THE “CUTENESS = SWEETNESS” INTUITION:
THE PRIMING EFFECTS OF CUTENESS ON CONSUMERS’ FOOD
PERCEPTION AND PURCHASE INTENTION

A Thesis in
Hospitality Management
by
Xunyue Xue

© 2020 Xunyue Xue

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2020
The thesis of Xunyue Xue was reviewed and approved* by the following:

Anna S. Mattila
Marriott Professor of Lodging Management
Professor in Charge of Graduate Program
Thesis Advisor

Donna Quadri-Felitti
Associate Professor of Hospitality Management
Marvin Ashner Director of the School of Hospitality Management

Heyao (Chandler) Yu
Assistant Professor of Hospitality Management
ABSTRACT

All humans crave for sweet foods despite their age, race, and cultural background (Drewnowski et al., 2012), and they are conditioned to expect sugary foods at a high sweet level (De la Peña, 2010; Laudan, 2016; Woloson, 2002). Therefore, lots of food marketers intuitively use cute elements to position their products as “sweeter”. Yet, research on the “cuteness = sweetness” link in the marketing domain is scant. This research examines how priming cuteness influences consumers’ food perceptions (i.e., perceived sweetness, tastiness, and healthiness) and purchase intention. An online and a lab experiment were employed to test the proposed hypotheses. The major findings indicate that priming cuteness increases purchase intention, which is sequentially mediated by perceived sweetness and tastiness. Cute elements increase perceived sweetness and the positive priming effect of cuteness on perceived tastiness is mediated by perceived sweetness, whereas cute stimuli have no impact on healthiness perception. I present the theoretical contribution and practical implications of the study’s findings and propose directions for future research.
# TABLE OF CONTENTS

LIST OF FIGURES .............................................................................................................. v  
LIST OF TABLES ................................................................................................................ vi  
ACKNOWLEDGEMENTS ................................................................................................. vii  

Chapter 1 Introduction ........................................................................................................ 1  
Chapter 2 Literature Review ............................................................................................. 4  
  Overview of cuteness research ......................................................................................... 4  
  Cute priming and sweetness perception ........................................................................... 6  
  Cute priming and opposite tastiness/healthiness perception ........................................ 9  

Chapter 3 Methods and Results ......................................................................................... 13  
  Study 1 .............................................................................................................................. 13  
    Design and participants .................................................................................................. 13  
    Stimuli ............................................................................................................................ 14  
    Procedures and measures ............................................................................................. 15  
    Results ........................................................................................................................... 16  
  Study 2 .............................................................................................................................. 20  
    Design and participants ............................................................................................... 20  
    Stimuli ............................................................................................................................ 20  
    Procedures and measures ............................................................................................. 21  
    Results ........................................................................................................................... 22  

Chapter 4 General Discussion ......................................................................................... 26  
  Theoretical implications ................................................................................................. 27  
  Managerial implications ............................................................................................... 29  
  Limitations and future research ..................................................................................... 30  

Appendix Cuteness Measurements for Study 1 & 2 ......................................................... 32  

References ......................................................................................................................... 34
LIST OF FIGURES

Figure 1-1: Examples of cuteness marketing practices ................................................................. 2
Figure 2-1: The conceptual framework ......................................................................................... 11
Figure 3-1: Cute (left) vs. neutral (right) cookie shape (Study 1) .................................................. 14
Figure 3-2: Main effect of cute priming on food perceptions and purchase intention (1) ........ 17
Figure 3-3: Sequential effect of cute priming on purchase intention (1) ................................. 18
Figure 3-4: Sequential effect of cute priming on purchase intention (2) ................................ 19
Figure 3-1: Cute (left) vs. neutral (right) cookie shape (Study 2) ............................................... 21
Figure 3-2: Main effect of cute priming on food perceptions and purchase intention (2) .... 23
Figure 3-3: Sequential effect of cute priming on purchase intention (3) ............................... 24
Figure 3-4: Sequential effect of cute priming on purchase intention (4) ............................... 25
LIST OF TABLES

Table 3-1: Demographic profile of respondents................................................................. 13
Table 3-2: Two study results................................................................................................. 25
ACKNOWLEDGEMENTS

I would like to thank the Marriott Foundation for the funding of this research
Chapter 1

Introduction

Cute attack: A sensational response incited by the witnessing of something cute, precious, fuzzy or otherwise snuggly. Symptoms include chills traveling up the spine and through the fingertips, impulsive smiling and jerking of the limbs.

- Urban Dictionary, December 14, 2009

Humans naturally prefer sweet foods despite their age, race, or cultural background (Drewnowski et al., 2012). Collectively, the United States has an extreme, not-reserved-for-special-occasions sweet tooth that adds up to a startling statistic: the average American consumes 22 pounds of candy every year, and more than 1,200 firms in the U.S. manufacture sweets and treats worth $14.5 billion a year (U.S. Census Bureau, 2016).

Riding on this consumer trend, a greater number of food producers have started to position their products as “sweeter” by using various visual appeals. Approximately 64% of consumers say that they choose a product simply based on the packaging’s visual appeal (Nielsen, 2016). A vast majority of academic research has investigated the impact of single design elements on perceived sweetness, such as the shape (Ngo et al., 2013; Fenko et al., 2016; Van Ooijen et al. 2017), color (Karnal et al. 2016; Mai et al., 2016), transparency (Deng & Srinivasan 2013), imagery (Deng & Kahn 2009; Machiels & Karnal 2016), and label placement (Huang et al. 2019). Among all the design elements, a specific marketing cue that has attracted both industrial and scholarly attention is cuteness.

Cuteness, though denoting varied meaning in daily communication, its academic conceptualization falls into two types: (1) kindchenschema, which assesses the degree to which the object has a baby-like in appearance (Lorenz, 1943), and (2) whimsicality, which focuses on
characteristics of whimsical fun and playfulness (Nenkov & Scott, 2014). Previous studies found that the effect of cuteness, evoked by multiple design elements, is robust and universal (Esposito et al., 2014; Hildebrandt, 1983). Therefore, worldwide food marketers widely incorporate cute elements into their sweet foods to increase product likability, to generate favorable emotions and attitudes, consequently influencing consumers’ food intake and food choice (Boyer et al., 2012; Branen et al., 2002; Nenkov & Scott, 2014). For example, Innocent Drinks makes use of anthropomorphic fruit pictures on their juice bottles; Fujiya’s cute mascot Peko-chan, the smiley and mischievous babyface, is a big part of what makes the brand so instantly recognizable; Sanrio, a Japanese company that designs, licenses and produces kawaii (cute) characters that graces the packaging of many snack and bakery companies.

Figure 1-1: Examples of cuteness marketing practices

Such widespread use of cute stimuli in the sweets/treats marketing may reflect an intuitive association between cuteness and sweetness (REF?). Surprisingly, to the best of my knowledge, no study has empirically investigated the cuteness-sweetness link in the marketing domain. So, how does the visual appeal of cuteness influence consumers’ sugary food perceptions and behavior intention? To answer the questions, I draw insight from both the cuteness and the sensory marketing literature. Previous research suggests that both internal and external sources underlie the “cuteness = sweetness” intuition. Internally, humans have an instinct to integrate
multiple sensory elements when such sensory modalities evoke common feelings and emotions (Frank et al., 1993; Marks, 2014; Spence, 2011). Building on this notion named “crossmodal correspondences”, I argue that that the “sweet taste/cute vision” match is evoked by the hedonic properties embedded in both sensory modalities. Externally, before tasting, the visual perception may induce some expectations based on consumers’ previous experiences. This cognitive status, in turn, influences consumers’ subsequent taste perceptions. To elaborate, the marketing efforts of constantly pairing cute elements with sugary foods may enhance perceived sweetness regardless of the actual sugar level.

This thesis has several implications for theory. First, it illuminates a novel facilitator, cuteness, that serves as an extrinsic sensory cue and leads consumers to perceive the sugary food as sweeter. Second, this research extends the line of food perception research to the concept of cuteness, suggesting that priming cuteness only significantly increases perceived tastiness but not influences perceived healthiness of sugary foods. Third, this research also adds to the growing literature on cute marketing. To the best of my knowledge, this is the first research to investigate the priming effect of cuteness on consumers’ purchase intention of sweet foods, and the sequential mediating role of sweetness perceptions and tastiness/healthiness perceptions. In the following chapter, the literature related to the priming effect of cuteness and food perception is reviewed. The research methods employed in this study and the results are then described. Finally, the theoretical and managerial implications of this research, in addition to a discussion of limitations and potential future research, are presented.
Chapter 2

Literature Review

Overview of cuteness research

The word “cute” is ubiquitous in both the marketplace and daily communication (Wang & Anirban, 2015). Even though cuteness denotes various, somewhat contradictory meanings in colloquial language, in academia, it is categorized into two types: kindchenschema and whimsicality.

*Kindchenschema*. Also known as “baby schema”, kindchenschema is a classic, well-accepted definition of cuteness, firstly proposed by ethologist Konrad Lorenz (1943). It refers to a set of infantile characteristics that evoke positive affective responses in human beings, including both physical features (e.g., the large forehead, round chubby cheeks, and big eyes) and behavioral traits (e.g., clumsy behavior; Glocker et al., 2009). Kindchenschema can attach cuteness to infants (Li, Haws & Griskevicius, 2018), adults (Berry & McArthur, 1985), and even to non-human objects like animals and manufactured products (Golle et al., 2013; Miesler et al., 2011). Miesler et al. (2011) suggest that cars with larger “eyes” (headlights), narrower “lips” (air intake), and small “noses” (middle grilles) are perceived cuter than ones without such features, thus eliciting observers’ positive responses. Since it relates to the vulnerable nature of a living entity, exposure to kindchenschema cuteness triggers an innate releaser of parental care (Berry & McArthur 1985; Lorenz 1943). Due to such mental representations of vulnerability and caretaking, marketing researchers mainly study the impact of kindchenschema on enhancing “other-benefit” behaviors such as charity donations consumption of green products and tolerance of product failure (Xie et al., 2018). For instance, Shin (2019) found that after viewing a set of cute images, participants exhibited higher donation intentions to a local food bank; Silva (2016)
demonstrated the effect of cuteness appeals on promoting a more plant-based diet; and Sprengelmeyer et al. (2019) pointed out that since cuteness increases perceived warmth, consumers tend to have higher tolerance for the failure of cute brands and are more willing to listen to failure explanations.

*Whimsicality.* Nenkov and Scott (2014) proposed a novel dimension of cuteness, which “is associated with capricious humor and playful disposition”. Examples of such cuteness include an ice-cream scoop shaped like a miniature person or a dress with tropical colors and pink flamingos. Wang and Anirban (2015) suggest that the French firm Pylones is an excellent example of capturing whimsical cuteness since it specializes in “poetic and colorful objects”. Distinctively different from the vulnerable nature inherent in kindchenschema, whimsicality primes mental representations of fun and hedonic values. Therefore, related studies focus on its impact on self-benefit behaviors. Nenkov and Scott (2014) found that priming cuteness increases consumers' self-reward focus and makes them more likely to choose indulgent options. In a later study (2016), they identified the effect of “responsibility reminders” on reducing cuteness-induced indulgent consumption. When consumers are reminded of their responsibility to themselves and other people, they are more likely to resist the temptation of purchasing cute products, thus contributing to their long-term well-being.

Overall, cuteness is a multifaceted construct with two underlying subsets. The general cuteness is a robust yet universal cue. Firstly, the effect of cuteness tends to override the effects of other visual cues (Wang & Anirban, 2015). For example, usually, facial expressions with positive emotions are found to increase perceived attractiveness. However, Hildebrandt (1983) suggests that certain babies were rated more attractive, simply out of cuteness rather than the expressions they conveyed. Secondly, cuteness perceptions are universal rather than culturally determined. Sanefuji et al. (2007)'s study showed that preschool children, with little cultural experiences, have similar preferences for cute objects. Esposito et al. (2014) found that cuteness
perceptions transcend group membership distinctions (i.e., similar responses for both in-groups and out-groups). Parsons et al. (2011) also found that although women were more likely to report sensitivity towards cute infant features, no significant difference was found between men’s and women’s time spent looking at cute stimuli.

**Cute priming and sweetness perception**

The mainstream research of cuteness marketing centers around “the priming effect” of cuteness on consumers’ perceptions and behaviors. Priming, as suggested by social-cognitive theories, refers to the “technique whereby exposure to one stimulus influences an individual’s response to a subsequent stimulus, without conscious guidance or intention” (Bargh & Chartrand, 2000; Weingarten et al., 2016). In other words, exposure to one stimulus, which appears to have an overlap or strong association (the association can be perceptual, semantic, or conceptual) with the targeted stimulus, can activate given types of perceptions or behaviors (Dijksterhuis & Bargh, 2001). A significant amount of research has shown that people infer underlying traits and exhibit behaviors they associate with other individuals, social groups, symbols, brands, and even product attributes (Aggarwal & McGill, 2012; Fitzsimons et al., 2008). Consumers often lack access to complete product information, and therefore, they tend to use symbolic associations to form judgments about product attributes, which in turn, spill over to their product evaluations (Benedikt, 2019; Deval et al. 2013).

Of particular importance to the current research, prior research has demonstrated that packaging design elements, such as shape, color, and imagery, can alter consumers’ mental representations, thus influencing their sweetness perceptions of food. Consumers perceive food as sweeter when food packages are rounded rather than angular (Velasco et al., 2014), symmetric rather than asymmetric, contain more elements rather than less (Salgado-Montejo et al., 2015),
voluminous rather than tight (Deroy & Valentin, 2011). Moreover, the priming effect still holds when it’s not directly related to the target object. For instance, when instructed to listen to low-pitched sounds and to read semantically familiar words, participants expressed higher levels of “sweet” sensitivity (Liang et al., 2013; Velasco et al., 2014).

Taken together, prior research has examined the effect of single design elements, while the focus of the current study is to investigate the effects of cute priming evoked by multiple design elements. So, how does cute priming influence consumers’ sweetness perceptions of food? This study posits that both internal and external sources underlie the “cuteness = sweetness” intuition.

**Internal sources.** Humans are naturally integrative in their sensory perceptions (Frank et al., 1993). The idea that the sweet food’s cute features can convey clues about its sweet taste may be explained by the notion of “crossmodal correspondences”. Spence (2011) defines crossmodal correspondences as “the tendency to match various attributes and sensory dimensions across different sensory modalities”. To elaborate, when one sensory modality (e.g. taste) only provides ambiguous and incomplete information, humans need to take in information from other parallel sensory channels (e.g. light, sound, temperature, pressure and smell) to form concepts and opinions about a complex stimulus, such as food or consumer products (Lavin & Lawless, 1998). Crossmodal correspondences are more likely when all the sensory modalities evoke a common feeling or emotion (Marks, 2014; Spence, 2011).

This study proposes that sweet taste/priming cuteness matches may be partly mediated by the hedonic properties embedded in both sensory modalities. On the one hand, sweetness has high hedonic value (Frijters, 1987) - the response to ingestion is one of pleasure, thus imparting high hedonic value to sugar and sugar-containing foods. People typically match sweet taste with visual stimuli when they denote similar hedonic and intensity-related properties (Velasco et al., 2014). For example, Liang et al. (2013) and Velasco et al. (2015) showed that package shapes with
curvature attributes (e.g., circles and ellipses) induce higher hedonic scores, thus increasing consumers’ sweet sensitivity (i.e., the ability to detect sweetness in food). Salgado-Montejo et al. (2015) also suggest that participants categorized shapes that were round, symmetrical, and which had fewer elements as sweeter and more pleasant. On the other hand, cuteness in general evokes a positive affective response. The evidence in the International Affective Picture System (IAPS) showed that the seven images rated highest in positive valence are all images of cute animals and human babies (Lang, Bradley & Cuthbert, 1999). Both the mental representations of kinchenschema (i.e., wholesomeness) and whimsicality (i.e., fun and playfulness) point to the hedonic value of cute features. Taken together, this study proposes that the positive feelings people associate with cute visual stimuli spill over to the pleasure associated with sweet taste.

External Sources. In addition to sensory transference, marketing communications repeatedly pairing sweet food with cute elements also account for the “cuteness = sweetness” intuition. As Piqueras-Fiszman et al. (2012) suggested, the visual perception may set up some expectations based on previous experiences and thereby unconsciously influence people’s taste perceptions. Being constantly exposed to marketing communications pairing sweet food with cute elements, consumers tend to view cuteness and sweetness cues as compatible. Other external sources include personal communications, in which people are constantly exposed to views that are compatible with the cuteness=sweetness intuition. The dictionary definition of “kawaii” (cuteness) – “has a sweet nature” has suggested the co-occurrence of sweet and cute concepts (Nittono, 2016). Cuteness has become the favored language of (the predominantly female) the popular consumer culture (Granot, Alejandro & Russell, 2014). Taken together, I propose the following:

H1: Cute (vs. neutral) priming increases consumers’ perception of food sweetness.
Cute priming and its opposite effect on tastiness/healthiness perceptions

Prior research suggests that as sweet intensity increased it had a positive impact on perceived pleasantness, up to a flattening point (Pfaffmann, 1980; Wundt, 1874). When stored in long-term memory, sweetness is not only a sensory perception but also “a part of the mental attitude towards the food concerned” (Frijters, 1987). In other words, sweetness positively correlates with perceived tastiness. For example, Meiselman (1977) found that 40% of 378 preferred food items were classified as being sweet. Despite their age, ethnicity, or culture, humans have an innate preference towards the sweet taste due to the rewarding properties of sugars and repeated experiences with heavily marketed, intensely sweet foods (Drewnowski et al., 2012). The sense of pleasant feelings/emotions generated by cute priming will raise consumers’ focus and responsiveness to cues regarding the possible self-reward, thus increasing their perceptions of potential hedonic benefits (Voss et al., 2003). The hedonic value of food products is defined by how good the food tastes (Connell & Mayor, 2013). In the field of sweet foods, one important criterion of tastiness is perceived sweetness.

Therefore, the impact of cute priming increasing consumers’ tastiness perceptions is a two-step process: (1) when exposed to a food item with cute packaging/shape, the notion of pleasure is likely to be triggered and become mentally accessible. (2) The product imagery is likely to be influenced by the pleasure association, resulting in the food item being perceived as having more hedonic value (i.e., for sugary foods = sweeter and tastier). Thus,

H2a: Cute (vs. neutral) priming increases perceived tastiness.

H2b: The positive effect of cute priming perceived tastiness is mediated by perceived sweetness.

However, according to the naive theory (Deval et al. 2013), people tend to draw opposing inferences from the same information. Specifically, consumers categorize objects into those that
are fun and exciting (tasty) and those that are wholesome (healthy, nourishing, and good for you) and hold the belief that there exists a compensatory relationship between the “wholesomeness” and the one with “hedonic potential” (Raghunathan, Naylor & Hoyer, 2006). People generally believe that healthy foods should have simple and clean designs such as muted colors, transparent packages, and non-animated packages. While foods with cute elements go against such traditional belief that healthy foods should look serious and may lead to negative healthiness inference. For example, Elliott (2009) suggested that foods’ playful appearance negatively influences children’s interpretation of health and nutrition. Huang and Lu (2013) also show that sweetness perceptions mediate the relationship between package color and healthiness perceptions of foods. Since I expect that priming cuteness leads to a positive inference about the food’s sweetness, I predict that that cute priming serves as a positive taste cue and as a negative health cue. Thus,

H3a: Cute (vs. neutral) priming decreases perceived healthiness.
H3b: The negative effect of cute priming on perceived healthiness is mediated by perceived sweetness.

Previous research shows that perceptions have a direct and often unconscious effect on a wide range of behaviors, from simple motor movements to elaborate behavioral patterns (Dijksterhuis et al. 2005). Accordingly, consumers’ food perceptions, activated by a particular mental construct, influence their food decisions such as purchase intention. As priming cuteness simultaneously increases perceived tastiness while decreasing perceived healthiness of the food item, what is their relative impact on consumers’ purchase intention?

Previous studies have shown that product type influences consumer responses to products, assortments, and promotions by shifting consumers’ focus to make judgments (Hui et al., 2009; Milkman et al., 2008; Okada, 2005; Wertenbroch, 1998). For vice products (known as “wants”), consumers pay more attention to the immediate pleasure they could experience rather than long-term outcomes to make purchase decisions. While for virtue products (known as
“should”), the contribution to health is the most prominent criteria (Van Doorn & Verhoef, 2011). The sugary foods like cookies, chocolates, and cakes are vice products since they bring the affective gratification and are hedonic by nature (Batra & Ahtola, 1991; Hirschman & Holbrook, 1982). Prior studies show that consumers focus on experiential attributes (i.e., the taste and social–cultural meaning of the food) rather than functional values when evaluating hedonic foods. For example, Schnurr (2019) found that for vice products (vs. virtue products), consumers interpret cute packaging as a positive signal for tastiness, and care less about their negative association with healthiness, thus increasing their purchase intention. Therefore, I predict that when evaluating sugary foods, consumers prioritize tastiness rather than healthiness when making purchase decision. Thus,

H4: For sweet foods, the positive impact of cute priming on consumers’ purchase intention is sequentially mediated by perceived sweetness and perceived tastiness.

The conceptual framework is shown below:

Figure 2-1: The conceptual framework
Chapter 3

Methods and Results

Study 1

Study 1 has two main goals. Firstly, it aims to demonstrate the cute priming effect. If so, cuteness priming will have a positive impact on consumers’ purchase intention of sweet foods. Secondly, this study investigates the underlying mechanism that cuteness cues make consumers expect sugary foods to be sweeter, which further influences perceived tastiness, perceived healthiness, and consequent purchase intention. I conduct an online experiment with visual stimuli in line with previous studies on cuteness and food decision (Nenkov & Scott, 2014; Schnurr, 2019).

Design and participants

This study used a single-factor (cute priming: cute vs. control) within-subjects design. Cuteness priming was manipulated with images. Fifty-five participants were recruited from Amazon Mechanical Turk (MTurk) for a small monetary compensation. Two participants who did not pass the attention checks were excluded from further analyses. Table 3-1 shows the demographic profile of the respondents.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Characteristics</th>
<th>Participants (N = 53)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>34</td>
<td>64.2%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19</td>
<td>35.8%</td>
</tr>
<tr>
<td>Age</td>
<td>18 - 24</td>
<td>3</td>
<td>5.7%</td>
</tr>
<tr>
<td></td>
<td>25 – 34</td>
<td>20</td>
<td>37.9%</td>
</tr>
<tr>
<td></td>
<td>35 – 44</td>
<td>19</td>
<td>36%</td>
</tr>
</tbody>
</table>
Stimuli

Pictures of two sugary cookies were chosen as stimuli. A Hello Kitty shape and a round shape were selected as cute and neutral shapes, in line with the definition of cuteness and previous experiments (Lee et al., 2018; Nenkov & Scott, 2014).

Figure 3-1: cute (left) vs. neutral (right) cookie shape (Study 1)

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>42</td>
<td>79.2%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>3</td>
<td>5.7%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school graduate</td>
<td>13</td>
<td>24.5%</td>
</tr>
<tr>
<td>Some college</td>
<td>9</td>
<td>17%</td>
</tr>
<tr>
<td>2-year degree</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>4-year degree</td>
<td>21</td>
<td>39.6%</td>
</tr>
<tr>
<td>Professional degree</td>
<td>4</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000 to $50,000</td>
<td>33</td>
<td>62.3%</td>
</tr>
<tr>
<td>$50,000 to $100,000</td>
<td>19</td>
<td>35.8%</td>
</tr>
<tr>
<td>$100,000 to $150,000</td>
<td>1</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

To ensure the effectiveness of the cuteness manipulation, all participants viewed both the cute or neutral cookie and rated the extent to which the cookies were overall cute (cute, adorable, endearing; $\alpha = .849$), reflected whimsical cuteness (whimsical, playful, fun; $\alpha = .884$), reflected
kindchenschema cuteness (vulnerable, naive, caretaking; $\alpha = .892$), and were likable (likable, attractive; $r = .742$). All items were measured on a 7-point scale (1 = not at all, 7 = extremely; Nenkov & Scott, 2014).

**Procedures and measures**

Participants were informed that they would be completing a survey about consumers' food consumption behavior. To avoid the order effect, the experimental procedure followed a counter-balanced presentation order (Macfie et al., 1989; Piqueras-Fiszman et al., 2012), that is, half of the participants viewed the kitty cookie picture first, while the other half viewed the round one first. After reporting their hunger level, participants viewed the first cookie picture and completed the manipulation check and measurements of interests (see Appendix A for the full list of measurements). Next, participants viewed the second cookie picture and answered the same measures again. Demographic information was collected at the end.

**Purchase intention**

Likelihood to purchase the sugary cookie was captured with three items adapted from Baker and Churchill (1977), and Kilbourne (1986): “Would you like to try this cookie?”, “Would you buy this cookie if you happened to see it in a store?” and “Would you actively seek out this cookie in a store in order to purchase it?” (1 = definitely not, 7 = definitely yes; $\alpha = .843$)
**Food perceptions**

An unstructured 10-cm-long scale was used to measure anticipated food sweetness, anchored with “not sweet at all” and “extremely sweet” (Piqueras-Fiszman et al., 2012). Participants have to drag the slider to indicate their sweetness perception. Perceived tastiness and healthiness were measured by one single item, respectively: “How would you rate this cookie on the following attributes?” (1 = not at all tasty/healthy, 7 = very tasty/healthy).

**Control variables**

Participants indicated their hunger level (1 = not at all hungry, 7 = extremely hungry) and their general liking of sugar cookies (1 = dislike extremely, 7 = like extremely). Having answered the questions of interests, participants reported their demographic information (i.e., age, gender, ethnicity, education and income).

**Results**

A paired sample t-test was conducted on perceived cuteness. The results showed that, comparing to the control condition (i.e., round cookie), the cute condition (i.e., kitty cookie) was perceived as cuter (Mcute = 5.264 vs. Mcontrol = 2.642, p < .001), more whimsical (Mcute = 5.214 vs. Mcontrol = 2.465, p < .001), and more kindchenschema (Mcute = 3.094 vs. Mcontrol = 2.170, p = .001), and more likable (Mcute = 5.311 vs. Mcontrol = 3.359, p < .001). The cuteness manipulation was successful.

Results of paired samples t-test revealed that, comparing to the sugar cookie in the neutral condition, participants rated the one in the cute condition as sweeter (Mcute = 7.359 vs. Mcontrol = 2.642, p < .001).
M_{control} = 6.377, t(3.201), p = .002), and as tastier (M_{cute} = 5.910 vs. M_{control} = 5.380, t(2.654), p = .011). The effect of cute priming on perceived healthiness was not significant (M_{cute} = 2.660 vs. M_{control} = 2.890, t(-1.030), p = .308). Furthermore, participants showed a higher purchase intention with the cute cookie than the neutral one (M_{cute} = 4.798 vs. M_{control} = 4.113, t(3.080), p = .003; see Figure 3-2).

A mediation analysis was conducted using the bootstrapping approach (MEMORE, 2017; Model 1) with perceived sweetness and tastiness as serial mediators (See Figure 3-3). The positive indirect effect of cute priming on purchase intention through perceived sweetness and tastiness was not significant (effect (b) = .035, standard error (SE) = .059, 95% Confidence Interval (CI_{95%}) = .076 to .166). The cute shape positively predicted perceived sweetness (b = .981, SE = .307, t(3.), p = .002); Perceived sweetness positively predicted perceived tastiness (b = .325, SE = .078, t(4.162), p < .001); But perceived tastiness failed to positively predict purchase intention (b = .109, SE = .164, t(.669), p = .507). The direct
impact of cute priming on purchase intention was also significant ($b = .686, SE = .223, t(3.080), p = .003$).

Figure 3-3: Sequential effect of cute priming on purchase intention (1)

Similarly, a mediation analysis was conducted using the bootstrapping approach (MEMORE, 2017; Model 1) with perceived sweetness and healthiness as serial mediators. The negative indirect effect of cute priming on purchase intention through perceived sweetness and healthiness was not significant ($b = .002, SE = .016, CI_{95\%} = -.042$ to .029).

The cute shape positively predicted perceived sweetness ($b = .981, SE = .307, t(3.201), p = .002$); Perceived sweetness failed to negatively predict perceived healthiness ($b = .037, SE = .104, t(.355), p = .724$) and perceived healthiness also failed to positively predicted purchase intention ($b = .061, SE = .119, t(.515), p = .609$). The direct impact of cute priming on purchase intention was significant ($b = .686, SE = .223, t(3.080), p = .003$).

Figure 3-4: Sequential effect of cute priming on purchase intention (2)
Cute Priming

Perceived Sweetness

< .001

(+ .365)

.002

(+ .981)

.724

(+ .037)

.003

(+ .686)

Perceived Healthiness

Purchase Intention

.609

(+ .061)

.291

(- .262)
Study 2

Study 1 initially established the cute priming effect derived from visual stimuli in an online setting. Study 2 applied a lab experiment to demonstrate the robustness of the cute priming effect. Specially, while Study 1 only gauged participants’ anticipated sweetness of the food, Study 2 captured taste perceptions.

Design and participants

Study 2 used a single-factor (cute priming: cute vs. control) within-subjects design. The priming of cuteness was manipulated via cookie shapes. Fifty-three undergraduate students (N = 53, 64% Female) at the Pennsylvania State University participated in the study in return for extra credit.

Stimuli

Sugar cookies were chosen as stimuli. Consistent with Study 1, the Hello Kitty shape and a round shape were selected as the cute and neutral shape, respectively. The cookies were custom ordered from a local bakery. Regardless of their shape (kitty vs. round), both cute and neutral cookies had the same color, weight, and ingredients. Again, to ensure the effectiveness of the cuteness manipulation, all participants viewed both the cute or neutral cookie and rated the extent to which the cookies were cute (cute, adorable, endearing; $\alpha = .881$), reflected whimsical cuteness (whimsical, playful, fun; $\alpha = .837$), reflected kindchenschema cuteness (vulnerable, naive, caretaking; $\alpha = .906$), and were likable (likable, attractive; $r = .764$). All items were measured on a 7-point scale (1 = not at all, 7 = extremely).
Procedures and measures

The experiment was conducted at a research laboratory at the university, where participants sat in an individual carrel and filled out a computer-assisted survey. Before entering the lab, the “fake” study purpose and instructions were given to the participants. After reporting their hunger level, participants were given either a kitty shape or round shape cookie on a white plate. They were instructed to observe, touch and taste the cookie and then fill out the questionnaire on the computer, before trying the next cookie. The presentation order (kitty shape cookie vs. round shape cookie) was counterbalanced. A cup of water was available for rinsing the palate between samples. Participants were allowed to finish cookies after they had completed the evaluation if they so wished. Evaluations were performed under artificial daylight type illumination, temperature control (70 – 75 °F) and air circulation.

The focal study was disguised as the evaluation of the local bakery’s new products. To mask the genuine purpose, participants were asked rate the cookie on different several
irrelevant attributes (e.g. perceived quality, perceived intensity). Other measurements were the same as Study 1.

**Results**

The manipulation check of cuteness was successful. The results showed that, compared to the control condition (i.e., round cookie), the cute condition (i.e., kitty cookie) was perceived as cuter ($M_{cute} = 4.799$ vs. $M_{control} = 2.654$, $p < .001$), more whimsical ($M_{cute} = 4.868$ vs. $M_{control} = 2.270$, $p < .001$), more kindchenschema ($M_{cute} = 3.157$ vs. $M_{control} = 2.346$, $p < .001$), and evoked more positive affect ($M_{cute} = 4.962$ vs. $M_{control} = 3.302$, $p < .001$) as expected.

Results of paired samples t-test found that, participants in the cute condition rated the cookie as sweeter ($M_{cute} = 5.453$ vs. $M_{control} = 4.189$, $t(3.619)$, $p = .001$) and were more willing to purchase it ($M_{cute} = 3.925$ vs. $M_{control} = 3.006$, $t(5.735)$, $p < .001$). The effect of cute priming on perceived tastiness was marginally significant ($M_{cute} = 4.580$ vs. $M_{control} = 4.250$, $t(1.749)$, $p = .086$), while the effect of cute priming on perceived healthiness was insignificant ($M_{cute} = 2.940$ vs. $M_{control} = 2.830$, $t(1.352)$, $p = .182$).

Figure 3-6: Main Effect of cute priming on food perceptions and purchase intention (2)
A mediation analysis was conducted using the bootstrapping approach (MEMORE, 2017; Model 1) with perceived sweetness and tastiness as serial mediators (See Figure. 3-7). It produced a significant positive indirect effect of cute priming on purchase intention through perceived sweetness and tastiness (effect (b) = .084, standard error (SE) = .045, 95% Confidence Interval (CI_{95%}) = .017 to .189). Specifically, the cute shape positively predicted perceived sweetness (b = 1.264, SE = .349, t(3.619), p < .001); Perceived sweetness positively predicted perceived tastiness (b = .220, SE = .073, t(3.018), p < .004) and perceived tastiness positively predicted purchase intention (b = .302, SE = .115, t(2.625), p < .012). The direct impact of cute priming on purchase intention was also significant (b = .918, SE = .160, t(5.735), p < .001).

Figure 3-7: Sequential effect of cute priming on purchase intention (3)
A mediation analysis was conducted using the bootstrapping approach (MEMORE, 2017; Model 1) with perceived sweetness and healthiness as serial mediators. The negative indirect effect of cute priming on purchase intention through perceived sweetness and healthiness was not significant ($b = -0.015$, $SE = 0.026$, $95\% CI_{95\%} = -0.069$ to $0.043$). Specifically, the cute shape positively predicted perceived sweetness ($b = 1.264$, $SE = 0.349$, $t(3.619)$, $p < 0.001$); Perceived sweetness failed to negatively predict perceived healthiness ($b = -0.023$, $SE = 0.340$, $t(-0.686)$, $p = 0.496$) and perceived healthiness also failed to positively predicted purchase intention ($b = 0.493$, $SE = 0.271$, $t(1.817)$, $p = 0.076$). The direct impact of cute priming on purchase intention was significant ($b = 0.918$, $SE = 0.160$, $t(5.735)$, $p < 0.001$).

Figure 3-8: Sequential effect of cute priming on purchase intention (4)
The table below summarizes the support for the proposed hypotheses.

**Table 3-2: Two study results**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>H2a and H2b</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>H3a and H3b</td>
<td>Not Supported</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H4</td>
<td>Not Supported</td>
<td>Supported</td>
</tr>
</tbody>
</table>
Chapter 4

General Discussion

Results from Study 1 provide initial evidence of the cute priming effect. The findings suggest that viewing an image of a cute cookie increases perceived sweetness (H1 supported). Moreover, the positive priming effect of cuteness on perceived tastiness is mediated by perceived sweetness (H2a and H2b supported). Such an increase in perceived sweetness and tastiness, however, did not influence participants’ purchase intention (H4 not supported). The failure to detect such a mediation may be attributed to the limitation of an online survey. In the online setting, participants can only “imagine and expect” the taste/flavor by viewing food pictures rather than actually tasting them. Therefore the mediating effect of “anticipated tastiness” is not strong enough to drive purchase intention. If so, we would expect that consumers are more willing to buy cute cookies when they are able to actually taste them, which drives me to conduct the second lab experiment.

These findings also indicate that priming cuteness has no influence on healthiness perceptions (H3a and H3b not supported). This counterintuitive finding can be explained with the “Least Mean Square (LMS)” connectionist model (Gluck & Bower, 1988; Janiszewski & Van Osselaer, 2000): The LMS was developed to explain how people learn, remember, and react to stimuli, assuming that cues compete to acquire predictive values. In other words, one cue can only acquire predictive value when performance differences that it predicts have not been covered by other available cues. For instance, Besharat (2010) found that, in the context of co-branding, quality perceptions for products with two high-equity brands do not differ from those for a product with one high-equity and one low-equity brand, because one high-equity brand has already provided sufficient predictive cues to form attitudinal judgments.
Similarly, there are two cues consumers use for making healthiness judgment: (1) the cue brought by food type, and (2) the cue brought by the cute shape. According to the LMS connectionist model, since the product type of the sugary cookie is hedonic in nature and provides sufficient information about how unhealthy the cookie may be, it inhibits the access to any possible associations of the second ally (i.e., the negative healthiness perception brought by the cute shape). Such a ceiling effect is a compelling reason why H3a and H3b are rejected.

Study 2 replicates Study 1 in a real lab setting. The study findings provide converging evidence for the cute priming effect. Priming cuteness positively influenced consumers’ purchase intention (H4 supported), which is sequentially mediated through perceived sweetness and tastiness (H1, H2a and H2b supported). Consistent with Study 1, priming cuteness does not influence consumers’ healthiness perceptions (H3a and H3b not supported), which may result from the ceiling effect of two competing cues as previously suggested.

**Theoretical implications**

The current research contributes to the hospitality literature in several ways. First, the two studies illuminate a novel facilitator, cuteness, that serves as an extrinsic cue and leads consumers to perceive the sugary food as sweeter. Previous research has mainly focused on single elements such as color brightness (Mai et al. 2016), color hue (Karnal et al. 2016), shape angularity (Fenko et al. 2016; Velasco et al. 2014), shape size (Deroy & Valentin, 2011) and product visuals (Machiels & Karnal 2016), while little attention has been devoted to stimulus combined with multi design elements. To fill this void, this research demonstrates that cuteness, a robust and universal visual cue with multiple elements can effectively leverage consumers’ sweetness perception. It is noteworthy here that the study findings reveal that the impacts of cute priming on
sweetness perception are not only the result of crossmodal correspondences, but also driven by marketing efforts (Velasco et al., 2014). My findings shed light on a pleasant catalyst of cute priming, which has a strong appeal in the hospitality industry since it overrides other visual marketing elements.

Second, this study extends food perception research. Prior research shows that consumers depend on expectations about food quality (i.e., taste, health, convenience and process) when making food choices (Brunsø & Grunert, 2002). I extend this stream of literature by showing that hedonic values induced by sweetness (taste) and the cute food shape (visual) jointly influence consumers’ taste perceptions, thus leading to higher purchase intention.

Third, this research adds to the growing literature on cute marketing. When exploring the role of cuteness in food marketing, the vast majority of research primarily focuses on one subset of cuteness rather than picture cuteness holistically. Also, the impacts of cuteness on food intake have generated more attention than the perception-purchase behavior link. For instance, kinchenschaft effectively reduces meat consumption and induces a more plant-based diet (Silva, 2016), while whimsicality promotes indulgent consumption by increasing consumers’ self-reward focus (Nenkov & Scott, 2014). To the best of my knowledge, this is the first study to examine how cute food shapes drive consumers’ food perceptions and subsequent purchase intention.

Sugary foods are often bundled with cute images, thus magnifying their hedonic nature. I extend the stream of literature by demonstrating the sequential mediating role of sweetness and tastiness on the relationship between cute priming and purchase intention of sugary foods.

**Managerial implications**

This study also provides actionable managerial implications for marketers and policymakers. On the one hand, the findings suggest that marketers should make use of cute
elements to promote sweet treats’ perceived sweetness. Cultural factors are powerful determinants of which food we prefer, as dietary experience may influence liking for tastes and flavors (especially sweet and bitter; Rozin & Vollmecke, 1986). Prescott and Bell (1995) show that compared with Taiwanese students, US students rated the cookies as more pleasant at high sucrose concentrations. Also, foods are pervasively sweeter in the North American region due to a complex and interlocking set of forces like support from the US government, sugar growers, and food service sectors (De la Peña, 2010; Laudan, 2016; Woloson, 2002). Since Americans are conditioned to expect sweet foods at a high sugar level, marketers should use more cute elements to increase perceived. Moreover, when consuming sweet treats, people predominantly focus on the immediate pleasure, thus looking for cues that signal tastiness with less attention to how unhealthy the food might be. To make such pleasure more salient, designers can incorporate "cuteness" into products by color, material, motion, sound, shape, size, and proportion (Cheok, 2010).

On the other hand, priming cuteness could be an effective strategy for policymakers to fight against obesity. From 1999–2000 through 2017–2018, the prevalence of obesity increased from 30.5% to 42.4%, resulting to an estimated $147 billion expenditures in the U.S. per year (CDC, 2020) Results of Study 2 show that the cute food shape can “fool” our taste buds by making us think the food is sweeter than it actually is. Therefore, policymakers can encourage companies to produce healthy snacks with cute elements, leading consumers to make healthier food choices and reduce their sugar intake.

**Limitations and future research**

Despite the contributions to theory and practice, the limitations of the current study open up several avenues for future research. First, the two experiments were conducted using a single
stimulus, a kitty shape cookie, to represent cuteness. The results indicate that priming cuteness evokes positive affective responses, therefore influencing consumers’ food perception. Nenkov and Scott (2014) identify two sub-dimensions of cuteness – kinchenschema and whimsicality. The former leads to more careful behaviors, suggesting restraint, while the latter induces indulgent consumption. Therefore, future research should examine the strength of the priming effect for each sub-dimension on consumers’ food perceptions and decision-making processes. This research failed to demonstrate that cuteness has a negative impact on perceived healthiness. One possible explanation is that these two types of cuteness may produce distinctive effects, thus potentially offsetting each other. Also, there are various ways to prime cuteness. Xie et al., (2018) categorized cuteness marketing into two types: “impression type” (e.g., package, logo, brand name, placement) and “interactive type” (e.g., interaction, social media campaign). It would be interesting to examine how different ways of priming cuteness influence consumers’ food perceptions.

Second, food type has important implications for food decisions (Raghunathan et al., 2006; Van Doorn & Verhoef, 2011). The current studies used a sugar cookie as a stimulus, which is hedonic in nature. Future investigations should consider the moderating role of food type (e.g., vice food vs. virtue food, hedonic food vs. functional food) on the relationship between cuteness priming and consumer responses.

Lastly, the study findings indicate that the priming effect of cuteness on purchase intention was sequentially mediated by perceived sweetness and tastiness. In other words, the sweeter the food, the tastier the participant rated it. However, previous research suggests that taste preferences are culture-dependent (Getchell, 1991; Prescott & Bell, 1995). It is possible that cuteness effect might backfire in cultures with less emphasis on sugary foods. Future studies should examine the moderating role of culture on cute marketing in the food context.
Appendix

Cuteness measurements for Study 1 & 2

Cuteness Manipulation (Nenkov & Scott, 2014)

To what extent do you think this cookie is (1 = not at all, 7 = extremely)

Overall cuteness: cute, adorable, endearing

Whimsical cuteness: whimsical, playful, fun

Kindchenschema cuteness: vulnerable, naive, caretaking

Likability: likable, attractive


Please answer the following questions (1 = definitely not, 7 = definitely yes)

Would you like to try this cookie?

Would you buy this cookie if you happened to see it in a store?

Would you actively seek out this cookie in a store in order to purchase it?

Sweetness Perception (Lei & Ji, 2015; Piqueras-Fiszman et al., 2012)

Please drag the slider to rate this cookie on anticipated sweetness

Please drag the slider to rate this cookie on perceived sweetness

(1 = not at all, 7 = extremely high)

Tastiness and Healthiness Perception

How would you expect this sugar cookie on the following attributes?

How would you perceive this sugar cookie on the following attributes?

(1 = not at all tasty/healthy, 7 = very tasty/healthy)

Hunger Level

Please indicate your hunger level (1 = not at all hungry, 7 = extremely hungry)

Sweet Food Preference
In general, to what extent do you like sugar cookies (1 = dislike extremely, 7 = like extremely)
References


Piqueras-Fiszman, B., Alcaide, J., Roura, E., & Spence, C. (2012). Is it the plate or is it the food? Assessing the influence of the color (black or white) and shape of the plate on the perception of the food placed on it. *Food Quality and Preference*, 24(1), 205-208.


