A Happier Mind, A Healthier Heart

The Science of Well-Being

Dr. Rosalba “Rose” HERNANDEZ, PhD, FAHA



The Life Around a Blood Pressure Reading

A reading tell us something important

A person's daily life tell us more

- Caregiving responsibilities
- Work and financial pressures
- Relationships and sources of support
- Hopes for the future



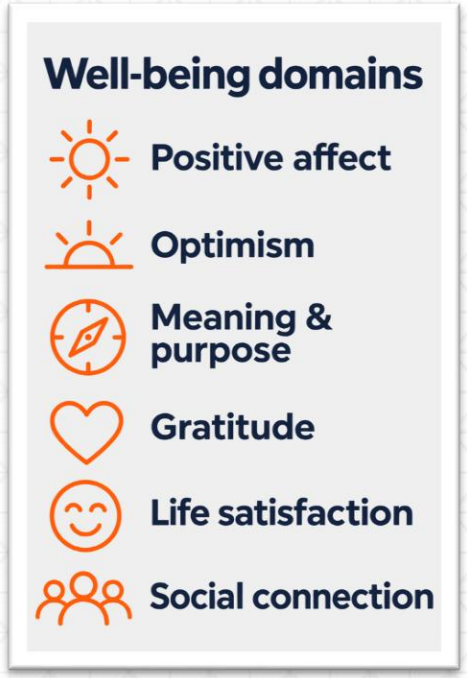
The Mind-Heart-Body Connection

Circulation
Volume 143, Issue 10, 9 March 2021; Pages e763-e783
https://doi.org/10.1161/CIR.0000000000000947

AHA SCIENTIFIC STATEMENT

Psychological Health, Well-Being, and the Mind-Heart-Body Connection: A Scientific Statement From the American Heart Association

Glenn N. Levine, MD, FAHA, Chair, Beth E. Cohen, MD, MAS, Yvonne Commodore-Mensah, PhD, MHS, RN, Julie Fleury, PhD, Jeff C. Huffman, MD, Umair Khalid, MD, Darwin R. Labarthe, MD, MPH, PhD, FAHA, Helen Lavretsky, MD, Erin D. Michos, MD, MHS, Erica S. Spatz, MD, MHS, and Laura D. Kubzansky, PhD, MPH On behalf of the American Heart Association Council on Clinical Cardiology; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiovascular and Stroke Nursing; and Council on Lifestyle and Cardiometabolic Health



Psychological health belongs in the assessment and care of people with or at risk for cardiovascular disease

Psychological Health Is Cardiovascular Health

Growing recognition within the American Heart Association

2021

Scientific recognition

AHA scientific statement on the psychological health, well-being, and mind–heart–body connection.

2023

Organizational commitment

Psychological Health and Well-being Committee established within the AHA/ASA Stroke Council.

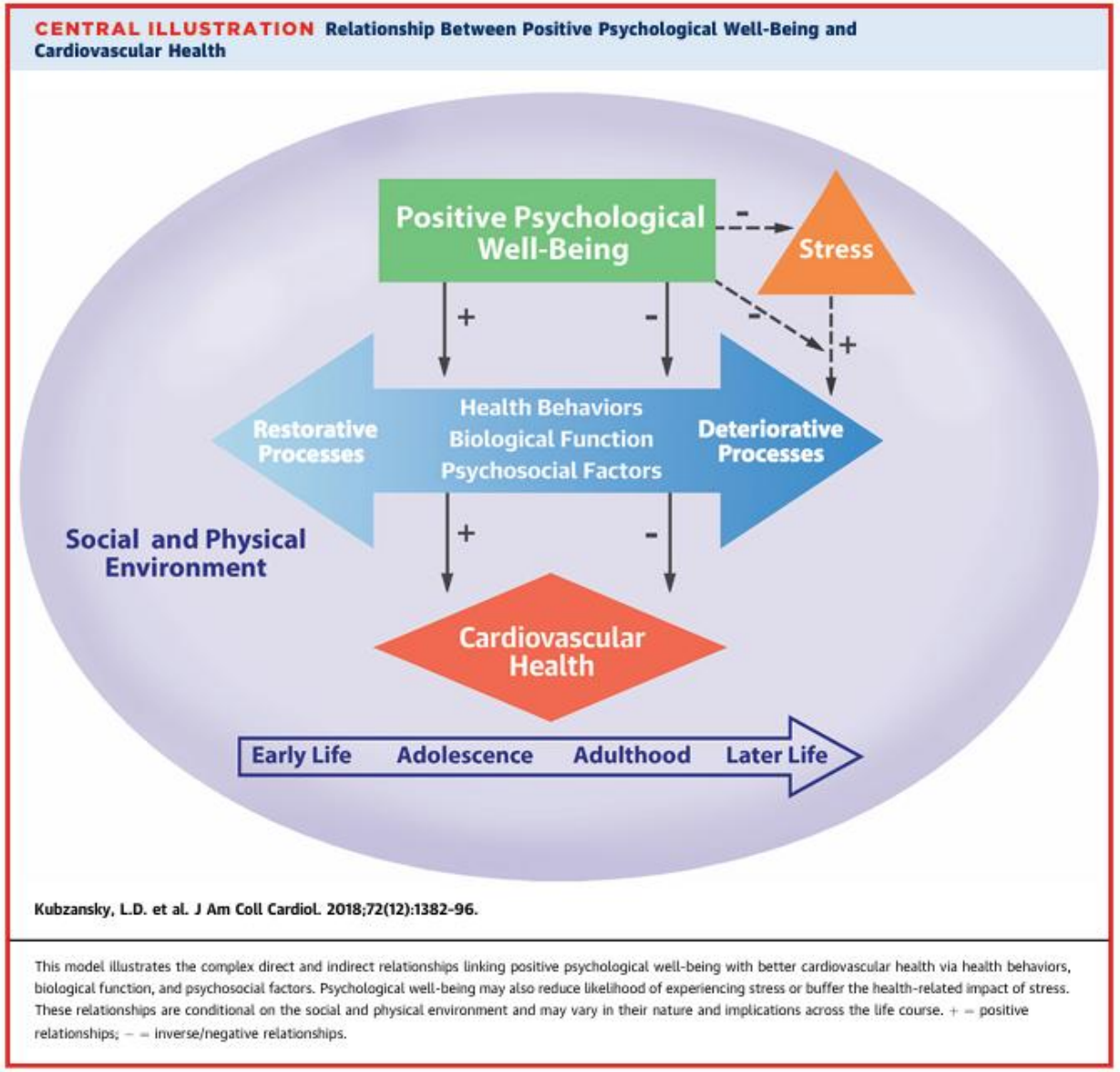
Cardiovascular care should address psychological distress and support positive psychological well-being.

Committee Chair: Rosalba Hernandez, PhD, FAHA

Levine et al. Circulation. 2021;143:e763–e783. | AHA Connections. Fall 2023, Council on Stroke.

Potential Pathway Linking Mind and Heart

- **Biology**: Stress responses and related physiological processes
- **Daily Behavior**: Sleep, physical activity, and taking medication
- **Social Relationships**: Support that can shape coping and health behavior



Levine et al. Circulation. 2021. doi:10.1161/CIR.0000000000000947

A question that shaped my research

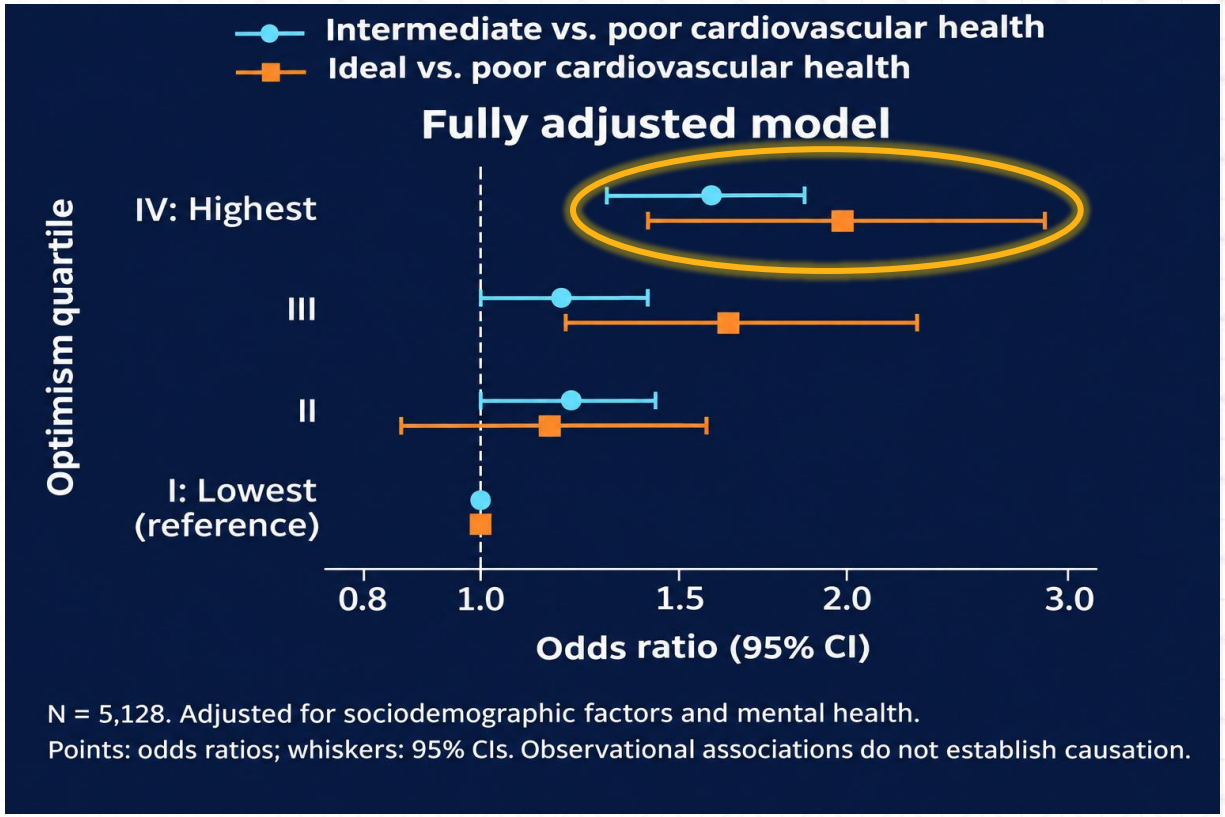
Can psychological strengths help us understand cardiovascular health?



Lloyd-Jones DM, et al. Defining and setting national goals for cardiovascular health promotion and disease reduction. *Circulation.* 2010;121:586–613. doi:10.1161/CIRCULATIONAHA.109.192703.

An Early Foundation in MESA

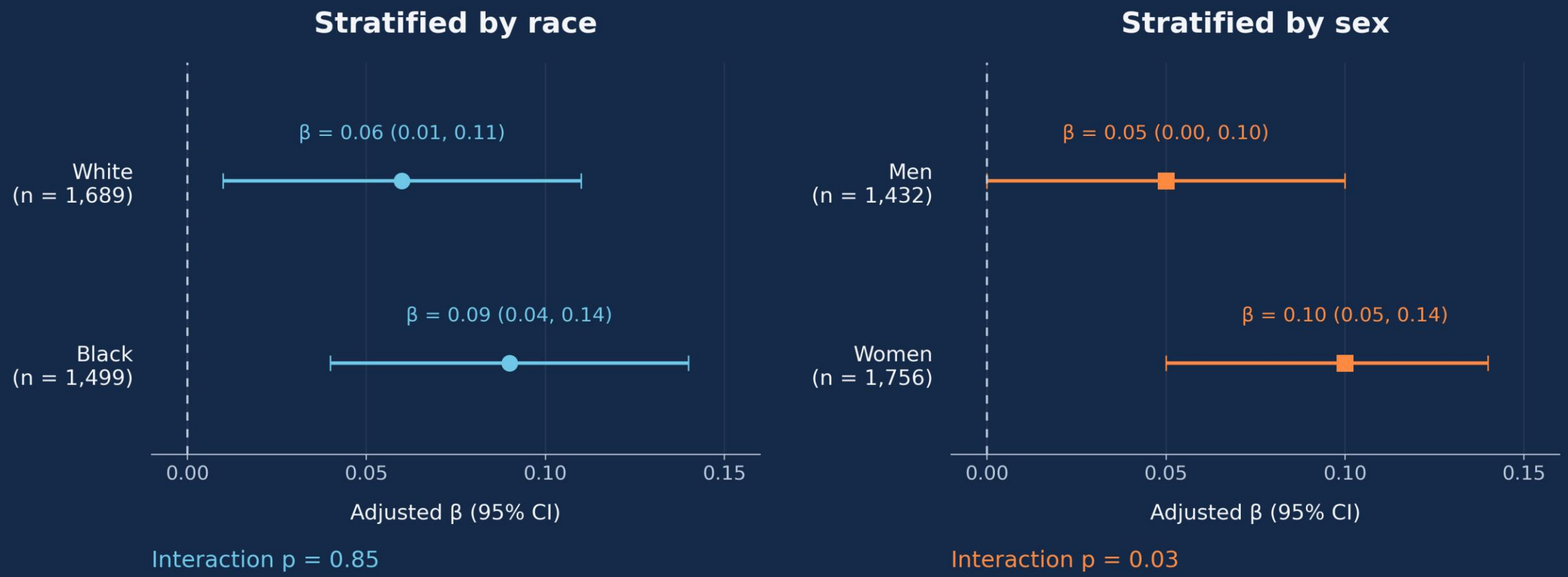
- 5,128 adults from a multiethnic community cohort
- Higher optimism was associated with better cardiovascular health, even after adjustment
- **The next question**: Could an intervention to increase optimism improve cardiovascular health?



Hernandez et al. Optimism and Cardiovascular Health. 2015

Optimism and Cardiovascular Health in the CARDIA Cohort

Baseline optimism and total cardiovascular health scores during follow-up



N = 3,188. Estimates are per 1-SD higher baseline optimism. Whiskers show 95% CIs; dashed line: β = 0.

Adjusted for time, age, education, income, marital status, and sex (race models) or race (sex models).

Source: supplied Table 3. Association does not establish causation.

Boehm JK, et al. Optimism and cardiovascular health: Longitudinal findings from the Coronary Artery Risk Development in Young Adults Study. *Psychosom Med.* 2020;82(8):774–781. doi:10.1097/PSY.0000000000000855

Optimism and Better Sleep Quality Over Five Years

- 3,548 adults in the CARDIA study
- Higher optimism was associated with improved or persistently good sleep quality
- Associations remained after accounting for depressive symptoms and other factors

Self-reported sleep quality

Fully adjusted model

Five-year sleep pattern	Odds ratio (95% CI)
Improved Poor → Good	1.32 (1.07–1.62)
Worsened Good → Poor	1.21 (0.98–1.48)
Persistently good Good → Good	1.31 (1.10–1.56)

Per 1-SD higher optimism; reference: persistently poor sleep quality.

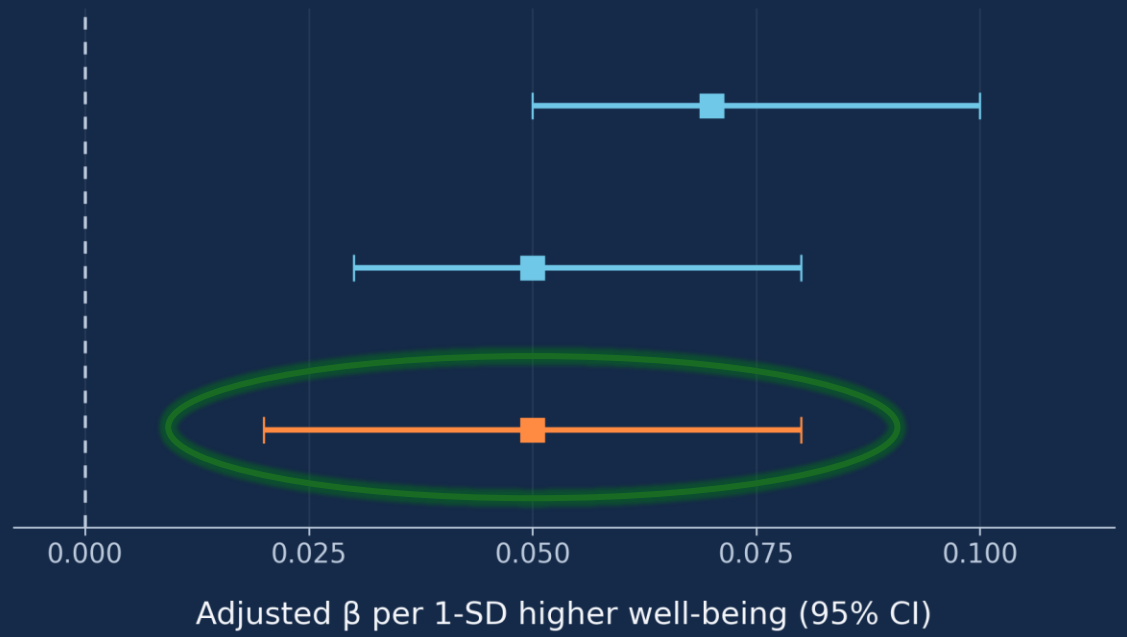
N = 3,548. Adjusted for sociodemographic and health factors, including depressive symptoms.

Hernandez et al. *Behavioral Medicine.* 2020;46(2):100–111.

Psychological Well-Being and Cardiovascular Health in ELSA

English Longitudinal Study of Ageing | N = 4,925 adults aged 50+ without baseline CVD

Baseline well-being (Wave 2) and favorable cardiovascular health scores at Waves 2, 4, and 6



Higher well-being was associated with more favorable cardiovascular health, including after adjustment for socioeconomic factors and depression.

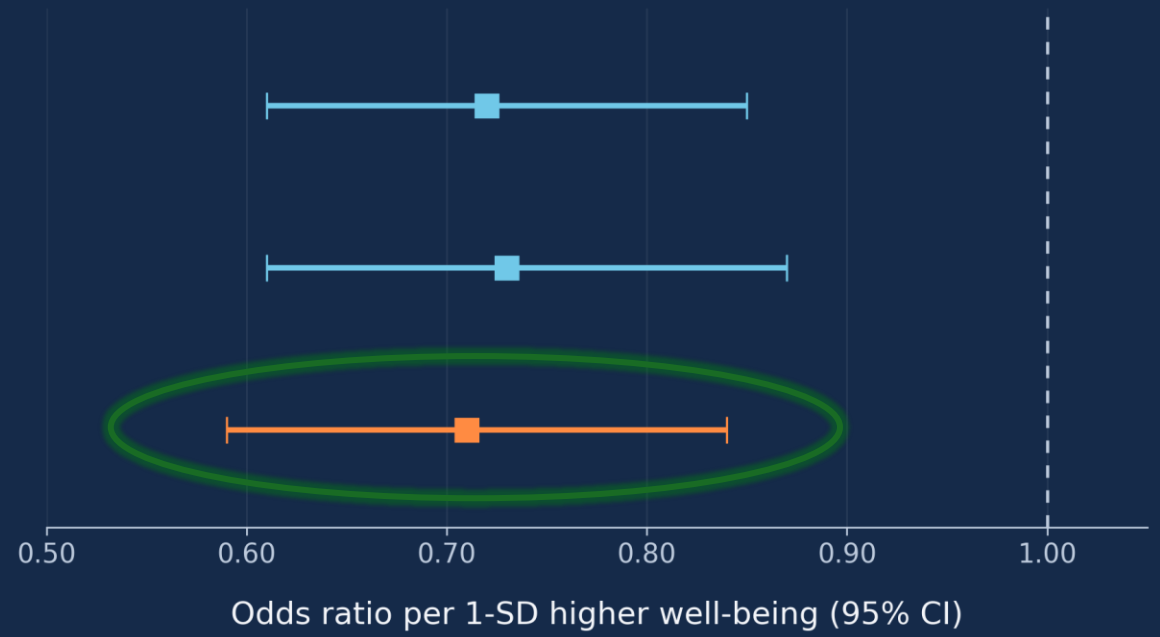
Linear mixed models. Models 2 and 3 build on the preceding model. Dashed line: β = 0. Association does not establish causation.

Boehm et al. American Journal of Preventive Medicine. 2017;53(6):791–798. Values reproduced from Table 2.

Psychological Well-Being and Cardiovascular Mortality in ELSA

English Longitudinal Study of Ageing | N = 5,944 adults without baseline CVD | 162 deaths

Association of baseline well-being (Wave 2) with subsequent cardiovascular-related mortality



	OR (95% CI)
Model 1 Age, gender, race	0.72 (0.61, 0.85)
Model 2 + Education and income	0.73 (0.61, 0.87)
Model 3 + Depression status	0.71 (0.59, 0.84)

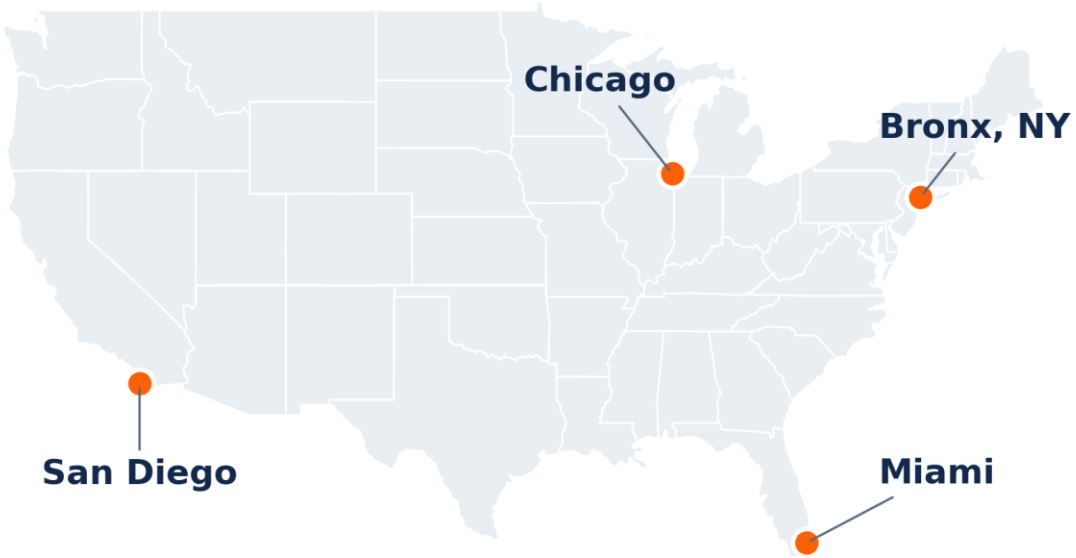
Each 1-SD higher well-being was associated with 29% lower odds of cardiovascular-related death in the fully adjusted model.

Logistic regression models. Models 2 and 3 build on the preceding model. Dashed line: OR = 1. Association does not establish causation.

Boehm et al. American Journal of Preventive Medicine. 2017;53(6):791–798. Values reproduced from Table 3.

HCHS/SOL

Hispanic Community Health Study / Study of Latinos



16,415
Hispanic/Latino adults

18–74
years at enrollment

2008–2011
baseline enrollment

4 U.S. communities

DIVERSE HERITAGE BACKGROUNDS

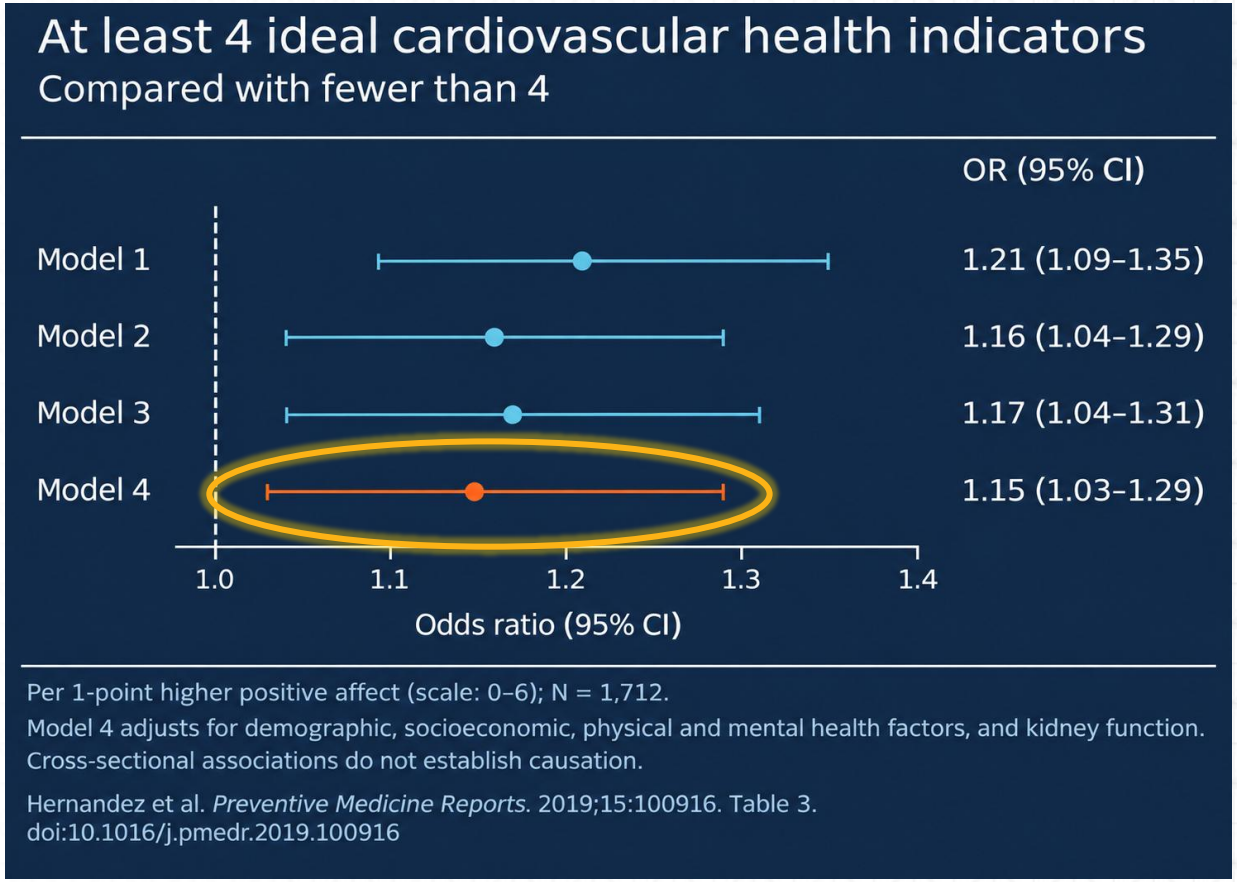
Mexican • Puerto Rican • Cuban • Dominican • Central American • South American

OPTIMISM ANALYSIS **4,919 adults | Sociocultural Ancillary Study**

Sources: NHLBI; HCHS/SOL Study Overview; Hernandez et al. BMJ Open. 2018;8:e019434.

Positive Affect and Cardiovascular Health in Adults With CKD

- 1,712 Hispanic/Latino adults with chronic kidney disease in HCHS/SOL
- Each 1-point higher positive affect score was associated with 15% higher odds of having at least 4 ideal cardiovascular health indicators
- The association remained after adjustment for negative affect, kidney function, and other factors



The Intervention Question

Can we help people build emotional resources in ways that fit their lives?

Association provides a reason to test an intervention



¡Alégrate! Intervention Content by Week

8 weeks • 8 weekly in-person sessions • 8 positive emotion skills

Week	Session focus	Positive emotion skills
Week 1	**Recognize your strengths**	Identify and use personal strengths
Week 2	**Notice the positive**	Notice positive events in daily life
Week 3	**Savor positive experiences**	Savor and share positive events
Week 4	**Cultivate gratitude**	Express thankfulness and appreciation
Week 5	**Connect through kindness**	Plan and perform acts of kindness
Week 6	**Be present**	Practice mindfulness and meditation
Week 7	**Find a new perspective**	Reappraise stressful events positively
Week 8	**Work toward your goals**	Set realistic, attainable goals

Spanish-language, in-person sessions • At-home practice • Weekly text reminders

Adapted from Table 1: Hernandez et al. "¡Alégrate!"—A culturally adapted positive psychological intervention for Hispanics/Latinos with hypertension: Rationale, design, and methods (2019).

Positive Psychology: Moving Beyond Distress Reduction

Population and setting

Hispanic/Latino adults with hypertension

Culturally adapted, church-based delivery

Intervention

8 weekly in-person group sessions

Delivered in Spanish

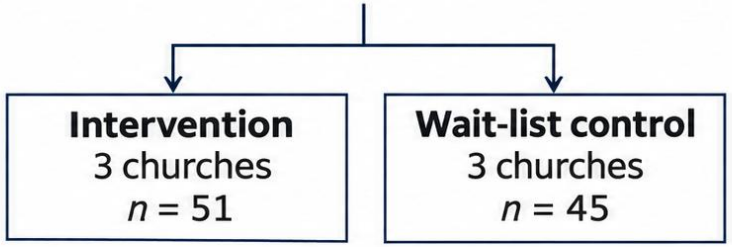
Skills practiced

Gratitude
Mindfulness
Acts of kindness
Positive reappraisal

Trial design

6 churches | 96 participants

Church-level randomization



Outcomes: blood pressure, well-being, and health behaviors



Hernandez et al. *Contemp Clin Trials Commun.* 2019;14:100348.

Enrollment shown; design paper describes the planned trial.

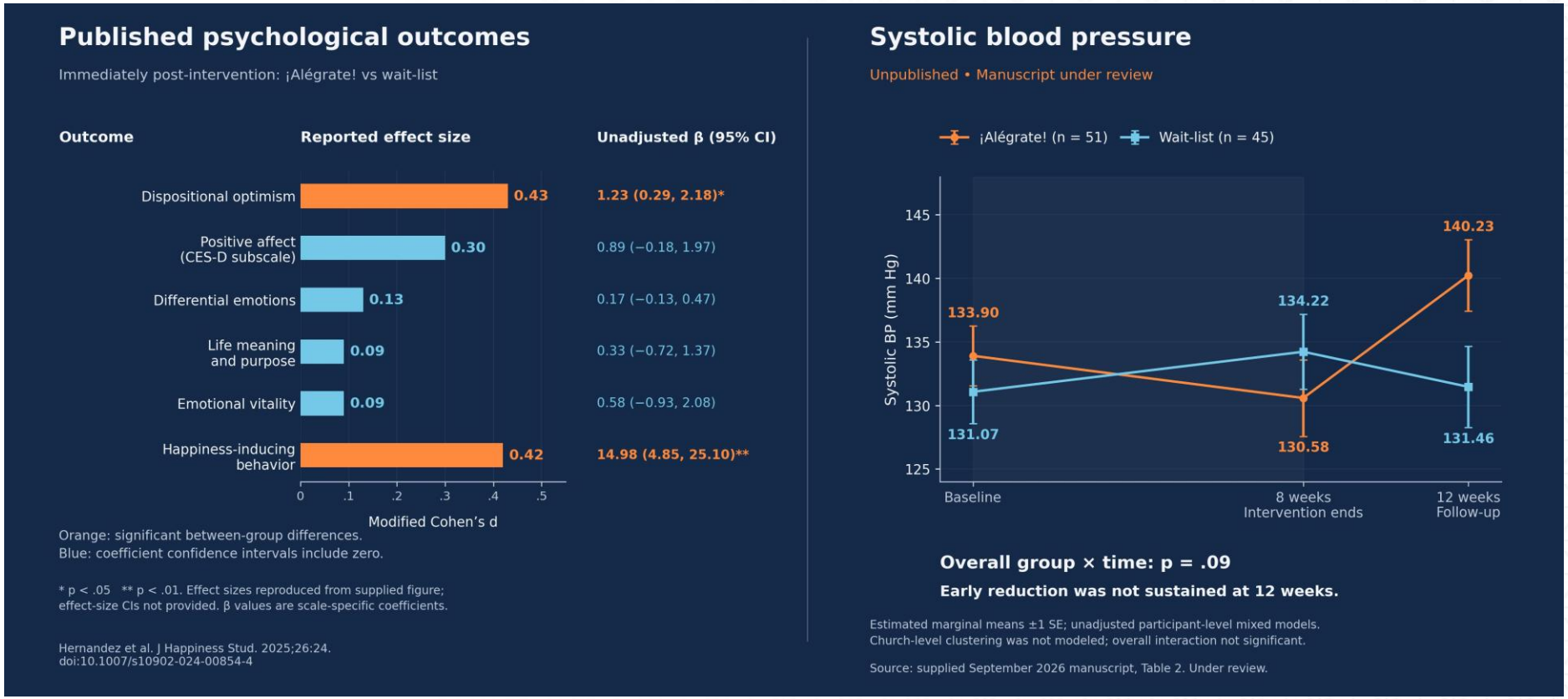
Who Participated in *¡Alégrate!*?

Characteristic	Total (N = 96)	¡Alégrate! (n = 51)	Wait-list control (n = 45)
Age, mean (SD), y	57.9 (11.5)	58.1 (11.2)	57.8 (12.0)
Female	52 (54.2)	28 (54.9)	24 (53.3)
Mexican heritage	87 (90.6)	46 (90.2)	41 (91.1)
Foreign-born	93 (96.9)	50 (98.0)	43 (95.6)
≤8 years of education	48 (50.5)	26 (52.0)	22 (48.9)
Annual household income < $20,000	30 (32.3)	13 (25.5)	17 (40.5)
Employed	52 (54.2)	26 (51.0)	26 (57.8)
Married or living with a partner	59 (61.5)	34 (66.7)	25 (55.6)

Values are n (%) unless indicated. Percentages use available data; age rounded to 1 decimal.
Education: n = 95 (50 intervention; 45 control). Income: n = 93 (51 intervention; 42 control).
SD indicates standard deviation. Source: ¡Alégrate! manuscript under review, Table 1.

Hernandez et al. J Happiness Stud. 2025. doi:10.1007/s10902-024-00854-4.

¡Alégrate!: Psychological Outcomes and Blood Pressure



Access Depends on How We Deliver Support

What if support could fit within time already spent receiving treatment?

A delivery question that led us to virtual reality

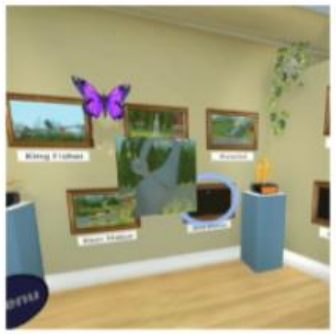


Joviality™: Skills within immersive environments

- Five-week
- Intervention During hemodialysis
- English or Spanish
- Positive emotion skills



Skill 1: noticing positive events



Skill 2: amplifying positive events



Skill 3: gratitude



Skill 4: activation



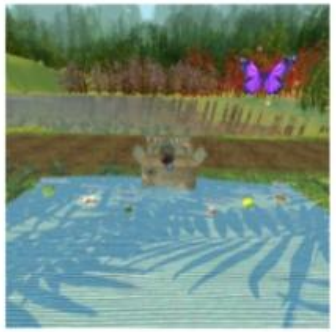
Skill 5: mindfulness and meditation



Skill 6: positive reappraisal



Skill 7: personal strengths



Skill 8: acts of kindness

Joviality™ VR During Hemodialysis

Pilot findings: usability, tolerability, and immersion

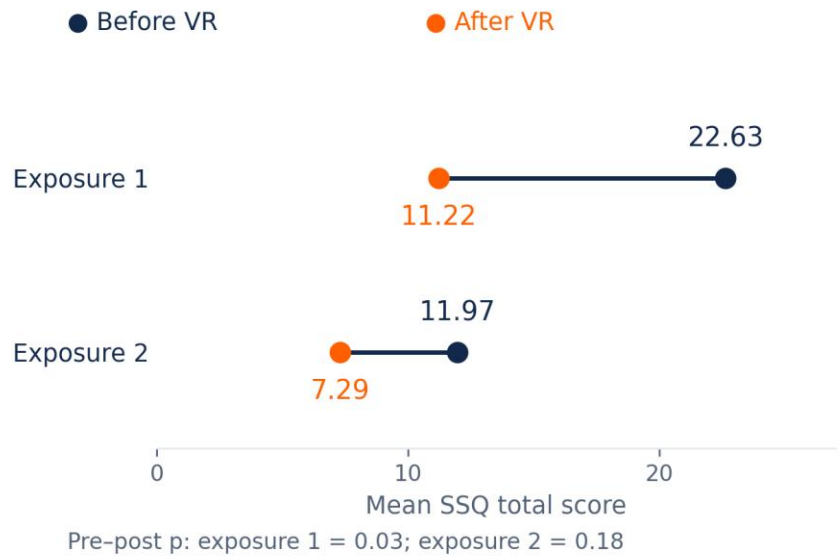
USABILITY

82.75

System Usability Scale / 100

SD = 21.85

SIMULATOR SICKNESS SYMPTOMS



Pre–post p: exposure 1 = 0.03; exposure 2 = 0.18

SENSE OF PRESENCE

5.60 / 7

“Sense of being there”

Exposure 1; SD = 1.76

Exposure 2: 4.65; SD = 2.11

High reported usability; symptom scores decreased after VR exposure.

Two-exposure pilot; presence assessment n = 20. These findings support further testing, not clinical efficacy.

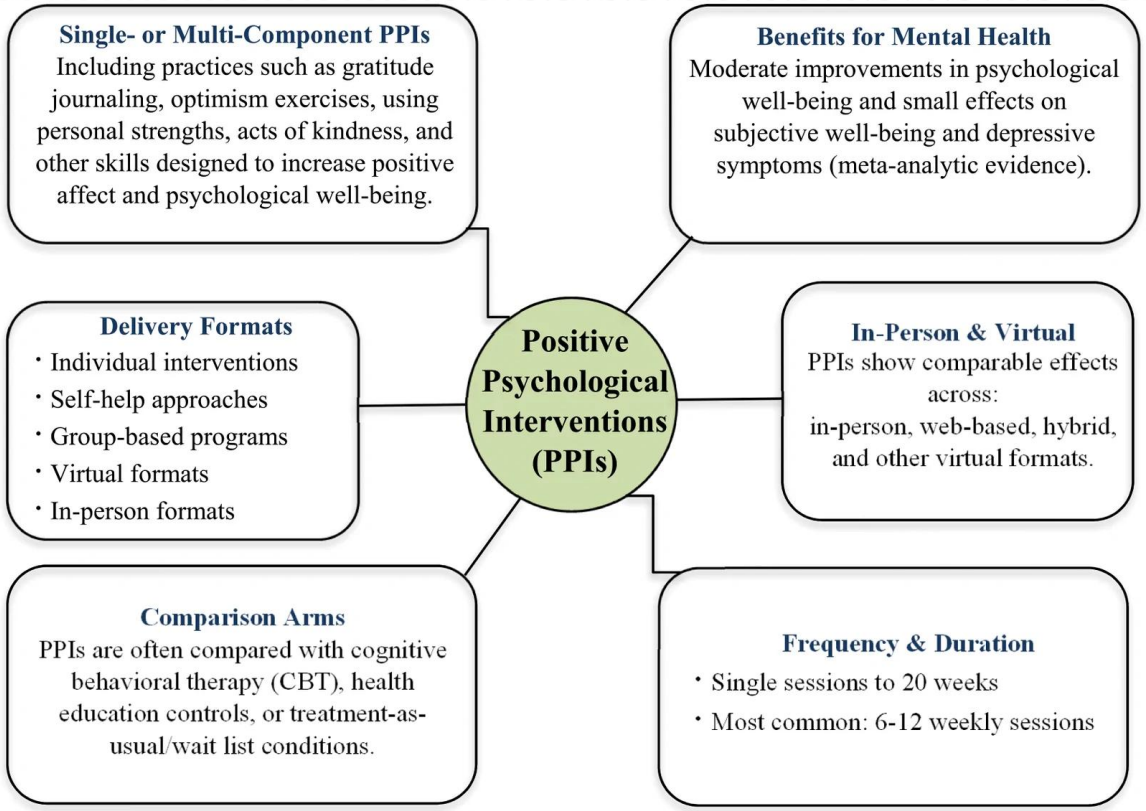
Source: supplied Tables 3–4. SSQ = Simulator Sickness Questionnaire (lower is better); presence = IPQ general presence item.

Hernandez R, et al. Mindfulness-based virtual reality intervention in hemodialysis patients:
A pilot study on end-user perceptions and safety. *Kidney360.* 2021;2(3):435–444.

The Broader Cardiovascular Intervention Evidence

18 **randomized trials**

- Positive psychological and mindfulness-based interventions
- Improvements in CV risk factors, health behaviors, and medication adherence
- Weekly sessions over **6-12 weeks**, with practice between sessions



Open questions: optimal dose, equitable reach, and long-term cardiovascular outcomes

Hernandez et al. Cardiology Clinics. 2026;44:233–250. doi:10.1016/j.ccl.2025.12.001

Building Well-being Belongs in Cardiovascular Care



Recognize strengths

Ask about hope, meaning, and social connection.



Make skills accessible

Offer practical, culturally relevant ways to build well-being.



Build the evidence

Test how to sustain benefits and improve long-term outcomes.

Helping people live healthier also means helping them live well.

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Thank you.

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