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Short-Form Audit Instrument for Assessing Corner Store Healthfulness

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Abstract

Purpose—To develop a valid and feasible short-form corner store audit tool (SCAT) that could be used in-store or over the phone to capture the healthfulness of corner stores.

Design—Nonexperimental.

Setting—Four New Jersey cities.

Subjects—Random selection of 229 and 96 corner stores in rounds 1 and 2, respectively.

Measures—An adapted version of the Nutrition Environment Measures Survey for Corner Stores (NEMS-CS) was used to conduct in-store audits. The 7-item SCAT was developed and used for round 2 phone audits.

Analysis—Exploratory factor analysis and item response theory were used to develop the SCAT.

Results—The SCAT was highly correlated with the adapted NEMS-CS ($r = .79$). Short-form corner store audit tool scores placed stores in the same healthfulness categories as did the adapted NEMS-CS in 88% of the cases. Phone response matches indicated that store owners did not distinguish between 2% and low-fat milk and tended to round up the fruit and vegetable count to 5 if they had fewer varieties.

Conclusion—The SCAT discriminates between higher versus lower healthfulness scores of corner stores and is feasible for use as a phone audit tool.

Keywords

nutrition; built environment; nutrition audits; food environment; corner stores

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Introduction

Low-income neighborhoods, with their relatively low concentrations of supermarkets and high concentrations of small food retailers,[1–3] have fewer healthy foods available to purchase compared to middle- and higher-income neighborhoods.[4,5] Although specific foods stocked by retailers may vary according to the predominant race/ethnicity of neighborhoods in which stores are located, healthy foods still, regardless of culture, include fruits and vegetables, whole grains, and lean meats or dried beans; less nutritious foods are those that are energy dense and nutrient poor.[6] Small food retailers, unlike supermarkets, have a difficult time carrying large varieties of healthy, higher quality foods, and instead stock and promote a greater proportion of highly processed, energy-dense, nutrient-poor foods.[7]

Initiatives have been adopted to increase the availability of healthy foods in small retail food stores, resulting in varying degrees of improvement.[8] As initiatives continue to expand, so does the need for valid and reliable measures of assessment, and the evaluation of programs to help gauge their effectiveness. The validated instruments currently available for assessments require in-person evaluations, with surveys taking up to 30 minutes per store to complete.[9–11] These requirements make the tools resource prohibitive and infeasible for large-scale projects that may cover wide geographical areas and include large numbers of stores. Data collection using longer tools may be especially out of reach for community-based efforts, which typically have limited resources, a point emphasized by the Built Environment Assessment Training Institute Think Tank in a recent publication.[12]

The aims of the project reported here were to develop, validate, and test the feasibility of a short-form corner store audit tool (SCAT) to be used for rapid assessments (5 minutes or less) of the healthfulness of the foods sold at small retail outlets that traditionally do not sell a variety of healthy items. Stores were considered small retail food stores if they carried a limited selection of staples and other convenience goods and generated approximately US $1 million or less in sales annually[13] or were national/regional convenience store franchises such as 7-Eleven, Wawa, or QuikChek.

Methods and Results

Study Design

The study was conducted in 2 rounds. In round 1, a comprehensive, validated instrument (Nutrition Environment Measures Survey for Corner Stores [NEMS-CS])[9] currently used to assess in-store food environments of small retail food stores was adapted for conducting in-person store audits; data from these audits were used to develop and validate the SCAT. In round 2, the feasibility of administering the newly developed SCAT over the telephone to rapidly assess the healthfulness of a store's offerings was examined. The sampling frame for the 2 rounds of data collection consisted of small food stores listed in 2013 commercially available business lists (InfoUSA and Nielsen) for the metro areas of Camden, Newark, Trenton, and New Brunswick, New Jersey. Store audits were conducted in 2014, and data were analyzed in 2014 and 2015. Because the only data collected from participants related to store inventories, this study was granted an exempt status by the institutional review board of Arizona State University.

Round 1: Development of the short form—*Sample.* In round 1, a sample of 229 stores was audited. Based on simulation studies examining required sample sizes for exploratory factor analysis (EFA) models, Mundfrom et al[14] suggest that under conservative assumptions about factor structure (<3 factors; >4 variables per factor), a sample size of 200 cases (i.e., stores) should allow for a good match between sample-based and population-based solutions. In order to ensure enough variability in the data to discriminate between stores that stocked higher numbers of healthy items and those that stocked fewer healthy items, all stores in the study cities that were participating in healthy upgrades were included in the sample. To identify a sample of non-upgraded stores that most closely matched the sample of upgraded stores in terms of block group-level characteristics, an algorithm using nearest neighbor propensity score matching with calipers was used. This procedure, however, did not result in appreciably better balance on covariates (or matching) than randomly matching non-upgraded (control) stores to upgraded (treatment) stores. Accordingly, the sample included 36 stores that have received funding for healthy upgrades as part of a healthy conversion program, 172 stores randomly selected from the pool of all non-upgraded stores, and 21 additional stores likely to be included in a new corner store initiative in New Brunswick. Table 1 describes the characteristics of the stores included in the round 1 sample.

Development of in-store audit instrument: The NEMS-CS assesses the availability of food items in 13 categories. Food items considered for inclusion in the in-store audit tool were selected from the NEMS-CS. Only the NEMS-CS survey items that assess the availability of food items were retained for testing, whereas NEMS-CS items related to price and quality, which are difficult to administer reliably over the telephone, were excluded, yielding a total of 67 individual NEMS-CS survey items. Eighteen additional items related to types of changes likely to occur as part of corner store initiatives were generated based on input from community partners and from an expert panel engaged in public health nutrition interventions with a focus on establishing and evaluating corner store conversion programs. Examples of the additional items included refrigeration for fresh foods and availability of specific items such as fresh fruit and candy at the checkout. Interrater reliability of each expert-generated item was assessed by having pairs of raters independently audit selected stores. Pair ratings were compared using the κ statistic to determine inter-rater reliability. Eight items had κ values above 0.7, and only 1 had a value below 0.5. Items with a κ statistic below 0.7 were explained thoroughly during data collector training. For example, the “checkout vegetables” item was clarified to exclude dill pickles.

Data collection: A paper copy of the adapted NEMS-CS was created for in-store audits. Thirteen data collection team members, primarily undergraduate students, were trained over a 2-day period and were given a training manual. Intra-rater reliability was difficult to assess due to the limited selection of items stocked by small corner stores. An auditor returning to a store a week later may find different results because of stocking changes. However, a form of intra-rater reliability was assessed by showing auditors photographs of items included on the in-store instrument. Each auditor classified items the same way on 2 different occasions approximately 95% of the time.

Data collectors carried ID badges and an introductory letter from the principal investigators. After initially experimenting with auditing without approaching an employee first, data collectors decided in almost every case to briefly explain the purpose of the audit to a store employee before beginning audits. At least 1 data collector per team was bilingual in Spanish and English, and therefore spoke in the employee's preferred language. All employees understood either Spanish or English.

Corner stores observed in close proximity (usually within a block) to the original store were used as replacements when store employees refused audits (n = 2), the stores could not be located in the field (n = 7), or the stores were permanently closed (n = 19).

Item reduction: Multiple analytic approaches were undertaken to determine which of the in-store audit items would be retained for use in the SCAT. All analyses were conducted in SPSS (version 22, IBM, Armonk, New York) unless otherwise noted. As a first step, items with insufficient variability (i.e., items with splits more extreme than 90%/10% on yes/no questions) were excluded from consideration for the short form (e.g., bottled water at the checkout was present in 1% of stores). Table 1 shows the items that did have adequate variability and were thus considered for inclusion. Eighty-two percent and 90% of stores stocked fresh fruits and fresh vegetables, respectively.

Next, EFAs were conducted using Mplus (version 7.2; Muthén & Muthén, Los Angeles, California) to identify and describe latent constructs[15] that might underlie and explain the observed correlation structure of the measured variables. A set of 10 items showed substantial factor loadings in 1- and 2-factor EFA solutions. The 2-factor solution was not clearly interpretable, so the 1-factor model was retained.

To further examine properties of the individual items with respect to the hypothesized underlying latent construct of store healthfulness, a 2-parameter logistic (2-PL) item response theory (IRT) analysis was then conducted using Mplus, with associated plots generated using R software (R 3.1.2; R Foundation for Statistical Computing, Vienna, Austria). The item difficulty parameter in the 2-PL model is defined as the healthfulness score that is associated with a 50% likelihood of a "yes" response to that item. In the 14-item model, item difficulties demonstrated a good spread (Figure IA), indicating that the set of items provided information across a wide range of healthfulness values. Four items, however, had shallow slopes or low values on the discrimination parameter in the 2-PL model (Figure IB), indicating that they did not distinguish well between stores with low levels of healthfulness and those with high levels. These 4 items were thus excluded, resulting in a 10-item instrument, in line with the results of the EFA. Figure IC, shows the total information curve (TIC) for the 10-item model. The TIC combines the item information curves (item information = the inverse of the item's variance at each healthfulness value) from the individual items. Maximum scale reliability is calculated as 1 – (1/height) of the peak of the TIC. The 10-item model reveals a maximum scale reliability of 0.80 (1 – [1/5]). A maximum reliability value of 0.8 or above is considered desirable for a measure.

Pilot audits were conducted in 10 corner stores in a nonstudy city to test the feasibility of obtaining reliable telephone responses about the availability of each of the 10 items in the store. To minimize the chances of finding differences due to restocking issues, calls were made within 2 hours after the visit the same day of the in-store audit, or the next day within a 4-hour window around (i.e., 2 hours before and 2 hours after) the time visited the previous day to administer the 10-item audit. Respondents tended not to distinguish between the healthier versus less healthy versions of bread, cereal, and frozen dinners. Accordingly, those items were dropped, resulting in a 7-item SCAT. An IRT analysis of this reduced instrument yielded an acceptable maximum scale reliability value of 0.74 (Figure ID). Scale scores were calculated for the 7-item set by counting all yes (presence) responses (i.e., scale scores could range from 0–7). The Pearson correlation between the 7-item set and the adapted NEMS-CS was $r = .79$.

Sensitivity/specificity analysis was conducted to assess the agreement between the SCAT classification of stores as stocking more healthy items or stocking fewer healthy items versus the same adapted NEMS-CS score classification. A dichotomous indicator (0 = lower 80% of scores, 1 = upper 20% of scores) for both the SCAT and the adapted NEMS-CS scores and agreement between the indicators was analyzed, with the adapted NEMS-CS–derived indicator serving as the reference measure. Sensitivity and specificity are the abilities of the SCAT to correctly classify a store as being in the lower 80% or upper 20%, respectively, according to healthy items stocked. Overall, the SCAT classified 89% of stores correctly (Table 2). Sensitivity and specificity were 0.92 and 0.72, respectively.

Round 2: Testing the feasibility of using the SCAT over the phone.: The 7-item SCAT developed in round 1 (Box 1) was used to test the feasibility of collecting the data over the phone. The purpose of the refrigeration question was to assess the freshness of fruit and vegetable (FV) and ground meat offerings and was therefore skipped if respondents reported having no FV or ground meat.

Sample: At the initiation of round 2, 7 additional stores had been added to the list of stores undergoing upgrades. The round 2 sample included the 7 upgraded stores and 89 randomly selected non-upgraded stores, all of which were different from the round 1 sample.

Data collection: Eight graduate and undergraduate student telephone data collectors, 2 of whom were bilingual in Spanish and English, received training on the protocol for using the SCAT over the phone. In-store data collection for round 2 was identical to that of round 1.

Corner stores observed in close proximity (usually within a block) to the original store were used as replacements when store employees refused audits (n = 9), the stores could not be located in the field (n = 4), or the stores were permanently closed (n = 9). The most common reason employees gave for refusing audits was that the owner was absent and would need to be consulted. Unlike round 1 in which auditors returned to stores in which an audit was initially refused, in round 2, replacement stores were immediately identified.

Confirmatory analysis: As in round 1, EFA, IRT, Pearson correlation, and sensitivity/specificity analyses were conducted in the round 2 sample to validate the SCAT. Results

were similar to those obtained in round 1 (correlation between SCAT and adapted NEMS-CS: $r = .73$; overall accuracy: 0.88; sensitivity: 0.95; specificity: 0.65) confirming the validity of the SCAT (Table 2).

Feasibility testing: After each in-store audit was completed, stores were called to conduct telephone audits. Calls were made within 2 hours after the visit the same day of the in-store audit, or the next day within a 4-hour window around the time visited the previous day to conduct the telephone survey.

Complete responses were obtained from 86 stores. An average of 3.03 ± 2.65 calls per store were required to complete phone audits and calls took an average of approximately 3.5 minutes to complete.

In-store findings versus phone responses: Phone responses to each of the 7 items on the SCAT were compared to in-store findings of the same 7 items. Skim or 1% milk was observed in 24% of stores during in-store audits, whereas 58% of phone respondents reported having skim or 1% milk (Table 3). Five or more fresh fruits were found in 13% of stores, but 41% of phone respondents reported having 5 or more fresh fruits. Five or more fresh vegetables were found in 31% of stores, whereas 51% of respondents reported having 5 or more fresh vegetables. Phone respondents also overreported the availability of frozen vegetables (37% vs 50%) and ground meat (12% vs 37%), as well as the presence of refrigeration (80% vs 88%). Twenty-eight percent of phone respondents reported accepting Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), whereas WIC signs were observed in 20% of stores.

In order to investigate whether discrepancies between FV phone reports versus in-store observations were potentially due to a tendency among respondents to round the amounts they stocked (i.e., 3 or 4 varieties) up to the threshold of 5 varieties, and/or due to restocking issues, the percentage of stores found by in-store audits to have 3 or more and 4 or more (Table 3) fruits, and 3 or more and 4 or more (Table 3) vegetables were calculated. Similarly, in-store observations of 2% milk were combined with those of skim and 1% milk and compared to employee reports of stocking only low- or no-fat milk (Table 3) to investigate the possibility that store employees included the availability of 2% milk when responding to the question that asked whether they had skim or 1% milk. In-store audits and phone responses on the milk item matched 82% of the time when using skim, 1% or 2% milk as the cutoff for in-store assessments, compared to 55% of the time when only in-store availability of skim and 1% milk was considered (data not shown). Phone responses matched in-store findings for fruits and vegetables 86% and 94% of the time, respectively, when using 3 varieties as a cutoff for in-store assessments (data not shown).

Discussion

Interest in improving corner store food environments is growing among researchers and practitioners,[16–22] as is evaluating the effectiveness of healthy corner store initiatives through comprehensive measurement tools.[10,11,23] Recently, the NEMS-CS became the first corner store-specific audit that reported psychometrics.[9] However, larger-scale studies and

community-based efforts to improve offerings at corner stores need reliable, valid, and time-efficient measurement tools that do not require extensive resources and skills.[12] The ability to collect data remotely is also a desirable feature for rapid evaluation tools. The purpose of this study was to address these needs by developing a short-form rapid assessment instrument that could be used in person or over the phone.

This instrument is of potential value to a variety of stakeholders. For example, researchers examining large numbers of stores or working across wide geographical areas will find that the SCAT decreases the time and personnel required to obtain information about a store's healthfulness. Healthy corner store programs are often initiated in phases, and a store must meet certain criteria before advancing in the program.[24] The SCAT could both identify a store's basic level of healthfulness to evaluate its fit for a particular program, as well as quickly and efficiently assess a store's level of compliance and eligibility to progress further in a program.

Many community partners who develop corner store interventions have limited time and resources or may not be trained in the methods required to evaluate the results of larger audits. They should weigh the benefits versus challenges of using the SCAT in person or over the phone, understanding that in-person results may be more accurate but will require greater resources than phone audits will. Furthermore, other analysis of these data indicated that upgraded stores had mean SCAT scores of 3.18 ± 0.53, which were significantly higher than nonupgraded store scores (DeWeese RS, Todd M, Karpyn A, Yedidia MJ, Kennedy M, Bruening M, Wharton CM, Ohri-Vachaspati P. Healthy store programs and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), but not the Supplemental Nutrition Assistance Program (SNAP), are associated with corner store healthfulness. *Prev Med Rep.* 2016:256–261. doi:10.1016/j.pmedr.2016.06.018). In the absence of statistical analysis, communities may want to establish cumulative scores to set as specified goals; each situation will vary and should be considered individually. Evaluating programs informs every level of action, from community members discerning whether their intervention is resulting in healthy changes, to policymakers who rely on results to inform and/or support their decisions.

The overall accuracy for in-store use of the SCAT developed in this study was 88%. Partington et al (2015)[25] also recently developed reduced-item food audits. Similar to the current study, their 10-item reduced convenience store audit produced scores comparable to their full audit. In contrast to this study, they validated the reduced audit by going into stores rather than by calling them, allowing the inclusion of whole-grain bread, healthy cereal, and fruit quality that were excluded from the SCAT due to the difficulty of obtaining reliable telephone responses to inquiries about these items. As a result, the Partington et al instrument must be used only for in-person evaluations and cannot be used remotely.

Although conducting the telephone survey was feasible, data obtained over the phone differed in some cases from that collected in stores. The potential reasons for these discrepancies should be taken into consideration when interpreting results. Responses may have varied systematically according to whether questions were answered by the owner, a family member, or another employee. When responding to the questions about the presence

of 5 or more fresh FV, respondents possibly rounded up to 5, when in fact they may have carried only 3 or 4 varieties. Furthermore, restocking is a substantial issue in reporting varieties currently in stock due to the small inventory of fresh produce in most corner stores.

A discrepancy in milk reporting was also observed, likely due to most respondents being unable to discriminate between 2% milk versus skim or 1% milk. There is ample room for confusion; until recently, WIC considered both 1% and 2% milk as low-fat milk,[26] and several dairy council documents seem to count both 1% and 2% milk as low fat.[27] If all types of low-fat milk are considered together, the gap between data collected over the phone and in person becomes smaller.

The implications of these discrepancies must be considered when using the SCAT over the phone. Overall, the SCAT is adequate for discriminating between stores that carry some fruits and vegetables (3–5 or more) compared to those that carry very few or none. It may be useful to add to the milk inquiry a phrase such as, “do not include 2% milk.” In any case, SCAT users should be cognizant of the potential for store employees to include 2% milk in their reporting and should account for potential discrepancies between phone reports and actual in-store stock.

The SCAT is limited in scope, and inclusion of the 7 items should not imply that other healthy items and practices cannot be considered. Rather, the items included in the SCAT appear to be robust for distinguishing between stores that stock more healthy items and those that stock fewer healthy items. Results were similar to those obtained by a full in-store availability audit. A number of statistical methods were utilized to ensure inclusion of the most informative items and exclusion of extraneous items, with a high level of agreement among all methods. The development of the SCAT is timely due to the current state of the science regarding utilization of corner store initiatives as a means to improve urban food environments. The instrument is validated and requires fewer resources compared to full audits in this expanding field.

Limitations

The SCAT was only tested in low-income, high-minority communities in New Jersey and should be tested over the phone in other corner store samples with different socioeconomic and racial compositions, as well as in rural and suburban areas to assess its external validity. The instrument’s ability to assess the effectiveness of interventions to increase the availability of healthy foods in corner stores should also be evaluated, as should the instrument’s ability to predict purchasing changes in response to interventions.

The SCAT is not intended for in-depth evaluations of a store’s inventory or quality, but rather for rapid assessments. Full in-store audits using comprehensive instruments such as the NEMS-CS are required for detailed assessments of corner stores. The assessments must be accurate and comprehensive due to their role in informing the design and implementation of proposed interventions.

Conclusion

The 7-item SCAT developed in the current study provided valid information about the availability of healthful items. Assessing the presence of the 7 items exhibited the same level of discrimination as a longer instrument in 88% of cases. Using the instrument to conduct audits over the phone was found to be feasible as well. Discrepancies observed between in-store observations and phone reports may result from the absence of uniform definitions and from inventory issues and should be taken into consideration when interpreting results. The SCAT can be used either in person or over the phone, with both methods filling the need for a validated rapid assessment tool for evaluating the healthfulness of corner stores.

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So what? Implications for health promotion practitioners and researchers

What is already known on this topic?

Interventions to increase the availability of healthy foods in small retail food stores have been found to be effective. However, validated survey instruments that assess effectiveness require in-person evaluations and take up to 30 minutes to complete.

What does this article add?

The purpose of this article was to describe the development of a rapid assessment tool that does not require extensive resources and skills to evaluate the availability of healthy foods in corner stores. The 7-item assessment tool was tested for validity and for the feasibility of using it over the phone.

What are the implications for health promotion practice or research?

This short-form audit tool simplifies the process of evaluating the effectiveness of healthy store interventions, while obtaining results comparable to comprehensive store audits that were created primarily for use by researchers. The short instrument will enable community partners and practitioners interested in conducting their own evaluations of food access in their neighborhoods to do so.

Box 1:

Seven-Item Short-Form Corner Store Audit Tool (SCAT).

Could you please tell me whether your store carries the following food items?

1. Skim or 1% milk?
2. Five or more different types of fresh fruits?
3. Five or more different types of fresh vegetables?
4. Any type of frozen vegetables?
5. Ground meat?
6. (If respondent answers “yes” to numbers 2, 3, or 5), Do you have refrigeration for your fruits, vegetables, or ground meat?
7. Does your store accept Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)?

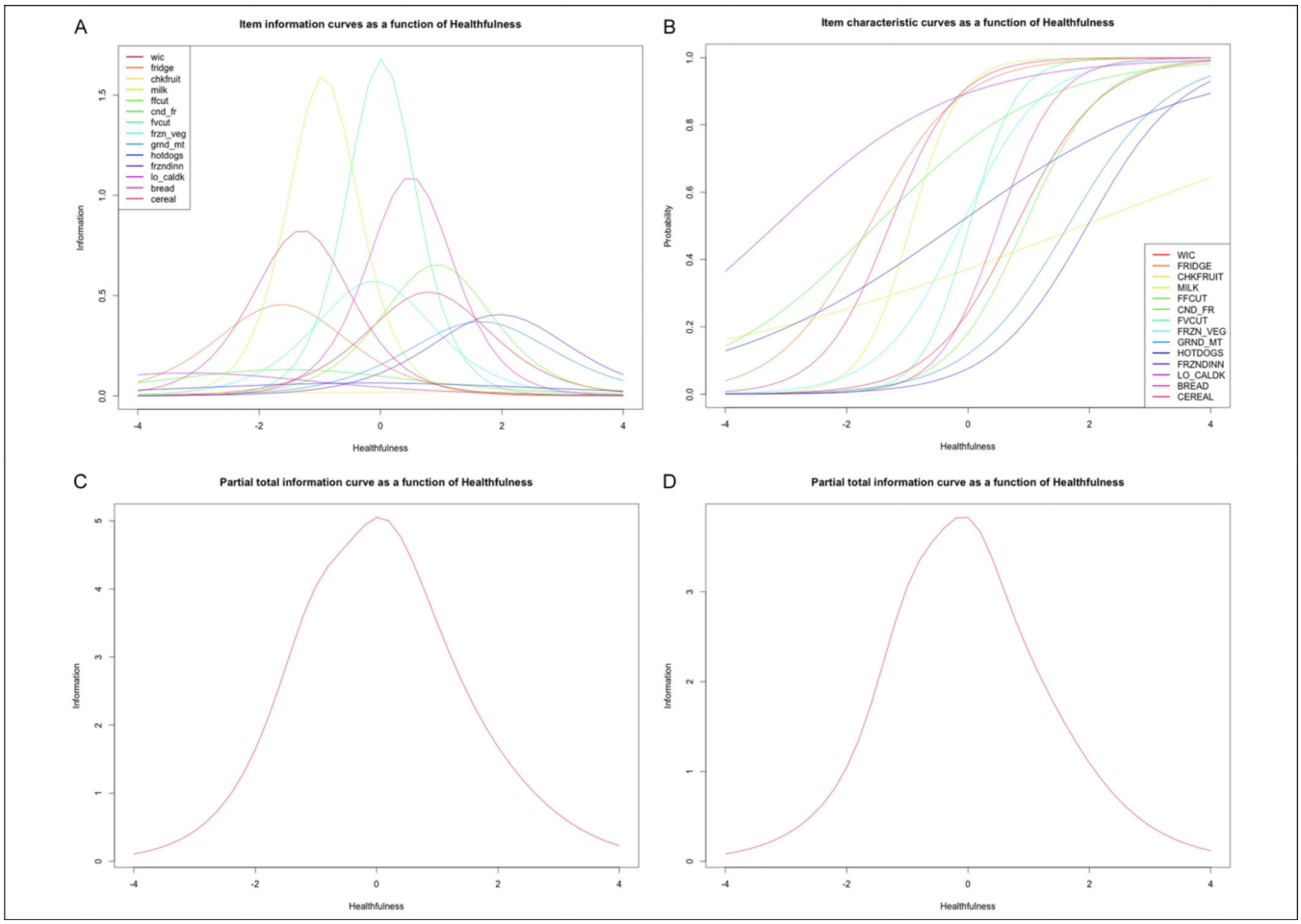

Figure I.

Item characteristic curves (A) and item information curves (B) for 14 items and total information curves for 10 items (C) and 7 items (D).

Table 1.

Round 1 Store Characteristics; Adapted NEMS-CS Points; Frequencies, Percentages of Stores With Measured Items.

	Round 1 (n = 229)	
Store Characteristics and Adapted NEMS-CS	M	Range
Number of employees	2.85 ± 1.83	1–27
Sales volume ($)	763 539 ± 255 642	277 000–3 000 000
Square footage (ft^2)	1276 ± 324	1000–6000
Adapted NEMS-CS points	12.67 ± 4.34	0–23
Items Found in Store Audits	n	%
Marketing materials for healthy foods		
Window clings only	41	17.9
Fliers only	1	0.4
Awnings only	67	29.3
Other	5	2.2
Multiple	24	10.5
None	91	39.7
SNAP signs		
No	78	34.1
Yes	151	65.9
Any WIC signs (windows or shelves)		
No	159	69.4
Yes	70	30.6
Refrigeration for FV and/or meat		
No	35	15.3
Yes	194	84.7
Fresh fruit at checkout		
No	143	62.4
Yes	86	37.6
Milk		
Skim	25	10.9
1%	24	10.5
2%	130	56.8
None	50	21.8
Fresh fruit		
No	41	17.9
Yes	188	82.1
Canned fruit		
No	61	26.6
Yes	168	73.4
Fresh vegetables		

No	22	9.6
Yes	207	90.4
Frozen vegetables		
No	107	46.7
Yes	122	53.3
Ground beef/ground turkey		
No	190	83.0
Yes	39	17.0
Light hot dogs		
No	108	47.2
Yes	121	52.8
Reduced fat frozen dinners		
No	201	87.8
Yes	28	12.2
Noncarbonated zero or low-calorie drinks		
No	28	12.2
Yes	201	87.8
Whole-grain bread		
No	148	64.6
Yes	81	35.4
Low-sugar cereal		
No	40	17.5
Yes	189	82.5

Abbreviations: FV, fruits and vegetables; NEMS-CS, Nutrition Environment Measures Survey for Corner Stores; SNAP, Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

Table 2.

Rounds 1 and 2 Sensitivity/Specificity Analysis Comparing 7-Item Set Scores to Adapted NEMS-CS.

Round 1				
	Adapted NEMS-CS			
7-Item Set[a]	0–16 Points	17–23 Points	Total	
0–4 points	172; true unhealthy	12; false unhealthy	184	PPV: 172/184 = 0.93
5–7 points	14; false healthy	31; true healthy	45	NPV: 31/45 = 0.69
Total	186	43	229	
	Sensitivity: 172/186 = 0.92	Specificity: 31/43 = 0.72		Accuracy : (172 + 31)/229 = 0.89
Round 2				
	Adapted NEMS-CS			
7-Item Set[a]	0–14 Points	15–26 Points	Total	
0–3 points	69; true unhealthy	8; false unhealthy	77	PPV: 69/77 = 0.90
4–7 points	4; false healthy	15; true healthy	19	NPV: 15/19 = 0.79
Total	73	23	96	
	Sensitivity: 69/73 = 0.95	Specificity: 15/23 = 0.65		Accuracy: (69 + 15)/96 = 0.88

Abbreviations: NEMS-CS, Nutrition Environment Measures Survey for Corner Stores; NPV, negative predictive value; PPV, positive predictive value.

[a]Sum of dichotomous (0,1) indicators for Special Supplemental Program for Women, Infants, and Children (WIC) signage, presence of refrigeration, availability of skim/1% milk, availability of fresh fruit cuts (<5 varieties vs ≥5 varieties), availability of fresh vegetable cuts (<5 varieties vs ≥5 varieties), availability of frozen vegetables, and availability of ground meat.

Table 3.

Comparisons Between In-Store Findings and Phone Responses.[a]

	In-Store		Telephone	
Food Item Present	**n**	**%**	**n**	**%**
Skim/1% milk				
No	65	75.6	36	41.9
Yes	21	24.4	50	58.1
Skim/1%/2% milk[b]				
No	19	22.1	-	-
Yes	67	77.9	-	-
5 or more fruits				
No	75	87.2	51	59.3
Yes	11	12.8	35	40.7
4 or more fruits[b]				
No	54	62.8	-	-
Yes	32	37.2	-	-
5 or more vegetables				
No	59	68.6	42	48.8
Yes	27	31.4	44	51.2
4 or more vegetables[b]				
No	37	43.0	-	-
Yes	49	57.0	-	-
Frozen vegetables				
No	54	62.8	43	50.0
Yes	32	37.2	43	50.0
Ground meat				
No	76	88.4	54	62.8
Yes	10	11.6	32	37.2
Refrigeration[c]				
No	17	19.8	7	12.3
Yes	69	80.2	50	87.7
Accept WIC				
No	69	80.2	62	72.1
Yes	17	19.8	24	27.9

Abbreviations: WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

[a] N = 86 stores.

[b] Information only available for in-store audits as these questions were not asked during telephone audits.

[c] Only asked of respondents who indicated they had fresh fruits, fresh vegetables, or ground meat.