



# Adherence and the Medical Management of HIV/AIDS: Stress and Coping

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## Introduction

- The Centers for Disease Control (2005) estimates that over 980,000 people in the United States are living with Acquired Immune Deficiency Syndrome (AIDS).
- The introduction of highly active antiretroviral therapy (HAART) in 1995 has helped to significantly decrease the number of HIV-related deaths as well as improve the quality of life of those infected by HIV or AIDS (CDC, 2003; Lee et al, 2001).
- A benchmark of 95% adherence to HAART medications has been established as necessary for treatment success; however, studies have found adherence to be as low as 50-60% (McNabb et al, 2001; Heckman, Catz, Heckman, Miller & Kalichman, 2004).
- Nonadherence or poor adherence can lead to the development of HIV mutations that are resistant to medications (Wainberg & Friedland, 1998) and a higher susceptibility to opportunistic infections (Gebo, Diener-West, & Moore, 2001).
- Research suggests that the way in which a person living with HIV/AIDS utilizes coping strategies in response to stress may be a predictor of medication adherence (Weaver, Llabre, & Duran, 2005.)

## Model



## Hypotheses

- Levels of perceived stress are positively associated with missed doses of medication.
- More extensive use of maladaptive coping strategies (behavioral disengagement, denial, self-distraction, substance use, and venting) leads to an increased number of doses of HAART medications missed, and thus lower medication adherence.
- HIV+ individuals who have been diagnosed with HIV-related diseases will miss more doses of medication.
- HIV+ individuals who have been diagnosed with opportunistic infections will miss more doses of medication.

## Measures

### Adherence Follow-Up Questionnaire (AACTG Adherence Instruments, n.d.)

- List medications, pills per dose, dose per day, and doses missed in the past four days

### Perceived Stress Scale (Cohen et al., 1983)

- 10 Likert-type items
- Reliability: Published  $\alpha = .85$
- Validity: Correlation to depressive symptomatology: .65-.76\*\*\*
- Responses: (0-4)  
0 = never, 4 = very often
- "In the last month, how often have you been upset because of something that happened unexpectedly?"

### Brief COPE (Carver, 1997)

- 5 maladaptive coping subscales used; 2 items per subscale
- 10 Likert-type items
- Responses (0-3)  
0 = I haven't been doing this at all, 3 = I've been doing this a lot
- Behavioral Disengagement:  $\alpha = .65$   
"I've been giving up the attempt to cope"
- Denial:  $\alpha = .54$   
"I've been refusing to believe that it has happened."
- Self-distraction:  $\alpha = .71$   
"I've been turning to work or other activities to take my mind off things."
- Substance Use:  $\alpha = .90$   
"I've been using alcohol or other drugs to help me get through it."
- Venting:  $\alpha = .50$   
"I've been expressing my negative feelings."

## Sample Demographics (n = 160)

	Mean (SD)	Range
Age	41.7 (8.2)	23-65
# of Doses of Medication/4 Days	9.6 (7.2)	1-52
# of HIV-related Diseases	1.8 (1.4)	0-7
# of Opportunistic Infections	0.5 (0.7)	0-3

	Number	Percent
Gender		
• Female:	79	49.4%
• Male:	81	50.6%
Ethnicity:		
• African/African-American	79	49.4%
• European-American	53	33.1%
• Latino/Latina	24	15.0%
• Other	4	2.5%

## Results

### Univariate Statistics

Variable	Mean(SD)	Possible Calculated	
		Range	$\alpha$
Perceived Stress	19.8 (6.5)	0-40	.89
Missed Doses /4 Days	2.8 (5.4)	n/a	n/a
<b>Maladaptive Coping Strategies</b>			
Behavioral Disengagement	3.8 (1.8)	0-8	.66
Denial	3.5 (1.8)	0-8	.79
Self-distraction	4.7 (1.7)	0-8	.52
Substance Use	3.3 (1.9)	0-8	.90
Venting	4.2 (1.6)	0-8	.41

### Bivariate Statistics

Independent Variables:	Missed Doses
Age	ns
Gender	ns
Ethnicity	ns
# of Doses of Medication	ns
# of HIV-related Diseases	.17*
# of Opportunistic Infections	.27***
Perceived Stress	.34***
<b>Maladaptive Coping Strategies</b>	
Behavioral Disengagement	.19*
Denial	.25***
Self-distraction	ns
Substance Use	.28***
Venting	ns



### Hierarchical Regression Analyses

Predictors	Missed Doses	
	$\beta$	t
Opportunistic Infections	.28	3.79***
Perceived Stress	.32	4.05***
Denial	.18	1.98*
Substance Use	.26	3.17**

F (8, 151) = 6.92\*\*\*, Adjusted R<sup>2</sup> = .23 \* p < .05; \*\* p < .01; \*\*\* p < .001

### Tests for Mediation

**Mediation Criteria 1:**  
The IV (maladaptive coping strategy) is a significant predictor of the DV (missed doses). See below for results.

**Mediation Criteria 2:**  
The IV (maladaptive coping strategy) is a significant predictor of the mediator (perceived stress).

	Missed Doses		Perceived Stress	
	$\beta$	t	$\beta$	t
Behavioral Disengagement	.18	2.60**	.38	5.64***
Denial	.23	3.33***	.29	4.18***
Substance Use	.25	3.58***	.19	2.63**

**Mediation Criteria 3:**  
The mediator (perceived stress - PS) is a significant predictor of the DV (missed doses) when the IV (maladaptive coping strategy) is controlled.

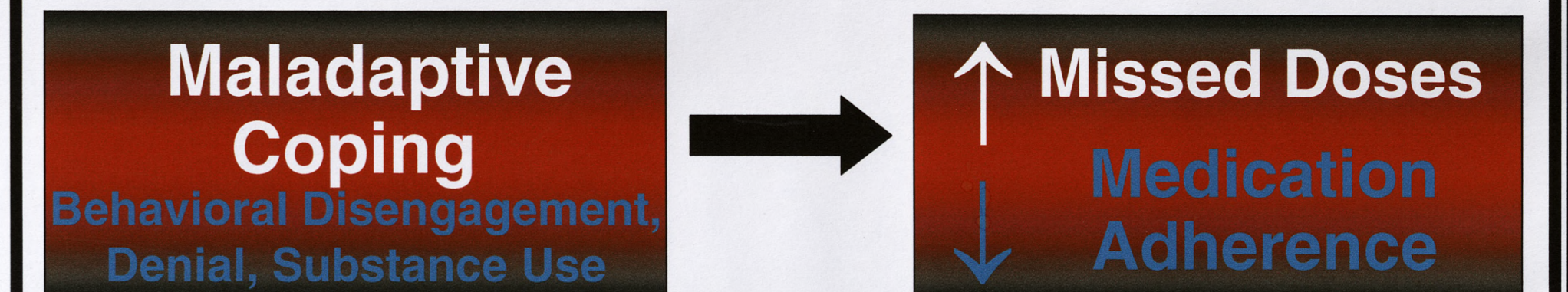
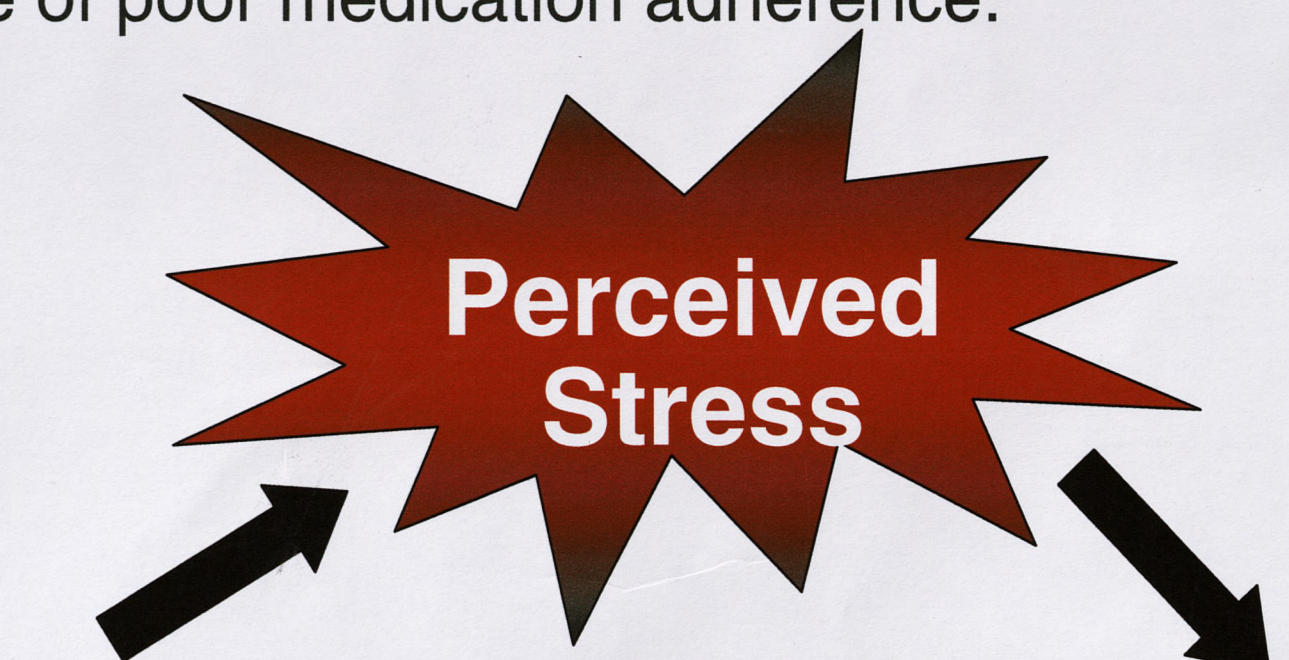
	Missed Doses	
	$\beta$	t
PS (control for Behavioral Disengagement)	.27	3.66***
PS (control for Denial)	.27	3.72***
PS (control for Substance Use)	.26	3.78***

**Mediation Criteria 4:**  
The contribution of the IV (maladaptive coping strategy) to the DV (missed doses), when controlling for the mediator (perceived stress), is reduced in partial mediation and eliminated in complete mediation.

	Missed Doses		Mediation
	$\beta$	t	
Behavioral Disengagement	.08	1.10	COMPLETE
Denial	.16	2.24*	PARTIAL
Substance Use	.22	3.15*	PARTIAL

## Discussion

- Hypothesis #1 - supported:** Higher levels of perceived stress were associated with more doses of medication missed.
- Hypothesis #2 - partially supported:** Three maladaptive coping strategies (behavioral disengagement, denial, and substance use) were positively associated with missed doses; additionally, each relationship was mediated by perceived stress.
- Hypothesis #3 - not supported:** HIV-related diseases were not associated with doses of medication missed.
- Hypothesis #4 - supported:** Opportunistic infections, such as tuberculosis, were positively associated with doses of medication missed, which supports the identification of these infections as an outcome of poor medication adherence.



## Implications & Future Directions

- Poor adherence to a medication regimen by a person infected with HIV/AIDS can lead to a number of undesirable outcomes; increased education and awareness of these consequences is critical.
- Stress may explicate the relationship between maladaptive coping and medication adherence. Increased focus should be directed toward minimizing stress levels of PLH through interventions aimed at reducing the use of maladaptive coping strategies, particularly substance use and denial.
- Further research is necessary to identify other mediating variables that may contribute to a fuller understanding of the process that leads to poor medication adherence in persons infected with HIV/AIDS.

## Limitations

- Adherence to medication was measured using data from only four days worth of doses.
- Due to the cross-sectional correlational design of the study, causal relationships cannot be inferred.
- Generalizability of results is limited because a convenience sample was utilized.

## References

- Please refer to handout.



