# Intervention for Decreasing Viral Load in HIV/AIDS Patients Failing HAART

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**HIV/AIDS patients adherent to highly active antiretroviral therapy (HAART) can live relatively normal lives**

# Reliable viral suppression requires ≥ 95% adherence to HAART medications

**(Paterson et al., 2000)**

**For every 10% decrement from complete adherence, there is a doubling of viral load.**

**(Bangsberg et al., 2000)**

**Suppression of viral replication is the best way to avoid clinical progression to AIDS.**

# Psychosocial variables related to non-adherence to HAART

- Elevated alcohol consumption
- Lack of perceived social support
- Complexity of treatment
- Negative side effects
- Depressed mood
- Poor coping skills
- Negative attitude towards taking medication

**We have looked at relations among psychosocial factors, medication adherence and HIV viral load in 320 men (n=186) and women (n=134) on HAART over 15 months using structural equation modeling**

**(Weaver et al., 2005)**

**Psychosocial latent factors formed at baseline were used to predict nonadherence and viral load over 15 months.**

# *Negative Mood* derived from Profile of Mood States (POMS) as a latent variable

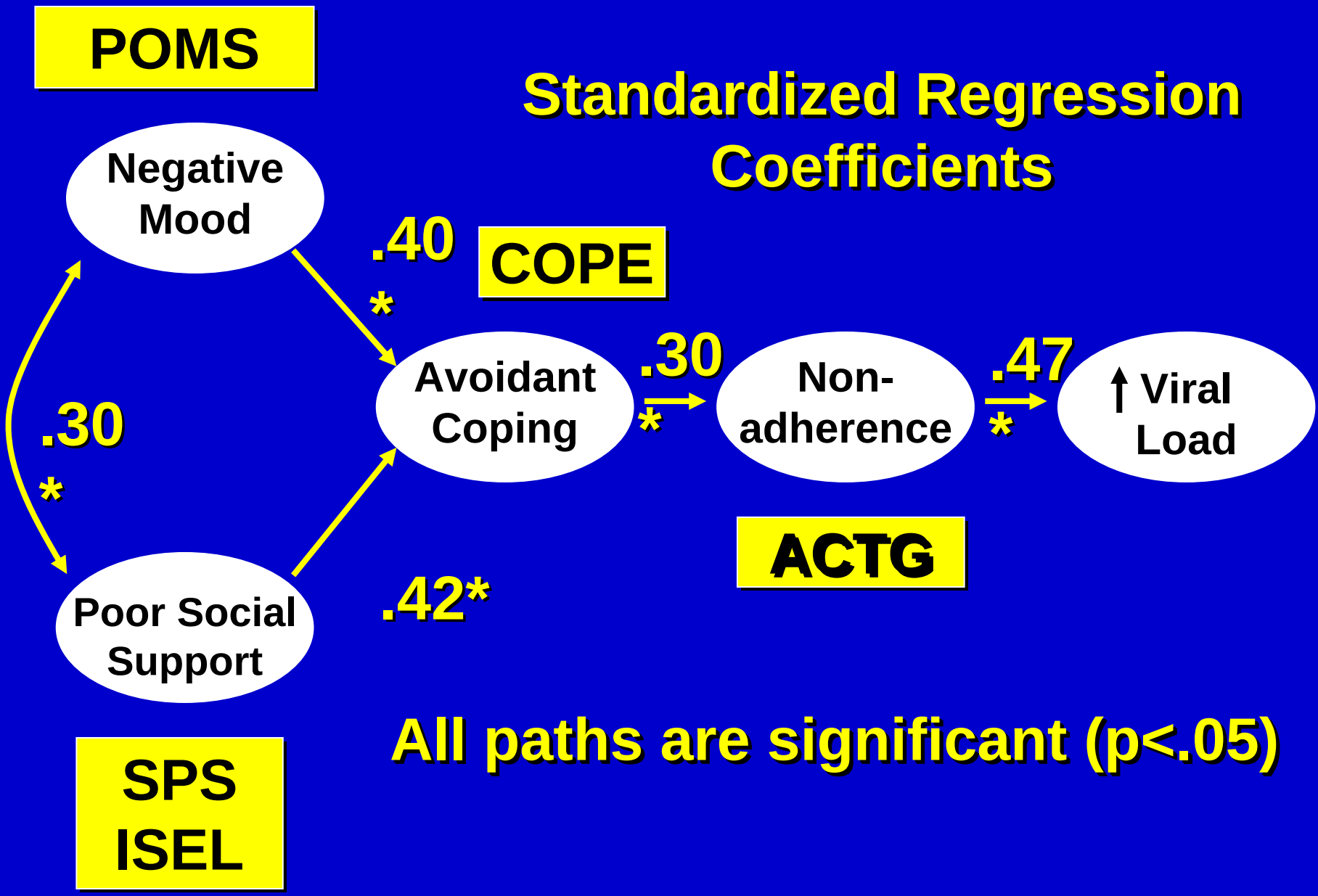
- Anger
- Depression
- Anxiety

# *Social Support* derived from (SPS) and (ISEL) as a latent variable

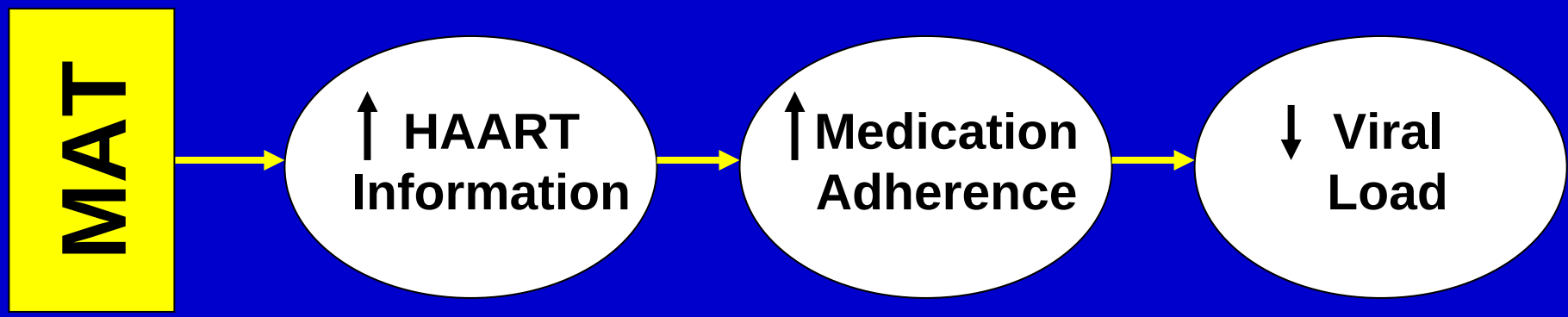
- Reliable Relationship
- Social Attachment
- Sources of Help
- Social Integration
- Tangible Support

# *Avoidant Coping derived* from the COPE Inventory as a latent variable

- Disengagement
- Denial


POMS
Standardized Regression Coefficients
Negative Mood
.40
*
COPE
Avoidant Coping
.30
*
Non-adherence
.47
*
↑ Viral Load
.30
*
ACTG
Poor Social Support
.42*
All paths are significant (p<.05)
SPS
ISEL

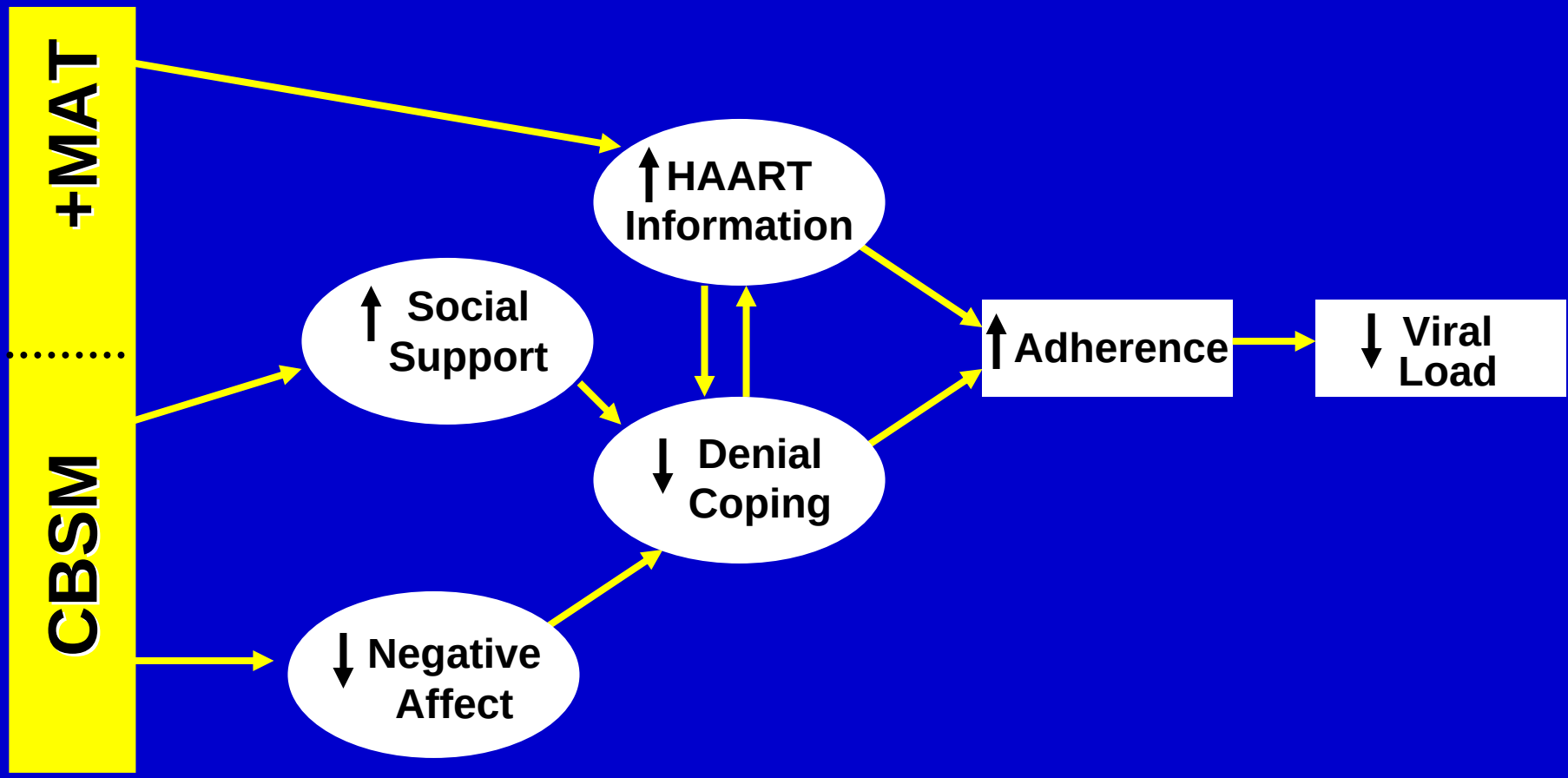
**Because psychosocial factors (e.g., mood, social support and coping) predict adherence, we wanted to test whether cognitive behavioral stress management (CBSM) plus medication adherence training (MAT) would provide lower viral load than MAT alone.**


MAT
↑ HAART Information
↑ Medication Adherence
↓ Viral Load

# Hypothesis

**Medication Adherence Training would decrease HIV viral load by improving adherence through reducing:**

- **Barriers to adherence**
- **Medication side effects**
- **Misconceptions about consequences of nonadherence**


+MAT
CBSM
HAART Information
Social Support
Denial Coping
Negative Affect
Adherence
Viral Load

# Hypothesis

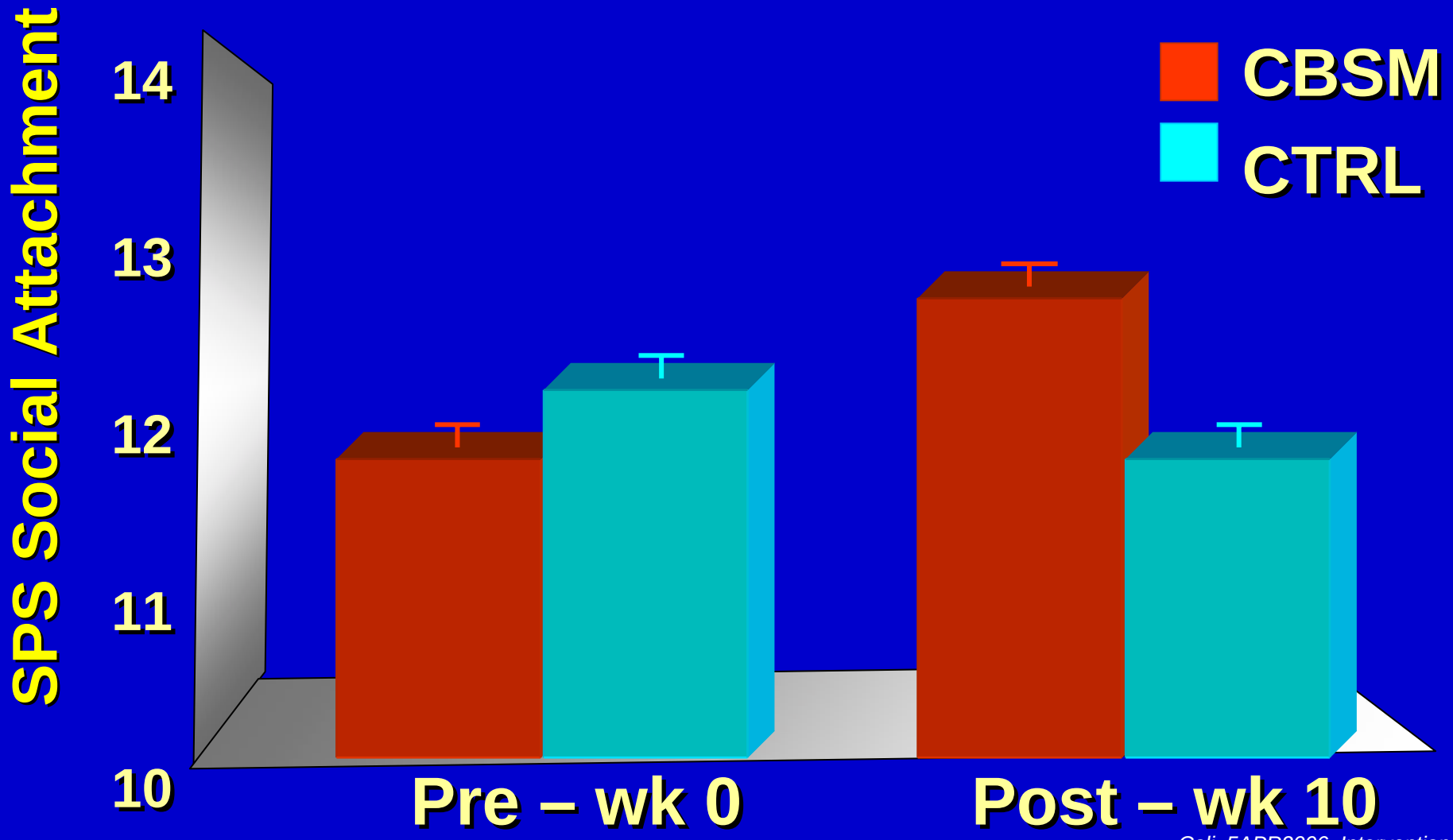
**CBSM + MAT would do better than MAT alone in improving adherence and decreasing HIV viral load.**

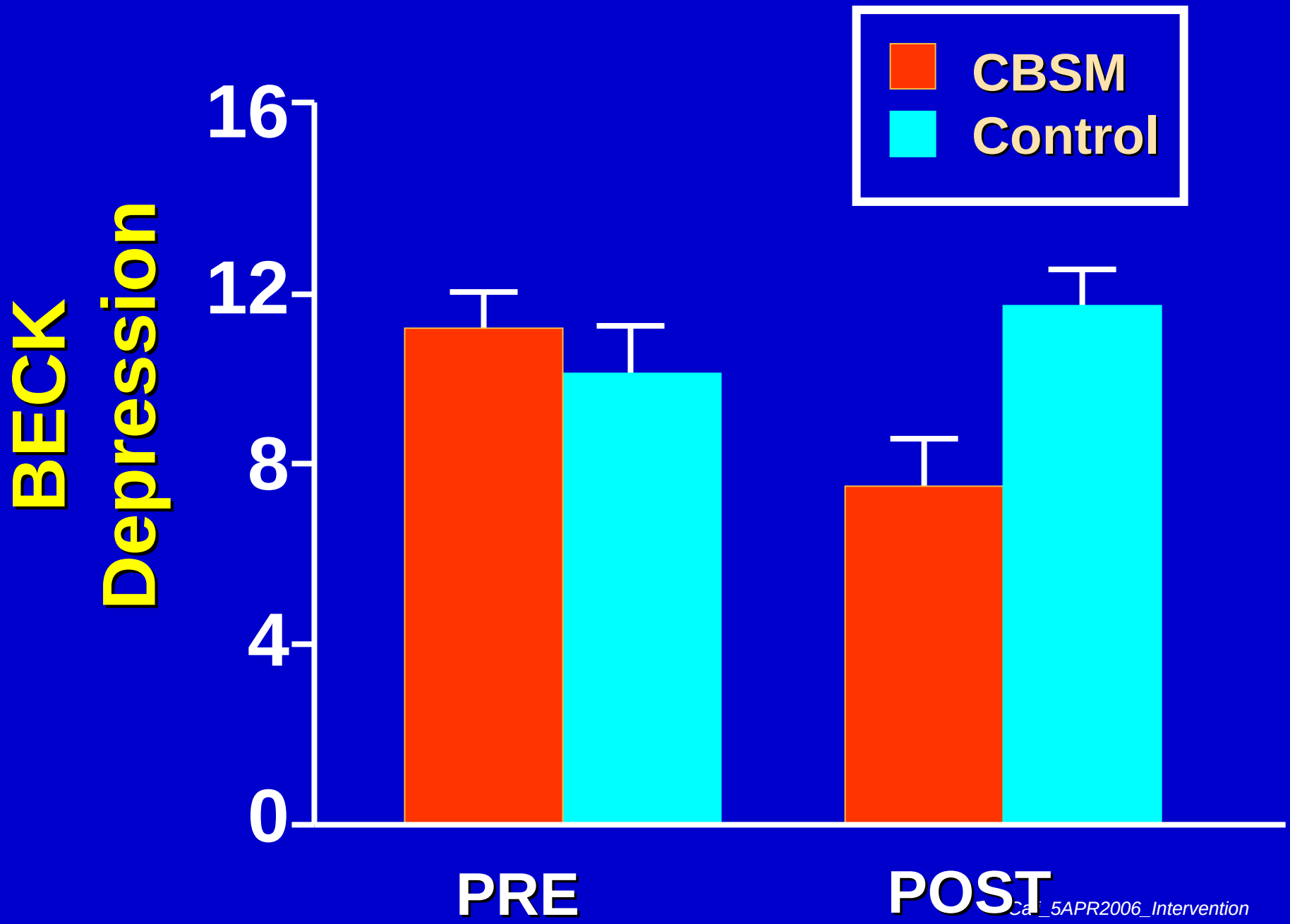
# Cognitive Behavioral Stress Management

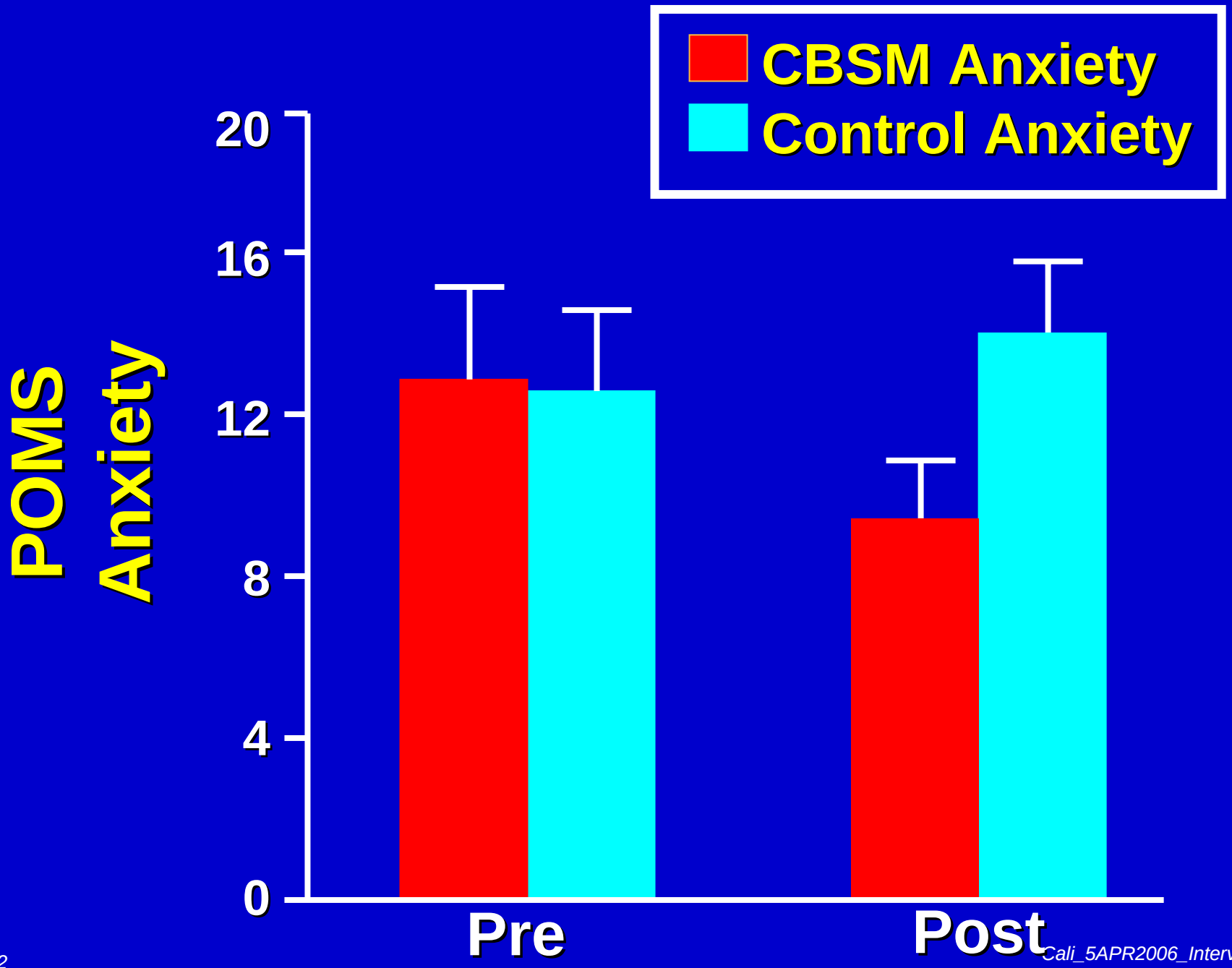
- Relaxation training
- Cognitive behavior therapy
- Group social support
- HAART information
- Health behavior information

**In previous research we had shown that group based CBSM can improve social support, decrease depressed affect, and reduce anxiety in HIV+ people.**

# CBSM and Appraisals of Support




CBSM
Control
BECK Depression
16
12
8
4
0
PRE
POST


CBSM Anxiety
Control Anxiety
POMS Anxiety
20
16
12
8
4
0
Pre
Post

# We compared CBSM+MAT vs. MAT alone in 101 HIV+ MSM who had detectable HIV viral load at baseline

(Antoni et al., 2006)

- CBSM presented as ten 2 hour group sessions
- MAT presented as 1 hour session followed by 15 minute sessions in conjunction with HCP visit every 3 months.

**We did not include a Usual Care control group because our previous research and the literature (Chesney et al., 1997) suggested adherence of about 50%.**

**We anticipated that MAT would increase adherence >80% and MAT + CBSM >95%.**

# Results

**MAT vs. MAT + CBSM groups did not differ either at baseline or across 15 months in**

- Alcohol, cigarette, marijuana or cocaine use
- Sexual risk taking
- Adherence

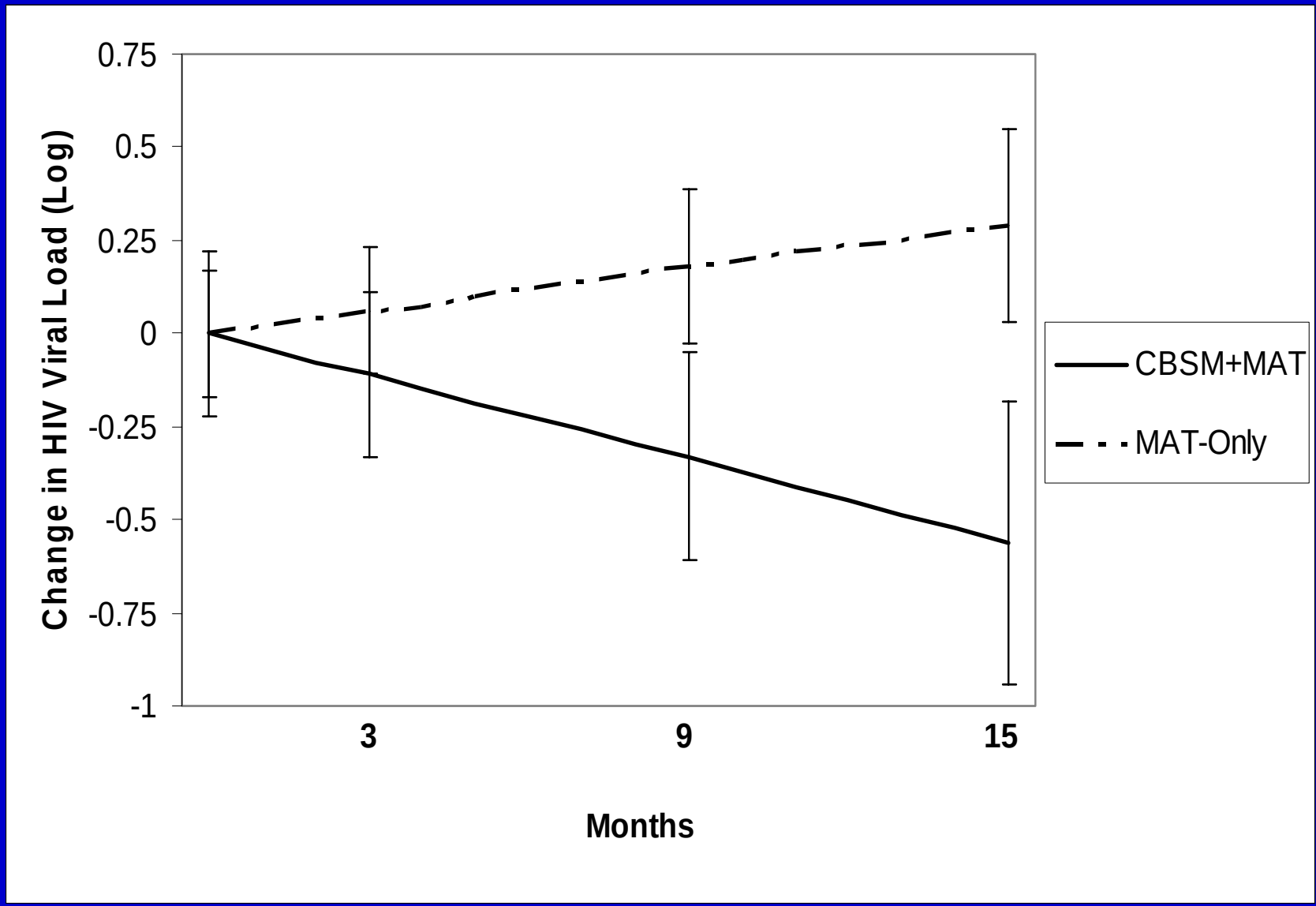
# Self-Reported Adherence (%)

| | BL | 3 mos | 9 mos | 15 mos |
|---|---|---|---|---|
| CBSM+MAT | 91 | 91 | 92 | 93 |
| MAT | 90 | 90 | 92 | 94 |

# Untransformed measures of HIV viral load

| Group | Month | Copies/mL Mean | Copies/mL SE |
|---|---|---|---|
| CBSM + MAT | 0 | 13,224 | 3,088 |
| (n=61) | 3 | 12,894 | 3,503 |
| | 9 | 5,438 | 3,017 |
| | 15 | 5,632 | 3,054 |
| MAT | 0 | 22,982 | 7,339 |
| (n=40) | 3 | 12,818 | 5,879 |
| | 9 | 30,096 | 14,102 |
| | 15 | 31,956 | 16,218 |

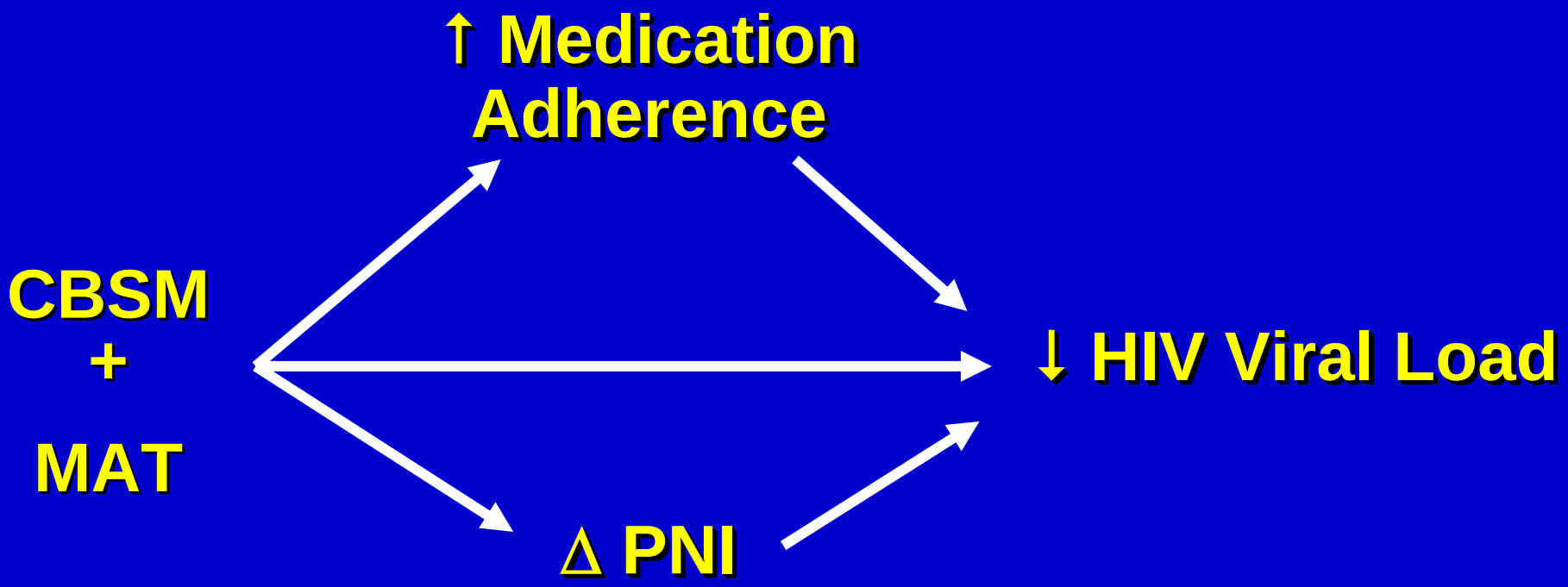
**We observed a significant group x time interaction for HIV viral load across the 15 month study after controlling for medication adherence (p=.04).**

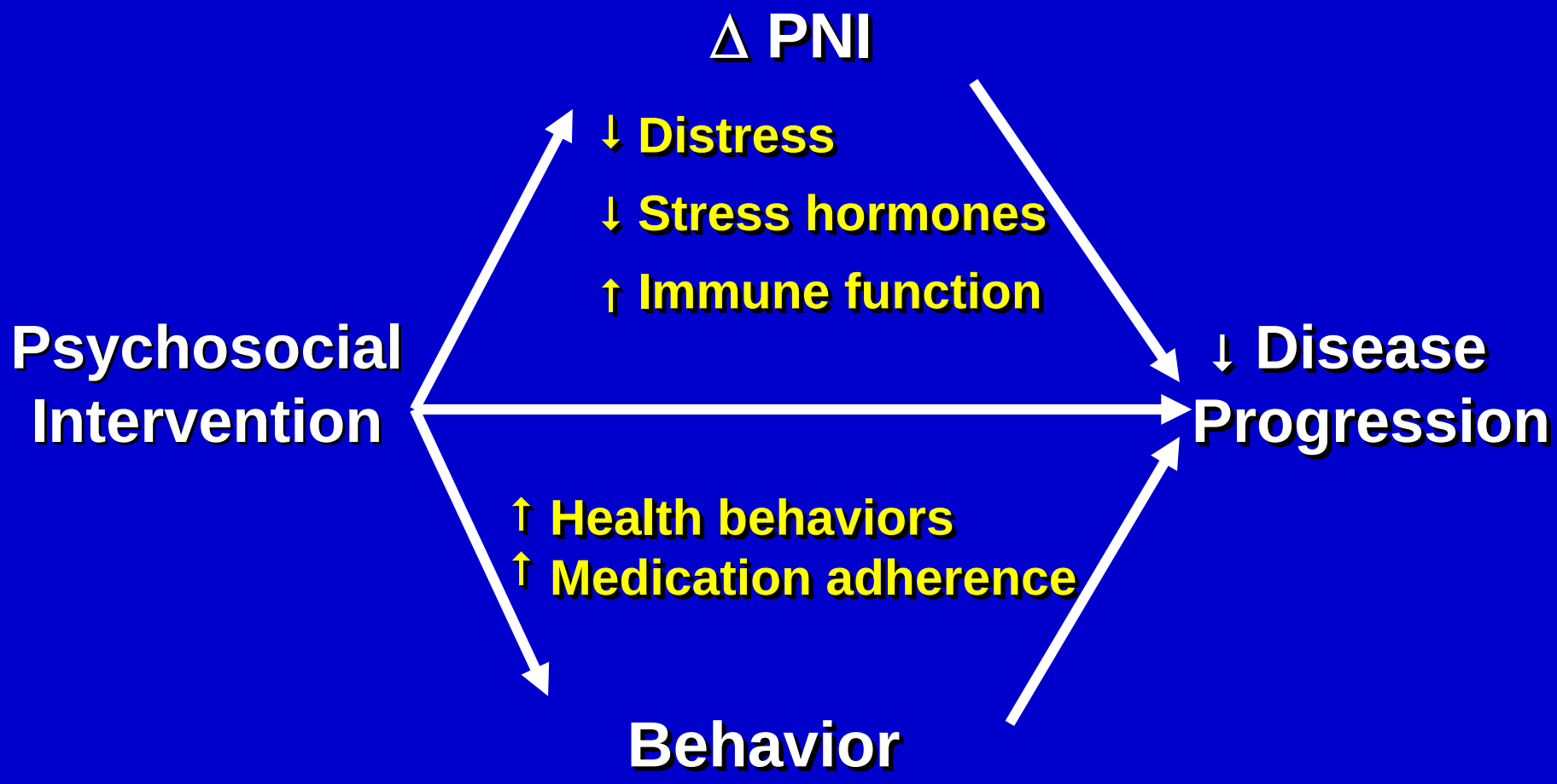

0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
Change in HIV Viral Load (Log)
3
9
15
Months
CBSM+MAT
MAT-Only

- Men in CBSM+MAT showed a 0.56 log reduction across the study.
- Decrease in HIV viral load appears to have been mediated by a reduction in depressed affect.

# Conclusion:

**CBSM can play a role in reducing HIV viral load separate from adherence in HAART patients, probably by PNI pathway(s).**


↑ Medication Adherence
CBSM + MAT
↓ HIV Viral Load
Δ PNI

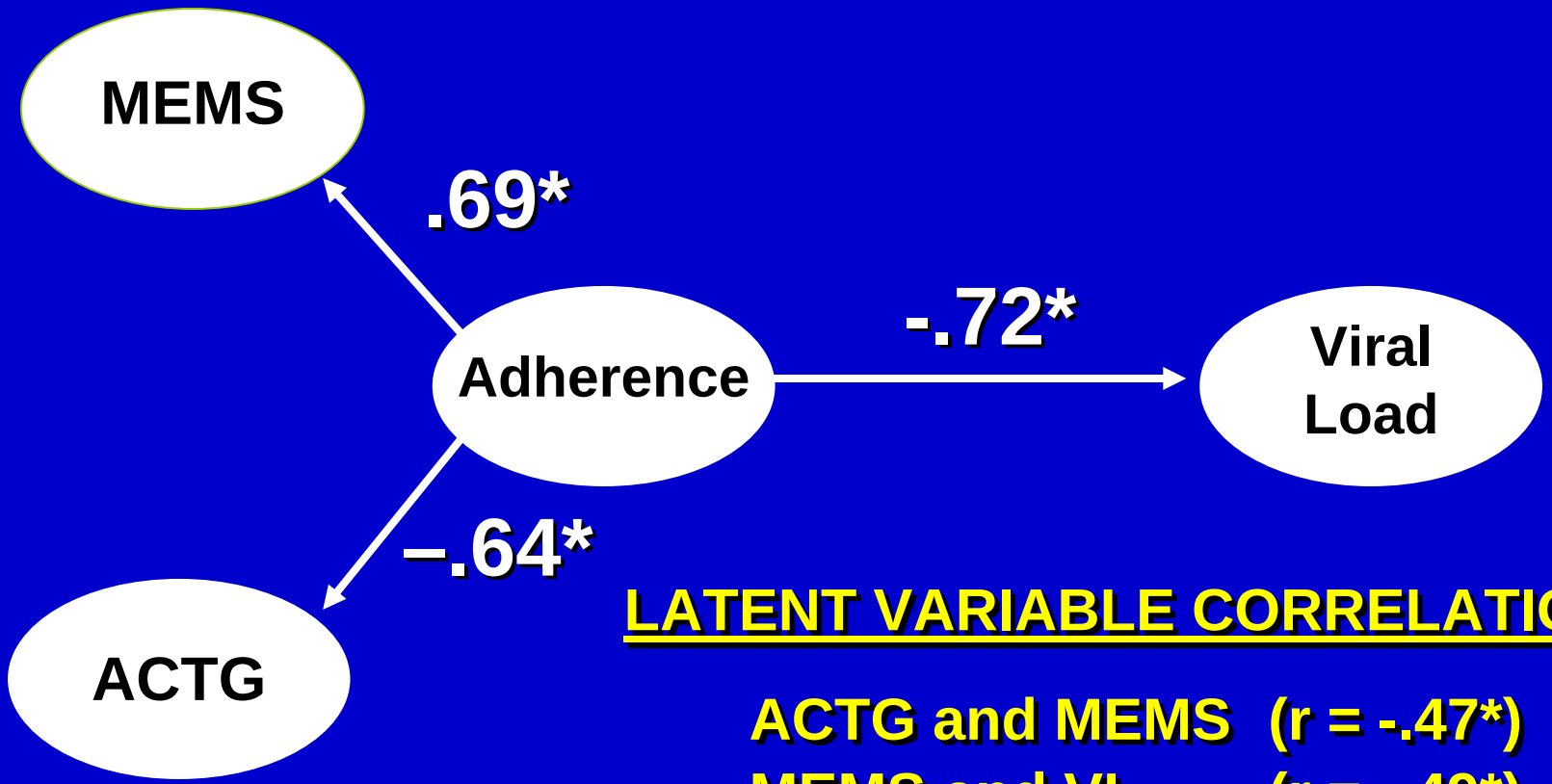

Δ PNI
↓ Distress
↓ Stress hormones
↑ Immune function
Psychosocial Intervention
↓ Disease Progression
↑ Health behaviors
↑ Medication adherence
Behavior

**Self-reported adherence in our study was problematic. However, we have examined adherence using electronic monitoring (MEMS CAPS) and the AIDS Clinical Trial Group (ACTG) Questionnaire in 323 HIV+ men and women on HAART.**

**(Duran et al., *in press*)**

**While either method of assessing adherence predicted about 22% of variance in viral load, combining methods predicted 49% of the viral load variance.**

# ELECTRONIC MONITORING and SELF REPORT




**LATENT VARIABLE CORRELATIONS**

| | |
|---|---|
| ACTG and MEMS | (r = -.47*) |
| MEMS and VL | (r = -.49*) |
| ACTG and VL | (r + .46*) |

**However, the rate of self-reported ACTG adherence was 93%; the rate of MEMS adherence was 56%**

**Making clinical decisions based only on adherence measures is not useful.**

# We prefer to make decisions based on:

- HIV viral load
- HIV medication resistance
  - Past failures
  - Current genotypic patterns
- Self-reported adherence patterns

# LONG-TERM STRATEGY

**Tailor chronic disease management of HAART as a function of HIV viral load, medication resistance profile and medication adherence.**

- For HIV+ people with undetectable viral load, regular contact with HCP is sufficient.
- For those with virologic failure HCP + MAT may be enough.
- For persistent virologic failure or those facing salvage regimens HCP+MAT+CBSM may be required.

# FOR THE PRESENT

**CBSM + MAT is better than MAT alone for HIV+ MSM who have detectable HIV viral load**