

Family members' obstructive behaviors are associated with worse glycemic control, especially for patients with limited health literacy

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Conflicts of Interest:

Nothing to disclose.

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Research Staff

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Background

- Individuals with health literacy limitations may leverage resources and assistance from their support networks to navigate the healthcare system and manage their health.
- Hypotheses¹:
 - Social support be associated with health status (irrespective of health literacy status).
 - The relationship between health literacy limitations and health status may be buffered by positive support.
 - The relationship between health literacy limitations and health status may be exacerbated by negative support.

Background

- Diabetes management often requires ongoing involvement of family members.^{2,3}

Supportive Behaviors make patients' self-care possible or easier

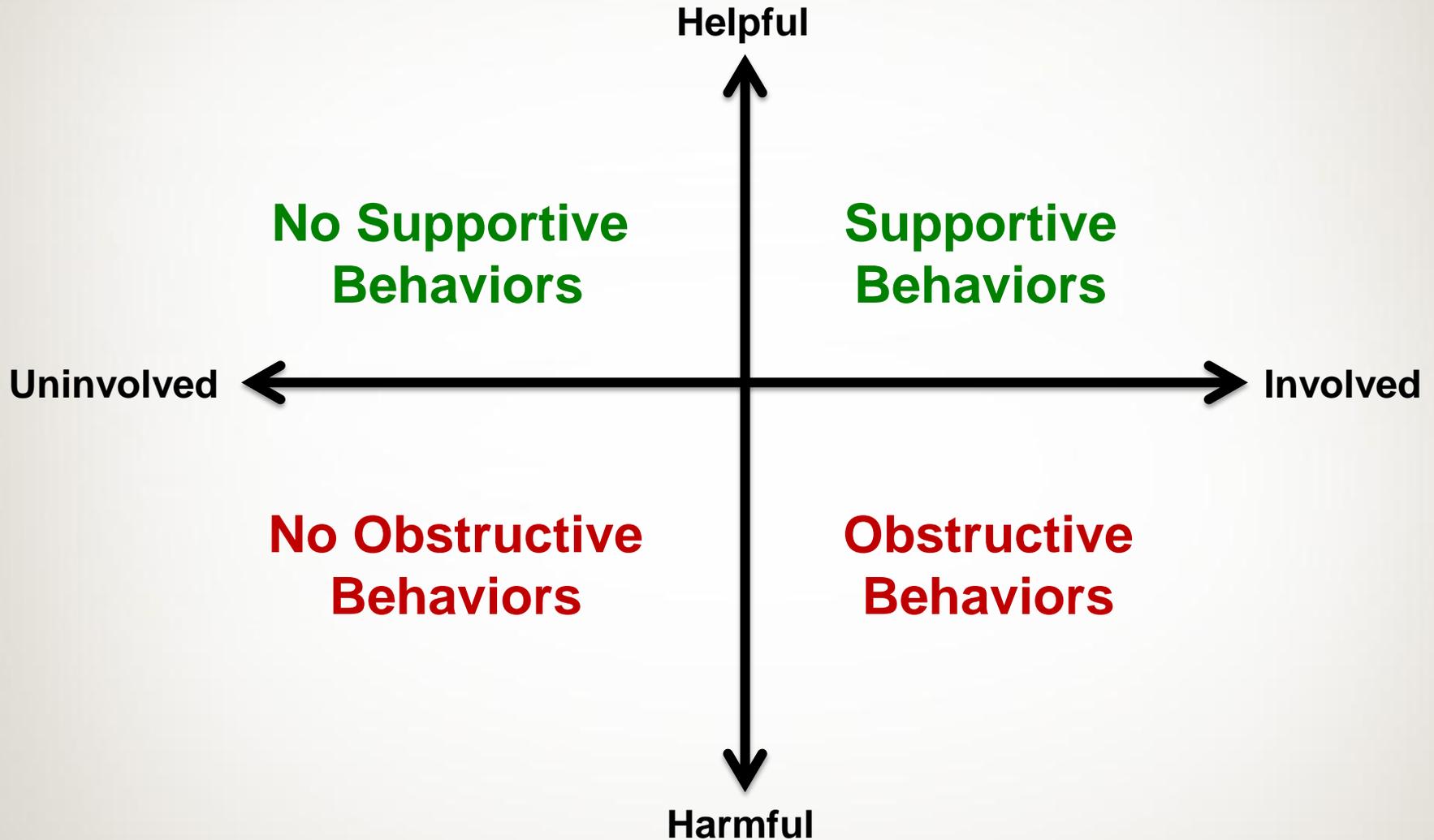
“My wife will carry snacks and my pill box in her purse, and we work close together, so if I need something, I just call her and we meet up.”⁴

Obstructive Behaviors make patients' self-care more difficult or make patients not want to perform self-care

Sabotaging: *“I take [my husband] to the dietician with me because he kind of sabotages my diet. I take him with me so he can hear them and understand, you know, what it's all about. It doesn't always work, anyhow.”⁴*

Nagging/Arguing: *“I tell him, ‘Do you want to dance at our daughter's wedding? You need feet to dance!’ And I threaten him with – we have lots of animals and I'm like ‘Who's going to take care of the animals? Not me! I'll just open the gate and say bye!’”⁴*

Background



Background

- Qualitative and correlational evidence suggests obstructive behaviors may be more predictive of adults' self-care and glycemic control than positive support⁴⁻⁸
 - Discussed more often in interviews & focus groups
 - Stronger correlations with self-care
- Relationships remain unclear due to unclear operationalizations⁵

Study Objectives

- Empirically examine the relationships between supportive family behaviors, obstructive family behaviors, and glycemic control
- Assess whether supportive or obstructive family behaviors affect glycemic control differently for patients with limited health literacy

Methods

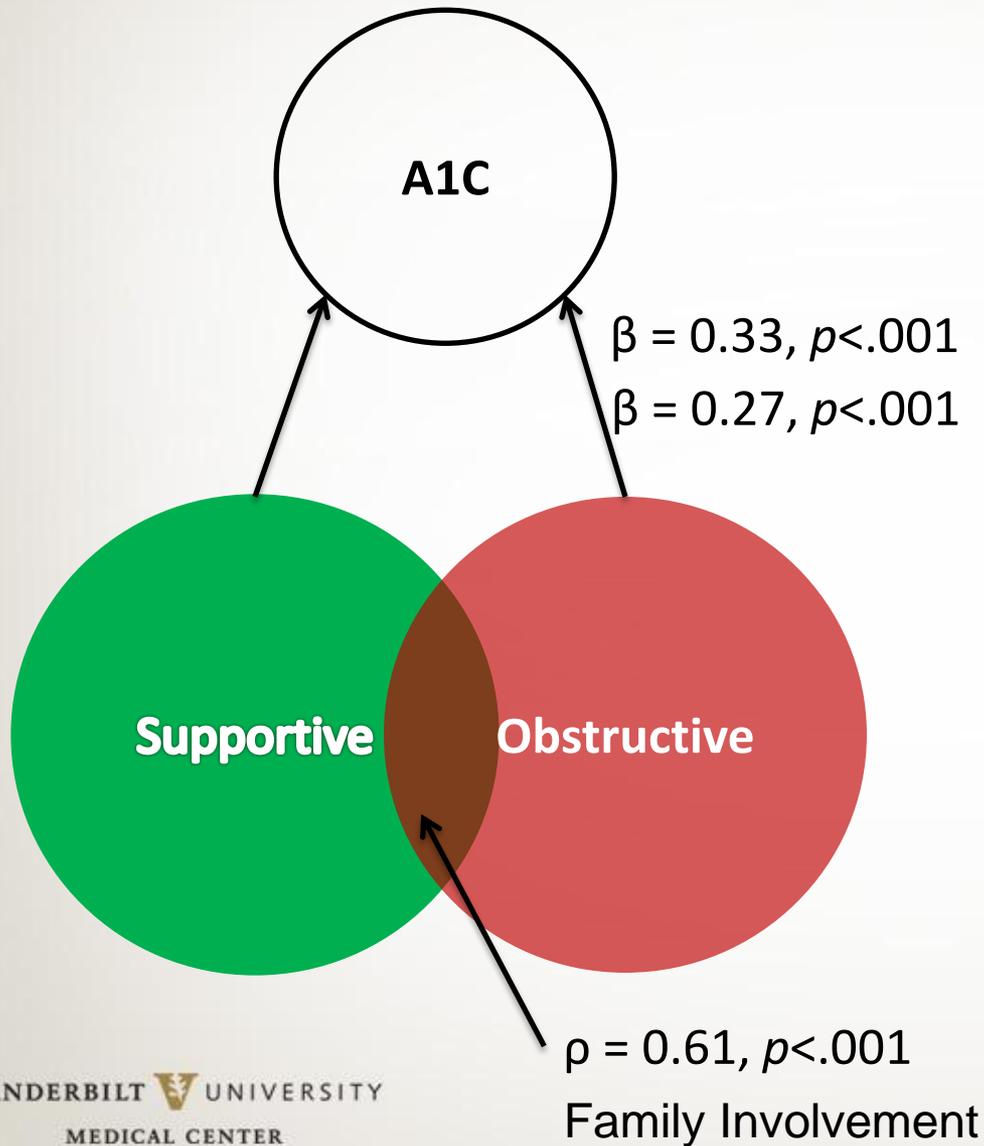
Procedure:

- We enrolled 314 eligible patients from a Federally Qualified Health Center in Nashville, TN.
 - Measures of family behaviors added to study protocol
 - n=192

Measures:

- Supportive & Obstructive Family Behaviors – Diabetes Family Behavior Checklist-II^{9,10}
- Health Literacy – Short Test of Functional Health Literacy in Adults (S-TOFHLA)¹¹
 - S-TOFHLA score <23 = limited health literacy
- Glycemic Control – point-of-care A1C (A1C)

Suppression



- Suppression occurs when:**
- Two predictors are correlated
 - Their correlation represents shared error variance
 - Including both results in a stronger relationship between one or more predictor(s) and the outcome
 - Tolerance = 0.64
 - Suppressors are often moderators as well

Methods

Analysis:

1. ANOVA/ANCOVA models – relationships between health literacy status (limited vs. adequate) and supportive and obstructive family behaviors and A1C
2. Regression models – relationships between supportive and obstructive family behaviors and A1C. We included both supportive and obstructive behaviors and a priori covariates in models.

A priori covariates:	
Age (years)	Insurance status
Gender	Diabetes duration
Race (white vs. non-white)	Insulin status
Education (years)	
3. Assessed whether supportive behaviors moderated the relationship between obstructive behaviors and A1C
4. Stratified sample by health literacy status

Participants' characteristics	
N = 192	M ± SD or %
Age, years	51.6 ± 10.9
Female gender	70%
Race	
Caucasian/White	34%
African American/Black	56%
Other race	10%
Hispanic ethnicity	10%
Education, years	12.0 ± 3.0
Income	
<\$10K	44%
\$10-\$15K	27%
\$15-\$25K	15%
>\$25K	14%
Insurance Status	
Uninsured	47%
Publicly insured	45%
Privately insured	8%

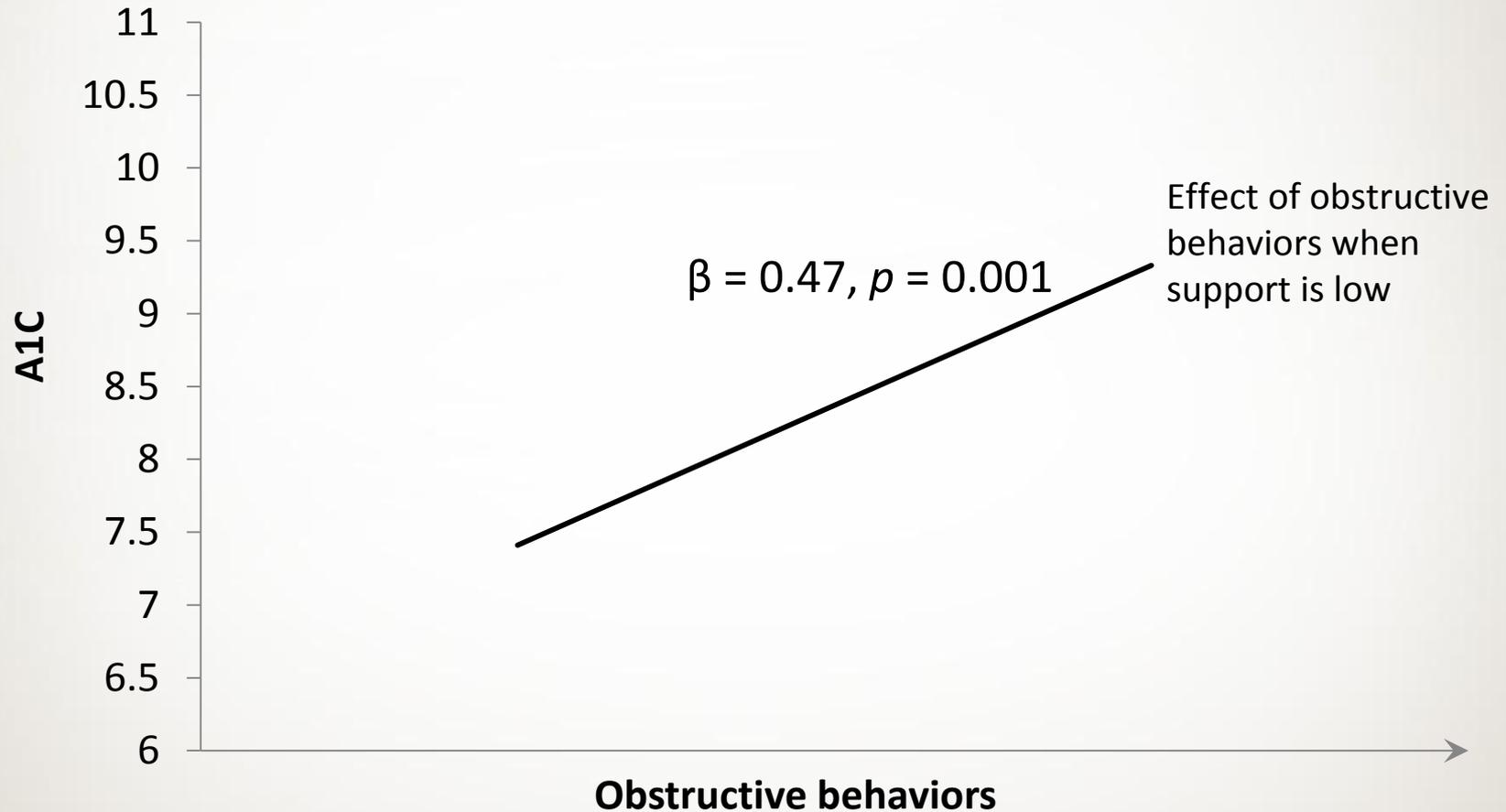
Participants' characteristics	
N=192	M ± SD or %
Diabetes duration, years	7.7 ± 7.2
Treatment Regimen	
Insulin only	22%
Oral agents only	53%
Both	25%
Glycemic Control (A1C), %	7.9 ± 2.0
Health Literacy	
S-TOFHLA	25.5 ± 11.8
Limited (<23)	29%
Adequate (≥23)	71%
Family Behaviors	
Supportive	2.4 ± 1.0
Obstructive	2.1 ± 0.9

Results

- Participants with limited health literacy reported more family supportive behaviors ($M = 2.7$, $SD = 1.2$) than participants with adequate health literacy ($M = 2.2$, $SD = 0.9$)
 - Bivariate $F(1,186) = 6.88$, $p < 0.01$
 - Adjusted for covariates $F(1,160) = 4.67$, $p < 0.05$
- No relationship between health literacy status and obstructive behaviors or A1C
- Only obstructive behaviors were associated with A1C
 - Bivariate: $\beta = 0.27$, $p < 0.001$
 - Adjusted for supportive behaviors: $\beta = 0.33$, $p < 0.001$
 - Adjusted for supportive behaviors and covariates: $\beta = 0.18$, $p < 0.05$

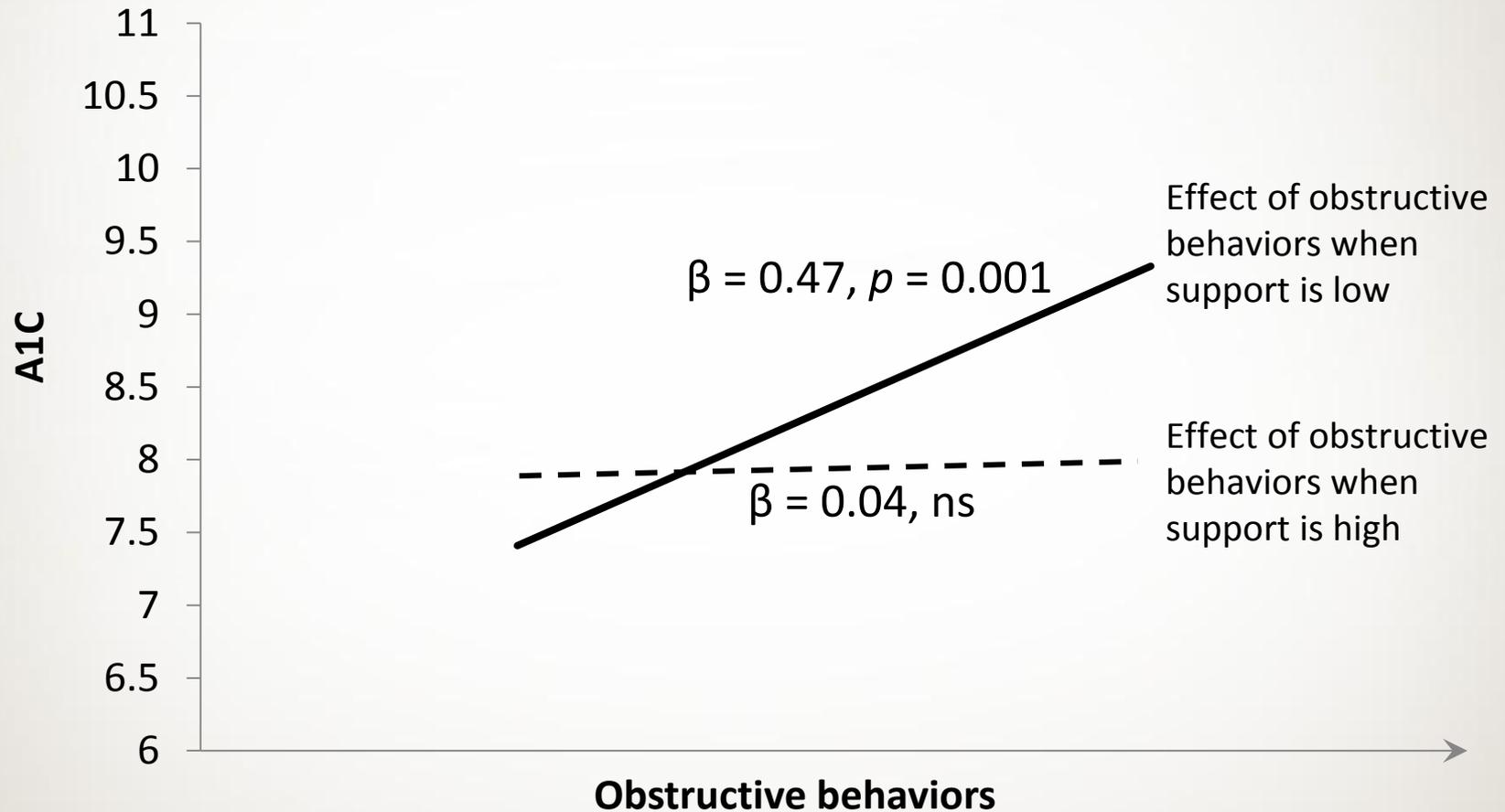
Results

Figure 1. Relationship between obstructive family behaviors & A1C.



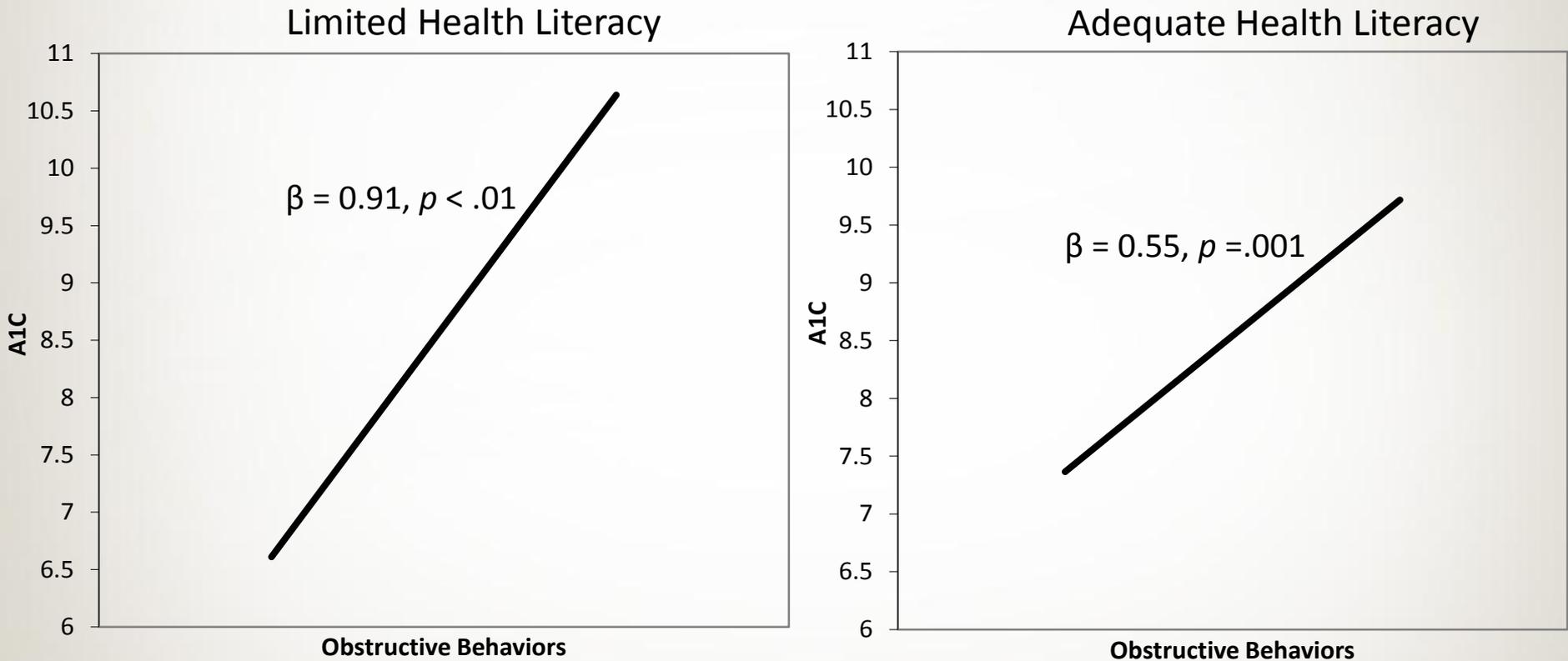
Results

Figure 1. Relationship between obstructive family behaviors & A1C.



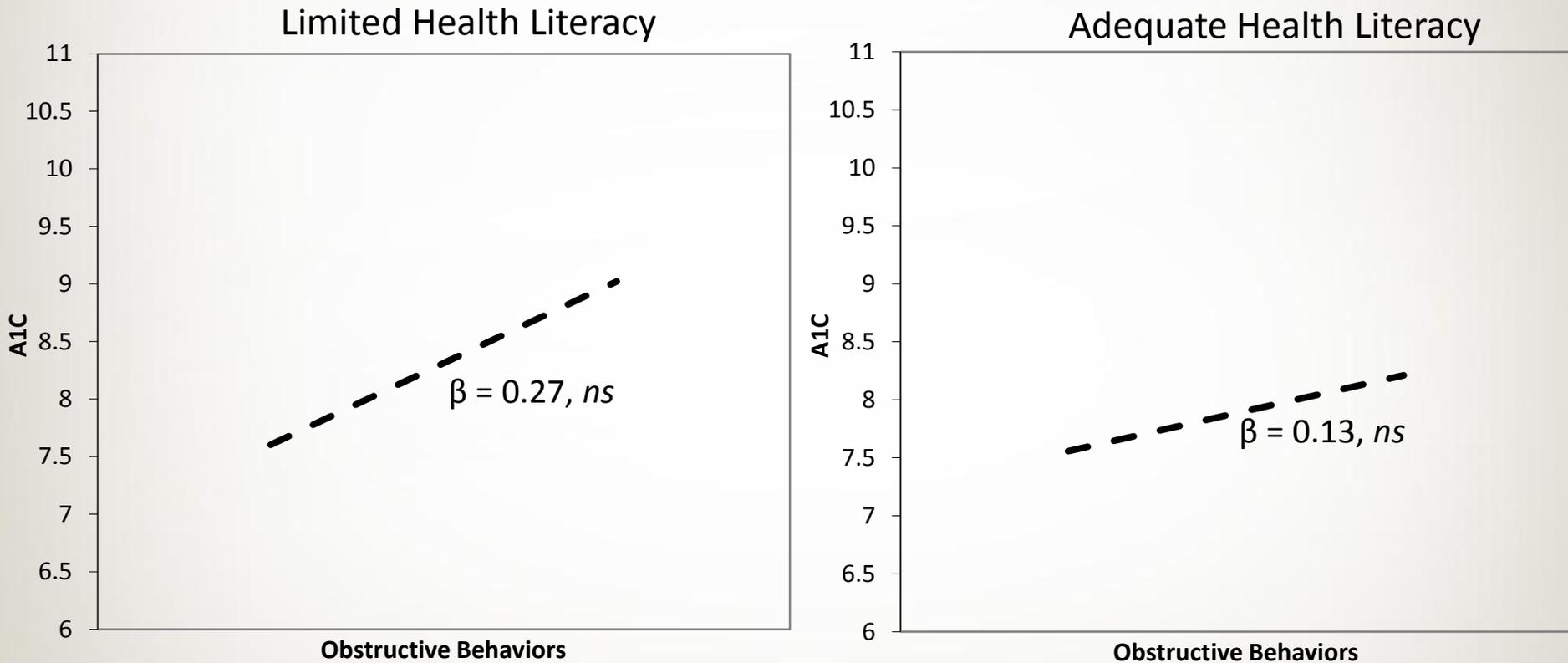
Results

Figure 2. Effect of obstructive behaviors when support is low, by health literacy status.



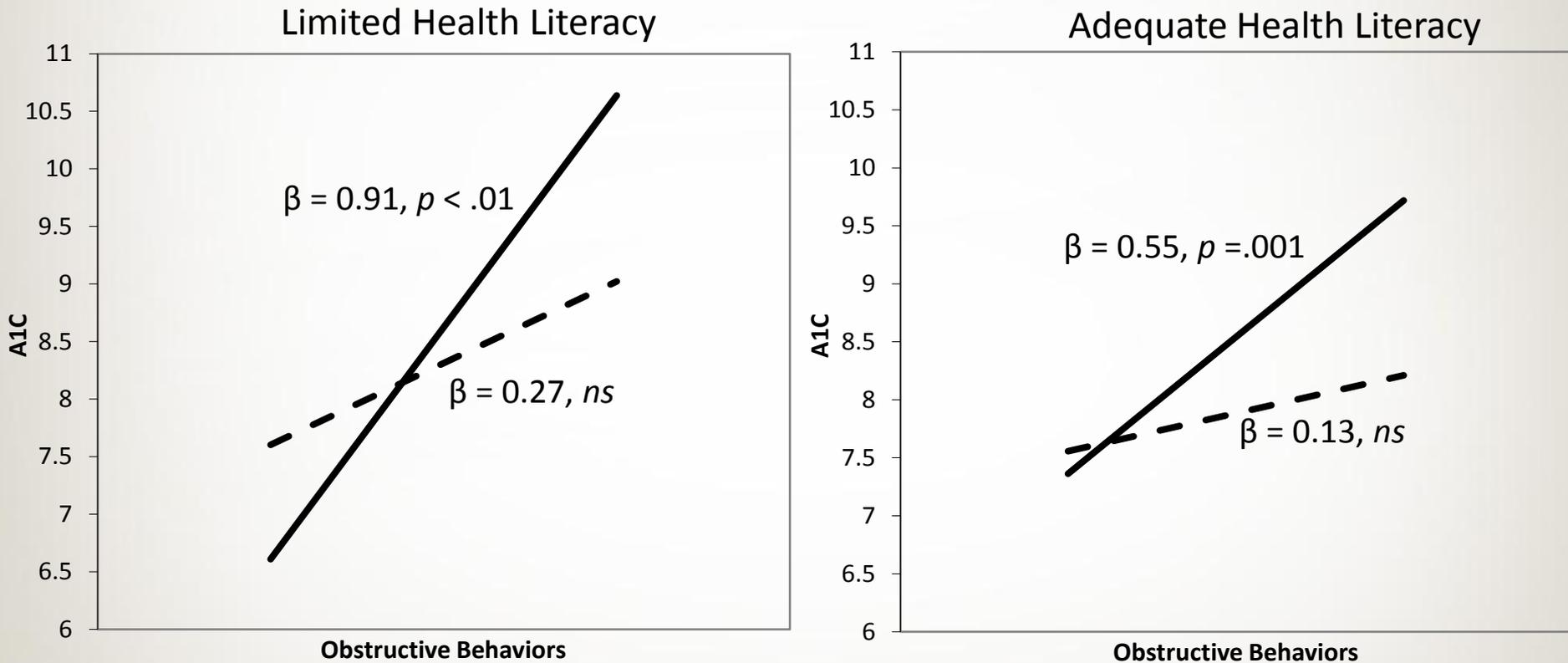
Results

Figure 3. Effect of obstructive behaviors when support is high, by health literacy status.



Results

Figure 4. The relationship between obstructive family behaviors and patients' glycemic control when family support is low vs. high, stratified by health literacy status.



Discussion

- Participants with limited health literacy reported more supportive family behaviors
- But only obstructive family behaviors were associated with A1C
 - This relationship was stronger for participants reporting less family support
 - And even stronger among participants with limited health literacy
- This is the first study to:
 - Associate obstructive family behaviors with glycemic control
 - Identify the suppression and moderating effects of family support on this relationship
- Rosland et al.⁷ also found that adults with T2DM and low health literacy reported more family support, but not more family barriers to self-care.
 - Family barriers were associated with less self-efficacy and diabetes self-care

Discussion

Limitations & Future Work:

- Cross-sectional
- Study population
- Future work should examine mechanisms underlying the association between obstructive family behaviors and glycemic control, for those with and without health literacy limitations

Implications:

- Interventions focused on increasing “support” may not be effective unless they also decrease obstructive behaviors
 - This appears especially important for patients with health literacy limitations.
- Involved family members may need assistance to know how to help and not hinder the patient.

Thank you!

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