Resilience Moderates the Relationship Between Experimentally Manipulated Social Status Conditions and Dietary Intake: Results From a Randomized Controlled Trial

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INTRODUCTION

- Obesity rates are highest (21.9%) in Hispanic American (HA) adolescents relative to other racial/ethnic adolescent groups.
- Previous work has suggested that low social status influences excess caloric intake and thereby increases risk for obesity
- Psychological resilience, or the ability to overcome adversity, has been shown to decrease adverse eating behaviors and excessive dietary intake, and has been shown to increase healthy eating behaviors and diet diversity.
- Little is known about the relationship between resilience and eating behaviors in experimentally manipulated social status conditions.

OBJECTIVE & HYPOTHESES

- To investigate the relationship between resilience level and experimentally manipulated social status on dietary intake in HA adolescents
  - H1: Adolescents randomized to both the LOW and HIGH manipulated social status conditions with low resilience scores will consume more calories, saturated fatty acids (SFA), sugar, and sodium compared to those with high resilience scores.
  - H2: Resilience will have a stronger impact on eating behaviors for individuals in the LOW social status condition relative to those in the HIGH manipulated social status condition.

METHODS

❖ *Recruitment*

- Participants (n=132)
  - Self-identify as Hispanic or Latino
  - BMI between 18.5-40 kg/m^2
  - No significant dietary restrictions

❖ *Study Design*

- Randomized controlled trial, 2 conditions: HIGH or LOW social status

❖ *Protocol*

- Consumption of a standardized breakfast
- Completion of Connor Davidson Resilience Scale
- Randomization to HIGH or LOW social status condition via a rigged game of Monopoly™ (see Table 1 for rules)
- *Ad libitum* lunch buffet (Figure 1)
- Dietary intake from *ad libitum* lunch buffet assessed via food weight (in grams)
- Diet data entered into Nutritional Data System for Research (NDSR)

❖ *Statistical Analysis*

- Multiple linear regression
  - Outcome variables: total energy consumption (kcals); % energy needs consumed; SFA consumption; sodium consumption; sugar consumption
  - Covariates: BMI; sex; food security; community subjective social status

RESULTS

❖ *Confirmatory Analysis*

- A confirmatory analysis was conducted to check LOW MSS x resilience and HIGH MSS x resilience with each of the dietary intake variables.
- Significant: resilience x LOW social status for sugar and resilience x HIGH MSS for total energy and % energy needs consumed (Table 3)
- Not significant: resilience x MSS for sodium or SFA consumption

❖ *Exploratory Analysis*

- An exploratory analysis was conducted to confirm the direction of the relationships seen in the confirmatory analysis (Figure 2).
  - *In the HIGH social status condition*
    - Higher resilience was associated with lower energy intake and lower % energy needs consumed.
    - Resilience may be a strong protective factor for food intake in HIGH social status conditions.
  - *In the LOW social status condition*
    - Sugar intake increased with increased resilience.
    - Resilience may not be a protective factor for food intake

DISCUSSION

- Resilience had a significant effect on some variables (sugar intake, total energy intake, and % energy needs consumed), but not other variables (sodium and SFA).
- Resilience seems to function differently in HIGH and LOW MSS conditions.
- For those in LOW SS conditions, an individual's SS may be more important than level of resilience for determining acute dietary intake.
- The psychophysiological effects of participants being in the LOW MSS condition may be so strong that they are overpowering the effects of resilience; or perhaps resilience is not as protective as we once thought.
- Results from this study help to characterize the extent to which resilience influences eating behavior and risk for obesity, particularly in relation to SS.
- This experiment could aid in the development of weight loss interventions and other public health initiatives to help treat and prevent overweight and obesity, which disproportionally impacts HA adolescents.

Resilience may function as a **protective factor** against **excess caloric intake** for individuals in **high social status** conditions, but not for those in **low social status** conditions.

Figure 2: Resilience and Dietary Intake Correlation Graphs

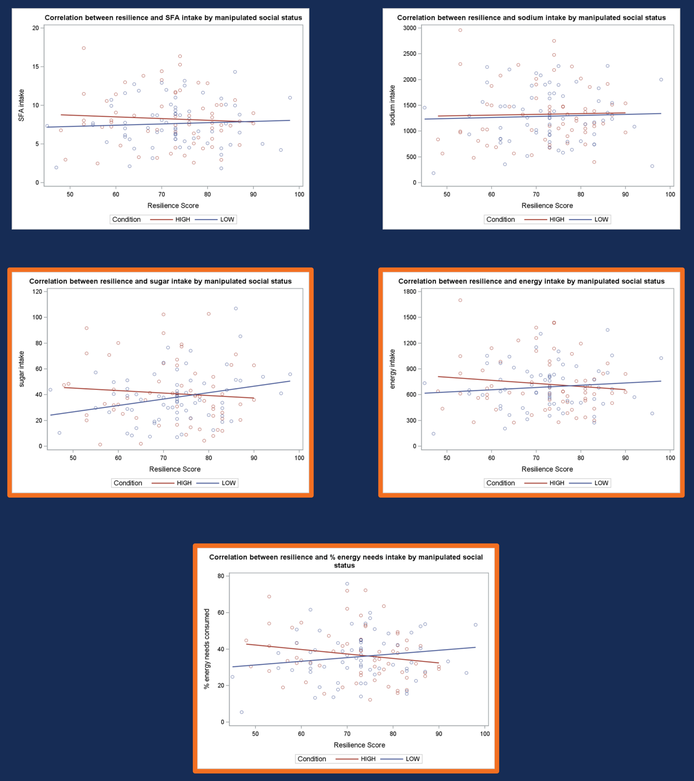

Figure 1: Measure of Dietary Intake

Table 1: Status Manipulation: Monopoly Game Rules

LOW Condition	HIGH Condition
"I'm sorry, based on your test scores you have been given the shoe piece."	"Congratulations, based on your test scores you have been given the Rolls Royce piece"
1. Shoe piece 2. Start game with $1,000 3. Collect $100 when passing "GO" 4. Roll 1 die each turn	1. Rolls Royce piece 2. Start game with $2,000 3. Collect $200 when passing "GO" 4. Roll both dice each turn 5. Play role of the banker

Table 2: Demographics

Characteristic	All (n=132)	High Social Status Group		Low Social Status Group	
		Resilience <73 (n=26)	Resilience ≥ 73 (n=38)	Resilience < 73 (n=29)	Resilience ≥ 73 (n=39)
Age (mean, SD)	19.1± 1.3	19.2±1.3	19.1±1.2	19.2±1.0	19.0±1.5
Female (n, %)	80 (60.6%)	17 (65.4%)	22 (57.9%)	16 (55.2%)	25 (64.1%)
BMI (mean, SD)	24.4±4.1	25.6±4.6	23.7±4.3	24.3±3.5	24.5±4.0
Community Subjective Social Status (SSS) (n, % low)	37 (28.0%)	6 (23.1%)	9 (23.7%)	9 (31.0%)	13 (33.3%)
Food Security (n, % secure)	98 (74.2%)	20 (76.9%)	30 (78.9%)	19 (65.5%)	29 (74.4%)
Resilience	72.2 ±10.5	60.9±7.0	79.3±4.9	63.5±6.8	79.2±6.8
Outcome Variables					
Total SFA, g (mean, SD)	7.9±3.2	8.5±3.9	8.1±3.2	7.7±3.0	7.6±2.9
Sodium, mg (mean, SD)	1307±541	1306±660	1342±505	1320±551	1265±496
Total sugar, g (mean, SD)	39.3±21.9	44.3±26.7	38.6±22.8	34.1±17.3	40.6±20.4
Total energy, kcal (mean, SD)	707±289	774±364	691±289	692±281	688±240
% energy needs, (mean, SD)	36.3±13.7	39.1±15.0	35.4±13.5	34.5±15.0	36.8±12.2

Table 3: Resilience X Social Status

Outcome variables	P-value
Saturated Fatty Acids Consumption	0.0734
Sodium Consumption	0.2614
Sugar Consumption	0.0042*
Total Energy Consumption	0.0063*
% Energy Needs Consumed	0.0048*

** indicates significant p-value ($p \leq 0.01$)*

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