Participants' perceived barriers to adherence vs.
empirically-based barriers to adherence:
Do they differ by age and race and ethnicity?

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Background

Race and ethnic disparities in ART adherence persist for variety of reasons.

Association between age and ART Adherence.

Disparities and depression w/non-adherence as a treatment interruption?

Barriers to ART adherence are extensively studied, yet little is known about barriers vary based on a person's age or race and ethnicity.
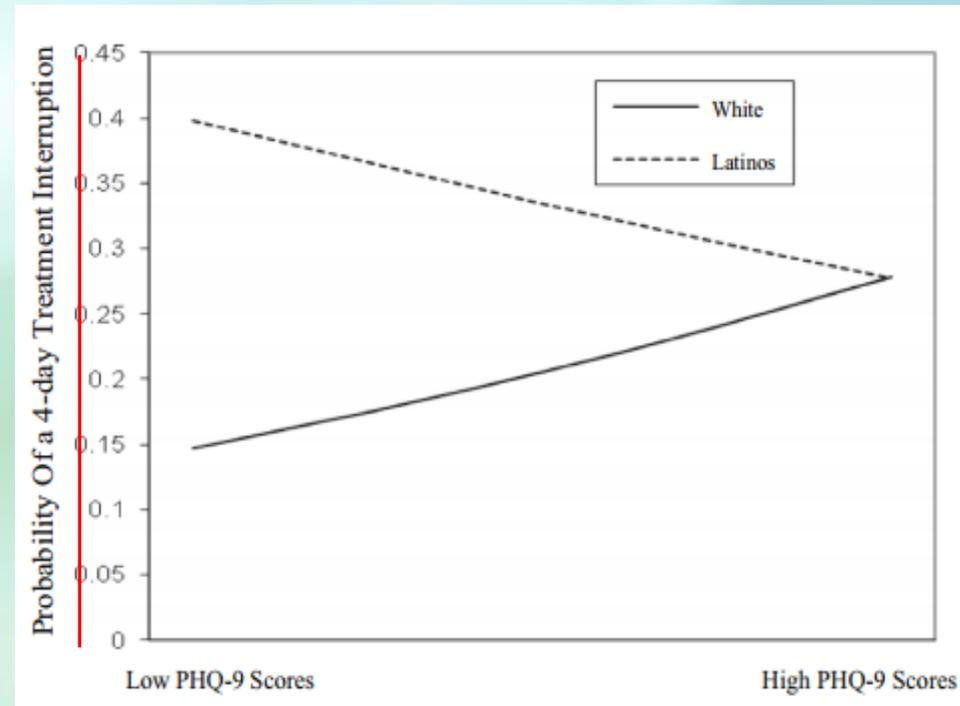
(Oh et al., 2009; Hinking et al., 2004; Simoni et al., 2012; Sauceda et al., 2016)

Objective

We used an empirically-based analytic approach to examine the importance of barriers stratifying by age and race and ethnicity.

Secondary hypothesis: the most important barriers would be <u>invariant across race/ethnicity and age</u> subgroups (i.e., empirically)

Brief Overview: Assessing Importance

1. Dominance analysis is a class of Relative Important Analysis
    - Identify the "most important predictor(s) from a set of predictors."

2. Problems with traditional regression approaches (short list)
    A. Adherence barriers are correlated
    B. Std. regression objective of "impact on Y per change in X" not ideal for "importance."
    C. R^2 is influenced by order, other factors and model dependent

3. Advantage of dominance analysis
    A. General pair-wise regression approach tests *all possible* barriers against one another.
    B. Weight = average squared semi-partial correlation – i.e., each barrier in relation to the outcome of ART non-adherence.

Interpreting Dominance Weights and Patterns

1. Does one barrier consistency outperform other barriers in predicting ART non-adherence?
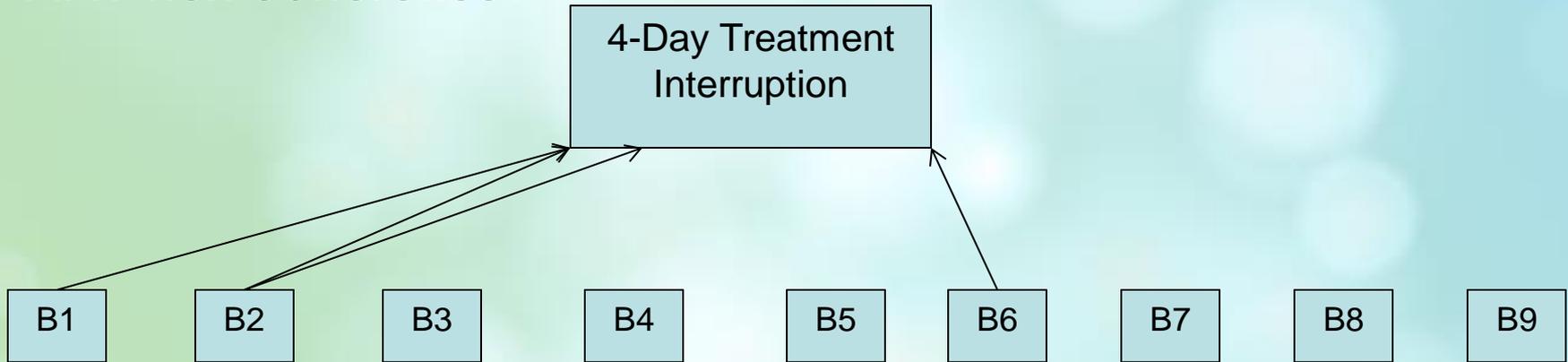
General (Least dominant)	Conditional (Somewhat dominant)	Complete (Most dominant)
Based on every possible comparison		
Average variance contributed by one barrier is greater than the average variance contributed by another barrier	Average variance contributed by one barrier is greater in size than any one contribution of another barrier	Amount of additional variance one barrier has singularly contributed is greater than any amount of variance contributed by any other barrier

Demographics

• **Sample Characteristics**

- Mean age was **46.7** (SD = 10.9, Median = 48)
- **44%** reported a college-level education
- **57%** reported annual income of less than $40,000
- **76.3%** self-identified as non-Latino White
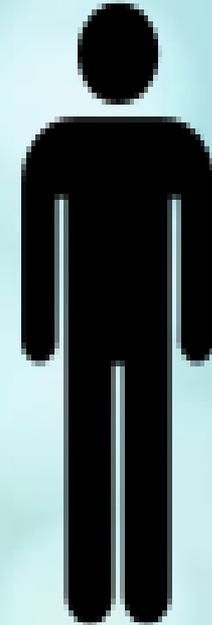
HIV and ART Adherence-related Information

- **13%** reported a detectable VL
- **69.8%** reported once-daily dosed ART
- **28.8%** twice-daily dosed ART
- **14%** reported at least one, 4-day Tx interruption in past 3 months

Sample Characteristics

Dominance Analyses

1. Stratified analysis by selecting out race/ethnic groups from total sample:

   a. Non-Latino Whites, $n = 929$

   b. Latinos, $n = 154$

   c. African Americans, $n = 110$

2. Stratified analysis by selecting out age subgroups from total sample:

   a. Young adults (18-29 years), $n = 104$

   b. Middle-aged adults (30-49 years), $n = 590$

   c. Older adults (> 50 years), $n = 524$

Results: Comparisons by Race and Ethnicity and Age

Dominance analysis ranking by race and ethnicity

Non-Latino White (*n*=929)		Latinos (*n*=148)		African Americans (*n*=110)	
Adherence Barrier	Dominance Weights	Adherence Barrier	Dominance Weights	Adherence Barrier	Dominance Weights
#1 Day-to-day life	.290	#1 Asleep/slept through dose time	.288	#1 Alcohol or using illicit drugs	.521
#2 Asleep/slept through dose time	.178	#2 Day-to-day life	.237	#2 Felt sick or ill	.183
#3 Problems with pharmacy/ insurance	.163	#3 Ran out of pills	.151	#3 Simply forgot	.081
#4 Simply forgot	.157	#4 Simply forgot	.142	#4 Wanted to avoid side-effects	.066
#5 Felt depressed/overwhelmed	.152	#5 Alcohol or using illicit drugs	.067	#5 Felt depressed/overwhelmed	.051
#6 Alcohol or using illicit drugs	.038	#6 Problems with pharmacy/insurance	.062	#6 Day-to-day life	.050
#7 Felt sick or ill	.011	#7 Felt sick or ill	.034	#7 Asleep/slept through dose time	.030
#8 Wanted to avoid side-effects	.006	#8 Felt depressed/overwhelmed	.020	#8 Problems with pharmacy/insurance	.011
#9 Ran out of pills	.004	#9 Wanted to avoid side-effects	.000	#9 Ran out of pills	.007

Dominance analysis rankings by Age

Young Adults (n=104) 18-29 yrs		Middle-aged Adults (n=590) 30-49 yrs.		Older Adults (n=524) >50 yrs.	
Adherence Barrier	Dominance Weights	Adherence Barrier	Dominance Weights	Adherence Barrier	Dominance Weights
#1 Alcohol or using illicit drugs	.521	#1 Felt depressed/overwhelmed	.454	#1 Asleep/slept through dose time	.580
#2 Felt sick or ill	.183	#2 Day-to-day life	.187	#2 Problems with pharmacy/insurance	.230
#3 Simply forgot	.081	#3 Alcohol or using illicit drugs	.119	#3 Alcohol or using illicit drugs	.057
#4 Wanted to avoid side-effects	.066	#4 Wanted to avoid side-effects	.096	#4 Wanted to avoid side-effects	.042
#5 Felt depressed/overwhelmed	.051	#5 Problems with pharmacy/insurance	.077	#5 Felt depressed/overwhelmed	.040
#6 Day-to-day life	.050	#6 Asleep/slept through dose time	.027	#6 Simply forgot	.033
#7 Asleep/slept through dose time	.030	#7 Ran out of pills	.021	#7 Day-to-day life	.015
#8 Problems with pharmacy/insurance	.011	#8 Felt sick or ill	.020	#8 Ran out of pills	.007
#9 Ran out of pills	.007	#9 Simply forgot	.008	#9 Felt sick or ill	.004

Discussion: Race and Ethnicity

1. Stratified dominance analyses showed that no one barrier to adherence was most important to all groups.

   – Similar patterns did emerge.

2. Non-Latino White and Latino subgroups were most similar.

   – "Day-to-day life" and "Fell asleep/slept through dose" barriers were two most important for these groups.

3. African American subgroup had different pattern of results.

   • "Alcohol & drugs" yielded largest dominance weight (.521).

   • "Felt sick or ill" yielded second largest weight (.183).

Discussion: Age

6. Young Adults:
  – #1 ranked barrier = "Drinking alcohol or using illicit drugs" (.521).
  – Also ranked #3 for middle-age and older adult subgroups.

7. Middle-aged adult subgroup:
  – #1 ranked barrier = "Felt depressed/overwhelmed" (.454).
  – More important vs. other age subgroups.

8. Older adult subgroup:
  – #1 ranked barrier = "Fell asleep/slept through dose" (.580).

10. "Drinking alcohol or using illicit drugs" and "wanted to avoid side-effects" barriers was most consistent across age subgroups.

Implications

- Examine how barriers to adherence express themselves and vary based on the target population characteristics.
  - Younger versus older-aged groups experiences with HIV.

It is important to address those <u>barriers that are most strongly linked to clinical outcomes</u> and not necessarily those that are most frequently reported.

Limitations

1. All data were self-reported.
   - No incentives to participate were provided & the direction of the effect of interest was predicting non-adherence.

2. A replication study is needed to support the stability of weights.
   - Statistical power is not directly related to dominance analysis because it is not a null hypothesis significance test.

3. Total sample consisted of mostly college educated and gay-identified men with access to online social media.

4. We could not determine conclusively the chronological order of effect for a treatment interruption on an HIV VL outcome.

Limitations – Study Two

1. Stratified analyses were for exploratory purposes.

2. A replication study is needed to support the stability of weights.
   – Each stratified dominance analysis consisted of smaller and restrictive sample.
   – Age groups were selected arbitrarily.

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Questions?

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