. Quando tomas o pequeno-almoço fora de casa, é geralmente onde?

Assinala com uma X a tua resposta.

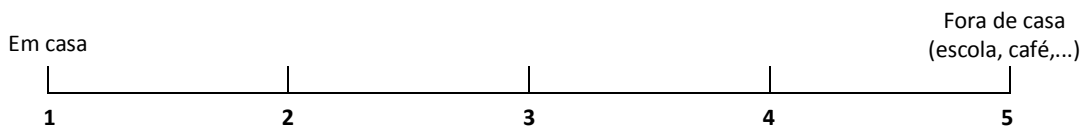
Escola

Café

Outro
Qual? ____

3. Numa semana normal, com que frequência lanchas...

(Coloca um círculo à volta da tua resposta. 1 = todos os dias em casa, 3 = umas vezes em casa e outras fora de casa, 5 = sempre fora de casa)



4. Quando lanchas fora de casa, é geralmente onde?

Assinala com uma X a tua resposta.

Escola

Café

Outro
Qual? ____

5. No geral, achas que os teus hábitos alimentares são...

(Coloca um círculo à volta da tua resposta. 1 = nada saudáveis, 3 = mais ou menos saudáveis, 5 = muito saudáveis)



6. Com que frequência comes estes produtos?

Assinala com uma X a tua resposta.

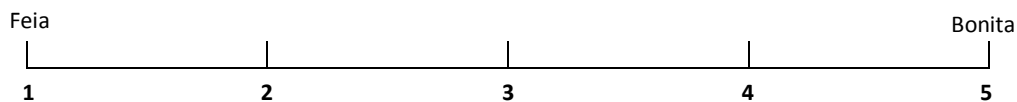
	Todos os dias	2-3 vezes por semana	1 vez por semana	Muito poucas vezes	Nunca
Bolachas					
Batatas fritas					
Chocolates/Doces					
Refrigerantes					
Cereais de pequeno-almoço (ex: Chocapic, Estrelitas)					
Gelados					

AGORA PENSA NA EMBALAGEM QUE OBSERVASTE...

Coloca um círculo à volta da tua resposta em todas as seguintes perguntas:

1. Achas que a embalagem é...

(1 = feia, 3 = nem feia nem bonita, 5 = bonita)



2. Achas que a embalagem...

(1 = não transmite qualidade, 3 = transmite alguma qualidade, 5 = transmite qualidade)



3. Achas que a embalagem é...

(1 = agradável, 3 = nem agradável nem desagradável, 5 = desagradável)



4. Achas que a embalagem...

(1 = atractiva, 3 = mais ou menos atractiva , 5 = não é atractiva)



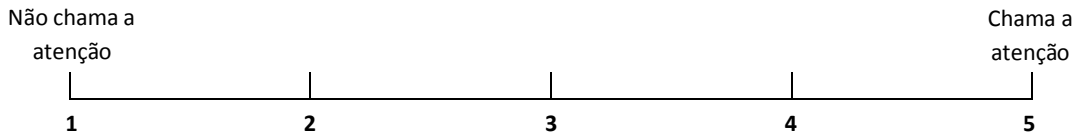
5. Achas que a embalagem...

(1 = não dá nas vistas, 3 = dá mais ou menos nas vistas , 5 = dá nas vistas)



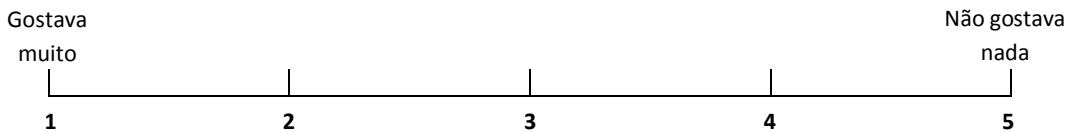
6. Achas que a embalagem...

(1 = não chama a atenção, 3 = chama alguma atenção , 5 = chama a atenção)



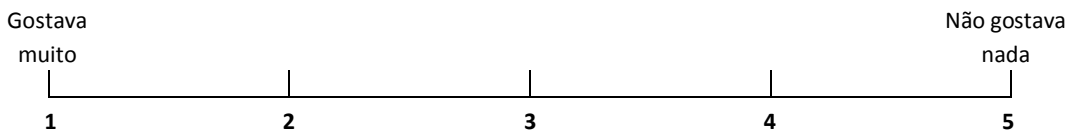
7. Gostavas de comer este produto?

(1 = gostava muito, 3 = gostava mais ou menos, 5 = não gostava nada)



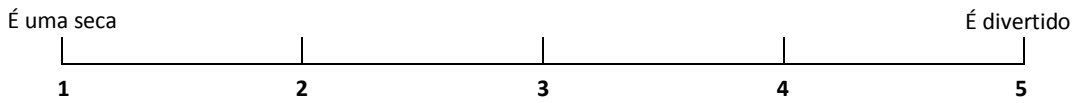
8. Gostavas de poder comprar este produto ou de pedir aos teus pais para comprarem?

(1 = gostava muito, 3 = gostava mais ou menos, 5 = não gostava nada)



9. O que achas do alimento dentro da embalagem?

(1 = é uma seca, 3 = não é uma seca nem divertido, 5 = é divertido)



10. O que achas do sabor do alimento dentro da embalagem?

(1 = sabe mal, 3 = não sabe bem nem mal, 5 = sabe bem)



11. Conheces o alimento dentro da embalagem?

(1 = não conheço, 3 = Conheço mais ou menos, 5 = conheço)



12. Achas saudável comer este alimento?

(1 = não é nada saudável, 3 = é mais ou menos saudável, 5 = é muito saudável)



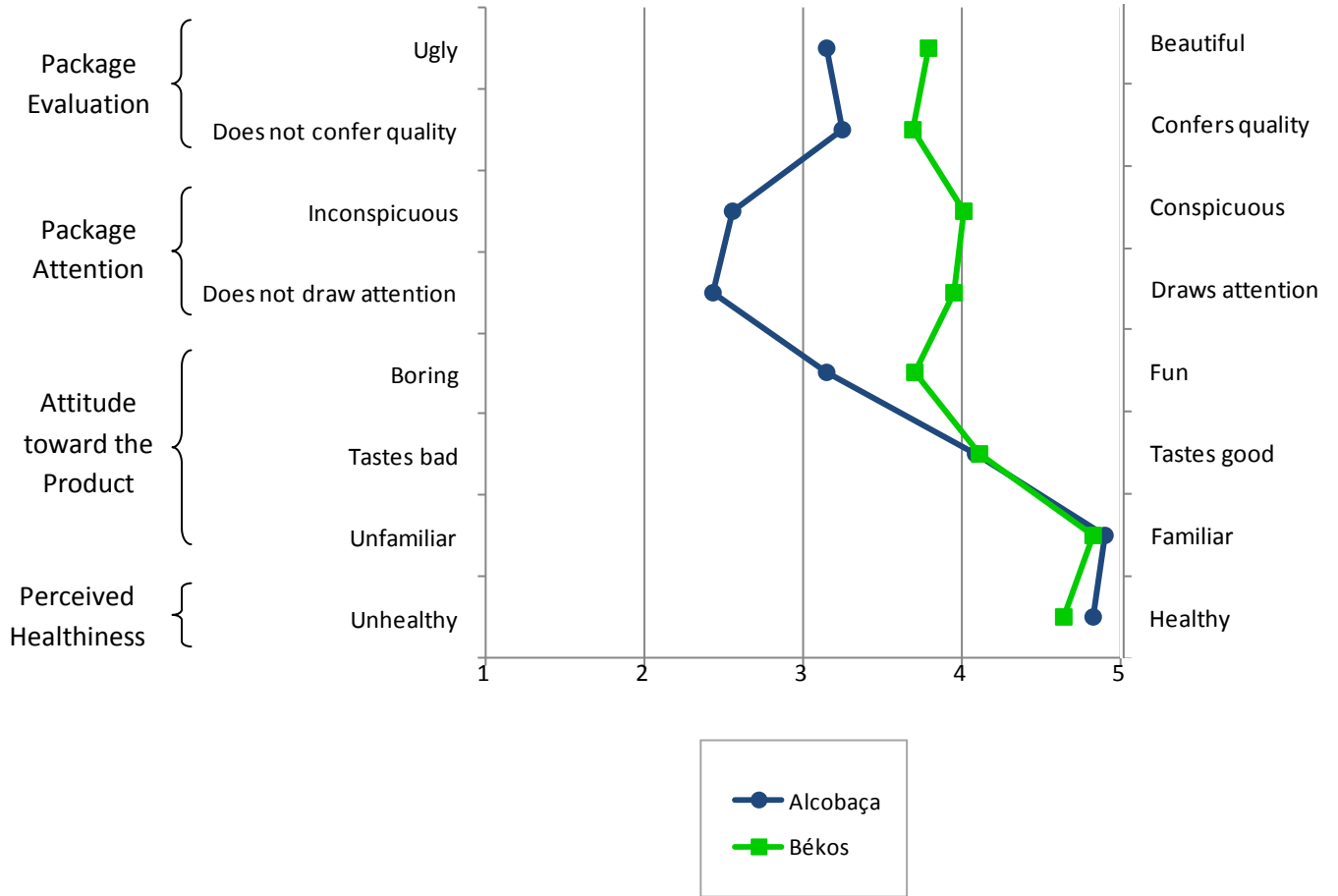
13. Com que frequência achas que os jovens da tua idade comem este alimento?

(1 = poucas vezes, 3 = algumas vezes, 5 = muitas vezes)



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Appendix N – Mean scores for Package Evaluation, Package Attention, Attitude toward the Product and Perceived Healthiness.



Appendix O – ANOVA results for Package Evaluation.

	<i>Sig. Test of Homogeneity of Variances (Levene Test)</i>	<i>F</i>	<i>Sig.</i>	<i>Reject H₀? (H₀: μ_{Alcobaça} = μ_{Békos})</i>
<p><i>The package is...</i></p> <p>Ugly Beautiful</p> <p>1 2 3 4 5</p>	,054	37,765	,000	Yes
<p><i>The package...</i></p> <p>Does not confer quality Confers quality</p> <p>1 2 3 4 5</p>	,201	14,344	,000	Yes

Appendix P – ANOVA results for Package Attention.

	<i>Sig. Test of Homogeneity of Variances (Levene Test)</i>	<i>F</i>	<i>Sig.</i>	<i>Reject H₀? (H₀: μ_{Alcobaça} = μ_{Békos})</i>
<p><i>The package is...</i></p> <p>Inconspicuous Conspicuous</p> <p>1 2 3 4 5</p>	,499	194,370	,000	Yes
<p><i>The package...</i></p> <p>Does not draw attention Draws attention</p> <p>1 2 3 4 5</p>	,424	196,244	,000	Yes

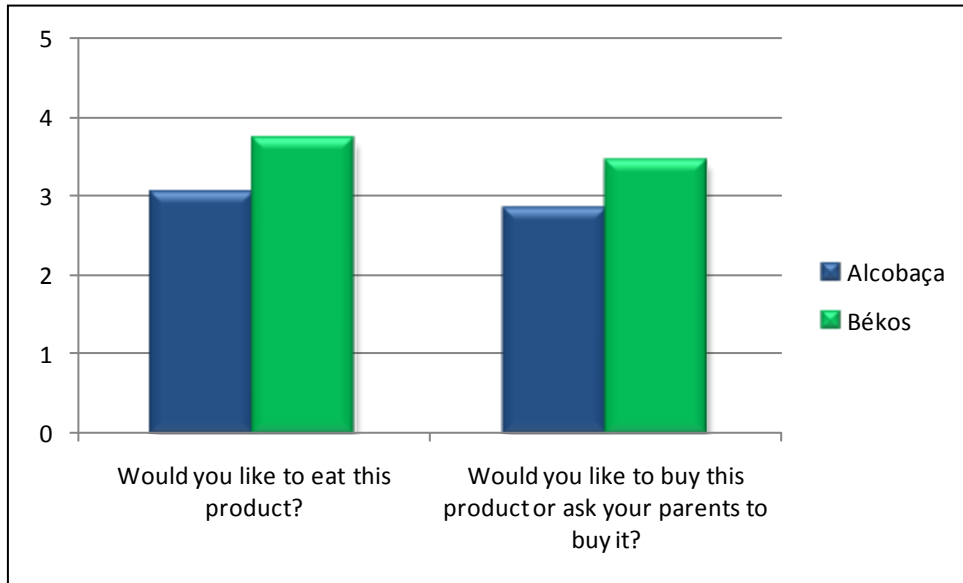
Appendix Q – *t*-test results for Attitude toward the Product.

	<i>Sig. Test of Homogeneity of Variances (Levene Test)</i>	<i>t</i>	<i>Sig.</i>	<i>Reject H₀? (H₀: μ_{Alcobaça} = μ_{Békos})</i>
<p><i>The product is...</i></p> <p>Boring Fun</p> <p>1 2 3 4 5</p>	,158	-4,996	,000	Yes
<p><i>The product...</i></p> <p>Tastes Bad Tastes Good</p> <p>1 2 3 4 5</p>	,906	-,239	,811	No
<p><i>The product is...</i></p> <p>Unfamiliar Familiar</p> <p>1 2 3 4 5</p>	,009	1,257	,210	No

Appendix R – *t*-test results for Perceived Healthiness.

	<i>Sig. Test of Homogeneity of Variances (Levene Test)</i>	<i>t</i>	<i>Sig.</i>	<i>Reject H₀? (H₀: μ_{Alcobaça} = μ_{Békos})</i>
<p><i>The product is...</i></p> <p>Unhealthy Healthy</p> <p>1 2 3 4 5</p>	,000	2,791	,006	Yes












Appendix S – Mean scores for Purchase Intention.



Appendix T – *t*-test results for Purchase Intention.

	<i>Sig. Test of Homogeneity of Variances (Levene Test)</i>	<i>t</i>	<i>Sig.</i>	<i>Reject H₀? (H₀: μ_{Alcobaça} = μ_{Békos})</i>
<p><i>Would you like to eat this product?</i></p> <p>Not at all Very much</p> <p>1 2 3 4 5</p>	,003	-5,707	,000	Yes
<p><i>Would you like to buy this product or ask your parents to buy it?</i></p> <p>Not at all Very much</p> <p>1 2 3 4 5</p>	,222	-5,122	,000	Yes

Appendix U – Summary table of all hypotheses and respective evidence.

	Observations	Equal Variances	Procedure	Test	Sig.	Reject H ₀	Evidence in favor
H1 _a	Healthy food with packaging similar to junk food products has a positive effect on Package evaluation .	Higher scores for Békos in both items.		One-Way ANOVA	F	,000 ,000	 
H1 _b	Healthy food with packaging similar to junk food products has a positive effect on Attention to Packaging .	Higher scores for Békos in both items.		One-Way ANOVA	F	,000 ,000	 
H2	Healthy food with packaging similar to junk food products will have a positive effect on Attitude toward the Product .	Higher scores for Békos but the dif was small in 2 items.		Independent Samples Test	t	,000 ,811 ,210	 
H3	Healthy food with packaging similar to junk food products will have the same perceived healthiness as a normal packaging.	High scores for both packages but slightly lower for Békos.		Independent Samples Test	t	,006	 
H4	Healthy food with packaging similar to junk food products will have a positive effect on Purchase Intention .	Much higher scores for Békos in both items.		Independent Samples Test	t	,000 ,000	 