Kids, Caregivers, and Cartoons: The Impact of Licensed Characters on Food Choices and Consumption

Bridget Leonard, Margaret C. Campbell, and Kenneth C. Manning

Abstract
This research examines effects of on-package licensed characters on children’s and caregivers’ choices of healthy and indulgent food and children’s consumption amount. The authors propose that food liking exerts the greatest influence on children’s choices and consumption, such that the impact of on-package characters will be limited to choices between equally liked options. Caregivers’ choices are primarily influenced by their food goals for their children; thus, the impact of characters will likewise be limited to caregivers’ within-category choices. Two experiments show that a character influences children’s choices between two same-category options but not between indulgent and healthier options. A third experiment reveals that food liking influences amount consumed, while the presence of a character influences neither amount consumed nor food liking. Two additional experiments show that characters influence caregivers’ choice between the same foods, but not between different food types or intention to purchase a food. The expanded framework for the effects of licensed characters—taking into account choice versus consumption, children versus caregivers, and healthy versus unhealthy foods—enhances understanding for consumers, practitioners, and policy makers.

Keywords
food choice, food consumption, children, licensed cartoon characters, marketing to children

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Childhood obesity has increased rapidly over the last 40 years; 17% of American 2- to 19-year-olds are classified as obese, and 32% are overweight or obese (Ogden et al. 2014). Overweight and obesity can have significant negative effects on children’s physical and psychosocial well-being. In particular, overweight and obesity increase chances of joint problems, sleep apnea, asthma, high blood pressure, high blood cholesterol, prediabetes, and Type 2 diabetes in children (e.g., Han, Lawlor, and Kimm 2010). Children who are overweight are sometimes stigmatized. For example, children perceive that other children who are overweight have fewer social skills, lower academic success, and low fitness (Hill and Silver 1995). In addition, children indicate that they are less interested in socializing with children who are overweight as compared with those who are not (Cramer and Steinwert 1998). Children who are overweight or obese are more likely to be overweight or obese as adults (Freedman et al. 2005), leading to decreased physical and psychosocial well-being across their lifespan.

While many factors affect whether children are overweight or obese, more energy consumed than expended plays a central role (Butte, Christiansen, and Sorensen 2007). Thus, it is important to understand factors that influence what and how much children eat (as well as factors that influence energy expended). Research suggests that marketing unhealthy food and beverages (i.e., those that are high in sugar, high in fat, or low in nutrition) to children may undermine healthy choices and play a role in childhood obesity (Grier and Moore 2012; Harris et al. 2009; World Health Organization 2010). In 2009, $1.79 billion was spent marketing foods to children and adolescents, with $113 million of that total spent on in-store marketing and packaging (Federal Trade Commission 2012). In the United States, cross-promotions such as the use of licensed characters (i.e., when a product firm pays to use a character created by another [usually entertainment] firm in the...
marketing of a product) increased 78% between 2006 and 2008 (Harris, Schwartz, and Brownell 2010), accounting for almost 50% ($530 million) of all child-directed marketing in 2009 (Federal Trade Commission 2012). Licensed characters (LCs) are used extensively with foods targeted toward children and are more frequently used with high-energy, low-nutrient foods, such as cookies and gummy snacks, than on healthy foods, such as fruit and vegetables (Grigsby-Toussaint and Rooney 2013; Harris, Schwartz, and Brownell 2010). Despite efforts to curb the use of LCs in advertising to children, analyses indicate that LCs remain prevalent in advertising and highly prevalent on packaging (Castonguay et al. 2013).

There is concern that food marketing may negatively affect children’s well-being by leading to unhealthy food choices (e.g., Grier and Moore 2012) and interfering with important food socialization provided by families (Moore, Wilkie, and Lutz 2002). From a policy perspective, the World Health Organization recommends policies that (1) reduce children’s exposure to marketing of foods that are high in saturated fats, trans fats, sugars, or salt and (2) restrict use of “powerful” marketing techniques (World Health Organization 2010). Recent policy discussions have centered on the appropriateness of using LCs in marketing to children. The Robert Wood Johnson Foundation and the Children’s Food and Beverage Advertising Initiative (CFBAI) pledge recommend that LCs should only be used to market “healthier” foods that meet a minimum nutritional standard (CFBAI 2014; Robert Wood Johnson Foundation 2016). While organizations and companies that follow the CFBAI pledge have policies against using characters in advertising to children, these policies rarely extend to characters on packaging (Wootan, Batada, and Balkus 2010).

Some consumer and health advocates suggest that policy makers invest resources into restricting the use of LCs on food packaging marketed to children or limiting such use to healthier foods. However, there is little scientific evidence to support such efforts. Limited research has examined LC effects, and the majority of this research focuses on attitudes rather than choice or consumption. Accordingly, the objective of the current research is to gain insight into the impact of on-package LCs on children’s choice and consumption of indulgent and healthy foods and caregivers’ choice of these foods for their children.

**Package Effects**

When examining the impact of on-package LCs on children’s food consumption, there are at least three decisions to consider. Typical for much consumer decision making, children make decisions regarding product choice and use (e.g., consumption). Somewhat less typical, however, is that the decisions of a third party, namely the child’s parent or other caregiver, play a critical role in children’s food choices and consumption. Parents and other caregivers (collectively referred to as “caregivers”) exert strong influence on children’s food choice and consumption by (1) controlling choice and consumption options and (2) deciding what to provide (e.g., Block et al. 2011; Moore, Wilkie, and Desrochers 2017). On-package LCs could thus affect children’s food consumption by influencing (1) what children choose and what they ask their caregivers to purchase (“pester power”), (2) the amount of food that children consume, and (3) what parents purchase and provide (purchase power). We thus consider each of these decisions.

**Packaging Effects on Children’s Attitudes and Intentions**

Considerable research has focused on the impact of food package elements, such as colors, patterns, images, fun names, and familiar brand names, on children’s attitudes, taste perceptions, and intentions (e.g., Elliott 2009; Elliott, Den Hoed, and Conlon 2013; Enax et al. 2015; Letona et al. 2014a; Pires and Agante 2011; Robinson et al. 2007). Overall, several studies have suggested that attractive package elements, such as vivid colors and interesting graphic elements (Letona et al. 2014a; Pires and Agante 2011) and cute pictures and names (Enax et al. 2015), can increase attention to, perceptions of, and intentions toward foods as compared with plain packaging without these elements.

Studies of the impact of branded packaging have found effects of the presence of familiar brands on children’s evaluations and taste perceptions. One study found mixed results, such that children evaluated healthy, but not indulgent, foods more positively when packaged with a familiar (vs. unfamiliar) brand name (Levin and Levin 2010). Other research has found that children perceive the same food to taste better when packaged with a familiar brand name, as compared with a plain package (Robinson et al. 2007), but to taste the same when compared with packaging with other attractive elements (Elliott, Den Hoed, and Conlon 2013).

**Impact of On-Package LCs on Children’s Food Product Attitudes and Choices**

Among the many promotional techniques that may be employed to influence children’s choices and food consumption, LCs have been implicated as potentially powerful (Harris, Schwartz, and Brownell 2010; Roberto et al. 2010). Accordingly, researchers have begun examining possible effects of LCs. As with other package elements, however, most of this research has focused on children’s perceptions, attitudes, intentions, and, to a lesser extent, choice or amount consumed. In some of the research, children only see products, whereas in other research, children also taste the food. Some research has concurrent presentation (within-subject), whereas a more limited amount of research examines children’s responses to individual products (between-subject). For an overview of this research, see Table 1.1

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1 We identified one additional study that examined the impact of an LC on children’s choice between a healthy and an unhealthy product (Wansink et al. 2012), but this study was retracted in 2017.
## Table 1. Overview of Previous and Current LC Research.

### Effect of Characters on Preferences for Foods When the Food Is Not Tasted

<table>
<thead>
<tr>
<th>Study</th>
<th>Type of Decision</th>
<th>Measure of Impact</th>
<th>Participants N; Age (Years)</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin and Levin (2010)</td>
<td>Healthy and unhealthy food pairs presented with either a familiar or unfamiliar brand name and a character or no character</td>
<td>Attitude scale (good–bad)</td>
<td>43; 7</td>
<td>Presence of a character increased attitude only for unhealthy products with unfamiliar brand names.</td>
</tr>
<tr>
<td>De Droog, Valkenburg, and Buijzen (2011)</td>
<td>Healthy and unhealthy food pairs presented with a familiar character, an unfamiliar character, or no character.</td>
<td>Liking scale (not at all–very much)</td>
<td>216; 4–6</td>
<td>Presence of a character (either familiar or unfamiliar) on the package increased liking and intent to request purchase for healthy food.</td>
</tr>
<tr>
<td>Smits and Vandebosch (2012)</td>
<td>Same foods (healthy and unhealthy) presented concurrently with and without a character</td>
<td>Appetite rating (scale with pictorial portion sizes)</td>
<td>57; 6–7</td>
<td>Foods were preferred when shown with a character (either licensed or unknown) versus no character.</td>
</tr>
<tr>
<td>Ogle et al. (2017)</td>
<td>More and less healthy product pairs presented both with and without characters and with character on either product</td>
<td>Hypothetical choice of which product they would want to eat</td>
<td>149; 6–9</td>
<td>Children preferred less healthy products and tended to prefer products without characters. Only young boys (6–7 years old) showed some preference for products with two of the three characters. Less healthy products without characters were preferred to more healthy products with characters.</td>
</tr>
<tr>
<td>The current research, Experiments 1 and 2</td>
<td>Experiments 1 and 2: Same-type foods (two healthy or two unhealthy) presented concurrently with and without a character, Experiment 2: A healthy/indulgent food pair presented with character on either the healthy or indulgent food, or no characters</td>
<td>Actual choice (participant chose and took a food product)</td>
<td>81; 4–10 (139; 3–12)</td>
<td>When choosing between two of the same type of food, children prefer the option with the LC. When choosing between healthy or indulgent food, children prefer the indulgent option, regardless of LC presence.</td>
</tr>
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(continued)
### Table 1. (continued)

#### Effect of Characters on Preferences for Foods When the Food Is Tasted

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<tr>
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<tr>
<td>Roberto et al. 2010</td>
<td>Same foods presented concurrently with and without a character</td>
<td>Taste scale (love it–hate it) &amp; Hypothetical choice of which one they would pick</td>
<td>40; 3–5</td>
<td>Food from a package with an LC tasted better, and children prefer it for a snack over food from a plain package.</td>
</tr>
<tr>
<td>Lapierre, Vaala, and Linebarger 2011</td>
<td>Food presented either with or without a character and with a healthy name or an indulgent name.</td>
<td>Taste scale (really do not like–really like)</td>
<td>80; 4–6</td>
<td>Characters only increased liking of the food when the food was branded with an indulgent name, but not when the food was branded with a healthy name.</td>
</tr>
<tr>
<td>Letona et al. 2014b</td>
<td>Same foods presented concurrently with and without a character</td>
<td>Taste scale (love it–hate it) &amp; Hypothetical choice of which one they would pick</td>
<td>121; 4–11</td>
<td>Food from a package with an LC tasted better, and children prefer it for a snack over food from a plain package.</td>
</tr>
<tr>
<td>Current research, Experiment 3</td>
<td>A healthy or an indulgent food presented with or without a character</td>
<td>Food liking scales (hate it–love it, don’t want–want it)</td>
<td>130; 4–7</td>
<td>Characters did not increase liking of the food for either healthy or indulgent foods.</td>
</tr>
</tbody>
</table>

#### Effect of Characters on Consumption of Food

<table>
<thead>
<tr>
<th>Study</th>
<th>Type of Decision</th>
<th>Measure of Consumption</th>
<th>Participants N; Age (Years)</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keller et al. 2012</td>
<td>Fruits and vegetables presented in either plain packages or packages with characters and including a sticker</td>
<td>Consumption (grams)</td>
<td>16; 4–5</td>
<td>Children increased consumption of healthy foods when these foods were presented in a package with a combination of LCs, cute names and phrases, and a sticker premium than when the foods were presented in a plain package.</td>
</tr>
<tr>
<td>Kotler, Schiffman, and Hanson 2012</td>
<td>Food pairs presented with either no character or with a character in front of one of the foods.</td>
<td>Percentage of pieces eaten</td>
<td>207; 3–6</td>
<td>Children did not consume more when the food was presented with an LC than when it was presented with no character.</td>
</tr>
<tr>
<td>Current research, Experiment 3</td>
<td>A healthy or an indulgent food presented with or without a character</td>
<td>Consumption (ounces and calories)</td>
<td>130; 4–7</td>
<td>Children did not consume more of either the healthy or indulgent food when there was an LC on the package.</td>
</tr>
</tbody>
</table>
Results are mixed with respect to whether on-package LCs influence children’s attitudes and intentions. Research has found that when selecting between identical foods (e.g., two apples), six- to seven-year-old children express greater preference for, and intent to ask parents to purchase, foods with an LC over foods without an LC (Smits and Vandebosch 2012). Research examining the impact of LCs on preferences between healthy (e.g., chopped banana) versus indulgent (e.g., banana candy) food has found that, although preference for indulgent food is higher than that for healthy food, (1) LCs had a positive impact on liking and purchase request intent for healthy (but not unhealthy) food among four- to six-year-old children (De Droog, Valkenburg, and Buijzen 2011), but (2) LCs only had a positive impact on attitudes toward unhealthy (but not healthy) foods with unfamiliar (but not familiar) brand names among seven-year-old children (Levin and Levin 2010). Additional research examining the impact of LCs on preferences between more and less healthy food pairs found that while on-package LCs increased attention, children consistently preferred less to more healthy foods, and in almost all situations in this research, LCs led to lower, not higher, preference (Ogle et al. 2017). Overall, these research results on the attitudinal impact of LC are best described as mixed.

Impact of On-Package LCs on Children’s Taste Perceptions and Preferences

We identified three studies that examined effects of LCs when children tasted the food. Two studies simultaneously presented children with the exact same food, packaged either without or with an LC, and had them taste each (Letona et al. 2014b; Roberto et al. 2010). When children (4- to 11-year-old Guatemalans or 3- to 6-year-old Americans) were asked to taste and directly compare pairs of what were actually identical foods presented in packaging that differed in terms of whether it included an LC sticker, children indicated that the food with the LC on the package tasted better and that they would prefer it relative to the food from the plain package (Letona et al. 2014b; Roberto et al. 2010). However, a between-subjects study found that four- to six-year-old children who tasted a moderately sugary cereal branded “Sugar Bits” rated the taste of the cereal higher when the package included an LC compared with those consuming the same cereal without a character, but the presence or absence of the character unexpectedly did not affect ratings of taste when the cereal was branded as “Healthy Bits” (Lapierre, Vaala, and Linebarger 2011). Thus, results on the impact of LC on children’s perceptions of taste are mixed.

Children’s and Caregivers’ Food Choice Behavior

Consideration of children’s information processing can help us predict when the presence of LCs on packaging will influence children’s choices between foods and the amounts they consume. Characters include a broad range of human and anthropomorphized fictional animal-based or object-based beings (Garretson and Burton 2005). Children learn about and form attitudes toward characters they see in the media and social environments (Richert, Robb, and Smith 2011). Children develop parasocial relationships (i.e., friendships felt by an audience member for a media character) with cartoon and other characters in the media (Calvert and Richards 2014). Given children’s familiarity and parasocial relationships with LCs, on-package LCs are similar to celebrity endorsers and can be expected to influence attitudes and choices similarly. Just as a liked celebrity endorser can positively affect adults’ perceptions, attitudes, and purchase intent through a transfer process (e.g., Campbell and Warren 2012; McCracken 1989; Weisbuch, Mackie, and Garcia-Marques 2003), we propose that an LC on a product package can transfer a child’s positive affect for the LC to the associated product. In an effort to create such a positive impact via an LC, firms strategically select characters for their packages that are familiar and liked by children in their target age and gender group. When a child sees a familiar, liked character on a food package, the character is likely to attract the child’s attention (Ogle et al. 2017), and the positive affect that the child feels for the character is likely to transfer, increasing attitude toward the product (Chaplin and John 2005; De Droog, Buijzen, and Valkenburg 2011; Kim, Lim, and Bhargava 1998; Weisbuch, Mackie, and Garcia-Marques 2003).

This leads to the question of how children make food choices. Children tend to heavily weight the most important attributes in their decision making rather than using compensatory strategies (Wartella et al. 1979). While there are multiple influences on children’s food consumption, expected taste is one of the most important (Patrick and Nicklas 2005). Thus, expected taste preference is anticipated to be heavily weighted in children’s food choices. If children are choosing between two foods with similar expected taste, other factors, such as brand name or positive associations with the product, are likely to affect the choice (Wartella et al. 1979). If, however, children are choosing between two foods with different expected taste, because taste tends to be the most important attribute, choice is expected to be most strongly affected by taste, with limited influence by other factors, such as LCs.

Children have a biological preference for sweet and salty foods (Mennella 2014) and, therefore, often prefer indulgent to “healthy” foods because the indulgent foods are tastier (McCullough, Guilkey, and Stark 2017; Moore, Wilkie, and Desrochers 2017; Phillips and Kolas 1980). In choice contexts, the effect of the presence versus absence of an LC is likely to depend on the food types. When one type of food has an LC and a different type does not, the child’s choice will depend on the relative weighting of the expected taste of the food versus the liking provided by the LC. Because taste is normally the most important attribute, liking for an indulgent food will often outweigh liking for a healthy food paired with liking for an LC (Kotler, Schiffrin, and Hanson 2012). Thus, children’s expectations of the taste difference (between the options in the choice set) may moderate the effect of the LC.
If taste expectations between the options are equal, due to affect transfer, a child is likely to choose a package with a familiar and liked LC versus a package without a character. However, when taste expectations for one product are higher than for the other, taste will be an important driver of the choice, and an LC is less likely to have an impact. This conceptualization leads to the following hypotheses:

\(H_1\): An on-package LC is likely to increase children’s choice of a food as compared with the same type of food without the on-package LC.

\(H_2\): The presence of an on-package LC is more likely to influence children’s choices between two foods expected to taste the same (two indulgent or two healthy options) than between two foods with divergent expected tastes (healthy vs. indulgent).

A potential question is whether the impact of on-package LC will depend on children’s age. While it is possible that younger children, who have lower media literacy and fewer cognitive defenses, are more likely to be influenced by peripheral factors such as fun themes and package graphics (Livingstone and Helsper 2006), a body of research has shown that teens and adults are often influenced by peripheral factors including tactics such as celebrity endorsers (e.g., Agrawal and Kamakura 1995; Campbell and Warren 2012; Petty, Cacioppo, and Schumann 1983). Even young children are influenced by perceptual features, such as liked characters, so transfer from the characters to the product are likely to occur across age (see John 1999). While we do not expect the impact of familiar, liked LCs to differ over our target range of 4- to 12-year-olds, we explore age effects in the data.

**Impact of LCs on Children’s Food Product Consumption**

In addition to choosing a food, children also choose how much of a food to eat. The choice of consumption quantity is directly related to weight status. Thus, it is important to understand whether on-package LCs affect the amount of food that children consume. Despite the key importance of consumption amount for children’s health, well-being, and public welfare, a limited amount of research has examined the impact of LCs on children’s consumption. Keller et al. (2012; Study 3, \(n = 16\)) found evidence to support an increase in fruit and vegetable intake among four- to five-year-old children when the fruits and vegetables were presented in a package with a combination of LCs, cute names and phrases, and a sticker premium, with stickers that could be collected on a game board for a bigger prize, compared with those presented in a plain package with no name, premium, or possible prize. It is unclear whether the character, name, sticker gift, collection of stickers for a prize, or the combination of all of these (plus nutrition education provided to the families) drove the effect. In contrast, a higher-powered study (\(n = 207\)) found no impact of the inclusion of an LC on a healthier food on preschool-aged children’s consumption of the healthier versus less healthy food (e.g., broccoli vs. chocolate); children consumed more of the less healthy food item, regardless of the presence of an LC (Kotler, Schiffman, and Hanson 2012).

Many environmental factors increase the quantity of food consumed by adults, including meal duration, social environment, distractions, food salience, plate size, portion size, size of package, and on-package food display (for a review, see Wansink [2004]). For example, the amount of food displayed on a package appears to influence the amount adults consume by providing an anchor and affecting perceptions of consumption norms (Madzharov and Block 2010). Less is known about environmental influences on children’s food intake. Research has demonstrated that both television advertisements and cartoon character body weight prime eating, leading to increased consumption in children (Campbell et al. 2016; Halford et al. 2007; Harris, Bargh, and Brownell 2009). In addition, the portion size of food served increases consumption in children as young as four years old, perhaps by affecting consumption norms (Mrdjenovic and Levitsky 2005; Patrick and Nicklas 2005; Rolls, Engell, and Birch 2000). Unlike the amount of food displayed, an LC does not provide a numerical anchor. Likewise, LCs in general are unlikely to prime specific consumption behaviors (unless, as noted in Campbell et al. [2016], the LC is overweight) or influence children’s perceptions of consumption norms.

Given the important influence of food taste on children’s consumption (Havermans et al. 2009; Patrick and Nicklas 2005), the lack of consumption-relevant information provided by an LC, and children’s tendency to heavily weight the most important attribute (Wartella et al. 1979), we propose that while the mere presence of an LC on a package can affect a child’s choice between foods that taste the same, it is unlikely to influence the amount of a specific food that a child consumes. Rather, the amount of a food that children choose to consume is expected to be more strongly influenced by liking based on the taste of the food (and hunger) (Kotler, Schiffman, and Hanson 2012; Patrick and Nicklas 2005) than whether the package includes an LC. This reasoning leads to the following prediction:

\(H_3\): The amount of food a child chooses to consume is influenced more by food taste than by the presence of an on-package LC.

**Impact of LC on Caregivers’ Food Product Choices**

Caregivers (e.g., parents, relatives, daycare providers) have a critical influence on children’s food consumption through control over choices, the food that they provide to children in their care, and choices that they model (Grier et al. 2007; Moore, Wilkie, and Desrochers 2017; Nicklas et al. 2001). Young children typically only have access to foods that a caregiver provides, although as children get older, they begin to have more independent control (Story, Neumark-Sztainer, and French 2002). Thus, it is important to examine the impact of on-package LCs on caregivers’, as well as children’s, choices.
Caregivers often have a variety of health-oriented and non-health-oriented goals in terms of feeding their children (Kiefner-Burmeister et al. 2014). Three common caregiver goals include choosing healthy foods, foods that the child will enjoy, and foods that the child will consume (Kiefner-Burmeister et al. 2014). Research on parental motivations and feeding practices reveals that parents strive for balance between providing children with healthy food and making children happy through treats and “fun” foods (Carnell et al. 2011; Harman and Cappellini 2014). Parents want their children to eat healthy foods, but they also want their children to be happy, and they want to avoid food waste, particularly at low levels of household income (Daniel 2016).

On-package LCs could influence caregivers’ attitudes toward a food for their children in multiple ways. First, the presence of an LC could signal to a caregiver that a food is “for kids,” strengthening the belief that the food is normative for children. Increasing social norms is one way in which food marketing influences caregivers’ food choices for children (Grier et al. 2007). Second, when an on-package LC is one that a caregiver believes his or her child likes, the presence of the character is likely to seem “fun,” thus strengthening the beliefs that the child will enjoy and like the food and, perhaps, that the child will be more likely to consume the food.

Caregivers’ multiple goals suggest that, just as with children, the type of choice is likely to moderate the impact of an on-package LC. When a caregiver is choosing between two of the same foods, whether healthy or indulgent, the extent to which each product meets the caregiver’s health goal is the same, while the LC could increase both the perception that the food is fun and the likelihood of meeting the goals of child liking and, thus, consumption. It follows that when choosing between two of the same food, a caregiver is more likely to choose the product with an LC than the one without an LC.

When, however, a caregiver is choosing between a healthy and an indulgent food for a child, each food achieves different types of caregiver goals. As noted previously, children tend to like indulgent foods more than healthy foods, and a caregiver may feel pulled between choosing a food that is healthy for the child and one that the child is likely to like and eat. This conflict may increase the caregiver’s processing involvement, such that the cue to social norms and fun that an LC can provide is given less weight in the decision than the food’s ability to meet the caregiver’s active goals. The presence versus absence of an LC is thus less likely to have a strong impact on choice between two diverse types of foods (i.e., healthy vs. indulgent).

H₄: An on-package LC is likely to increase caregivers’ choice of a food as compared with the same type of food without the on-package LC.

H₅: An on-package LC is more likely to influence a caregiver’s choice between two of the same type of food (two indulgent or two healthy options) than between two different types of food (healthy vs. indulgent).

The Current Research

The current research focuses on providing insight into the effect of including familiar, liked LCs on healthy and indulgent food. Experiments 1 and 2 examine whether the impact of an LC on children’s choice of product depends on the type of choice (i.e., whether children are choosing between the same healthy or the same indulgent food or between a healthy and an indulgent food). Experiment 3 examines whether taste is a stronger predictor of children’s consumption of both healthy and indulgent foods than an LC. Experiment 4 focuses on whether the impact of an LC on caregivers’ choices for healthy and indulgent foods depends on the type of choice and investigates the impact of an on-package LC on caregivers’ perceptions of and purchase intentions for that food.

Selecting LC and Foods

The Q Scores Company conducts a Cartoon Q study biannually measuring familiarity and likeability of more than 600 LCs among nationally representative samples of children. Because of our interest in companies’ use of familiar, liked characters to market to children, we used LCs (SpongeBob SquarePants, Scooby-Doo, and Minions) that were familiar and well-liked across age groups (4- to 12-year-olds) and by both girls and boys, according to Q Score data.

We conducted a stimuli pretest for the indulgent and healthy foods used in Experiments 1, 2, and 3 with 26 children between the ages of 4 and 12 years old. In public spaces (e.g., airports), caregivers of children that looked to be in the correct age range were asked their children’s ages and asked for verbal consent for their children to participate in a short survey. After the caregivers gave verbal consent, the children were asked for verbal assent and completed a brief questionnaire rating how healthy they thought each of five foods were on a seven-point scale from 1 = “Bad for me” to 7 = “Good for me” (for the mean ratings for each food, see the Web Appendix). Fruit gummy snacks and cookies were rated as unhealthy (less healthy than the scale midpoint; gummy snacks: \( t = -4.67, p < .0001 \); cookies: \( t = -7.32, p < .0001 \)). Carrots, raisins, and dried apricots were rated as healthy (average ratings above the scale midpoint; carrots: \( t = 17.35, p < .0001 \); raisins: \( t = 7.79, p < .0001 \); dried apricots: \( t = 6.34, p < .0001 \)). Paired t-tests revealed that children considered each of the healthy options to be significantly healthier than each of the indulgent options (raisins and gummy snacks: \( t = 7.53, p < .0001 \); raisins and cookies: \( t = 10.08, p < .0001 \); carrots and gummy snacks: \( t = 12.85, p < .0001 \); carrots and cookies: \( t = 16.18, p < .0001 \); dried apricots and gummy snacks: \( t = 6.88, p < .0001 \); dried apricots and cookies: \( t = 9.29, p < .0001 \)).
Experiment 1: Children’s Choice Between Same Food Type With and Without an LC

The purpose of Experiment 1 was to examine the effect of an LC on choice between two of the same foods. Children four through ten years old were offered a choice between the same food in a package with an LC or a package without an LC (for the distribution of age in Experiments 1 and 2, see the Web Appendix).

Stimuli

We used three sets of stimuli to test the hypothesis that an LC increases within-category choice. Experiment 1a (N = 26; 61% female; average age 6.6 years) used an indulgent snack (fruit-flavored gummy snacks) from the same brand, with half of the packages stickered with a SpongeBob SquarePants character. Experiment 1b (N = 26; 38% female; average age 6.2 years) included fruit gummy snacks from two different brands, one in a package designed with an LC (Scooby-Doo) and one designed with pictures of fruit and no LC. Experiment 1c (N = 29; 28% female; average age 7.27 years) used a healthy snack (baby carrots) from the same brand, with or without a SpongeBob sticker (for the packages, see the Web Appendix). These variations allowed for examination of the effects of LCs on children’s within-category choices when (1) the LC was shown on a sticker affixed to the package, (2) the LC was integrated into the package design, and (3) the within-category choice was between healthy or indulgent foods.

Method

Pairs of researchers went to public spaces popular with families, such as libraries, museums, and children’s soccer games. They approached parents with children who looked to be between four and ten years old and asked their child’s age and if their child could choose a snack. After receiving verbal consent from the parent, one researcher asked the child if (s)he would like to choose a snack. After receiving the child’s verbal assent, the tray was offered at the level of the child’s chest, where the child could easily see the options and make a choice. The snacks were offered on a clear, divided tray, with ten packages including the LC in a column on one side and ten packages without the LC in a column on the other side; which side the packages with characters were on was counterbalanced for order roughly every five minutes. The tray was refilled after each selection to maintain equivalent numbers of each package type for every choice. The second researcher recorded the child’s age, gender, and choice.

Results and Discussion

We used one-sample chi-square tests to test whether the packages in each choice set were equally attractive to children (in terms of the observed frequency of choice). If the packages with and without LC were equally attractive, we would expect the package with an LC to be selected approximately 50% of the time. Thus, we test whether the percentage of children who chose the package with an LC is significantly different than 50%. Analyses revealed that children were more likely to choose the option with the LC than expected by chance across all three experiments (Experiment 1a: 77%, $\chi^2 = 7.54, p = .006$; Experiment 1b: $69\%, \chi^2 = 3.85, p = .05$; Experiment 1c: $69\%, \chi^2 = 4.17, p = .04$; for choice shares, see the Web Appendix). Logistic regression analyses examining whether age or gender predicted package choice found a directional effect of age in Experiment 1a, but no age effect in Experiments 1b or 1c and no effect of gender (Experiment 1a: age: Wald $\chi^2 = 2.93, p = .087$, gender: Wald $\chi^2 = .074, p = .78$; Experiment 1b: age: Wald $\chi^2 = .50, p = .48$, gender: Wald $\chi^2 = .055, p = .66$; Experiment 1c: age: Wald $\chi^2 = .03, p = .85$, gender: Wald $\chi^2 = 1.61, p = .20$). In support of H1, an LC on a package, whether a sticker or part of the package design, for either an indulgent or a healthy product, significantly increased choice compared with the same product type without an LC.

Experiment 2: Impact of an LC on Choice Between Healthy and Indulgent Snacks

The Robert Wood Johnson Foundation (2016) and the CFBAI (2014) both recommend using LCs to market healthy and not indulgent foods as an important strategy to encourage children to make healthier choices. However, given children’s noncompensatory processing (Wartella et al. 1979) and the importance of taste (Patrick and Nicklas 2005), we hypothesize that the presence of an LC is unlikely to increase choice of a healthy over an indulgent (typically more preferred) food, or vice versa. Thus, to further explore the effect of LCs on children’s food choices, and to examine H2, we ran an experiment including healthy versus indulgent options. In line with the pretest results of perceptions of healthiness, we used raisins as our healthy option and fruit gummy snacks as our indulgent option. For generalization, we used a different LC (Minions).

Method

Experiment 2 was a 2 (type of choice: within-category, across-category) × 2 (product with LC: healthy, indulgent) design plus a control of healthy food versus indulgent food, with no LC on either. Thus, some children picked between two healthy or two indulgent options (within-category choice), whereas others picked between a healthy and an indulgent option (across-category choice). Children 3 to 12 years old (N = 139; 49% female; average age 7.4 years) participated in the study. The procedures were identical to Experiment 1.

Results and Discussion

We first examined whether children were more likely to choose the package with an LC in the within-category choice (i.e., when choosing between two of the same type of food). Replicating Experiment 1, and confirming H1, we found that
children were more likely to choose raisins with (74%) than raisins without (26%) the LC \((\chi^2 = 6.26, p = .012)\); see Figure 1) and gummies with (73%) versus without (27%) the LC \((\chi^2 = 4.54, p = .033)\). Logistic regression analyses examining whether gender or age predicted whether children chose the option with the LC found no effect of gender and directional, but nonsignificant, effects of age in the indulgent choice only (gummies: gender: Wald \(\chi^2 = 48, p = .49\), age: Wald \(\chi^2 = 3.19, p = .07\); raisins: gender: Wald \(\chi^2 = 20, p = .65\), age: Wald \(\chi^2 = 1.00, p = .32\)).

Next, we examined the control condition (i.e., choice between the healthy and indulgent options with no LC on either). As expected, in the absence of LC, children showed a preference for the indulgent option (80%) over the healthy option (20%; \(\chi^2 = 10.8, p = .001\)). Our next analyses showed that the choice proportions were not significantly different from the control condition when the LC was present on the healthy option (76% indulgent, 24% healthy; \(\chi^2 = 12, p = .73\)), or when the LC was present on the indulgent option (85% indulgent, 15% healthy; \(\chi^2 = 202, p = .65\)).

We used logistic regression to test \(H_2\), examining whether the choice of the option with the LC depended on whether the decision was within or across food type (choice type). The independent variables were choice type, whether the LC was on the package of healthy or indulgent food, the interaction of choice type and LC, age, and gender; the dependent variable was whether children chose the option with the LC. We found effects of choice type (Wald \(\chi^2 = 13.34, p = .0003\)), LC presence (Wald \(\chi^2 = 17.91, p < .0001\)), and a significant interaction of choice type and LC presence (Wald \(\chi^2 = 9.19, p = .002\)). There was also a directional, but nonsignificant, effect of age (Wald \(\chi^2 = 2.94, p = .09\)). Gender had no significant effect \((p = .92)\). Accordingly, the overall pattern of results is consistent with \(H_2\), with LC effects on choice when children chose between foods within a food type, but not when selection was across food types.

While influential in intracategory choice sets in which food liking is constant, LCs did not alter choices between healthy and indulgent foods. The findings suggest that LCs have limited influence on children’s choices, having an impact only when differences in liking across the foods under consideration are minimal.

### Analysis of Age Effects in Experiments 1 and 2

Neither Experiment 1 nor 2 revealed a significant effect of age. This could be because none exists or because the relatively small sample sizes did not provide ample power to see an effect. We combined data from Experiments 1a, 1b, and 1c and the within-category conditions from Experiment 2. This resulted in a relatively large data set \((n = 130)\) consisting of within-category choices (i.e., selection between two packages from the same product category, with one of the packages including an LC). We tested for the influence of age on choice of package with an LC and also assessed any potential gender effects, interactive effects of gender and age, and (in)consistency of any of these effects across the products or characters. Logistic regression was employed with package choice as the dependent variable and age, gender, a categorical indicator of the five combinations of products/characters, and their interactions as the independent variables. The effect of age was not significant \((p > .2)\), and the other independent variables also did not have an effect on choice \((ps > .15)\). Thus, we do not find evidence that age or gender influence the impact of LCs on children’s within-category food choice.

### Experiment 3: The Relative Roles of Food Liking and LCs on Amount Consumed

The primary goal of Experiment 3 was to examine the effects of an LC on food liking (taste) and consumption of healthy and indulgent foods. We expect that, across both food types, food liking will have a stronger effect than the presence of an LC on the amount consumed \((H_3)\). Prior research in which children were given two of the exact same foods concurrently, one with an LC and one without, found that children indicated higher taste liking for the food with the LC in the direct comparison (Letona et al. 2014b; Roberto et al. 2010). Thus, LCs could have a direct impact on consumption or an indirect effect by influencing liking. We propose, however, that an impact of an LC on food liking is unlikely to arise in the absence of a direct comparison because, in isolation, an LC is unlikely to change perceived taste. We use a between-subjects design that enables us to examine both direct and indirect effects of LC on liking and consumption.

### Method

Experiment 3 had a 2 (food: healthy, indulgent) \(\times\) 2 (character: present, absent) between-subjects design. In public locations,
after parental consent, children aged four through seven years old (N = 130; 48% female; average age 5.6 years) were asked to participate in a taste test. Since any effects of an LC on liking and consumption would occur through affect transfer, all participants were asked at the end of the study to indicate whether they knew the character (Scooby-Doo). Twenty children who did not know Scooby-Doo were removed from the analysis. Removing these subjects did not have a material effect on the results (see the Web Appendix). The remaining 110 participants were 45% female, with an average age of 5.8 years.

Children were seated behind a privacy screen without their parents and viewed a package of either cookies or dried apricots with an image of Scooby-Doo or the same package without Scooby-Doo (see the Web Appendix). While viewing the package, participants received a bowl of the cookies or dried apricots, tasted at least one, and rated their liking of the food. They then ate as much as they wanted while completing a brief survey, a filler task, consisting of circling their preferred option out of paired pictures unrelated to food or LCs. The researcher stepped away and children were given approximately three minutes to complete the questionnaire while eating as much of the food as they wanted. The food was removed and children indicated whether they knew various characters, including Scooby-Doo. After the child left, the amount of food the child consumed was recorded.

Results and Discussion

Food reward involves two interconnected components—the pleasure received from taste (liking) and the motivation to eat (wanting)—that cannot be easily dissociated (Havermans 2011). For this reason, we measured food liking using two five-point scales that included face emoticons, one measuring taste and the other measuring wanting. The taste rating asked children “How much do you like the way that this food tastes?” with the labels “Hate It,” “Don’t Like It,” “It’s OK,” “Like It,” and “Love It.” The want rating asked “How much would you like to have this food for a snack?” with labels “Don’t Want!,” “Not Really,” “It Would Be OK,” “Kind Of,” and “Want It!” The two scales were correlated (r = .51, p < .001) and were averaged together to create a food liking score.

An LC could have an indirect effect on amount consumed by influencing food liking, as well as a direct effect on consumption. We thus examined whether the presence of an LC on the package elicited higher food liking. An analysis of variance with the food liking measure as the dependent variable showed an effect of food type on food liking (F(1, 106) = 13.69, p < .001); not surprisingly, children indicated higher liking for cookies (M = 4.47) than for apricots (M = 3.87). The analysis showed no effect of character (F(1, 106) = 1.11, p = .29) or interaction of food type and character on liking (F(1, 106) = .09, p = .76).

To test the hypothesized influence of food liking and the presence of the LC on the amount consumed (H3), we conducted an analysis of covariance with amount eaten as the dependent variable and food liking as a covariate. Because the two foods varied in weight and calories (on average, each apricot weighed .3 oz and one ounce of dried apricots contains 71 calories, and each cookie weighed .2 oz and one ounce of cookies contains 147 calories), we conducted the analysis of covariance twice, once with ounces consumed and once with calories consumed as the dependent variable (for means, see Figure 2; for cell sizes and standard deviations, see the Web Appendix). There was a significant effect of type of food (ounces: F(1, 105) = 3.81, p = .053; calories: F(1, 105) = 11.12, p = .001) and a significant effect of food liking (ounces: F(1, 105) = 4.78, p = .03; calories: F(1, 105) = 3.91, p = .050), but no significant effect of character (ounces: F(1, 105) = .01, p = .92; calories: F(1, 105) = .00, p = .97) or interaction of food type and character (ounces: F(1, 105) = .02, p = .88; calories: F(1, 105) = .04, p = .84). In support of H3, food liking was a significant predictor of amount consumed, whereas we found no evidence of an impact of the presence of an LC on either food liking or consumption.

Our first three experiments examined effects of LC on children’s (1) choices between two of the same type of product, (2) choices between two different types of products (healthy and unhealthy), and (3) consumption amount of healthy and unhealthy foods. The results indicate that LC can have a significant impact on children’s choices between two of the same type of food. When children between the ages 4 and 12 years old make a real choice of a snack between two of the same type, they overwhelmingly choose the one with the LC. However, the results also show that when choosing between two different types of products (a healthier snack and a tasty, unhealthy snack), children tend to choose the one they like best, regardless of the presence of an LC on either one. In short, children tend to choose the tasty, unhealthy product, and the presence of an LC (on either product) does not affect this. Similarly, when looking at the amount that children choose to consume, the...
liking of the food affects children’s consumption, whereas LC presence does not affect either consumption or liking.

As discussed previously, in addition to their own choices of foods and consumption amounts, children’s food consumption is strongly influenced by parents and other caregivers. Much of the food available to children is provided by caregivers. Thus, another route by which LCs could influence what children eat is by influencing caregivers’ choices. The next two experiments examine impacts of LCs on caregivers’ perceptions, intentions, and choices for their children.

**Experiment 4a: Impact of an LC on Caregiver Choices**

The purpose of Experiment 4a was to test $H_4$–$H_6$ by asking caregivers of 4- to 12-year-old children to select one of two products as a snack for their child. It also examines how the presence of an on-package LC affects perceptions that the product might meet common parental feeding goals—specifically, perceptions that a food is healthy (thus meeting health goals) and perceptions that the product is “fun” and intended for kids (thus potentially providing a treat and allowing parents to balance health goals with the goal of making their children happy).

**Method**

Caregivers ($n = 163$; 42% female; average age 35.8 years) were recruited from Amazon’s Mechanical Turk. The posting noted that a screener would be used to identify appropriate participants, and only those who qualified would be able to complete the survey. The screener included several questions to vet for child care responsibilities for children in the intended age group. Consistent with Experiment 2, we employed a 2 (choice: within-category; across-category) $\times$ 2 (product with LC: healthy; indulgent) between-subjects design with the addition of an across-category, no-LC control condition. Thus, participants chose between two products that varied in terms of whether the products were in the same category (i.e., two indulgent or two healthy) or different categories (i.e., one healthy and one indulgent) and the presence or absence of an LC. There was also a control in which the choice was between the healthy and the indulgent food with no character on either. A pretest (using a seven-point scale anchored by “healthy” and “unhealthy”) revealed that a vegetable snack pack (broccoli, celery, carrots, and dip) was perceived as a healthy option ($M = 6.39$) while a cookie pack (chocolate chip cookies) was perceived as unhealthy ($M = 2.70$); accordingly, product packages from these two categories were utilized in the study. A graphic designer created the LC conditions by incorporating a picture of SpongeBob on the two packages.

Participants were asked to think about one child they cared for between 4 and 12 years of age and to indicate the child’s age ($M = 7.4$ years) and gender (57% male). Next, with this child in mind, the caregiver was asked to view photos and select between two food items. Following the choice measure, participants were asked to judge each item on seven-point scales (1 = “designed for adults,” and 7 = “designed for children”; 1 = “unhealthy,” and 7 = “healthy”; and 1 = “not fun,” and 7 = “fun”). The survey concluded with demographic questions.

**Results and Discussion**

First, we examined within-category choices (i.e., choosing between two of the same items, one with an on-package LC). When caregivers chose between two vegetable snack packs, the package with the LC (82%) was disproportionately selected relative to the package without the character ($18\%; \chi^2 = 13.36, p < .001$; see Figure 3). Similarly, the condition in which the choice was between two cookie packages revealed that a disproportionate percentage (74%) selected the option with the LC on the package ($\chi^2 = 7.53, p = .006$). Consistent with $H_4$, these findings indicate that when a caregiver is choosing between two of the same foods, the presence of an LC can increase choice of a child’s food.

We employed the control condition (i.e., choice between the vegetable snack pack and cookies, without an LC on either package) in examining the across-category choice conditions. In the control condition, 48% (52%) of caregivers selected the vegetable snack pack (cookies). A logistic regression model included a categorical independent variable reflecting whether the LC was not present on either package (i.e., control condition and reference category), appeared on the vegetable snack pack, or appeared on the cookies. Within the model, we also included other potentially applicable independent variables (i.e., child’s age, caregivers’ household size and income, and child’s gender) to examine whether they interacted with the absence/presence of the LC in influencing choice. Results indicated that the choice proportions did not
differ between the control condition and the condition in which the LC was shown on the vegetable snack pack ($p > .8$; vegetables: $35.5\%$, cookies: $64.5\%$) or the condition in which the LC appeared on the cookie package ($p > .8$; vegetables: $54.8\%$, cookies: $45.2\%$). There were no other significant effects ($ps > .1$). The pattern of results we have described (i.e., significant effects of an LC on choice between the same foods and no effects of an LC on choice between different foods) is consistent with $H_3$.

To gain insight into the process underlying the positive effects of LCs on caregivers’ within-category product choices, we examined responses to the three semantic differential scales reflecting beliefs that the products are designed for children, healthy, and fun. In particular, we used paired $t$-tests to examine whether the items with the LC were judged differently from the items without the LC. For both the healthy and indulgent within-category choice contexts, these measures reveal that the addition of an LC leads to stronger beliefs ($ps < .001$) that the item is designed for children ($M_{\text{veg, no LC}} = 3.64$, $M_{\text{veg with LC}} = 6.36$; $M_{\text{cookies, no LC}} = 3.65$, $M_{\text{cookies with LC}} = 5.79$) and fun ($M_{\text{veg, no LC}} = 3.67$, $M_{\text{veg with LC}} = 6.00$; $M_{\text{cookies, no LC}} = 3.50$, $M_{\text{cookies with LC}} = 5.56$), but does not affect beliefs regarding the healthiness of the food items ($ps > .5$).

This experiment reveals the same pattern of influence of LCs on caregivers’ choices as we found with children. When caregivers pick between two of the same foods for their children, they tend to pick the option with a familiar, liked LC. However, when caregivers pick between two different foods, one healthy and one unhealthy, they are not influenced by the presence of an LC. In this case, choice shares across the options are the same in the absence and the presence of LC on food packages. This is despite the evidence that the presence of an LC influences caregivers’ perceptions of food as “for children” and “fun.” These findings provide some support for the idea that when caregivers choose across categories, their goals are the primary driver of choice.

Experiment 4a provides important insight into the effects of LCs on caregivers’ choice of healthy versus unhealthy foods for their children. However, when considering caregivers’ in-store shopping behavior, while they holistically choose between types of foods for their children, in practice they tend to consider one type at a time. That is, when shopping in-store, a caregiver considers produce in the produce section and cookies, gummy snacks, and so on when in those aisles. It is thus important to also consider the potential impact of LCs on caregivers’ purchase consideration of a product on its own, rather than in a choice set. It is possible that when a caregiver sees a product with an LC and thinks of it as more fun and for children, she will be more likely to purchase it than in the absence of an LC. While this is one possibility, given the importance of caregivers’ goals in selecting food for their children, we propose that LCs are unlikely to influence caregivers’ purchase intent for each product, even in this case.

**Experiment 4b: Impact of an LC on Caregiver Choices**

The purpose of Experiment 4b was to further examine the impact of an on-package LC on caregivers’ perceptions of products and purchase intentions compared with choice.

**Method**

Caregivers ($n = 174$; $54\%$ female; average age 35 years) were recruited from Amazon’s Mechanical Turk using the same procedure and screening questions as Experiment 4a. Ten failed an attention check and were excluded from subsequent analysis; this omission did not have a substantive impact on the results. The study was a mixed design with a 2 (within-subject food type: healthy, indulgent) × 2 (between-subjects LC: on healthy food, on indulgent food). The same cookie and vegetable snack packs with and without SpongeBob from Experiment 4a were used.

As in Experiment 4a, participants were asked to think about one child they cared for between 4 and 12 years of age and to indicate the child’s age ($M = 7$ years) and gender (male = $62\%$). Keeping that child in mind, participants were asked to indicate their purchase intentions individually for four foods: two filler items to disguise our hypotheses (cereal and crackers) and two target foods (cookie and vegetable snack packs). Across conditions, the four foods were presented in the same order: cereal, cookies, crackers, and vegetables. Half of the participants were first presented with a cookie package that included the LC and later a vegetable snack pack without; the other half were presented with a cookie package that did not include the LC and later saw a vegetable snack pack with the LC. Participants indicated their intentions to purchase each food for their child on a seven-point scale from “extremely likely” to “extremely unlikely” (reverse-coded for clarity in presentation of means). After indicating purchase intentions for the foods, participants were asked their beliefs regarding whether the products were designed for children (vs. adults), healthy, and fun using the same items as in Experiment 4a. Prior to completing final demographic questions, participants were asked to choose between either two vegetable snack packs or two packages of cookies with one of the packages in each choice set including the LC.

**Results and Discussion**

We used a repeated-measures analysis of variance model to assess the effects of the LC on beliefs (i.e., healthy, fun, and for kids) and purchase intentions regarding the healthy product (i.e., vegetable snack pack). A main effect of the measures ($F(3, 162) = 85.80$, $p < .001$) and a main effect of LC ($F(1, 162) = 104.06$, $p < .001$) were qualified by an interaction between the two. The measures interacted ($F(1, 162) = 16.72$, $p < .001$) with the absence versus presence of the LC, indicating differential effects across the four measures (see Figure 4). Further analysis revealed that the LC had no effect on purchase intentions ($M_{\text{no LC}} = 4.33$, $M_{\text{LC}} = 4.72$; $p > .1$).
despite strengthening beliefs that the product is fun (M_no LC = 2.99, M_LC = 5.37; p < .001), intended for kids (M_no LC = 3.20, M_LC = 5.43; p < .001), and healthy (M_no LC = 4.32, M_LC = 4.72; p < .05). When included as covariates, household income as well as the age and gender of the considered child were not significant (ps > .3).

Turning our attention to the indulgent item (i.e., cookies), we again find main effects of the repeated-measure factor (F(3, 162) = 78.19, p < .001) and the LC (F(1, 162) = 31.70, p < .001). These main effects were qualified by an interaction between the belief/intention measures and presence of the LC on the package (F(3, 162) = 6.47, p = .01) (see Figure 4). As expected, the presence of the LC had no effect on intentions to purchase the cookies (M_no LC = 3.89, M_LC = 3.69; p > .4) or on the strength of the belief that the food is healthy (M_no LC = 2.59, M_LC = 2.34; p > .2). Beliefs that the cookies were for kids (M_no LC = 3.56, M_LC = 5.67) and fun (M_no LC = 3.74, M_LC = 5.24) were both strengthened by inclusion of the LC on the package (ps < .001). As covariates in this model, household income, gender, and age of the child under consideration were not significant (ps > .3).

The choice results replicated those from Experiment 4a. In particular, 82.1% of the 78 participants choosing between the two vegetable snack packs (with one of the two including the LC) selected the option with the LC ($\chi^2 = 32.05; p < .001$). For the cookie choice set, 81.4% of the 86 participants selected the option with the LC on the package ($\chi^2 = 33.91, p < .001$).

This experiment shows that when considering a single food at a time, an LC increases perceptions that both healthy and indulgent foods are fun and designed for kids but does not increase purchase intent. The results support the idea that LCs have limited effects on caregiver choices. Only in a situation in which a caregiver is choosing between the same food, in packaging with an LC or without, does an LC influence the caregiver’s decision. In the context of shopping, this may indicate that LCs affect brand choice but not food choice, such that they have an impact only after a caregiver has decided to purchase a specific type of food. Because LCs increase perceptions that a food is fun and designed for kids, once the category choice has been made, caregivers may consider foods with an LC as helping them balance between providing their child with healthy food and providing a food that their child will like and consider a treat.

### Discussion and Conclusions

This research proposes that a fuller understanding of the effects of the use of LCs in food marketing on children’s food well-being can be gained by considering four possible influences for both healthy and indulgent foods. Thus, we examined the influence of familiar and liked LCs on (1) children’s choice between two of the same types of food and between different types of food, (2) children’s choice of how much healthy and indulgent food to consume; (3) caregivers’ choice between two of the same types of food and between different types of food, and (4) caregivers’ purchase consideration of a single type of food.

Four experiments, using multiple different characters (SpongeBob SquarePants, Minions, and Scooby-Doo), healthy foods (baby carrots, raisins, mixed vegetable snack packs, and dried apricots), and indulgent foods (gummy snacks and cookies), provide support for the conceptualization. Experiments 1 and 2 reveal that children are more likely to choose food in a package with an LC than the same type of food in a package without (H1). However, when faced with a choice between healthy and indulgent foods, one with an LC on the package and the other without, children choose the indulgent food over the healthy food, regardless of the presence or absence of an LC (H2). Experiment 3 examined whether an on-package LC would lead to increased food liking and consumption. Importantly, we find that the amount children consume is significantly affected by food liking, but not the presence of an LC on the package (H3). Experiments 4a and 4b examined the impact of LC on caregivers’ choices, intentions, and perceptions. Like children, when faced
with a choice between two of the same food, caregivers are more likely to choose the package with the LC (H4). However, when choosing between two different foods, an LC does not impact caregivers’ choices (H5); instead, caregivers appear to choose on the basis of their goals for their children. Although the LC does not affect caregivers’ across-category choices or purchase intentions (when considering products one at a time), it does affect their perceptions that the food is fun and designed for kids (H6).

Our research contributes to the existing literature on the impact of characters on children in several ways. First, we provide a framework that provides structure for the existing literature, as well as how our research contributes to it (Table 1). Our framework makes clear that the majority of research has asked children to distinguish between products presented concurrently, whereas only a few studies have asked children to respond to a product on its own. This also shows that only two previous studies have examined consumption, which, of course, is the ultimate concern. By clarifying the different questions asked by previous studies, we gain clearer insight into the fact that the literature reveals mixed effects.

Second, we ground our research within a theory-based conceptualization of children’s consumption, as suggested by recent research (Kraak and Story 2015). We conceptualize the major decisions that influence children’s food consumption: children’s choice of foods, caregivers’ choice of foods to provide, and children’s choice of consumption amount. Drawing from research on children’s decision making, we propose that children will tend to use noncompensatory, rather than compensatory, strategies, such that the most important attribute will have a very significant impact on choice (Wartella et al. 1979). Combining this with research on children’s food preferences, we expect taste to be the most important attribute and thus hypothesize that LCs have a different impact on children’s decisions between two foods that taste the same versus two foods that taste different. Our hypothesis and findings that food type within a choice set significantly influences the impact of LCs is an important contribution to the literature and, as discussed next, has important public policy implications. The conceptualization of children’s taste-driven decision making also leads to the hypothesis, supported by the data, that LCs have limited impact on the amount children consume.

Overall, our results indicate that the presence of an LC on a food package leads to increased choice when the food options are the same but is less likely to affect choice of healthy versus indulgent options, increase food liking, or increase the quantity of food consumed. We note, however, that although our results reveal an effect of LCs on choice and no effect on consumption, we did not simultaneously test them in the same experiment. Future research that simultaneously examines choice and amount consumed would be useful.

**Implications for Researchers and Policy Makers**

An important implication of this research is that efforts to include LCs on healthy foods to increase children’s consumption of healthy, relative to unhealthy, foods may not be successful. While it is important for our research findings to be replicated, the current studies show no impact of LCs on children’s and caregivers’ choices between healthy and unhealthy foods or on the amount children consume. These results are consistent with the findings of Kotler, Schiffman, and Hanson (2012) that children did not consume more of a food with an LC, even when paired with a food without an LC. Only one study, with a small sample of 16 and a complex combination of simultaneous interventions, provides evidence of a positive impact of LCs on consumption of healthy foods (Keller et al. 2012). The U.S. Institute of Medicine (2006), the White House Task Force on Childhood Obesity (2010), the Robert Wood Johnson Foundation (2016), and others have spent resources to encourage the use of LCs on healthy and discourage the use of LCs on unhealthy foods. Our research, combined with previous evidence, suggests that resources for the public good may be better spent on other, more effective, methods for increasing children’s relative consumption of healthy versus unhealthy foods. For example, efforts to persuade food marketers to change to healthier formulations may be more effective than efforts regarding LCs. At this point, the evidence is that the effect of LCs seems limited to a competitive effect between two of the same types of food; children’s choice between two brands of nutritionally equivalent foods is important to the marketers of the foods, but less important to society.

A second implication of our findings is that we need additional research that provides a better understanding of how to influence children to increase consumption of healthy foods and decrease consumption of unhealthy foods. As we have discussed, Keller et al. (2012) found that healthy food consumption can be increased with a combination of fun names; colorful, fun packages with LCs; sticker premiums; and prizes within a context of providing nutrition education as well as the healthy food to the children and their families. Given their promising results, future research with more substantial samples should tease apart the effects of the multiple components of fun name, package character, sticker gift, and prize. While our results suggest a lack of an impact of the LC, it is possible that one of the other pieces could drive an increase in consumption of fruits and vegetables. Alternatively, it could be that the combination of these factors, including family nutrition education and access to healthy foods, is necessary to get results. The gamification involved in Keller et al. seems worth exploring in terms of increasing healthy food consumption, with particular attention to long-term effects, given the research showing that external motivation (e.g., reward) can decrease longer-term intrinsic interest (e.g., Lepper, Green, and Nisbett 1973; Maimaran and Fishbach 2014).

**Limitations and Future Research**

Our research shows that neither children nor adult caregivers are influenced by LCs to make a different choice when choosing between two different food types. However, our research is limited to short-term choices—choices between two foods or
purchase intentions for a single food at a given time. It is possible that the inclusion of LCs on healthy foods could have a longer-term impact on children’s and/or caregivers’ consideration of healthy foods more generally. We find that caregivers’ perceptions of foods as fun and for kids are affected by the presence of LCs and, while we did not explore children’s perceptions, it is conceptually plausible that LCs would affect children’s perceptions similarly. In this case, it could be that repeated inclusion of LCs on, for example, fruits and vegetables could increase consideration of these foods. Because adding LCs to foods increases caregivers’ perceptions that the food is fun and for children, including them on healthy foods might encourage caregivers to replace indulgent foods with healthy, well-liked foods when choosing fun treats for their children. Limiting LCs to healthy foods could likewise be beneficial by lessening “pester power” for low-nutrition foods and increasing pester power for higher-nutrition foods. That is, perhaps the inclusion of familiar, liked LCs on foods that are more nutritious, such as vegetable snack packs and fruits, could lead to greater attention and interest for these foods on the part of children when they are shopping with caregivers. Either of these longer-term impacts on caregivers or children could result in increased availability of healthier food and less availability of indulgent food within the home, which is important because food availability has a major influence on children’s food consumption (Patrick and Nicklas 2005). Furthermore, the LCs used in this research were chosen because of their attractiveness to boys and girls across a broad age range, but we did not consider whether the LCs used on healthy foods were associated with health or healthy lifestyles. It may be beneficial for future research to examine whether the LC associations with healthy/indulgent foods and healthy/indulgent lifestyles can encourage children to make healthier choices. Much in the same way that an overweight character primes children to increase consumption (Campbell et al. 2016), it may be possible that a health-oriented or athletic character can prime children to choose healthy foods. These tactics may also help with parents’ food socialization efforts (Block et al. 2011). For more potential future research questions that could help shape our understanding of the use and role of LCs on food packaging, see Table 2.

We note that this research focuses on LCs without considering brand characters. Many foods are marketed using brand characters, such as the Jolly Green Giant or the Trix rabbit. Although little research has examined the influence of brand characters, one study found that brand characters increased preference for products presented with, versus without, their associated brand character (McGale et al. 2016). While both LCs and brand characters are used on products aimed at children, they may have different effects. Brand characters are strongly associated with brands, rather than other media, and create positive feelings toward brands that can persist from childhood into adulthood (Connell, Brucks, and Nielsen 2014). In contrast, LCs, like celebrity endorsers, are used to increase attention and affect for a product at a time when the LC is relevant and popular; LCs are thus less likely to be strongly associated with specific brands. An interesting and policy-relevant direction for additional research is to further examine the effects of both licensed and brand characters on children’s and caregivers’ choices with the goal of increasing

### Table 2. Research Questions Regarding the Use and Role of Characters on Food Packaging

<table>
<thead>
<tr>
<th>Licensed and Brand Characters</th>
<th>Longer-Term Impacts</th>
<th>Motives</th>
<th>LC Associations</th>
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</thead>
<tbody>
<tr>
<td>- How do novel, or familiar, characters affect children’s willingness to try unfamiliar foods?</td>
<td>- Over the long run, can LCs increase interest in a product category?</td>
<td>- How do social factors, such as impression management and self-concept, influence children’s choices and preferences with respect to food products featuring LCs and brand characters?</td>
<td>- How do characters that are strongly associated with one gender versus the other impact children’s and caregivers’ decisions (i.e., Disney princesses vs. Spider-Man)?</td>
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<td>- Does food that is shaped like a character influence the amount that children consume?</td>
<td>- Over the long run, do on-package characters influence children’s food motives (e.g., by emphasizing food as fun rather than nutrition)?</td>
<td>- What role does impression management play in the choices of caregivers for their children?</td>
<td>- What is the impact of LCs that are strongly associated with health goals or activities (i.e., athletic characters) on both healthy and indulgent foods?</td>
</tr>
<tr>
<td>- Do LCs and brand characters have the same or different effects?</td>
<td>- What is the impact of on-package LCs for healthy foods on dimensions of food well-being such as pleasure in the eating experience?</td>
<td>- Are children and/or caregivers more likely to use their persuasion knowledge when faced with one or the other?</td>
<td>- What role does self-congruency theory play in the choices of food products featuring LCs?</td>
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<td>- How do the use of brand characters affect children’s and caregivers’ preferences of healthy and/or indulgent foods?</td>
<td>- Does self-brand connection influence the impact of brand characters on children’s choices and/or consumption amount?</td>
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