Childhood Obesity Evidence Base:
Using NCCOR’s Newest Dataset to Examine Childhood Obesity Interventions

Wednesday, March 24, 3-4pm ET
1. Introduction to Childhood Obesity Evidence Base: Importance to the Field – Deborah Young-Hyman, National Institutes of Health


3. Opening the Black Box: An Introduction to Taxonomic Meta-Analysis – Lori Scott-Sheldon, National Institute of Mental Health

4. Summary and Implications for the field of childhood obesity and meta-analysis – Deborah Young-Hyman, National Institutes of Health

5. Q&A

6. NCCOR Announcements
Today’s Conversation

Deborah Young-Hyman, PhD
National Institutes of Health

Heather King, PhD
Mission Measurement

Mackenzie Magnus, MPH/MBA
Mission Measurement

Lori Scott-Sheldon, PhD
National Institute of Mental Health
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INTERACTIVE POLL
Making Better Use of the Evidence: Childhood Obesity Evidence Base

Deborah Young-Hyman, PhD
National Institutes of Health
A Novel Approach to include all possible evidence:

• **Commonly accepted meta-analytic methods** for clinical trial results restrict content
  - Only includes studies that meet *specific trial design and evaluation criteria* to conduct statistical aggregation of effect size.
  - The systematic review approach to aggregating evidence may include studies of varying types; however, comparability of evidence, study components, and design types may or may not be examined.

• **A taxonomic approach** to social science evidence aggregation makes use of evidence from diverse obesity prevention studies and initiatives

• **COEB**, an NCCOR activity funded by the NIH, published an example of this method and actual findings, in a September 2020 supplement of *Childhood Obesity*. 
The Steps to the Method:

<table>
<thead>
<tr>
<th>Design Hierarchy</th>
<th>Created a design hierarchy/architecture for study/report inclusion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibliography</td>
<td>Created a topic-specific bibliography</td>
</tr>
<tr>
<td>Article Coding &amp; Taxonomy</td>
<td>Created a coding system based on elements present in reports using a representative sample of 200 studies to produce a foundational taxonomy</td>
</tr>
<tr>
<td>Manual of Procedures</td>
<td>Formally documented coding procedures, including definition of taxonomy categories and elements used for article coding based on grounded theory.</td>
</tr>
<tr>
<td>Taxonomy Review</td>
<td>Reviewed and finalized taxonomy with vetting by NCCOR WG and the External Expert Panel</td>
</tr>
<tr>
<td>Dataset</td>
<td>Conducted a scoping review of US literature. Produced final comprehensive dataset of intervention studies coded using taxonomies</td>
</tr>
<tr>
<td>Papers</td>
<td>Produced rationale, methods, results, and implications papers for publication</td>
</tr>
</tbody>
</table>
Childhood Obesity Evidence Base

Products

- A scoping review of the literature regarding prevention efforts of childhood obesity (bibliography of included reports) interventions in this age group
- Examples of successful approaches used to prevent childhood obesity in children aged 2–5 years
- Evidence of mechanisms, pathways including contextual elements, and implementation strategies to inform future efforts
- Instructions regarding how to implement this method
Development and Use of the Taxonomies and Database

Mackenzie Magnus, MPH/MBA
Mission Measurement

Heather King, PhD
Mission Measurement
Why taxonomies?

Childhood Obesity Prevention Interventions

Interventions are decomposed into standardized components

- Outcomes
- Intervention Components
- Intended Recipient Characteristics
- Intervention Context

These components can be used as a common language to organize information
COEB Process

Topic Focus & Initial Article Log

- Children, 2–5
- United States
- Measured BMI
- Published since 1998
- 246 potential articles

Article Coding & Taxonomy Development

- 40 articles (random stratified sample)
- Open coding based on grounded theory
- External Expert Panel Review

Database Creation & Taxonomic Meta-analysis

- Full bibliography search
- Taxonomies applied to 51 studies
- Analysis
Working Group & External Expert Panel

- Sonia Arteaga, PhD – National Institutes of Health
- Leann L. Birch, PhD – University of Georgia
- John Cawley, PhD – Cornell University
- Jamie F. Chriqui, PhD, MHS – University of Illinois at Chicago
- Angie L. Cradock, ScD, Med – Harvard T.H. Chan School of Public Health
- Christina D. Economos, PhD – Tufts University
- Debra Haire-Joshu, PhD, RN – The Brown School Washington University
- Christine Hunter, PhD – National Institutes of Health
- Laura Kettel Khan, PhD – Centers for Disease Control and Prevention
- Shiriki Kumanyika, PhD, MPH – Drexel University
- Bruce Lee, MD, MBA – CUNY Graduate School of Public Health & Policy
- Lorren D. Ritchie, PhD, RD – University of California Agriculture and Natural Resources
- Thomas N. Robinson, MD, MPH – Stanford University
- Marlene B. Schwartz, PhD – University of Connecticut
- Deborah Young-Hyman – National Institutes of Health
# Outcomes

<table>
<thead>
<tr>
<th>Individual outcomes</th>
<th>Definitions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight status</td>
<td>Attained healthy or recommended weight/BMI</td>
<td>Change in height/weight/BMI (kg/m², percentage, z-scores).</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Demonstrated positive changes in physical activity and/or maintained healthy physical activity</td>
<td>Change in physical activity frequency, intensity, or duration.</td>
</tr>
<tr>
<td>Diet</td>
<td>Demonstrated positive changes in food intake and/or maintained healthy diet</td>
<td>Change in vegetable/fruit consumption</td>
</tr>
<tr>
<td>Sleep</td>
<td>Demonstrated positive changes in sleep behavior and/or maintained healthy sleep behavior</td>
<td>Change in sugar-sweetened beverage consumption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consuming recommended amounts of carbohydrates, protein, and fat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in sleep hygiene/sleep quantity and/or quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change in bedtime routine</td>
</tr>
</tbody>
</table>

The outcomes' taxonomy categorizes common child-level individual outcomes. Given the nature of this project, taxonomic meta-analysis of the final 51 studies was restricted to those with multiple measures of BMI.

Example of Article Coding: Outcomes

It was hypothesized that children who received the intervention would demonstrate increased F&V knowledge, preferences and lunchtime consumption and lower BMI relative to a comparison group who did not receive the intervention. Additionally, children received new information in an engaging format so knowledge was hypothesized to increase. The intervention was designed so that children were encouraged to eat more F&V. It was hypothesized that preferences for these foods would increase with repeated exposures.

Taxonomic meta-analysis of the final 51 studies was restricted to those with measures of Body Mass Index.
# Intervention Components

## 9 Categories and 93 Intervention Components

<table>
<thead>
<tr>
<th>Category</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities to Support Behavior Change</td>
<td>Incorporate Implementation of Self-Reflection Strategies</td>
</tr>
<tr>
<td></td>
<td>Incorporate Financial Incentives</td>
</tr>
<tr>
<td></td>
<td>Engage Caregivers in Goal-setting</td>
</tr>
<tr>
<td></td>
<td>Implement Media Campaigns</td>
</tr>
<tr>
<td></td>
<td>Engage Caregivers in Praise/Encouragement for Positive Health-related Behavior</td>
</tr>
<tr>
<td>Activities for Supporting Caregivers</td>
<td>Engage Experts to Provide Technical Assistance to Caregivers</td>
</tr>
<tr>
<td></td>
<td>Provide Materials to Support Healthy Eating Patterns to Caregivers</td>
</tr>
<tr>
<td></td>
<td>Provide Education about the Importance of Routines to Caregivers</td>
</tr>
<tr>
<td>Activities Related to Physical Activity / Environment</td>
<td>Focus on Physical Activity Education</td>
</tr>
<tr>
<td></td>
<td>Focus on Importance of Reduced Screen Time</td>
</tr>
<tr>
<td></td>
<td>Provide Materials/Space to Support Physical Activity to Facilitators</td>
</tr>
<tr>
<td></td>
<td>Include Free Play</td>
</tr>
<tr>
<td></td>
<td>Include Structured Physical Activities</td>
</tr>
</tbody>
</table>

For full Intervention Components taxonomy, see “Taxonomy Overview” on the COEB Project Documentation site
Example of Article Coding: Intervention Components

Based on prior interventions conducted by our group and other researchers (35,36) and with input and review from early childhood educators, nutritionists, exercise physiologists, community health promoters, and Head Start administrators, we developed a culturally proficient intervention tailored to this population (34)...It was delivered in both Spanish and English...The parent intervention included receiving weekly newsletters that mirrored the children’s curriculum and accompanying homework assignments that were designed to be an interactive activity between parents and children. Parents received 12 homework assignments during the 14-week intervention. If parents completed and returned the homework, they received a small monetary incentive.
### Intended Recipients and Intervention Context

<table>
<thead>
<tr>
<th><strong>Intended Recipients (Children) Characteristics</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Education</td>
<td>Reported level of education for children</td>
</tr>
<tr>
<td>Age Group</td>
<td>Reported age group of children participants</td>
</tr>
<tr>
<td>Living Arrangements</td>
<td>Family structure (i.e., living with both parents, living with one parent, living with grandparents)</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender of child</td>
</tr>
<tr>
<td>Language Spoken at Home</td>
<td>Information about language spoken and/or language proficiency (i.e., English language learner (ELL) status)</td>
</tr>
<tr>
<td>Physical / Learning Differences</td>
<td>Learning, behavioral, mental, or physical differences</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>Race or ethnicity of child</td>
</tr>
<tr>
<td>Socio-Economic Status</td>
<td>Socioeconomic status of child</td>
</tr>
<tr>
<td>Technology Access</td>
<td>Extent to which child has access to technology in the home</td>
</tr>
<tr>
<td>Health Status</td>
<td>BMI, at risk for obesity, physical activity level, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Intervention Context Category</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Type</td>
<td>Rural, suburban, urban</td>
</tr>
<tr>
<td>Geographic Location</td>
<td>Region, state, city, country</td>
</tr>
<tr>
<td>Intervention Setting</td>
<td>Where intervention takes place; within a school, childcare center, clinic, etc.</td>
</tr>
<tr>
<td>Instructor/Facilitator Education and Experience</td>
<td>Includes number of years providing instruction and degrees/certifications.</td>
</tr>
<tr>
<td>Instructor/Facilitator Gender</td>
<td>Gender of instructor(s)</td>
</tr>
<tr>
<td>Instructor/Facilitator Language</td>
<td>Native language or language proficiency of instructor(s)</td>
</tr>
<tr>
<td>Instructor/Facilitator Race/Ethnicity</td>
<td>Race/Ethnicity of instructor(s)</td>
</tr>
<tr>
<td>School Grade Level</td>
<td>The range of grade levels accommodated at the school (i.e., &quot;K-5;&quot; &quot;high school;&quot; &quot;university&quot;)</td>
</tr>
<tr>
<td>School/District/Community Language Status</td>
<td>Description of language proficiency at the school or district level (i.e., student body is mostly ELL)</td>
</tr>
<tr>
<td>School/District/Community Race/Ethnicity Composition</td>
<td>Description of racial/ethnic makeup of school or district</td>
</tr>
<tr>
<td>School/District/Community Socio-Economic Status</td>
<td>Description of school or district SEL, including &quot;low income;&quot; &quot;wealthy;&quot; &quot;50% free or reduced-price lunch;&quot; etc.</td>
</tr>
<tr>
<td>Caregiver/Parent Employment Status</td>
<td>Description of whether parents are employed and to what extent</td>
</tr>
<tr>
<td>Caregiver/Parent Health Status</td>
<td>Characteristics of health status including BMI, obesity status, pregnancy/breastfeeding, overall health, etc.</td>
</tr>
<tr>
<td>Caregiver/Parent Relationship Status</td>
<td>Whether caregivers/parents are single, divorced, separated, married, etc.</td>
</tr>
<tr>
<td>Caregiver/Parent Language Status</td>
<td>Languages spoken by caregivers/parents</td>
</tr>
<tr>
<td>Caregiver/Parent Age</td>
<td>Age ranges or absolute numbers of years</td>
</tr>
<tr>
<td>Technology Present in Home</td>
<td>Types of technologies available include computers and phones</td>
</tr>
</tbody>
</table>
**Final Dataset**

**NCCOR Childhood Obesity Evidence Base: Pilot Test of a Novel Taxonomic Meta-Analytic Method**

**TABLE OF CONTENTS**

This workbook contains 51 studies and 147 supplemental materials that examine the effectiveness of interventions (or policies) intended to prevent childhood obesity (or provide supplemental information about these interventions). This has been prepared for use in the COEB Pilot (see NCCOR project website for additional details). These articles adhere to eligibility criteria as defined in the COEB Manual of Procedures and represent interventions across the social ecological model (SEM). The interventions in these articles are coded by 4 taxonomies (Outcomes, Intervention Components, Intended Recipients, and Context) and the research design and reported effects were recorded and standardized. This data is structured for use in Taxonomic Meta-analysis, to determine which Intervention Components correlate to prevent childhood obesity in the target population of children residing in the United States.

This workbook is organized into the following tabs:

- **Document Log**: The list of EIR resources (studies and supplemental documents) included in this dataset.
- **Dataset**: Each record is a reported effect from one of the articles. Reported effects have been standardized and elements attached.
- **Dataset Glossary**: Definitions for all the data fields included in the dataset.

**DATASET**

Here are dataset glossary for variable definitions.
Opening the Black Box: An Introduction to Taxonomic Meta-Analysis

Lori A. J. Scott-Sheldon, PhD*
Center for Behavioral and Preventive Medicine
The Miriam Hospital
Department of Psychiatry and Human Behavior
Alpert Medical School
Brown University

@lscottsheldon

*Current affiliation:
Division of AIDS Research
National Institute of Mental Health
National Institute of Health, Bethesda, MD
Overview

• Traditional vs. Taxonomic Meta-Analysis
• Meta-Analytic Best Practices
• Childhood Obesity Evidence Base Project
Traditional vs. Taxonomic Meta-Analysis

Treatment Groups
- Intervention
  - Girls
  - Overweight
- Control
  - Boys
  - Obesity

Naturally Occurring Groups
Traditional Meta-Analysis
Taxonomic Meta-Analysis
Meta-Analytic Best Practices
Taxonomic Meta-Analysis

1. Formulating the research problem
2. Finding and selecting studies
3. Coding studies for important features
4. Calculating effect sizes
5. Analyzing the systematic review database
6. Interpretation and dissemination
7. Re-analysis, development, or criticism

Feedback can lead to repeating any and all steps

Cross-step synergy

Johnson & Hennessy (2019; Soc Sci Med)
Taxonomic Meta-Analysis

Data analyses: efficacy & modeling variation as a function of study, sample, methodology, and intervention characteristics

Includes: different study designs and intervention types; methodological quality
Childhood Obesity Evidence Base Project
Childhood Obesity Evidence Base (COEB): Test of a Novel Taxonomic Meta-Analytic Method

The NCCOR Childhood Obesity Evidence Base (COEB): Test of a Novel Taxonomic Meta-Analytic Method aims to:

1. Use a novel taxonomic (classification) method of data aggregation
2. Identify successful approaches used to prevent childhood obesity in children aged 2 to 5 years
3. Provide evidence regarding mechanisms, pathways, and implementation strategies to inform future efforts to reduce rates of early childhood obesity
4. Provide a scoping review of the literature regarding prevention efforts of childhood obesity for children aged 2–5 years.

The COEB Project aligns with NCCOR’s efforts to identify and evaluate practical and sustainable interventions as well as facilitate the ability of childhood obesity researchers and program evaluators to conduct...
Manual of Procedures

On this page, you will find all the NCCOR COEB Project documentation, including the project manual of procedures, obesity intervention component taxonomy, taxonomy-specific database, and bibliography.

Manual of Procedures

The purpose of the Manual of Procedures is to describe the methods and coding scheme used to create this dataset.

Taxonomy Overview

Four taxonomies were created for the NCCOR COEB Project via the grounded approach\(^1\) to intervention components, intended recipient characteristics, intervention component context, and outcomes. Only studies that included measures of Body Mass Index (BMI) were included in the final taxonomic meta-analysis.

Prepared by:
Lori A.J. Scott-Sheldon, PhD
The Systematic Review and Meta-Analytic Research Methods Team
The Milbank Hospital and Brown University
for
Mission Measurement

Which intervention components are more effective to prevent obesity or improve weight status among children ages 2 to 5 years?
Inclusion Criteria

P: Children ages 2–5 years living in the United States

I: Interventions targeting childhood obesity prevention

C: Same-aged control/comparison group

O: Assessed body mass index (BMI)

S: Published/unpublished between 1/1/2005 and 8/31/2019
Screening and Selection Process

Figure 3.1. Screening and Selection Procedures

- 30,414 records identified through electronic database searches
- 158 additional records identified through other sources
- 12,257 duplicates removed
- 16,311 records excluded:
  - not relevant: 9,138
  - not human: 550
  - age: 3,874
  - review/meta-analysis: 1,348
  - editorial/commentary: 1,401
- 2,824 full-text manuscripts assessed for eligibility
- 1,926 manuscripts excluded:
  - no intervention: 589
  - mean age/mean: 567
  - non-US: 166
  - no relevant outcomes: 166
  - qualitative: 153
  - manual/protocol: 92
  - no control group: 50
  - methods/statistical: 14
  - published prior to 2000: 14
  - intervention target: 13
  - conference proceedings: 11
  - genetic/chronic condition: 2
- 51 studies reporting on included in the meta-analysis
- 147 (156) manuscripts providing supplemental information for the 51 studies included in the meta-analysis
Data Collection Process

- Two trained coders independently extracted:
  - Study information
  - Recipient characteristics
  - Design and measurement
  - Intervention details
  - Risk of bias

- For each intervention, components were coded as present (1) or absent (0).
Summary Measures

Standardized mean differences, controlling for baseline

\[ SMD = \left( \frac{M_{\text{pre}} - M_{\text{post}}}{SD_{\text{pre}}} \right) - \left( \frac{M_{\text{pre}} - M_{\text{post}}}{SD_{\text{pre}}} \right) \]
Database

NCCOR Childhood Obesity Evidence Base: A Novel Taxonomic Meta-Analytic Method

The National Collaboration on Childhood Obesity Research (NCCOR), and Mission Measurement joined in a novel approach to evidence aggregation in a taxonomic framework that integrates intervention approaches and components, intended recipients and context, and evaluation design. The Social Ecological Model (SEM) is used as an organizing framework. This approach allows the comparison of the evidence from studies of varying levels of rigor and specificity, the examination of the success of intervention components in intended recipients and circumstances and provide a comparison to evidence generated by well accepted meta-analytic methods. The Childhood Obesity Evidence Base (COEB) tests the capacity of the taxo-meta-analytic approaches and differences in evidence aggregation outcomes from other methods of meta frameworks. Data was generated from published studies of obesity prevention initiatives and was not from clinical trials. Approaching data aggregation in this manner has the potential to inform future initiatives, contextual elements of the project, as well as intended recipients and approach, thereby facilitating early and prioritizing successful outcomes.

This dataset was derived from unique studies and all supplemental documents that provided additional data for the studies included. The purpose of this database is to enable independent analysis.

Example the Cases:
1. Comparing evidence from studies of varying levels of rigor and specificity
2. Comparing the effectiveness of specific intervention components in the intended recipients and context
3. Comparing a deviation to evidence generated by well-accepted meta-analytic methods.

Additional database creation and usage information can be found online at the NCCOR COEB project web site: https://www.nccor.org/projects/childhood-obesity-evidence-base-test-of-a-novel-taxonomic-meta-analytic-method/

This dataset has the potential for additional studies to be included and coded using the same coding scheme the COEB dataset grew and expanded over time. Given the rigor, specificity, and training required for pre-studies by this schema, it is recommended that any user interested in adding studies to the COEB dataset contact Mission Measurement at missionmeasurement.com

## Taxonomy of Intervention Categories

<table>
<thead>
<tr>
<th>Intervention Categories</th>
<th># of Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities to Support Behavior Change</td>
<td>8</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>15</td>
</tr>
<tr>
<td>Activities for Supporting Caregivers</td>
<td>23</td>
</tr>
<tr>
<td>Facilitator Training Activities</td>
<td>8</td>
</tr>
<tr>
<td>Involvement of Facilitators</td>
<td>4</td>
</tr>
<tr>
<td>Policy-Based Strategies</td>
<td>6</td>
</tr>
<tr>
<td>Activities Related to Physical Activity/Environment</td>
<td>10</td>
</tr>
<tr>
<td>Activities Related to Food/Food Environment</td>
<td>10</td>
</tr>
<tr>
<td>Characteristics of the Intervention</td>
<td>9</td>
</tr>
</tbody>
</table>

**Total** 93
Intervention Components

• 90 out of 93 components were identified
• Insufficient evidence for three components:  
  Activities for Supporting Caregivers  
  – provide materials to support self-control in children

  Policy-Based Strategies  
  – implemented earned income tax credit  
  – implemented policies regarding food/beverage costs
Intervention Components

• # components: $M = 20$ ($SD = 6$), range = 7-34
  – used research-based approach/curriculum (84%)
  – provided written resources to caregivers (60%)
  – provided initial or one-time training opportunities to facilitators (59%)
  – provided education about nutrition and healthy eating patterns to caregivers (53%)
  – provided curricular materials to facilitators (50%)
## Standardized Mean Difference in BMI

```
. means d_btwn_new_R [w=tw_btwn_new] if dv_OverallBMI_c_A1==1
   (analytic weights assumed)
   (3 missing values generated)
   (3 missing values generated)
   (3 missing values generated)
Version 2008.03.22 of meanes.ado

<table>
<thead>
<tr>
<th>Model</th>
<th>Mean</th>
<th>-95%CI</th>
<th>+95%CI</th>
<th>SE</th>
<th>Z</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed effect</td>
<td>0.08749</td>
<td>0.05864</td>
<td>0.11635</td>
<td>0.01472</td>
<td>5.94286</td>
<td>0.00000</td>
</tr>
<tr>
<td>Random effects 1</td>
<td>0.08935</td>
<td>0.05411</td>
<td>0.12460</td>
<td>0.01798</td>
<td>4.96853</td>
<td>0.00000</td>
</tr>
<tr>
<td>Random effects 2</td>
<td>0.10180</td>
<td>0.02394</td>
<td>0.17967</td>
<td>0.03973</td>
<td>2.56261</td>
<td>0.01039</td>
</tr>
</tbody>
</table>
```

Homogeneity Analysis

- Number of observations (k) = 55
- Minimum observations = -.141
- Maximum observations = 1.284
- Weighted standard deviation = 0.121
- I² = 19.50
- -95% CI = 0.00
- +95% CI = 42.89
- Q = 67.08
- df = 54
- p = 0.10890

Random effects variance component (method of moments) = 0.00296
Random effects variance component (full information ML) = 0.06052
\[ ES = 0.10 \]

\[ (0.02, 0.18), k = 55 \]

\[ I^2 = 20\% \ (95\% \ CI = 0-43); \ t^2 = 0.0303; \ Q (54) = 67.08, p = 0.109. \]
Components as a Moderator of BMI

• **Categories:**
  • Activities to Support Behavior Change ($\beta=0.03$, $p=0.024$)

• **Components:**
  • Engaged caregivers in praise/encouragement for positive behaviors, $\beta=0.09$, $p=0.049$
  • Provided education about the importance of screen time reduction to caregivers, $\beta=0.13$, $p=0.002$
  • Engaged pediatricians/healthcare providers in delivering content, $\beta=0.11$, $p=0.012$
Multiple Regression Model

Multiple meta-regression model: $F(3, 51) = 4.33$, $p = .009$, $R^2$ residual = 5%

```
. metareg d_BTWN_NEW_R G5_Presence G41_Presence G52_Presence if dv_OverallBMI_C_A1==1, wsse(se_new_v2) reml
```

| d_BTWN_NEW_R    | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-----------------|-------|-----------|-------|------|----------------------|
| G5 Presence     | .0211288 | .049986 | 0.42 | 0.674 | -.0792222 | .1214799 |
| **G41 Presence**| **.1001145** | **.0456644** | **2.19** | **0.033** | **.0084395** | **.1917896** |
| G52_Presence    | .059366 | .0497145 | 1.19 | 0.238 | -.0404401 | .1591721 |
| _cons           | .0582181 | .0173356 | 3.36 | 0.001 | .0234155 | .0930208 |
Permutation Test

```
. metareg d_btwn_new_R G5_Presence G41_Presence G52_Presence if dv_OverallBMI_c_A1==1, wsse(se_new_v2) permute (5000)
```

Monte Carlo permutation test for meta-regression

Moment-based estimate of between-study variance
Without Knapp & Hartung modification to standard errors

P-values unadjusted and adjusted for multiple testing

<table>
<thead>
<tr>
<th>d_btwn n-R</th>
<th>P Unadjusted</th>
<th>P Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>G5 Presence</td>
<td>0.618</td>
<td>0.936</td>
</tr>
<tr>
<td>G41 Presence</td>
<td>0.017</td>
<td>0.048</td>
</tr>
<tr>
<td>G52 Presence</td>
<td>0.221</td>
<td>0.498</td>
</tr>
</tbody>
</table>

Number of obs = 55
Permutations = 5000

There is evidence of moderation even after adjusting for multiple testing.

WARNING:
Monte Carlo methods use random numbers, so results may differ between runs.
Ensure you specify enough permutations to obtain the desired precision.
Conclusions & Acknowledgements

- This work was funded by the Office of Behavioral and Social Science Research of the National Institutes of Health. The views presented here are solely the responsibility of the authors and do not necessarily reflect the official views of the NIH.

- This research represents a collaborative effort between the National Collaborative on Childhood Obesity Research (NCCOR) and Mission Measurement, guided by members of NCCOR and an NCCOR External Expert Panel. The four organizations represented in NCCOR are the CDC, NIH, RWJF, and USDA. NCCOR is supported by the NCCOR Coordinating Center staff at FHI360.

Looking Ahead

• Clinicians, policy makers and implementers, as well as researchers can utilize the database and methods to answer their own customized questions regarding successful intervention approaches to prevent childhood obesity.

• This database can be updated as more evidence is generated.

• This method can be utilized to aggregate evidence in diverse social science topics and provides adjunctive information to traditional meta-analytic methods.
Thank you!

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UPCOMING EVENT
American Trails Webinar

• Effective Programs to Improve Access to and Use of Trails for Youth from Under-Resourced Communities
  • Thursday, April 22, 1–2:30 p.m. ET
ANNOUNCEMENTS
NCCOR Measures Registry Update

- Individual Diet
- Food Environment
- Individual Physical Activity
- Physical Activity Environment
## Catalogue of Surveillance Systems Update

### List of Surveys

- **School Nutrition and Meal Cost Study**
- **American Housing Survey**
- **Pregnancy Risk Assessment Monitoring System**
- **WIC Participants and Characteristics Report**

### Sampling

### Key Variables

- **SNAP Policy Database**
- **WIC Infant and Toddler Feeding Practices Study**
- **National Health and Nutrition Examination Survey**
  - Linked HUD Administrative Data
- **National Health Interview Survey**
  - Linked HUD Administrative Data
Why should students use NCCOR's tools?
They're free, easy to use, and save time by providing easy access in one centralized location!

How can these tools help me in my classes or on my projects?
These resources can assist you in selecting the most appropriate measures or datasets. These are handy for thesis or capstone projects where you can:
- Conduct systematic reviews and meta analyses
- Develop a childhood obesity intervention
- Evaluate a health promotion program

What types of undergraduate and graduate programs can use these tools?
Students in all types of programs can benefit from these tools, including Master's and PhD programs in public health, nutrition, exercise physiology, and epidemiology.

Sign up for NCCOR Student Hub!

→ nccor.org/e-newsletter
Check out the student hub webpage!
Have you used any of NCCOR’s tools?

Let us know at nccor@fhi360.org and we may feature you in our next webinar!
WHAT'S HAPPENING IN
NCCOR NEWS

New Update to NCCOR's Measures Registry

Childhood Obesity Evidence Base: Using NCCOR’s Newest Dataset to Examine Childhood Obesity Interventions

New from NCCOR: A Brief on Programs Promoting Trail Use to Youth from Under-Resourced Communities

NCCOR Year in Review: 2020

Improving research on children at high risk for obesity: When to apply, adapt, or develop a measure

Connect & Explore

Upcoming Webinars

Mark your calendar for these upcoming Connect & Explore webinars!
FURTHER QUESTIONS?

Other questions about NCCOR or upcoming activities?

Email the NCCOR Coordinating Center nccor@fhi360.org
THANK YOU!
. metareg d_btwn_new_R A01_Totalx if dv_OverallBMI_c_A1==1, wsse(se_new_v2)

Meta-regression
Number of obs = 55
REML estimate of between-study variance
tau2 = .000812
% residual variation due to heterogeneity
I-squared_res = 13.14%
Proportion of between-study variance explained
Adj R-squared = 18.98%
With Knapp-Hartung modification

| d_btwn_new_R | Coef.  | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|--------------|--------|-----------|-------|------|---------------------|
| A01_Totalx _cons | 0.0288041 | 0.0124303 | 2.32  | 0.024 | 0.0038721 - 0.0537361 |
|               | 0.0484437 | 0.023836  | 2.03  | 0.047 | 0.0006348 - 0.0962526 |
. metareg d_btwn_new_R G5_Presence  if dv_OverallBMI_c_A1==1, wsse(se_new_v2) reml

Meta-regression
REML estimate of between-study variance
% residual variation due to heterogeneity
Proportion of between-study variance explained
With Knapp-Hartung modification

| d_btwn_new_R | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|--------------|--------|-----------|-------|-------|----------------------|
| G5_Presence  | 0.0939587 | 0.0466028 | 2.02  | 0.049 | 0.0004853 - 0.187432 |
| _cons        | 0.0740545 | 0.0182614 | 4.06  | 0.000 | 0.0374268 - 0.1106822 |
. metareg d_btwn_new_R G41_Presence if dv_OverallBMI_c_A1==1, wsse (se_new_v2) reml

Meta-regression

REML estimate of between-study variance
% residual variation due to heterogeneity
Proportion of between-study variance explained
With Knapp-Hartung modification

| d_btwn_new_R       | Coef.    | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|--------------------|----------|-----------|-------|------|----------------------|
| G41_Presence       | .1321946 | .0403279  | 3.28  | 0.002| .0513071 .2130821    |
| _cons              | .0646588 | .0168793  | 3.83  | 0.000| .0308032 .0985145    |
. metareg d_btwn_new_R G52_Presence if dv_OverallBMI_c_A1==1, wsse(se_new_v2) reml

Meta-regression
Number of obs = 55
REML estimate of between-study variance tau2 = 0
% residual variation due to heterogeneity I-squared_res = 10.87%
Proportion of between-study variance explained Adj R-squared = 100.00%
With Knapp-Hartung modification

| d_btwn_new_R       | Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|--------------------|--------|-----------|-------|------|----------------------|
| G52_Presence       | 0.1132846 | 0.0434857 | 2.61  | 0.012 | 0.0260634 – 0.2005059 |
| _cons              | 0.0703215 | 0.0169307 | 4.15  | 0.000 | 0.0363627 – 0.1042802 |