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RESEARCH ARTICLE

Marketing to Children Inside Quick Service Restaurants: Differences by Community Demographics

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Introduction: In the U.S., children regularly consume foods from quick-service restaurants, but little is known about the marketing strategies currently used inside quick-service restaurants. This study aims to validate a child-focused Environmental Assessment Tool for quick-service restaurants, evaluate marketing strategies inside and on the exterior of quick-service restaurants, and examine differences by community race/ethnicity or income.

Methods: The inter-rater and test−retest reliability of the Environmental Assessment Tool were assessed across the top 5 national quick-service restaurant chains. Marketing techniques in 165 quick-service restaurants (33 per national chain) in socioeconomically and racially/ethnically diverse communities throughout New England were examined in 2018−2019. Mixed methods ANOVA examined the differences in marketing techniques in 2020.

Results: The inter-rater and test−retest reliability of the Environmental Assessment Tool were high (Cohen's κ>0.80). Approximately 95% of quick-service restaurants marketed less healthy foods, whereas only 6.5% marketed healthy options. When examining the differences by community demographics, there were significantly more price promotion advertisements inside and on the exterior of quick-service restaurants in lower-income communities. In addition, there was a greater number of child-directed advertisements with cartoon or TV/movie characters as well as fewer healthy entrée options and more sugar-sweetened beverage and dessert options on the children's menu inside quick-service restaurants in communities with higher minority populations.

Conclusions: Environmental Assessment Tool is a valid tool to evaluate marketing inside quick-service restaurants. Results suggest that there is a substantial amount of unhealthy food and beverage marketing inside quick-service restaurants, with differences in the number and types of techniques used in lower-income and minority communities. Policies that limit quick-service restaurant marketing to children should be considered.

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INTRODUCTION

In the U.S., the consumption of foods from quick-service restaurants (QSRs), commonly referred to as fast food, is increasing among children.[1] This can have important consequences because children consume significantly more calories, saturated fat, sodium, sugar, and sugar-sweetened beverages (SSBs) and conversely fewer fruits and vegetables on days they have QSR foods.[2,3] Consequently, research suggests a positive association between children's QSR food consumption and BMI.[4–7]

Research indicates that Black and Hispanic adolescents consume a greater percentage of calories from QSRs than their non-Hispanic White peers.[1] These disparities may be partially due to differences in QSR locations skewed toward lower-income and predominantly Black neighborhoods.[8,9] Lower-income and minority youth are also exposed to more QSR marketing through billboards and targeted screen-based advertisements.[10–12]

Although parents typically report that cost, taste, convenience, and nutrition determine food selections for children, behavior change techniques (i.e., marketing and advertising strategies, including posters, displays, promotions, and verbal prompts) used in restaurants may have a stronger influence.[13,14] Previous surveys have examined the marketing techniques aimed at adults inside QSRs and adult menus (with limited information related to those of children).[15–17] Others only examined children's menus with limited information related to marketing techniques.[18] Because children regularly order from both the children's and adult menus, it is important to have a tool that encompasses both when examining QSR environments.[19,20] In addition, recent technologic updates, such as electronic menu boards and kiosks, have not been examined.[15] Therefore, it is currently unknown what types of behavior change strategies are used in QSRs that may influence children, and little is known regarding whether marketing techniques differ by community demographics.[21]

To address these gaps, an updated and expanded child-focused QSR Environmental Assessment Tool (EAT) was developed, validated, and implemented to evaluate the behavior change techniques currently employed by QSRs that may influence children and parent's meal selections and to examine differences by race/ethnicity and the percentage of the population below the poverty line.

METHODS

Study Sample

Drawing from the top 5 national QSR chains, a list was compiled for all locations within New England (excluding those examined for the validation of the assessment tool), and demographic characteristics (e.g., percentage below the poverty line and percentage by race/ethnicity based on population-level Census tract data by ZIP code) were collected.[22] QSRs were categorized into 3 groups: (1) higher percentage White (≥70%)/higher income (<10% below the poverty line), (2) higher percentage White/lower income (≥10% below the poverty line), and (3) lower percentage White (<60% White)/lower income. A category representing a lower percentage White/higher income was not included owing to an insufficient number of QSRs. Within each category, 11 QSRs were randomly selected for each of the 5 chains (33 QSRs/chain; N=165 QSRs total).

Measures

The EAT (Appendix Figure 1, available online) was adapted from the validated Nutrition Environment Measures Study in Restaurants (NEMS-R).[23] EAT emphasized children's foods and behavior change techniques (i.e., marketing and advertising strategies such as posters, displays, promotions, table tents, and verbal prompts) potentially influencing children's selections inside QSRs. An instrument was developed on the basis of the NEMS-R and behavior change technique research and in consultation with public health experts. Because many children do not order from the children's menu,[19,20] general images promoting foods visible to children (e.g., images of soda) were included.

Investigators used EAT to assess behavior change techniques by quantifying the number of advertisements throughout the interior and exterior of QSRs. If the same image was in >1 location (i.e., if posters with the same image were located on the exterior and on the interior), they were counted as 1 poster on the exterior and 1 poster on the interior. Exceptions were made for table tent advertisements (i.e., the presence of table tents was counted as 1 advertisement) because a customer would likely only see the 1 advertisement located at the table where they were sitting. Compared with the NEMS-R, EAT included an expanded children's menu section with detailed questions about sides (e.g., fruit with or without added sugar), whole grains, and beverages (e.g., SSBs and chocolate milk). EAT also quantified the number of items on the children's menu by food categories and the different types of child-directed marketing techniques (e.g., advertisements with cartoon characters, toys, and TV and movie characters). In addition, EAT encompassed a broader set of marketing techniques, including modern technology (e.g., electronic menu boards and ordering kiosks), and differentiated between advertisement placements (e.g., visible waiting in line to order, on the menu board, in other areas inside the QSR, and around the exterior). Finally, EAT assessed environmental social features on the basis of existing measures of perceived neighborhood disorder, including security features (e.g., security cameras), disorder inside (e.g., foul odor), employee behavior (e.g., inappropriate language), and disorder outside (e.g., graffiti).[24–26]

On the EAT, both individual foods and meals were categorized as standard (i.e., unhealthy) or healthier. Healthier meals (i.e., entrée, side, and beverage) were those in alignment with RAND Corporation's Healthier Restaurant Meal Guidelines for Children, which was developed by national public health experts.[27] The standards included limits on calories, saturated fats, total sugar, and sodium. Healthier meals also excluded SSBs and included

≥2 additional components: fruit, nonfried vegetable, whole grain, lean protein, or skim/1% dairy. These standards were nearly identical to the Kids LiveWell program developed by the National Restaurant Association, which provided voluntary standards for healthy children's menu items.[28] The Kids LiveWell standards were used to categorize individual sides as healthier or standard. *Individual healthier entrées* were defined as those that could align with the healthier meal standards (i.e., meet the nutrient criteria for meals) if combined with healthier sides/beverages. These standards were applied to both the children's and adult menus.

Validation procedures for EAT were based on methodology from the NEMS-R.[15] College-educated research assistants (RAs) without previous relevant experiences completed training sessions (approximately 10 hours in total) that included the project's background information, a review of EAT, and practice sessions with feedback from the evaluation lead at local QSRs (that were not part of the main study). EAT was tested in New England by 2 RAs in 10 QSRs, each representing 1 of the top 5 U.S. QSR chains. The top 5 QSR chains were chosen because they account for >45% of the entire U.S. fast food industry and have locations within all the 50 states.[29,30] The RAs visited each QSR independently on the same day. The test−retest reliability was conducted by having 1 RA return to the 10 QSRs within 3−4 weeks of the initial assessment.

The RAs conducted site visits at each QSR during lunch (11:00AM−1:00PM) or dinner (4:30PM−8:00PM) hours using standard mystery shopper protocols and compliance standards in 2018−2019.[31] Before placing an order, RAs discretely observed behavior change techniques while entering the main entrance and standing in line. RAs examined the menu board for advertisements, including multiple advertisements that changed on electronic menu boards. In addition, RAs listened for cashiers' verbal prompts (e.g., Would you like fries with that?). After placing an order, RAs sat in the dining area to record their observations. They then discreetly examined any remaining visual displays and assessed QSR size on the basis of seating capacity (10−50 seats or >50 seats). RAs walked to other areas (e.g., to a rest room or out of a back entrance) to ensure that all images were recorded. If a QSR had electronic ordering kiosks, the RAs simulated placing orders for both the children's and adult menus to view potential marketing techniques (observing all sections within the ordering process). When leaving, RAs examined the QSR's exterior for visible advertisements. Measures of social disorder were also observed both inside and outside of the QSRs. This study was approved by Merrimack College's IRB.

Statistical Analysis

The inter-rater and test−retest reliability of EAT was assessed by Cohen's κ-coefficients. Kappa values >0.80 were considered strong (i.e., acceptable).[32] Mixed methods ANOVA was used to examine the differences in the number of behavior change techniques promoting healthy or standard options by community demographics (percentage below the poverty line [on the basis of a 10% change] and percentage White [on the basis of a 20% change]), with QSR chain as a random effect. Logistic regression (with QSR chain as a random effect) was used to examine differences in the presence of verbal prompts or electronic menu boards. All models included both the poverty and race/ethnicity variables and adjusted for QSR size on the basis of seating capacity. Other demographic characteristics (e.g., median household income, percentage of the community with less than high school education, and percentage unemployed) were strongly correlated with poverty level (Pearson's correlation coefficient> ±0.8) and were not statistically significant and therefore were not included in the final models. Analyses were conducted in 2020.

RESULTS

The inter-rater reliability of EAT was consistently strong (Cohen's κ>0.80) (Table 1). The pricing section had a perfect agreement (κ=1.00), whereas the social disorder section had the lowest agreement but was still considered strong (κ=0.81). Similarly, the test−retest values had a high agreement for all items (κ>0.80), ranging from κ=0.86 (interior: counter area section) to κ=0.95 (pricing section).

The community demographics for the 165 QSRs are presented in Table 2. The average percentage of the population below the poverty line was between 11.7% and 15.4% for the QSR chains (range=1.8%−37.9%). The median household incomes ranged from $18,300 to $129,000 (average=$60,600−$69,100), and the percentage with less than high school education ranged from 2.0% to 15.5% (average=10.9%−15.5%). The average percentage unemployed varied from 11.7% to 15.4% (range=1.8% −37.9%). The average percentage of the population that was White was 74.6%−80.2% (range=32.8%−98.7%), the percentage Black varied from 4.5% to 7.9% (range=0.1% −44.1%), and the percentage Hispanic was between 10.5% and 19.8% (range=0.2%−85.9%).

When examining the behavior change techniques visible while standing in line to order (excluding the menu board), only 6.5% of QSRs had advertisements promoting healthy foods (healthy advertisements), with a maximum of 1 advertisement observed (Table 3). However, 94.7% of QSRs had advertisements promoting standards foods (unhealthy advertisements), with an average of 4 unhealthy advertisements observed (range=0−14 ads). Among unhealthy advertisements, one third of the QSRs had price promotion advertisements (range=0−3), and 14% had limited-time advertisements (range=0−2). More than half (55%) had advertisements that promoted overeating (range=0−3). When examining the advertisements marketed to children visible while waiting in line, 5.9% of QSRs had advertisements with cartoon characters (range=0−1), 12.4% had advertisements with toys (range=0−2), and 11.2% had advertisements with TV or movie characters (range=0−1). Verbal prompts by QSR employees were observed in 13% of the QSRs. When examining differences by QSR location demographics, there were significantly more price promotion advertisements in lower-income areas; each 10% increase in the

Table 1. Inter-Rater and Test–Retest Reliability of the EAT in QSRs

Section	Item content	Inter-rater reliability[a]	Test–retest reliability[b]
Interior: counter area	Advertisements/marketing in all areas in front of, around, and behind the counter as well as anything in direct view of customers standing in line to order (not including the menu board)	0.83	0.86
Interior: other indoor areas	Advertisements/marketing in areas other than the ordering/counter area (not including the menu board)	0.92	0.90
Menu board: general	Advertisements/marketing on the menu board	0.91	0.89
Menu board: standard menu	Number/type of food items (e.g., entrées, sides, beverages) on the standard menu	0.89	0.90
Menu board: children's menu[c]	Number/type of food items (e.g., entrées, sides, beverages) on the children's menu	0.99	1.00
Pricing	Price for individual items, combos, and promotions	1.00	0.95
Exterior: signage/ promotions	Advertisements/marketing in all areas outside of the QSR (parking lot, main marquee sign, roof, ground, restaurant windows facing to the outside)	0.93	0.90
Social features	Security features, employee behavior, and disorder inside/outside the QSR	0.81	0.88

[a]Measured using Cohen's Kappa in *n*=5 QSRs by 2 research assistants who independently completed the assessment at differing times on the same day.
[b]Measured using Cohen's Kappa in *n*=5 QSRs by 1 research assistant who completed the assessment at each QSR and then returned within a month to the same *n*=5 QSRs.
[c]One QSR without a children's menu was excluded.
combo, combination; EAT, Environmental Assessment Tool; QSR, quick service restaurant.

percentage of the population below the poverty line was associated with 1.6 additional price promotion advertisements (p=0.01). When examining differences by race/ethnicity, QSRs in communities with a greater percentage White population had significantly fewer advertisements with cartoon characters; each 20% increase in the percentage of the population that was White was associated with a reduction in 0.7 advertisements with cartoon characters (p=0.02). A similar association was observed between community race/ethnicity and advertisements with TV/movie characters (β= −0.6, p=0.01). There were no other significant differences among the advertisements visible while waiting in line nor advertisements with verbal prompts by community demographics.

Table 2. Demographic Characteristics of QSR Locations

Characteristics	QSR chain 1 (*n*=33)	QSR chain 2 (*n*=33)	QSR chain 3 (*n*=33)	QSR chain 4 (*n*=33)	QSR chain 5 (*n*=33)
Median household income, $, mean (range)	68,400 (18,300–129,000)	60,600 (18,300–123,100)	62,800 (18,300–108,000)	63,100 (18,300–123,100)	69,100 (31,000–120,500)
Below poverty level, %, mean (range)	12.6 (2.6–32.8)	15.4 (2.6–37.9)	13.7 (2.6–34.1)	14.2 (2.6–36.6)	11.7 (1.8–36.6)
Less than high school education, %, mean (range)	12.1 (2.5–39.4)	15.5 (3.1–39.4)	14.2 (3.8–39.4)	14.2 (3.1–39.4)	10.9 (2.0–27.0)
Unemployed, %, mean (range)	5.7 (3.1–15.1)	6.5 (3.5–15.1)	8.5 (4.9–15.1)	8.4 (3.1–16.9)	5.9 (1.8–11.6)
Race/ethnicity, %, mean (range)					
White	80.2 (39.3–97.5)	74.6 (32.8–98.2)	76.1 (32.8–98.7)	74.7 (39.3–98.7)	79.7 (41.5–96.8)
Black	4.5 (0.1–18.4)	6.3 (0.3–26.4)	6.8 (0.3–25.1)	7.9 (0.1–42.1)	7.3 (0.1–44.1)
Hispanic	14.9 (2.9–85.9)	19.8 (1.2–85.9)	16.7 (2.6–57.5)	17.1 (1.2–85.9)	10.5 (0.2–63.4)

Based on population-level census tract data by ZIP code.
QSR, quick service restaurant.

Table 3. Marketing Inside of QSRs in New England by Location and Demographics (N=165 QSRs)

Variables	All QSRs %	All QSRs Mean (range)	% Below poverty line β (SE)[a]	% Below poverty line *p*-value	Race (% White) β (SE)[b]	Race (% White) *p*-value
Marketing visible while standing in line to order (excluding menu board)						
Healthier advertisements[c]	6.5	0.1 (0–1)	0.2 (0.3)	0.5	0.4 (0.3)	0.2
Unhealthy advertisements	94.7	4.0 (0–14)	−1.8 (2.4)	0.5	−0.3 (2.6)	0.9
Price promotion advertisements	33.5	0.4 (0–3)	**1.6 (0.6)**	**0.01**	1.1 (0.7)	0.1
Limited-time advertisements	14.1	0.2 (0–2)	−0.6 (0.5)	0.3	0.4 (0.6)	0.5
Advertisements promoting overeating	55.3	0.7 (0–3)	1.3 (0.9)	0.1	1.4 (1.0)	0.1
Advertisements with cartoon characters	5.8	0.6 (0–1)	−0.4 (0.3)	0.2	**−0.7 (0.3)**	**0.02**
Advertisements with toy	12.4	0.1 (0–2)	−0.05 (0.4)	0.9	0.1 (0.5)	0.8
Advertisements with TV/movie characters	11.2	0.1 (0–1)	0.5 (0.2)	0.05	**−0.6 (0.2)**	**0.01**
Marketing on menu board						
Healthier advertisements	7.1	0.1 (0–1)	0.2 (0.3)	0.4	−0.2 (0.2)	0.3
Unhealthy advertisements	98.8	6.3 (0–27)	−1.8 (3.4)	06	−0.2 (3.6)	0.9
Price promotion advertisements	72.4	1.6 (0–6)	−0.4 (0.9)	0.7	−1.0 (1.0)	0.3
Limited-time advertisements	20.7	0.5 (0–5)	0.4 (1.0)	0.7	1.1 (1.1)	0.3
Advertisements promoting overeating	97.7	2.8 (0–10)	−0.4 (1.4)	0.8	0.3 (1.5)	0.8
Advertisements with cartoon characters	37.9	0.4 (0–2)	−0.1 (0.6)	0.8	−0.3 (0.7)	0.6
Advertisements with toy	40.6	0.5 (0–3)	0.1 (0.7)	0.9	0.2 (0.8)	0.8
Advertisements with TV/movie characters	30.6	0.4 (0–3)	0.5 (0.6)	0.4	0.7 (0.6)	0.2
Marketing in all other areas inside the QSR (excluding areas visible while standing in line to order/menu board)						
Healthier advertisements	5.3	0.1 (0–3)	0.2 (0.7)	0.7	−0.2 (0.7)	0.8
Unhealthy advertisements	92.9	3.5 (0–22)	3.1 (2.9)	0.3	3.4 (3.0)	0.3
Price promotion advertisements	11.2	0.2 (0–13)	**4.4 (1.5)**	**0.005**	0.9 (0.9)	0.3
Limited-time advertisements	7.7	0.1 (0–6)	**2.0 (0.7)**	**0.01**	**1.8 (0.8)**	**0.03**
Advertisements promoting overeating	41.2	0.6 (0–4)	−0.3 (0.8)	0.7	0.2 (0.5)	0.7
Advertisements with cartoon characters	28.2	0.4 (0–4)	1.2 (0.6)	0.06	0.6 (0.7)	0.4
Advertisements with toy	25.9	0.3 (0–3)	0.8 (0.5)	0.1	0.4 (0.5)	0.5
Advertisements with TV/movie characters	21.2	0.3 (0–3)	1.0 (0.6)	0.3	0.7 (0.7)	0.3

Note: Boldface indicates statistical significance ($p<0.05$).
[a]Represents a 10% change in the % below the poverty level on the basis of population-level census tract data by ZIP code.
[b]Represents a 20% change in % White on the basis of population-level census tract data by ZIP code.
[c]*Healthier advertisements* were defined as those promoting meals or beverages in alignment with the RAND Corporation's Healthier Restaurant Meal Guidelines for Children's Meals or promoting sides in alignment with the Kids LiveWell program standards. *Healthier entrées* were defined as those that could align with the healthier meal standards (i.e., meet the nutrient criteria for meals) if combined with healthier sides/beverages.
QSR, quick service restaurant

When examining behavior change techniques on menu boards, only 7% promoted healthy foods (range=0−1). However, nearly all QSRs had unhealthy advertisements (average=6, range=0−27). More than half (55%) of QSRs had electronic menu boards, and they had on average 4 additional unhealthy advertisements compared with those on traditional menu boards ($p<0.0001$). No differences in menu board type were observed by community demographics. The majority (72%) of menu boards had price promotion advertisements for unhealthy foods (range=0−6), nearly all (97.7%) included advertisements that promoted overeating (range=0−10), and approximately one fifth had limited-time advertisements (range=0−5). Nearly half of menu boards had at least 1 child-directed advertisement; 38% had advertisements with cartoon characters (range=0−2), 41% had advertisements with toys (range=0−3), and 31% had advertisements with TV/movie characters (range=0−3). There were no significant differences by community demographics. Less than 5% of the QSRs (n=6) had electronic kiosks.

When examining behavior change techniques in other areas throughout the QSRs, only 5.3% of QSRs had healthy advertisements (range=0−3). Conversely, 93% of QSRs had unhealthy advertisements (mean=4, range=0−22). Slightly less than half of the QSRs (41%) had advertisements that promoted overeating (range=0−4). On average, 11% of the QSRs had price

Table 4. The Types of Foods Available on Children's and Standard Menus in QSRs (N=165)

Variables	All QSRs Mean (range)	% Below poverty line		Race (% White)	
		β (SE)[a]	*p*-value	β (SE)[b]	*p*-value
Children's menu					
Entrees	4.8 (3–7)	−0.9 (2.2)	0.7	−3.1 (2.4)	0.2
Healthier entrées[c]	4.4 (2–7)	1.2 (2.7)	0.6	**0.6 (0.3)**	**0.04**
Sides	2.3 (1–3)	0.4 (0.6)	0.6	0.7 (0.7)	0.3
Healthier sides	1.5 (1–2)	0.3 (0.7)	0.7	0.2 (0.8)	0.8
Beverages[d]	4.5 (1–10)	−1.9 (4.2)	0.7	−0.8 (0.4)	0.06
Healthier beverages	2.2 (1–3)	0.03 (0.9)	0.9	1.2 (1.0)	0.2
SSBs[e]	2.3 (0–7)	0.3 (0.2)	0.1	**−0.5 (0.2)**	0.02
Desserts	0.8 (0–2)	0.7 (1.1)	0.5	**−0.3 (0.1)**	0.03
Standard menu					
Entrees	37.3 (25–47)	0.1 (0.1)	0.2	**0.2 (0.1)**	**0.03**
Healthier entrees	5.4 (0–14)	0.1 (0.1)	0.3	0.1 (0.1)	0.2
Sides	11.6 (2–20)	−0.5 (0.7)	0.9	−1.3 (0.8)	0.09
Healthier sides	0.4 (0–2)	0.4 (0.6)	0.5	0.3 (0.7)	0.7
Beverages	22.8 (12–37)	8.8 (10.2)	0.4	3.1 (10.5)	0.8
Healthier beverages	3.0 (1–5)	0.3 (1.7)	0.8	0.8 (1.7)	0.6
SSBs	19.2 (7–33)	8.2 (9.9)	0.4	2.5 (10.3)	0.8

Note: Boldface indicates statistical significance ($p<0.05$).
[a]Represents a 10% change in the % below the poverty level on the basis of population-level census tract data by ZIP code.
[b]Represents a 20% change in % White on the basis of population-level census tract data by ZIP code.
[c]*Healthier* was defined as meals or beverages in alignment with the RAND Corporation's Healthier Restaurant Meal Guidelines for Children's Meals or sides in alignment with the Kids LiveWell program standards. *Healthier entrées* were defined as those that could align with the healthier meal standards (i.e., meet the nutrient criteria for meals) if combined with healthier sides/beverages.
[d]Beverages include water, juice, milk, soda, diet soda, coffee, shakes, and smoothies (where applicable).
[e]SSBs include soda, shakes, smoothies, and milk with added sugar (where applicable).
QSR, quick service restaurant; SSB, sugar-sweetened beverage.

promotion advertisements with significantly more observed in lower-income communities (β=4.4, p=0.005). Similar differences were observed in the number of limited-time advertisements by income (β=2.0, p=0.01). Roughly a quarter of all the QSRs also had child-directed marketing in other areas throughout the QSRs, including 28% with advertisements containing cartoon characters (range=0–4), 26% with advertisements promoting toys (range=0–3), and 21% with advertisements that included TV/movie characters (range=0–3). No differences in marketing to children by community demographics were observed.

When observing marketing around the exterior of the QSRs, nearly all QSRs (96%) had advertisements promoting unhealthy foods (mean=5, range=0–14) (Appendix Table 1, available online). No advertisements promoting healthy foods were observed. However, approximately 20% of QSRs had child-directed marketing on their exterior, including advertisements with cartoon characters, toys, or TV/movie characters (each ranging from 0 to 2 advertisements). In addition, 63% of the QSRs had advertisements promoting overeating (range=0–4), 15% had limited-time advertisements (range=0–4), and 71% had price promotion advertisements. When examining the differences by community demographics, significantly more price promotion advertisements were observed in lower-income communities (β=3.1, p=0.04). No other differences were observed by community demographics.

Finally, the quantity and types of foods were examined on children's and adult menus (Table 4). On the children's menu, there were on average 5 entrées (range=3–7), and the majority (mean=4, range=2–7) had the potential to meet the Kids LiveWell standards if combined with healthier sides/beverages. However, differences in the availability of healthier entrées were observed by the race/ethnicity of the location; there were significantly healthier options in communities where the percentage that was White was greater (β=0.6, p=0.04). Children's menus also had on average 2 side options (range=1–3), and typically 1–2 were healthy. Beverage choices ranged from 1 to 10 choices, with typically 1–3 healthier options (e.g., milk, water, 100% fruit juice), although many QSRs also had SSBs (range=0–7) and desserts (range=0–2). The number of SSBs and desserts on the children's menu were significantly lower in

communities with a higher percentage White population (β= −0.5, p=0.02 and β= −0.3, p=0.03, respectively). When examining the adult menu, there were on average 37 entrée choices (range=25−47), with a greater number of options in communities with a higher percentage White population (β=0.2, p=0.03). Less than 15% of entrées had the potential to align with the healthier meal standards (if combined with healthier beverages/sides). Similarly, there were many sides (mean=12, range=2−20) and beverages (mean=22, range=12−37), but typically, <15% of options were healthy. There were no significant differences by community demographics when examining sides or beverages on the adult menu.

DISCUSSION

This study found that EAT had high inter-rater and test−retest reliabilities. Using this tool, results suggested that nearly all QSRs marketed unhealthy menu items both inside and outside, whereas <10% of QSRs marketed healthier options despite having several children's meal options with the potential to align with healthier meal standards. Electronic menu boards were present in roughly half of the QSRs and had substantially more unhealthy behavior change techniques than standard menus. Importantly, this study found a greater number of price promotion advertisements inside and around the exterior of the QSRs in lower-income communities. In communities with higher racial/ethnic minority populations, there were a greater number of child-directed advertisements (e.g., with cartoon or TV/movie characters) visible while waiting in line to order. In addition, children's menus in these communities had on average fewer healthy entrées and more SSB and dessert options.

Price is a primary influence on food choices and may partially explain the disparities in diet quality.[19,33−35] Previous QSR research has found that price frequently influences orders among lower-income customers.[19] This study found that price promotion advertisements for unhealthy food items were used more often in lower-income areas, which may increase the diet-related health disparities by SES. Given that price promotions are already prevalent in QSRs, future research should examine the acceptability and effectiveness of price promotions for healthier items.

This study also observed differences in behavior change techniques in minority communities. Previous research has found that food companies have increased their advertising spending aimed at Black and Hispanic consumers to >$1 billion, and unhealthy food marketing is greater among minority communities, although this may be partially explained by demographic shifts within the U.S.[12,22,36,37] In addition, minority children frequently view twice as many food advertisements as their White peers.[11,12,38] This study expands on previous research conducted inside QSRs and found that QSRs located in predominantly minority communities had more child-directed marketing and fewer healthy children's menus. Overall, this can have important health implications because previous research has found that child-directed marketing can influence food preferences and future brand loyalty; this may increase the risk of poor diet and health outcomes often experienced disproportionately by lower-income and minority communities.[1,39−44]

Limitations

This study had several limitations. First, EAT was used only in the top 5 QSR chains in New England, which has higher incomes and population densities and lower percentage minority populations than national averages.[22] However, this study was strengthened by the socioeconomically, ethnically/racially, and geographically diverse areas examined. Future studies should examine whether similar advertising trends exist in other regions and in other QSRs or fast-casual or full-service restaurants. In addition, drive-thru menus were not examined. Future studies should consider examining drive-thru marketing techniques. Finally, this study was cross-sectional and descriptive. Future research should examine interventions to nudge consumers toward healthier QSR options.

CONCLUSIONS

The updated EAT adds to the field of behavioral change research, including comprehensive sections on child-directed marketing, children's menus, and marketing techniques more broadly including modern technology in QSRs. Study findings suggest that there is substantial unhealthy marketing inside and around QSRs, with more price promotions in lower-income communities. In addition, this study indicates that there may be more child-directed marketing and unhealthier options on QSR children's menus in minority communities. These findings have important public health implications, and policies that limit marketing to children should be considered. Researchers, policymakers, and restaurants should consider ways to use price promotions to encourage healthier diets, especially among more vulnerable populations.

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SUPPLEMENTAL MATERIAL

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