Presenter Disclosure

No relationships to disclose
Association of Optimism and Cardiovascular Health: Results from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) Sociocultural Ancillary Study

Background

• Optimism is the overarching expectation that positive things will occur in the future.

• Optimists display more favorable profiles for:
  – Atherosclerotic progression
  – Parasympathetic nervous system activation
  – Inflammatory markers
  – Lipids

• Little is known of the relationship between optimism and cardiovascular health, particularly in Hispanics/Latinos of diverse backgrounds.

Objective

• To examine the cross-sectional association between optimism and cardiovascular health (CVH; Life’s Simple 7) using data from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) Sociocultural Ancillary Study

*Hypothesis:* Compared to those with low optimism, participants with higher optimism scores will display more favorable CVH profiles independent of socio-demographic factor, physical health, and psychological ill-being
HCHS/SOL Sociocultural Ancillary Study

• Parent HCHS/SOL Study
  – Largest epidemiology study of Hispanic/Latino adults to date
    • 16,000+ Cuban, Dominican, Central/South American, Mexican, Puerto Rican from 4 US field centers (18-74 yrs)

• Sociocultural Ancillary
  – Sociocultural and psychological influences of physical health
    • 5,313 participants of the original HCHS/SOL within 9-months of clinical baseline exam (2010-2011)

Exposure: Optimism

- Life-Orientation Test—Revised (LOT-R)
  - 6-items survey tool
    - “In uncertain times, I usually expect the best”
  - 4-point scale ranging from *a lot like me* to *not at all like me*
  - Scores range from 6 (least optimistic) to 30 (most optimistic)

Outcome: CVH—Life’s Simple 7

- **Health Behaviors**
  - Smoking
  - Diet
  - Physical activity
  - Body Mass Index

- **Health Factors**
  - Glucose
  - Cholesterol
  - Blood Pressure

- Each metric receives a 0, 1, or 2 for poor, intermediate, or ideal CV health
- **Total CVH** score computed from summation across metrics
  - Poor, 0-7 pts
  - Intermediate, 8-11 pts
  - Ideal, 12-14 pts

# Metrics: Health Behaviors

<table>
<thead>
<tr>
<th>Metric</th>
<th>Poor (Score = 0)</th>
<th>Intermediate (Score = 1)</th>
<th>Ideal (Score = 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Current smoker</td>
<td>Quit &lt;12 mo.</td>
<td>Never or quit &gt;12 mo.</td>
</tr>
<tr>
<td>Diet</td>
<td>Diet score = 0-1</td>
<td>Diet score = 2-3</td>
<td>Diet score = 4-5</td>
</tr>
<tr>
<td>Leisure-Time Physical Activity</td>
<td>No physical activity</td>
<td>1-149 min/wk moderate or 1-74 min/wk vigorous</td>
<td>≥ 150 min/wk moderate or ≥ 75 min/wk vigorous</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>BMI &gt; 30 kg/m²</td>
<td>BMI = 25-29.9 kg/m²</td>
<td>BMI &lt; 25 kg/m²</td>
</tr>
</tbody>
</table>

## Metrics: Health Factors

<table>
<thead>
<tr>
<th>Metric</th>
<th>Poor (Score = 0)</th>
<th>Intermediate (Score = 1)</th>
<th>Ideal (Score = 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>FPG $\geq$ 126 mg/dl or DM w/ HbA1c $\geq$7%</td>
<td>FPG = 100-125 mg/dl or DM w/ HbA1c $&lt;$7%</td>
<td>FPG $&lt;$100 mg/dl</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>TC $&gt;$240 mg/dl or treated TC $&gt;$200 mg/dl</td>
<td>TC = 200-239 mg/dl or treated TC $&lt;$200 mg/dl</td>
<td>TC $&lt;$ 200 mg/dl</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Treated BP $&gt;$140/ $&gt;$90 or untreated $&gt;$140/ $&gt;$90 mmHg</td>
<td>SBP = 120-139 or DBP = 80-89, or treated $&lt;$140/$&lt;$90 mmHg</td>
<td>BP $&lt;$120/$&lt;$80 mmHg</td>
</tr>
</tbody>
</table>

Statistical Analysis

• Survey-specific procedures were used to account for the 2-stage sampling design, stratification, and clustering.

• Descriptive characteristics are presented by tertile of optimism.

• Multinominal logistic regression:
  – OR’s and 95% CI for prevalence of intermediate and ideal CVH versus poor CVH, across tertiles of optimism.
  – Final model adjusted for sociodemographic factors, self-rated health, prevalent CHD, and depressive symptoms.
Frequency Distribution for Optimism

The chart shows the frequency distribution of optimism scores. The data is represented by a bar chart with the following details:

- **Optimism Score Range**: 7 to 30
- **Frequency**: The frequency distribution peaks around the score of 22.7 (0.09), indicating a slight skew towards higher optimism scores.
## Characteristics of Study Sample

<table>
<thead>
<tr>
<th>N=4,960</th>
<th>Optimism Tertile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low I</td>
</tr>
<tr>
<td></td>
<td>n=1941</td>
</tr>
<tr>
<td>Age, M (95% CI)</td>
<td>40.8 (39.6--41.9)</td>
</tr>
<tr>
<td>Sex, % (95% CI)</td>
<td>54.0 (50.8--57.2)</td>
</tr>
<tr>
<td>Heritage Group, % (95% CI)</td>
<td></td>
</tr>
<tr>
<td>Mexican</td>
<td>41.4 (37.0--45.8)</td>
</tr>
<tr>
<td>Cuban</td>
<td>14.7 (11.1--18.3)</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>18.9 (15.7--22.1)</td>
</tr>
<tr>
<td>Dominican</td>
<td>10.8 (7.8--13.9)</td>
</tr>
<tr>
<td>Central American</td>
<td>6.0 (4.6--7.5)</td>
</tr>
<tr>
<td>South American</td>
<td>4.0 (2.8--5.1)</td>
</tr>
<tr>
<td>Other</td>
<td>4.2 (2.7--5.7)</td>
</tr>
<tr>
<td>Depressive Symptoms, M (95% CI)</td>
<td>9.0 (8.5--9.5)</td>
</tr>
</tbody>
</table>
Mean CVH Score by Tertile of Optimism

- Low Optimism: 8.2
- Moderate Optimism: 8.7
- High Optimism: 8.6

*p = 0.01

Adjusted for age and sex
Proportion in Ideal Classification Group Across Metrics, by Optimism Tertile

Cardiovascular Health Measures

- Total CVH
- Diet
- Physical Activity
- BMI
- Smoking
- Blood Pressure
- Blood Sugar
- Total Cholesterol

Proportion (%) in Ideal Category

- Low Optimism
- Moderate Optimism
- High Optimism
## Multinomial Association between Optimism and CVH

N= 4,960

<table>
<thead>
<tr>
<th>6-item LOT-R</th>
<th>Cardiovascular Health</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermediate vs. Poor</td>
<td>Ideal vs. Poor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1: Unadjusted</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile I—Lowest</td>
<td>1.37 (1.11, 1.69)</td>
<td>1.46 (1.03, 2.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile II</td>
<td>1.08 (0.86, 1.35)</td>
<td>0.97 (0.66, 1.42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile III—Highest</td>
<td>1.19 (0.92-1.54)</td>
<td>1.22 (0.72-2.07)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2: Multivariable Adjusted a</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile I—Lowest</td>
<td>1.38 (1.08-1.75)</td>
<td>1.63 (1.05-2.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertile II</td>
<td>1.19 (0.92-1.54)</td>
<td>1.22 (0.72-2.07)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tertiles range from lowest (I) to highest (III) for the LOT-R measure, with Tertile III corresponding to the highest levels of optimism for the full 6-item LOT-R measure.

a Adjusted for age, sex, Hispanic/Latino heritage group, marital status, education, income, insurance status, Physical Health Component of SF-12, prevalent CHD, and depressive symptoms (CES-D).
Summary

• Participants categorized as most optimist tended to be older and reported less depressive symptoms

• Moderate levels of optimism associated with greater odds for intermediate and ideal CVH
  – independent of demographic factors, physical health, and depression

• Multiple CVH metrics driving association
  – smoking and BMI
Strengths and Limitation

• First to examine the association between optimism and CVH in Hispanics/Latinos

• Large (n = 4,960) diverse sample of Hispanics/Latinos

• Well-validated instrument capturing optimism (LOT-R)

• Cross-sectional → Can’t infer causality

• Measurement error for self-report measures of diet and physical activity
Implications

• Elucidates mechanism for impact on subclinical and symptomatic/clinical CVD.

• Warrants cross-cultural exploration of the mind-heart relationship.

• Preliminary evidences suggests identification of ways to enhance optimism as moderate levels may positively impact cardiovascular health
Funding

Lead Institute

Six other Institutes contributed

- National Institute of Diabetes and Digestive and Kidney Diseases
- National Institute of Neurological Disorders and Stroke
- National Institute of Deafness and Other Communication Disorders
- National Institute of Dental and Craniofacial Research
- National Institute of Minority Health and Health Disparities
- National Institute of Health-Office of Dietary Supplements
The Hispanic Community Health Study/Study of Latinos was carried out as a collaborative study supported by contracts from the National Heart, Lung, and Blood Institute (NHLBI) to the University of North Carolina (N01-HC65233), University of Miami (N01-HC65234), Albert Einstein College of Medicine (N01-HC65235), Northwestern University (N01-HC65236), and San Diego State University (N01-HC65237). The following Institutes/Centers/Offices contribute to the HCHS/SOL through a transfer of funds to the NHLBI: National Center on Minority Health and Health Disparities, the National Institute of Deafness and Other Communications Disorders, the National Institute of Dental and Craniofacial Research, the National Institute of Diabetes and Digestive and Kidney Diseases, the National Institute of Neurological Disorders and Stroke, and the Office of Dietary Supplements. The authors thank the staff and participants of HCHS/SOL for their important contributions. A complete list of staff and investigators has been provided by Sorlie P., et al. in Ann Epidemiol. 2010 Aug; 20: 642-649 and is also available on the study website http://www.csc.ucn.edu/hchs/
Thank You
Regression for Association of 1-unit increase in Optimism with Continuous Measure of CVH

<table>
<thead>
<tr>
<th></th>
<th>Cardiovascular Health</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (SE)</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>6-item LOT-R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M1: Unadjusted</td>
<td>0.03 (0.01)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>M2: Multivariable Adjusted $^a$</td>
<td>0.04 (0.01)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

$^a$ Adjusted for age, sex, Hispanic/Latino heritage group, marital status, education, income, insurance status, Physical Health Component of SF-12, prevalent CHD, and depressive symptoms (CES-D).