

# Examination of the Relationship Between Nutrition Media Literacy and Soft Drink Consumption Among Adolescents: Preliminary Findings

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## Background

- The overweight and obesity rate among youth has reached epidemic proportions. One possible factor in this increase is the consumption of soft drinks and other sugar-sweetened beverages.
- Each year companies that produce soft drinks and other sugar-sweetened beverages (SSBs) spend hundreds of millions of dollars promoting their products to children and youth – especially on TV.
- The average US child may view as many as 40,000 TV ads per year, of which 50% are for food and beverages.
- Middle school-aged youth spend more time with media than any other activity and are exposed to an average of 7.5 hours of media content per day.
- One innovative approach recommended by several institutions and researchers for combating the effects of mass media advertising on youth is the use of interventions that increase media literacy

## Purpose

The purpose of this study was to

1. determine the reliability of a newly-developed nutrition media literacy (NML) scale
2. examine the relationship between nutrition media literacy and soft drink consumption among adolescents.

## Definition of Media Literacy

- Rooted in the field of communications, media literacy education involves the promotion of independent critical thinking (Brown, 1998). One definition of media literacy is “the ability to access, analyze, evaluate, and create media in a variety of forms” (Thoman & Jolls, 2002).
- When applied to health, media literacy means helping young people see that the media are in the business of selling them products and behaviors that often are not good for them.
- By increasing awareness of how media are produced and packaged, the assumption is that adolescents will become more critical of what they see and hear and will be less likely to engage in the unhealthy behavior promoted in the media.

## Core Concepts of Media Literacy

1. All media messages are constructed.
2. Media messages are constructed using a creative language with its own rules.
3. Different people experience the same media message differently.
4. Media have embedded values and points of view.
5. Media messages are constructed to gain profit and/or power.

## Methods

- A self-administered questionnaire assessing
  - demographic information,
  - consumption of regular (not diet) soft drinks,
  - psychosocial constructs from the Theory of Planned Behavior, and
  - level of nutrition media literacy was administered to 244 middle school students.
- Exploratory factor analysis was conducted to examine the factor structure of the nutrition media literacy scale.
- Alpha coefficients were calculated to determine reliability of the overall scale and the subscales.
- Pearson correlation coefficients were used to examine associations between the nutrition media literacy subscales and soft drink consumption.

## Results

### *Sample (see Table 1)*

- A total of 244 adolescents from 1 suburban middle school participated.
- 73.4% 7<sup>th</sup> grade, 26.6% 8<sup>th</sup> grade
- 50.4% female, 49.6% male

### *Soft drink consumption (see Table 2)*

- 54.9% of participants reported consuming at least 1 can, bottle, or glass of regular soda in previous 7 days.

**Table 2. Intake of regular soft drinks during last 7 days (N=244)**

Response category	N	Percent
Never	68	27.9
< 1 can, bottle, glass	42	17.2
1 can, bottle, glass	62	25.4
2 – 7 cans, bottles, glasses	63	25.8
> 7 cans, bottles, glasses	9	3.7

**Table 1. Demographic characteristics of study sample (N=244)**

	Mean (±SD)
Age	12.4 (.64)
	No. (%)
Grade level	
7 <sup>th</sup> grade	179 (73.4)
8 <sup>th</sup> grade	64 (26.6)
Gender	
Male	121 (49.6)
Female	123 (50.4)
Ethnicity	
American Indian/Alaska Native	8 (3.3)
Asian	95 (38.8)
Black or African-American	4 (1.6)
Mexican-American, Hispanic, or Latino	12 (4.9)
Native Hawaiian or other Pacific islander	1 (0.4)
White, non-Hispanic, non-Latino	105 (42.9)
Other	18 (7.3)
Participants on free/reduced price lunch program	27 (11.1)

## Results (cont.)

### Factor Analysis & Scale Reliability (see Table 4)

- The Nutrition Media Literacy (NML) scale resulted in 3 sub-scales:
    - Profit & Power* (4 items)  $\alpha=.825$
    - Message Interpretation* (3 items)  $\alpha=.761$
    - Message Construction* (2 items)  $\alpha=.560^{\dagger}$
- <sup>†</sup>Pearson correlation coefficient
- The 9-item NML Total Scale had a reliability coefficient  $\alpha=.848$ .

### Correlations (see Table 3)

- Significant negative correlations were found between regular soft drink consumption and both the total NML scale ( $r=-.13^*$ ), and with the Message Interpretation sub-scale ( $r=-.18^{**}$ ).
- Adolescents with higher levels of NML consumed lower levels of regular soft drinks.

## Discussion

- This study is one of the first to develop a measurement tool for the purpose of examining how media literacy could play a role in predicting dietary behaviors that are related to overweight and obesity – in this case, consumption of regular soft drinks.
- The NML measures that were associated with intake of regular soft drinks were the NML subscale Message Interpretation and the NML scale as a whole. Both associations were in the negative direction, suggesting that adolescents' regular soda consumption is lower when nutrition media literacy levels are higher.
- Associations in the expected direction between NML and the psychosocial measures from the Theory of Planned Behavior (attitudes, subjective norms, perceived behavioral control, intention) were also found (Evans, 2009 [dissertation]).
- Results of this study indicate that programs designed to increase nutrition media literacy could facilitate a reduction in the consumption of soft drinks, which has been shown to be related to increases in obesity.

**Table 3. Correlations between intake of regular soft drinks, Nutrition Media Literacy (NML) profit and power, NML message interpretation, NML message construction, and Total NML**

	NML Profit & Power	NML Message Interpret.	NML Message Const.	Total NML
<b>NML Message Interpretation</b>	<b>.506**</b>			
<b>NML Message Construction</b>	.373**	<b>.424**</b>		
<b>NML total scale score</b>	.866**	<b>.794**</b>	<b>.686**</b>	
<b>Intake of regular soft drinks</b>	-.110	<b>-.177**</b>	-.014	<b>-.133*</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

## Conclusion

- This study provides evidence to warrant further research of how media literacy can be incorporated into programs or interventions that will provide adolescents the necessary critical thinking skills for evaluating media messages.
- Increasing our understanding of how pervasive environmental influences such as advertising affect children's behavior, and the possible inoculating effects that media literacy might have, is a necessary first step in developing interventions to address the national childhood obesity epidemic.

**For more information about this study, or a copy of the questionnaire, please contact:**

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**Table 4. Final items, factor loadings, and Cronbach's alpha for the factors of the Nutrition Media Literacy Scale**

Scale Items	Factor Loadings		
	Profit & Power	Message Interpretation	Message construction
Most of the time, when people advertise products they are more concerned about making a profit than giving correct information	.685	.332	.105
To make money, soft drink companies would do just about anything they could get away with.	.843	.237	.086
Soft drink companies are very powerful, even outside of the restaurant business.	.626	.195	.130
Soft drink companies only care about making money.	.789	.051	.160
Two people may see the same movie or TV show and get very different ideas about it.	.200	.774	.208
Different people can see the same ad for a soft drink company on TV and feel completely different about it.	.225	.852	.080
A billboard for a soft drink company may catch one person's attention but not even be noticed by another person.	.230	.817	.176
When people make movies and TV shows, every camera shot is very carefully planned.	.091	.346	.813
When people make soft drink ads, every detail is very carefully planned.	.237	.058	.875
<b>Cronbach's <math>\alpha</math></b> *Pearson Correlation coefficient	.761	.825	.560*

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

## Original NML Scale Items

1. **Most of the time, when people advertise products they are more concerned about making money than giving correct information.**
2. **To make money, soft drink companies would do just about anything they could get away with.**
3. **Soft drink companies are very persuasive & powerful, even outside of the restaurant business.**
4. **Soft drink companies only care about making money.**
5. **Companies that advertise very carefully create messages that are targeted to the people they think might buy their product.**
6. **Many soft drink companies especially want to be noticed by young people.**
7. **By wearing clothing, or carrying an item that has a company's name on it (such as Abercrombie, Aeropostal, Nike, Old Navy, Coca-Cola, Pepsi, etc.) you become a walking advertisement for that brand.**
8. **Soft drink ads want to link themselves to things that humans want like happiness, love, good looks, and power.**
9. **Two people may see the same movie or TV show and get very different ideas about it.**
10. **Different people can see the same ad for a soft drink company on TV and feel completely different about it.**
11. **A billboard for a soft drink company may catch one person's attention but not even be noticed by another person.**
12. **People are influenced by TV and movies, whether they realize it or not.**
13. **People are influenced by soft drink ads, whether they realize it or not.**
14. **When people make movies and TV shows, every camera shot is very carefully planned.**
15. **When people make soft drink ads, every detail is very carefully planned.**
16. **There are often hidden messages in soft drink ads.**
17. **Movies and TV shows don't usually show life like it really is.**
18. **Soft drink ads show happy, healthy looking people so that you won't think about the health risks.**
19. **Advertisements usually leave out a lot of important information.**
20. **When you see an ad for soft drinks, it is very important to think about what was left out of the ad.**

Response options for all questions above:

- Strongly disagree     Disagree     Neither agree or disagree     Agree     Strongly agree