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Impact on primary school children's taste preferences: packaging design versus product familiarity

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Abstract

Due to their considerable purchasing power, children comprise a lucrative target group for the food industry. Research has shown that 70 % of all purchase decisions are made at the point of sale under direct influence of the product packaging. In a marketing context, children are described as easily influenced and receptive to persuasive messages. Hence, food marketing directed at children may strongly influence their taste perception.

The objective of this study is to examine the impact of both product packaging design and brand familiarity on children's taste perception.

Primary school children were offered three samples of apple juice drinks: one leading brand product, one discount product with a rather simple packaging, and one product designed for children with an attractive packaging. Children tasted all samples under blind conditions. In a second session of tasting both packaging and brand were visible. Each time, children evaluated the taste of each drink and stated their preferred product. Additionally, in session 2, children were asked about their preferences with respect to product packaging and their product familiarity.

Our findings clearly stand in contrast to the expected strong influence of child-friendly packaging on children's taste preferences. Instead, the results indicate that the familiarity of a product and the brand have a stronger impact on their taste perception. We conclude that the positive perception of a packaging is essential at the point of sale to gain attention and can support the product choice. However, it cannot compensate for a dissatisfying taste.

Key words: Children, product packaging, brand familiarity, taste perception

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Introduction

In Germany, 15 % of all children are overweight, 6.3 % are obese (Kurth & Schaffrath Rosario, 2007). There are multiple reasons for this situation. Besides genetic predispositions, specifically a lifestyle combining a decreased physical activity level and an excessive energy intake causes a positive energy balance which finally results in weight gain (Elmadfa & Leitzmann, 2004). There is evidence that specialised food marketing of energy-dense food targeting children influences this development (Hastings et al., 2003; IOM, 2006; Effertz, 2008; Matthews et al., 2005).

Children have developed into a target group of particular importance for food companies as they do not only represent one market but rather three: the primary market, the influence market and the future market (McNeal, 1999; IOM, 2006; Nicholls & Cullen, 2004).

Children are lucrative and profitable consumers, representing a powerful demographic segment whose financial potential has been steadily increasing (McNeal, 1999; IOM, 2006). On average, German children between the ages of six to thirteen years receive EUR 27.50 per month composed of both pocket money and money gifts. Thus, in 2014, children aged six to thirteen had about EUR 1.81 billion at their disposal (Egmont Ehapa Verlags Gruppe, 2014). Parents enable their children to purchase products by giving money to them (Calvert, 2008). Children in turn spend their money either with or without their parents' allowance (McNeal, 1999). In Germany, 84.2 % of the children aged six to thirteen decide independently on how to spend their money (Egmont Ehapa Verlags Gruppe, 2014). Thus, children have a considerable purchasing power, spending their own money to satisfy their individual needs and wants (McNeal, 1999). Children spend most of their discretionary income on food: The products most often purchased by children are sweets (64.8 %), followed by magazines (50.2 %), fast food products (37.8 %), ice cream (37.8%) and beverages (37.3 %) (Egmont Ehapa Verlags Gruppe, 2014; McNeal, 1999).

Furthermore, children have a significant indirect purchasing power by influencing their parents' purchase decisions (McNeal, 1999; IOM, 2006). They either refuse or request, recommend or demand certain products, especially via pester power (Nicholls & Cullen, 2004; McNeal 1999).

Research reveals that children's impact does not only apply for purchases predominantly aimed at them, but also for major purchases and decisions (Flurry, 2007; Schor, 2004).

Moreover, children represent the future market (McNeal, 1999). In terms of maturity, development and ability of processing information, children cannot be placed on the same level as adults (Levine, 2005). They are more susceptible to marketing activities. In a marketing context, they are described as easily influenced, impressionable and receptive to persuasive messages (Pine & Nash, 2002). Due to the fact that 70 % of the development of brand awareness takes place in childhood and adolescence, children are tomorrow's consumers whose preferences and brand loyalty are shaped in childhood and can be turned into loyal customers (McNeal, 1992; McNeal 1999).

Children are courted with a considerable variety of marketing campaigns and strategies: Television advertising, internet presences as well as product packaging are directed at children and appeal to them through their colourful and eye-catching design (IOM, 2006). The increasing requirements on television advertising targeting children lead to a rising importance of other marketing strategies for the food industry (Harris et al., 2009). The design of product packaging is of special importance and a critical factor in the decision making process (Silayoi & Speece, 2007). Research has shown that 70 % of all purchase decisions are made at the point of sale and therefore under the direct influence of the product packaging (Frontiers, 1996). Therefore, packaging takes a leading role in attracting consumers' attention (Salahshoor & Mojarrad, 2012). Research has shown that both children and parents are influenced by packaging with an eye-catching appearance (McNeal & Li, 2003, Wartella et al., 2011). Food packages for children feature cartoon characters, testimonials, child-oriented creatures, special shaping of product or packaging, premiums, the label "kids" and represent fun, action, adventure, magic or fantasy (Matthews et al., 2005; IOM, 2006; Fritzhugh & Lobstein, 2000; Story & French, 2004).

A number of studies have shown that the design of the product packaging has an influence on children's product preferences. There is evidence that licensed characters have an effect on children's taste perception (Roberto et al., 2010; Lapierre et al., 2011). Furthermore, Robinson et al. (2007) demonstrated that branding has a strong impact on children's taste preferences.

Thus, the overall objective of this paper is to examine the impact of both product packaging design and brand familiarity on primary school children's taste perception.

The analysis is guided by the following questions:

- Do children change their taste perception in favour of a child-appealing product packaging?
- Do children rate the taste of a product better if they like the corresponding packaging?
- Does brand familiarity have an impact on children's taste perception?
- Are there differences regarding the impact of child-friendly packaging design due to age, gender and immigration background?

Methodology

A one-group pre-test post-test experiment was conducted to analyse the impact of on-product communication on children's taste perception.

The survey was conducted using the example of fruit juice drinks, which are among the food categories most often consumed by children. In Germany, 65 % of children aged six to thirteen consume fruit juice and fruit juice drinks several times a week. Furthermore, 50 % state attaching importance to a special brand regarding their fruit juice consumption (Egmont Ehapa Verlags Gruppe, 2014). Moreover, both children and parents consider fruit juice to be part of a healthy diet (Maher & Morris, 2012). Therefore, three bottled apple juices with sparkling mineral water were used: one product from the leading brand (brand product), one product from a discounter with a rather plain packaging (discount product), and one product designed for children with a colourful appearance and a licensed character known from a famous children's television show (children product).

In a first session, a sample of primary school children aged eight to ten tasted the three different juice drinks under blind test conditions. The children were tested in groups of five. Samples were served in small plastic cups, each including 50 ml of the respective juice drink. Each cup was marked with an identification code to subsequently clearly assign the cup to the respective juice drink. The identification codes differed both for each child and each drink. The children were asked to taste the three apple juice drinks one after another. Between tasting the products, children were requested to drink the water provided at each table to neutralise the taste of each juice drink. Children had to rate the taste of each fruit juice drink using a five point smiley Likert scale. Furthermore, children were asked to state which product tasted best.

In a second session a few weeks later, the same products were served as in the blind conditions' setting. Children sampled the juice drinks in groups of three. This time, the associated packages were placed right behind the plastic cups on the table so that children could assign the juices to the corresponding packaging. All packages were 0.5-liter PET bottles not differing in height or shape but in design. As in the previous session, children were asked to taste the three juice drinks and rate each product using the five point smiley Likert scale. They also had to state which product they liked most. Additionally, they were asked to state which packaging they liked most. Moreover, children had to complete a questionnaire with general questions comprising age, gender and immigration background as well as questions regarding their fruit juice consumption patterns, and their familiarity with the products.

After finishing the experiment in both the first and second session, children were supervised by an assistant in a separate room instead of returning immediately to their classrooms to avoid peer influence. The experiment was only conducted with children whose parents had signed the consent form in advance.

Results

Altogether, 59 children completed the fruit juice drink experiment. The sample was quite balanced regarding children's gender, class level and immigration background. Table 1 lists the characteristics of the sample. The majority of participants, 91.5 %, generally liked apple fruit juice drinks. With 96.6 %, the awareness level of at least one of the offered products was quite high as the majority of children were familiar with the discount (89.8 %) and brand product (54.2 %).

Characteristic	Value	%
Participants	59	
Gender		
Female	29	49.2%
Male	30	50.8%
Class level		
3rd graders	26	44.1%
4th graders	33	55.9%
Immigration background		
No	29	49.2%
Yes	27	45.8%
Don't know	3	5.1%
Apple fruit juice drink-liking		
Like very much	42	71.2%
Like	12	20.3%
Indifferent	3	5.1%
Don't like	1	1.7%
Don't like at all	1	1.7%
Familiarity with discount product		
No	6	10.2%
Yes	53	89.8%
Familiarity with brand product		
No	27	45.8%
Yes	32	54.2%
Familiarity with children product		
No	56	94.9%
Yes	3	5.1%

*Table 1: Sample characteristics
Source: Own calculation.*

In the first session, children's taste evaluation regarding the three fruit juice drinks differed significantly ($p < 0.05$). Considering the means for each fruit drink stated under blind conditions, the taste of the discount product was rated best ($=1.56$). The average evaluation of the brand product was 1.81, and the rating for the children product was 1.88.

According to this, 42.4 % of the children stated the discount product to taste best, followed by the brand product (32.3 %) and the children product (16.9 %). The share of participants who could not decide for one favourite product was 8.5 %.

For the second session, the differences between children’s taste ratings of the three fruit drinks were highly significant ($p < 0.001$). Compared to session 1, the average evaluation of the children product had significantly declined ($= 2.41$, $p < 0.01$), while the taste of the brand product was considered better ($= 1.64$). The average ratings of the discount product remained consistently on the same level ($= 1.56$). Figure 1 illustrates the average results of the taste evaluations for both periods.

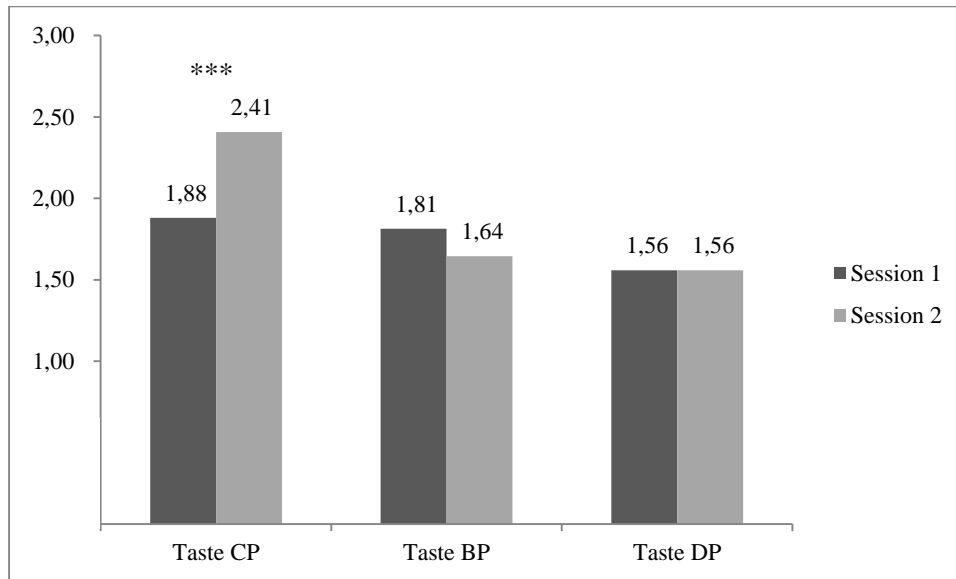


Figure 1: Taste evaluation in session 1 and session 2
 Note: CP = children product, BP = brand product, DP = discount product; *** $p < 0.01$
 Source: Own calculation.

Asked to state which product tasted best, 40.7 % of the children preferred the taste of the discount product, followed by the brand product (27.1 %) and the children product (15.3 %). Thus, all three fruit drinks were favoured by fewer participants than in session 1, while the number of participants who could not decide for one product increased (16.9 %). It can be determined that 33.9 % of the participants favoured the taste of the same product as in session 1, while 66.1 % changed their taste preferences.

The results regarding the evaluation of the preferred product packaging revealed that the majority of the children favoured the packaging of the children product (40.7 %). Moreover, 28.8 % of the children favoured the packaging of the brand product, 18.6 % preferred the packaging of the discount product, and 11.9 % could not decide at all. No differences in gender, age or immigration background were observed regarding children’s rating of the product packaging.

As shown in Figure 2, the difference between children's favoured taste and their favoured packaging in session 2 was significant ($p < 0.05$). Looking closely at the children preferring the packaging of the children product, one can deduce that their taste evaluation regarding the children product declined significantly between the first and second period ($p < 0.1$).

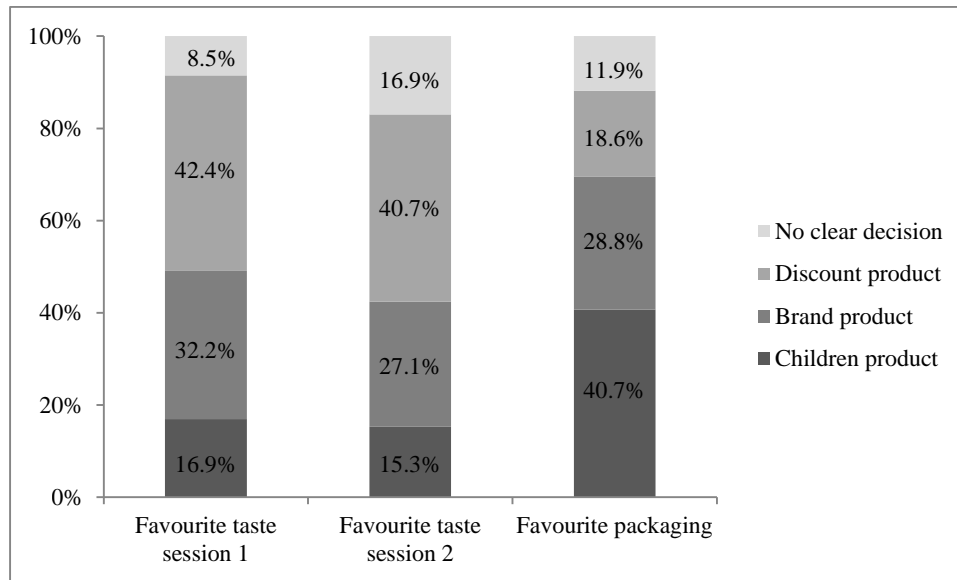


Figure 2: Favourite taste evaluation and favourite packaging evaluation
Source: Own calculation.

In the following, Figure 3 illustrates the comparison of data from session 1 and 2 considering only those children who were familiar with the brand product ($n = 32$; 54.2 %). The results indicated that they rated the taste of the brand product significantly better in the second period ($p < 0.05$). Furthermore, they evaluated the taste of the children product significantly worse than in session 1 ($p < 0.05$), while no significant difference regarding their evaluation with respect to the discount product could be determined.

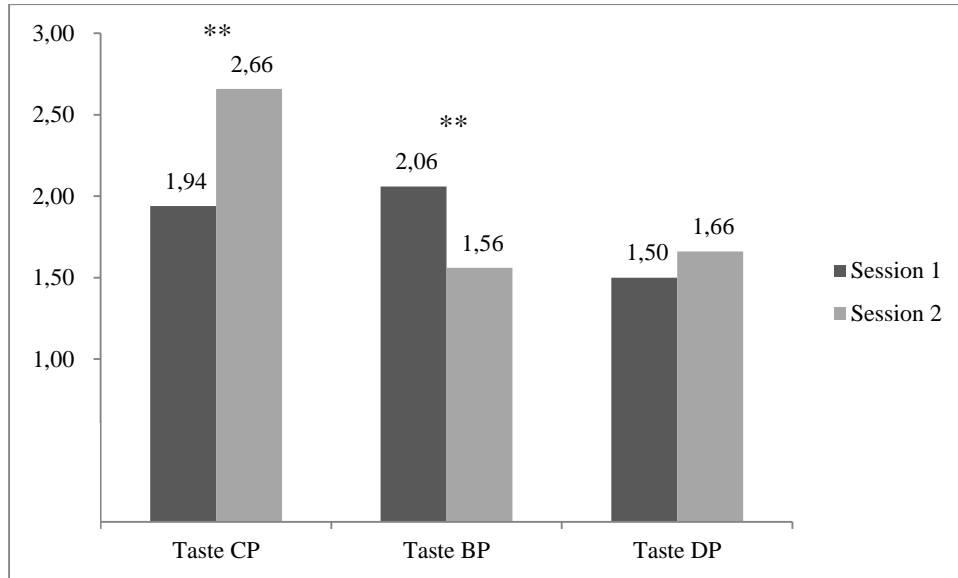


Figure 3: Taste evaluation of children familiar with the brand product in session 1 and session 2 (n = 32)
 Note: CP = children product, BP = brand product, DP = discount product; **p < 0.05
 Source: Own calculation.

Similar findings applied to those children who stated being familiar with the discount product (n = 53; 89.8 %) by comparing the data from session 1 and 2 as shown in Figure 4. Although no significant changes could be observed regarding the taste ratings of both the discount product and the brand product, the taste evaluation of the children product declined significantly in the second period (p < 0.01).

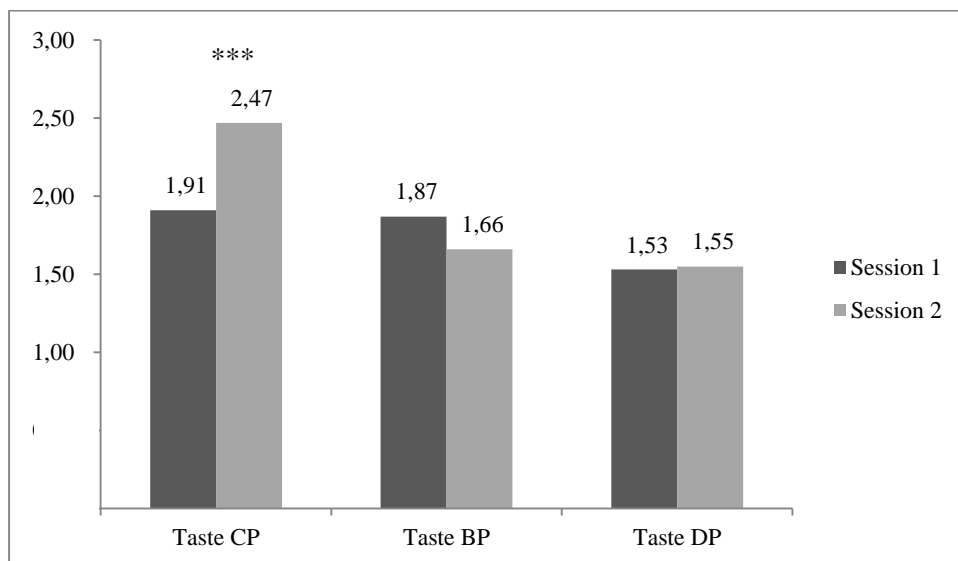


Figure 4: Taste evaluation of children familiar with the discount product in session 1 and session 2 (n = 53)
 Note: CP = children product, BP = brand product, DP = discount product; ***p < 0.01
 Source: Own calculation.

Focussing on the taste evaluation data of third and fourth graders, the analysis found that no relevant differences could be observed between both age groups during session 1. However, in the second experimental period, third graders rated the taste of both the children product ($p < 0.01$) and the brand product ($p < 0.1$) significantly higher than the compared age group (Figure 5). Furthermore, fourth graders evaluated the taste of the children product significantly worse in session 2 compared to session 1 ($p < 0.001$).

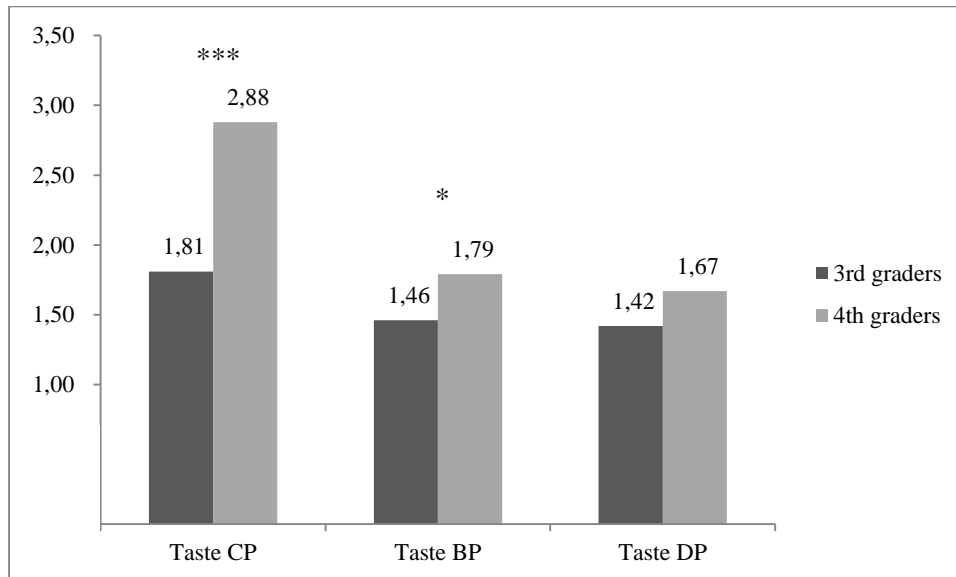


Figure 5: Taste evaluation of third and fourth graders in session 2
 Note: CP = children product, BP = brand product, DP = discount product; * $p < 0.1$; *** $p < 0.01$
 Source: Own calculation.

The analysis of the data with regard to the immigration background of the participants, illustrated in Figure 6, indicated that children from an immigration background rated the taste of the discount product in session 2 significantly better than non-migrant children ($p < 0.05$). For the children product and the brand product, no relevant differences could be detected between the groups. Similar findings can be applied to the comparison of their ratings in session 1 and 2 as no significant differences could be observed.

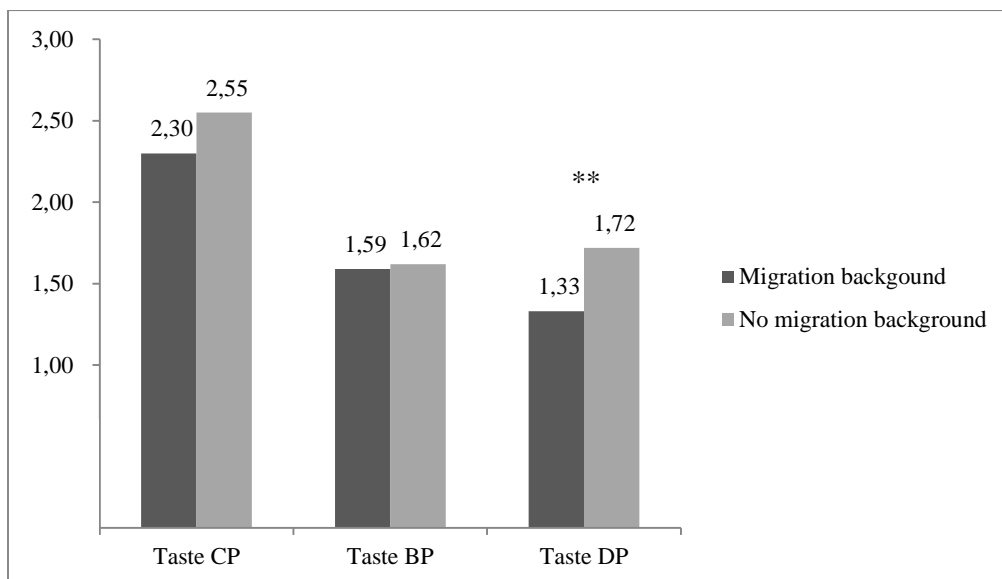


Figure 6: Taste evaluation of participants with and without immigration background in session 2
 Note: CP = children product, BP = brand product, DP = discount product; ** $p < 0.05$
 Source: Own calculation.

Discussion

The aim of this study was to analyse the impact of product packaging and brand familiarity on children’s taste perception. The purpose was to examine whether children change their sensorial preferences once they are aware of the corresponding packaging.

Of particular interest was their behaviour with regard to child-friendly product packaging. Our findings clearly stand in contrast to the expected strong influence of a child-appealing packaging on children’s taste perception. The results indicate that a child-oriented product packaging does not affect children’s sensorial preferences in favour of the children product. In contrast, once they received information on the related brands, children rated the taste of the children product worse than under blind test conditions, whereas the taste of the product from the leading brand was valued higher. This finding coincides with the fact that children attach importance to a special brand regarding their fruit juice consumption (Egmont Ehapa Verlags Gruppe, 2014).

According to the analysis’ findings, children do not evaluate the taste of a product better if they prefer the corresponding packaging. Although the majority of children preferred the design of the children product, the ratings of the children products’ taste do not reflect this situation. On the contrary, they are rather worse than without any information about the product packaging. Therefore, a significant difference between children’s favoured taste and their favoured

packaging could be observed. Regarding the children preferring the brand or discount product's packaging, no differences in rating the corresponding product's taste has been determined at all. Thus, it can be concluded that the packaging design cannot be emphasised as the decisive factor regarding children's taste preference. Nevertheless, as 70 % of all purchase decisions are made at the point of sale under influence of product packaging (Frontiers, 1996), the finding that most children prefer the children products' packaging design is of enormous importance. This is especially essential, since children normally do not compare the taste of several products with each other.

Concerning the impact of brand familiarity on children's taste perception, no statement can be made regarding the children product because of the small number of participants being familiar with it. In contrast to this, more than half of the children were familiar with the brand product. These children significantly changed their brand products' taste perception once the packaging was presented, and evaluated its taste highest. These findings reveal that children's brand awareness may have an influence on children's taste perception. Furthermore, the majority of children were accustomed to the discount product. Simultaneously, it was the product which received the best average taste evaluations and thus, was favoured in taste for both sessions. Especially children with an immigration background rated its taste high in session 2. Therefore, the results of the experiment indicate a close interdependence between the familiarity of a product and children's taste preferences.

Despite the fact that the licensed character displayed on the children's product is from one of children's favourite television shows (MPFS, 2015), neither the third graders nor the fourth graders rated the taste of the children product best once the packaging was visible. This might be due to the fact that eight to 12 years old children develop to be attracted by more realistic themes than childish characters (Acuff & Reiher, 1997). The finding indicates that the taste evaluations of the juices clearly show age variations as third graders rated the children product significantly higher than fourth graders. Therefore, it may be assumed that older children start showing aversions for childish products. Nevertheless, as both age groups favoured the children's product package design, it is possible that children's decision would have differed in another setting. Especially at school and consequently in the presence of their classmates, children's behaviour may be affected by peer influence leading to a different decision.

Related to gender and immigration background, the findings do not indicate any differences regarding the impact of child-friendly packaging design.

Conclusion

It can be concluded that child-appealing product packaging does not influence children's taste perception in a positive way. Instead, the results indicate that product familiarity has a stronger impact on children's taste perception and preferences.

However, it must be recognised that these results only apply for children aged eight to 11 years. Previous research indicates that younger children's taste perception is positively influenced by child-friendly packaging. Therefore, it cannot be ruled out that different results would have been obtained if a younger sample had been taken into account.

In summary, it can be stated that the positive perception of packaging design is essential at the point of sale to gain both children's and adults' attention and therefore can support their product choice. However, it cannot compensate a dissatisfying taste.

References

- Acuff, D. S.; Reiher, R. H. (1997). *What Kids Buy and Why. The Psychology of Marketing to Kids*. New York: The Free Press.
- Calvert, S. L. (2008). Children as Consumers: Advertising and Marketing. *Future of Children*, 18(1), 205-234.
- Effertz, T. (2008). *Kindermarketing - Analyse und rechtliche Empfehlungen*. Frankfurt: Peter Lang Verlagsgruppe.
- Egmont Ehapa Verlags Gruppe (2014). *KidsVerbraucherAnalyse 2014*. Berlin: Egmont Ehapa Media.
- Elmadfa, I.; Leitzmann, C. (2004). *Ernährung des Menschen*. Stuttgart: UTB.
- Flurry, L. A. (2007). Children's influence in family decision-making: Examining the impact of the changing American family. *Journal of Business Research*, 60(4), 322-330.

- Fritzhugh, K.; Lobstein, T. (2000). *Children's Food Examined – An analysis of 358 products targeted at children*. London: The Food Commission.
- Frontiers (1996). Planning for consumer change in Europe 1996/1997, cf. Brewer, C.; Rettie, R. (2000): The verbal and visual components of package design. *Journal of Product & Brand Management*, 9(1), 56-76.
- Harris, J. L.; Pomeranz, J. L.; Lobstein, T.; Brownell, K. D. (2009). A Crisis in the Marketplace: How Food Marketing Contributes to Childhood Obesity and What Can Be Done. *Annual Review of Public Health*, 30, 211-225.
- Hastings, G.; McDermott, L.; Angus, K.; Stead, M.; Thomson, S. (2006). *The extent, nature and effects of food promotion to children: A review of the evidence*. Geneva: World Health Organization.
- IOM (2006). *Food Marketing to Children and Youth: Threat or Opportunity?* Washington D.C.: The National Academies Press.
- Kurth, B.-M.; Schaffrath Rosario, A. (2007). Die Verbreitung von Übergewicht und Adipositas bei Kindern und Jugendlichen in Deutschland. Ergebnisse des bundesweiten Kinder- und Jugendgesundheits surveys (KiGGS). *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz*, 50(5/6), 736-743.
- Lapierre, M. A.; Vaala, S. E.; Linebarger, D. L. (2011). Influence of Licensed Spokescharacters and Health Cues on Children's Ratings of Cereal Taste. *Archives of Pediatrics & Adolescent Medicine*, 165(3), 229-234.
- Levine, R. (2005). *Die große Verführung*. München: Piper.
- Maher, J. K.; Morris, R. (2012). It' Called Fruit Juice So It's Good For Me..... Right? An Exploratory Study of Children's Fruit Content Inferences Made From Food Brand Names And Packaging. *The Journal of Applied Business Research*, 28(3), 501-514.
- Matthews, A.; Cowburn, G.; Rayner, M.; Longfield, J.; Powell, C. (2005). *The marketing of unhealthy food to children in Europe*. Brüssel: European Heart Network.

- McNeal, J. U. (1992). *Kids as Customers: A Handbook of Marketing to Children*. New York: Lexington books.
- McNeal, J. U. (1999). *The Kids Market: Myth or Realities*. Ithaca, NY: Paramount Market Publishing.
- McNeal, J. U.; Ji, M. F. (2003). Children's visual memory of packaging. *Journal of Consumer Marketing*, 20(5), 400-427.
- MPFS (2015). *KIM-Studie 2014. Kinder + Medien, Computer + Internet. Basisuntersuchung zum Medienumgang 6- bis 13-Jähriger in Deutschland*. Stuttgart: Medienpädagogischer Forschungsverbund Südwest.
- Nicholls, A. J.; Cullen, P. (2004). The child-parent purchase relationship: 'pester power', human rights and retail ethics. *Journal of Retailing and Consumer Services*, 11(2), 75-86.
- Pine, K. J.; Nash, A. (2002). Dear Santa: The effects of television advertising on young children. *International Journal of Behavioral Development*, 26(6), 529-539.
- Roberto, C. A.; Baik, J.; Harris, J. L.; Brownell, K. D. (2010). Influence of Licensed Characters on Children's Taste and Snack Preferences. *Pediatrics*, published online Jun 21, 2010.
- Robinson, T. N.; Borzekowski, D. L. G.; Metheson, D. M.; Kraemer, H. C. (2007). Effects of Fast Food Branding on Young Children's Taste Preferences. *Archives of Pediatrics & Adolescent Medicine*, 161(8), 792-797.
- Salahshoor A.; Mojarrad, F. (2012). Applying Golden Ratio in Product Packaging and Its Effect on Consumer's Buying Behaviour. *World Journal of Social Science*, 2(2), 49-60.
- Schor, J. B. (2004). *Born to Buy: The Commercialized Child and the new Consumers*. New York: Scribner.
- Silayoi, P.; Speece, M. (2007). The importance of packaging attributes: a conjoint analysis approach. *European Journal of Marketing*, 41, 1495-1517.

Story, M.; French, S. (2004). Food Advertising and Marketing Directed at Children and Adolescents in the US. *International Journal of Behavioral Nutrition and Physical Activity*, published online Feb 10, 2004.

Wartella, E. A.; Lichtenstein, A. H.; Yaktine, A.; Nathan, R. (2011). *Front-of-Package Nutrition Rating Systems and Symbols: Promoting Healthier Choices*. Washington DC: Institute of Medicine of the National Academies.