

Relationships Between Dimensions of Disability Experienced by Adults Living with HIV: A Structural Equation Model Analysis using data from the OCS Study

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Research

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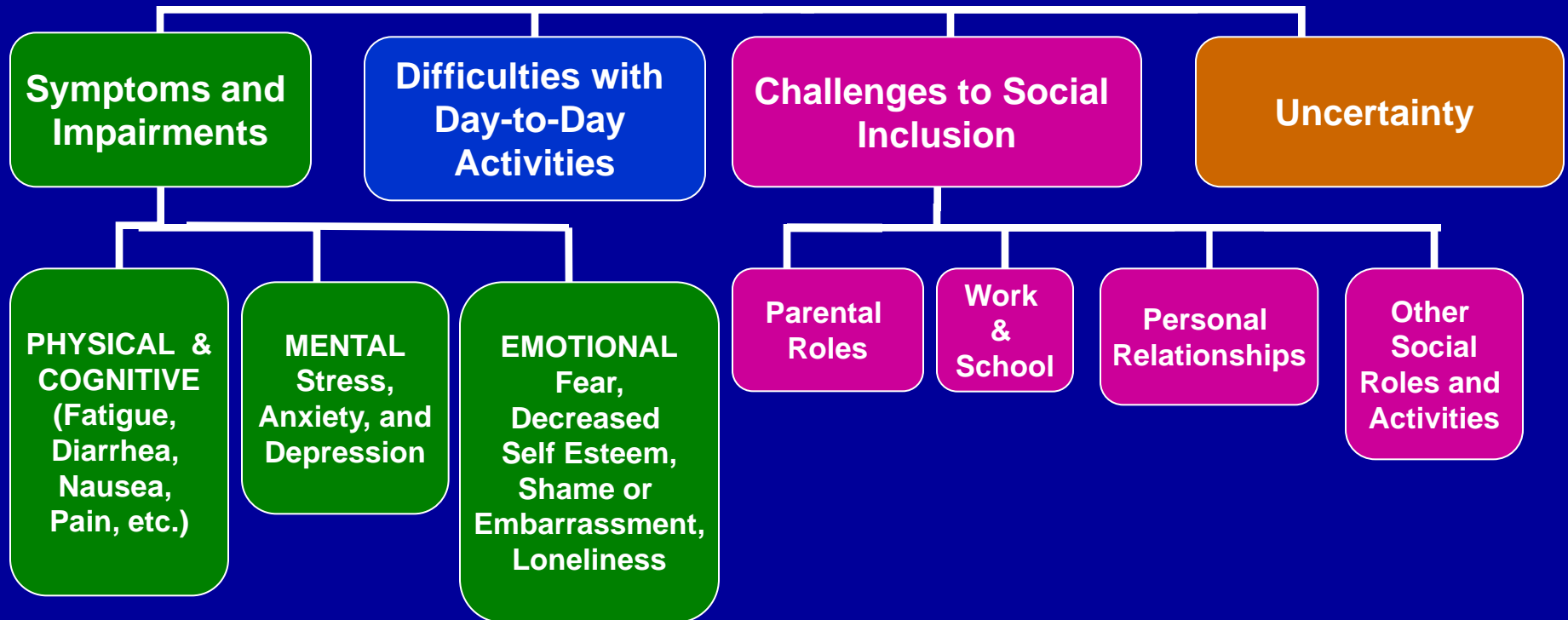
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Background

- HIV increasingly perceived as a chronic illness.
- People are living longer, aging with HIV
- Experiencing the long-term health-related consequences of HIV, multiple morbidities and the potentially adverse effects of treatment.
- Health related consequences \longrightarrow “disability”
- *Episodic Disability Framework*: derived from perspective of 38 adults living with HIV.
 - Dimensions of disability
 - Contextual factors that exacerbate or alleviate disability
 - Triggers that exacerbate an episode

Episodic Disability Framework

Dimensions of Disability



Research Questions

1) What are the relationships between dimensions of disability experienced by adults living with HIV?

2) How do personal attributes influence disability experienced by adults living with HIV?

Methods

- Ontario HIV Treatment Network Cohort Study (OCS)
<http://www.ohtncohortstudy.ca/>
- **Structural Equation Modeling (SEM)**
 - Statistical technique used to test theoretical models that indicate relationships between latent variables and observed variables.
 - **Latent variables** = dimensions of disability in the Episodic Disability Framework
 - **Observed variables** = OCS measures

The Sample (n=913)

Adults living with HIV who completed an OCS Extended Questionnaire between ~October 2007-March 2009.

Gender:

83% men, 17% women, <1% other

Median Age:

47 years (IQR: 12 years) Range: 18-85 years

Median Length of Time Since Diagnosis:

11.2 years (IQR: 11.2 years) Range: ~2 months-26 years

Ethnocultural Background:

White (68%), Black African (18%), Asian/Latin American/Arab (12%), Aboriginal (2%)

Employment:

Currently employed (45%), student/retired (12%), volunteering (25%), income support (32%), unemployed (9%)

Phase 1: Measurement Model

Confirmatory Factor Analysis

Testing hypothesis that measures in the OCS represent latent variables (dimensions of disability) of the framework.

Hypothesis

- 1) physical symptoms and impairments
 - 2) mental symptoms and impairments
 - 3) difficulties with day-to-day activities
 - 4) challenges to social inclusion
- } Latent Variables

will be represented by OCS measures with factors loadings >0.3

Step 1: Included all possible variables in the OCS that represented the latent variables according to the ED framework

Step 2: Modifications to improve model fit...where it made clinical and theoretical sense

Results: Measurement Model -1

Dimensions of Disability represented by 43 OCS variables

Overall Goodness of Fit Indices

Comparative Fit Indices (CFI): 0.912 (ideal is >0.90)

Tucker Lewis Index (TLI): 0.907 (acceptable is ≥ 0.90)

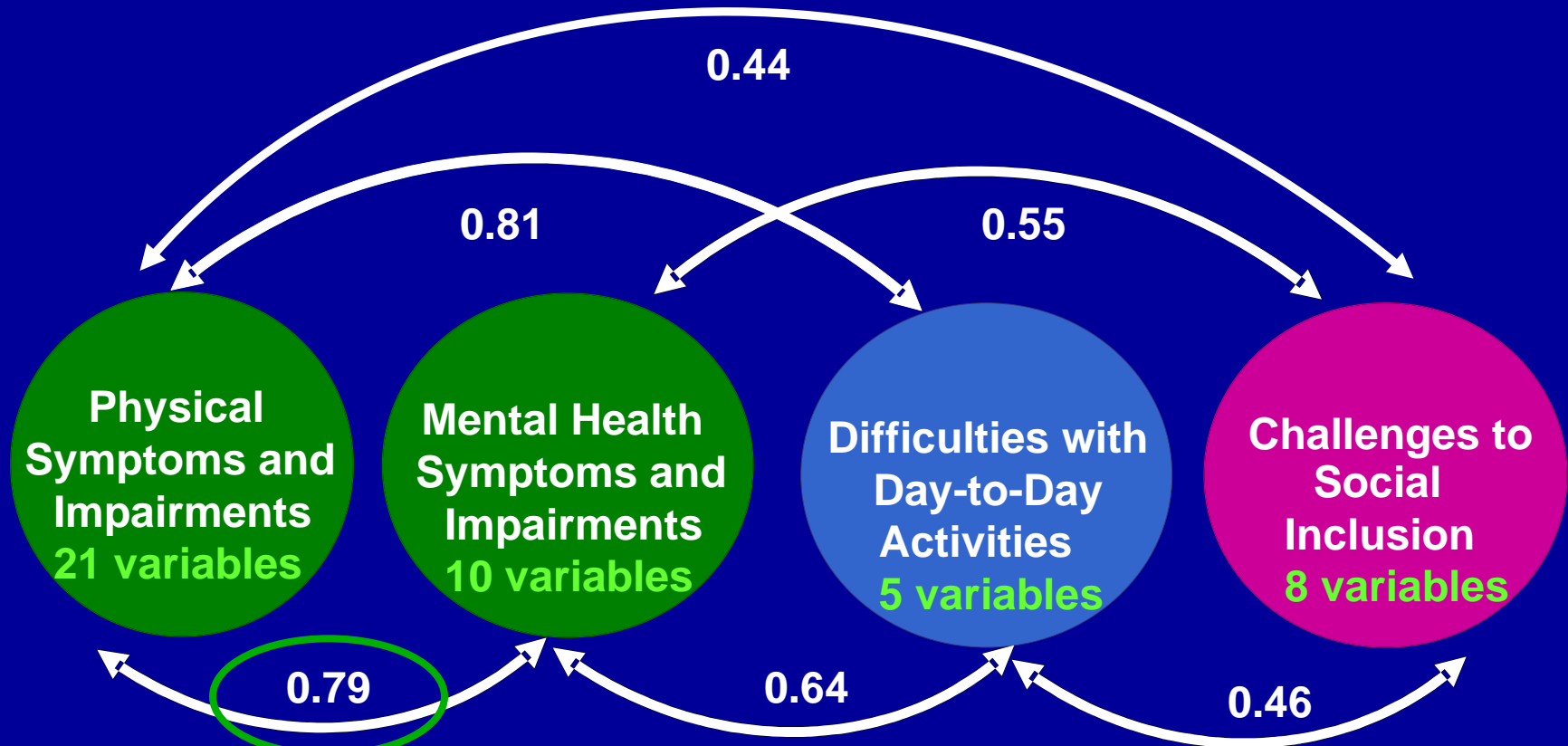
Root Mean Square Error of Approximation (RMSEA): 0.048 (ideal is ≤ 0.05)

Dimension of Disability	Physical Health Symptoms & Impairments	Mental Health Symptoms & Impairments	Difficulties with Day to Day Activities	Challenges to Social Inclusion
Represented by...	21 OCS variables	10 OCS variables	5 OCS variables	8 OCS variables
Examples of OCS variables (factor loadings)	<ul style="list-style-type: none">• HIV SI – Loss Energy (0.78)• SF36 Vitality (0.82)• EQ5D Pain (0.77)	<ul style="list-style-type: none">• HIV SI – Felt Sad (0.80)• SF36 –Mental Health (0.82)• CES-D Total Score (0.86)	<ul style="list-style-type: none">• SF36 Role Physical Function (0.86)• EQ5D Usual Activities (0.89)	<ul style="list-style-type: none">• Employment status (0.62)• Difficulty with housing costs (0.65)• Gross Personal Income (0.59)

Correlation between EQ5D Pain measure in the OCS and Physical Symptoms

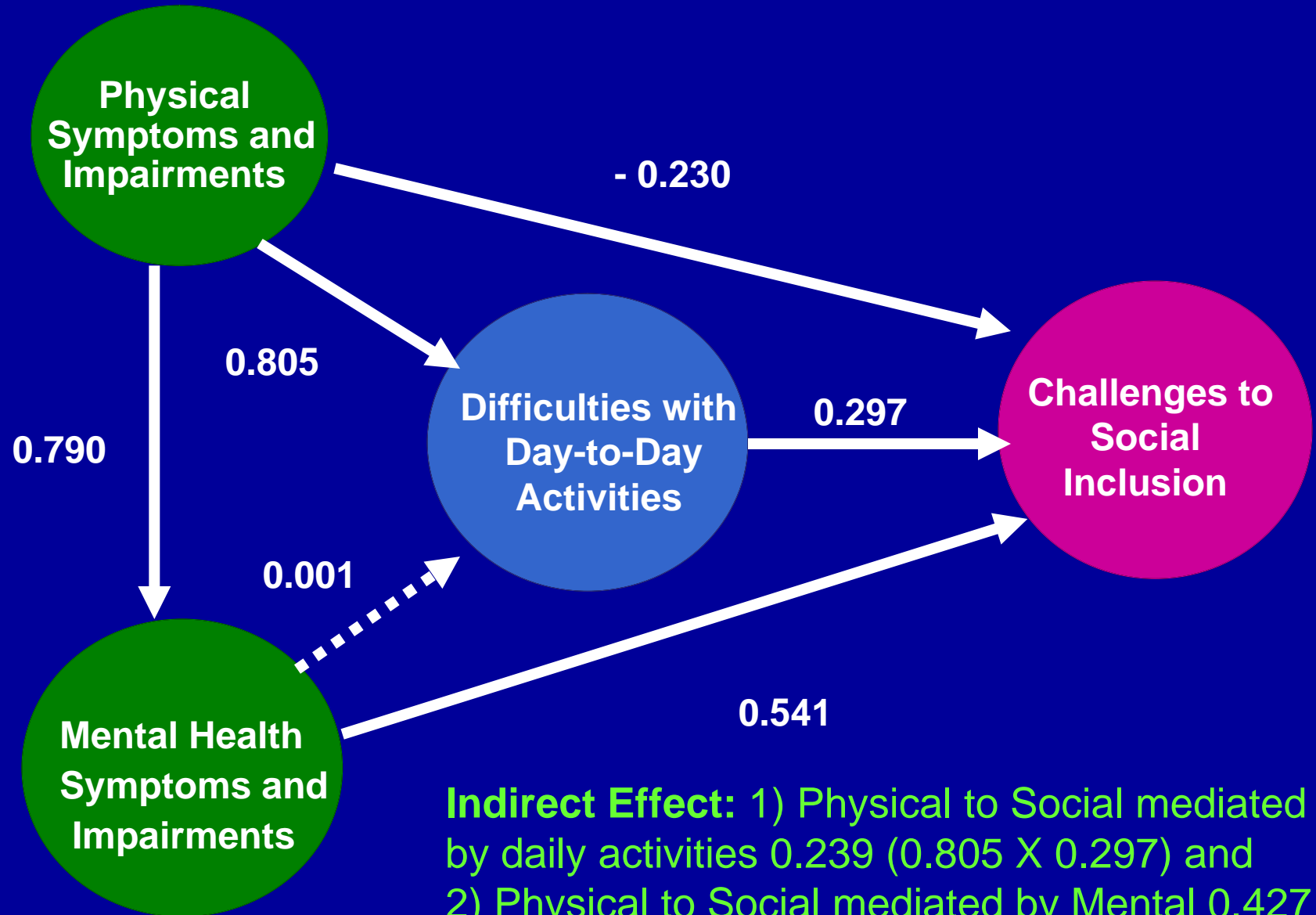
Results: Measurement Model - 2

Correlations between Dimensions of Disability (Latent Variables)



Correlation between physical and mental health symptoms

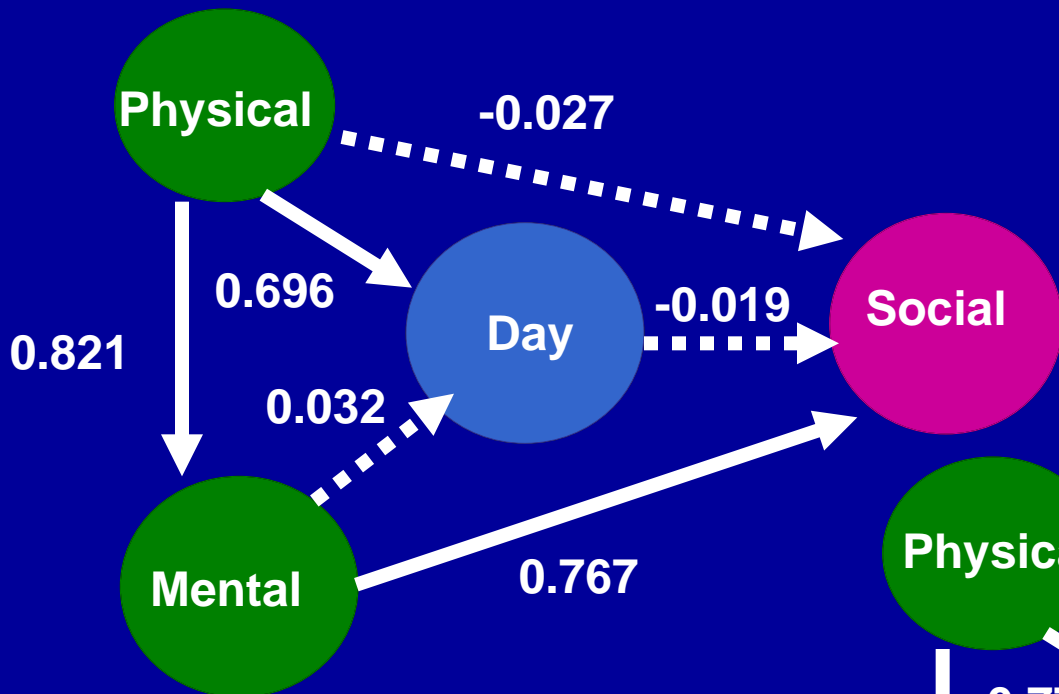
Phase 2: Structural Equation Model



Indirect Effect: 1) Physical to Social mediated by daily activities 0.239 (0.805×0.297) and 2) Physical to Social mediated by Mental 0.427 (0.790×0.541)

Gender

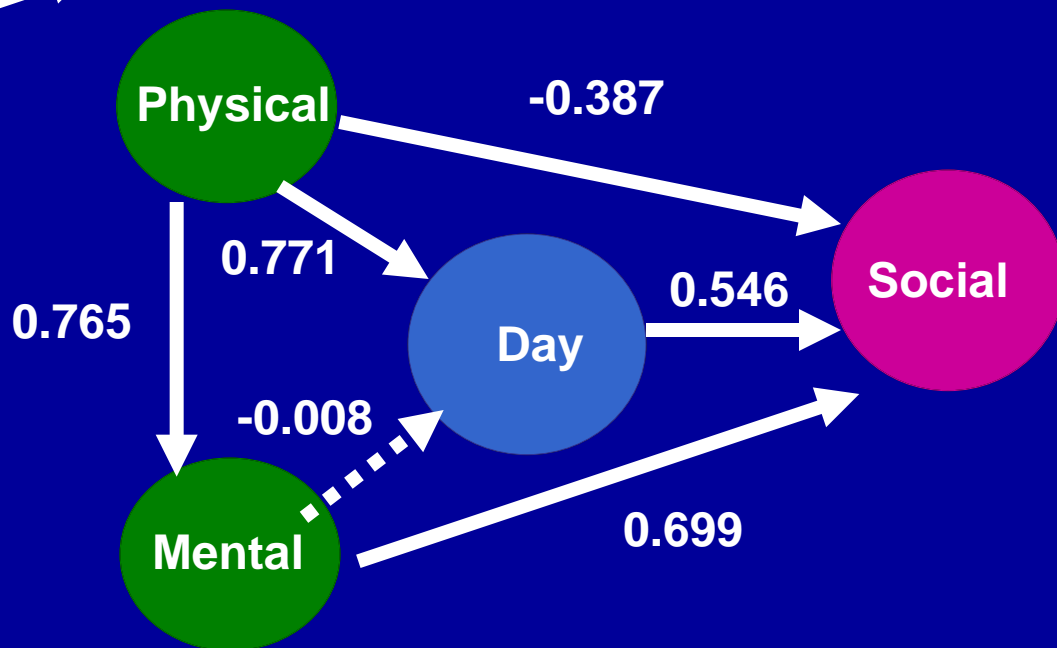
Women (n=153)



Men:

Mediated relationship from physical to social via day and mental.

Men (n=757)



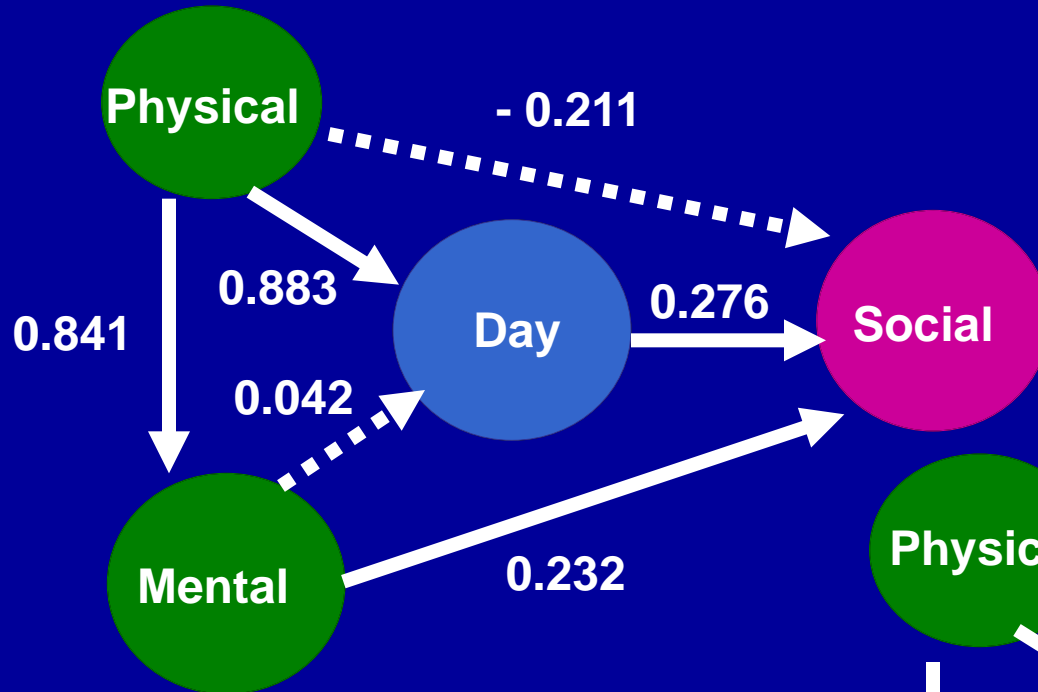
Women:

Relationship to social entirely driven by mental.

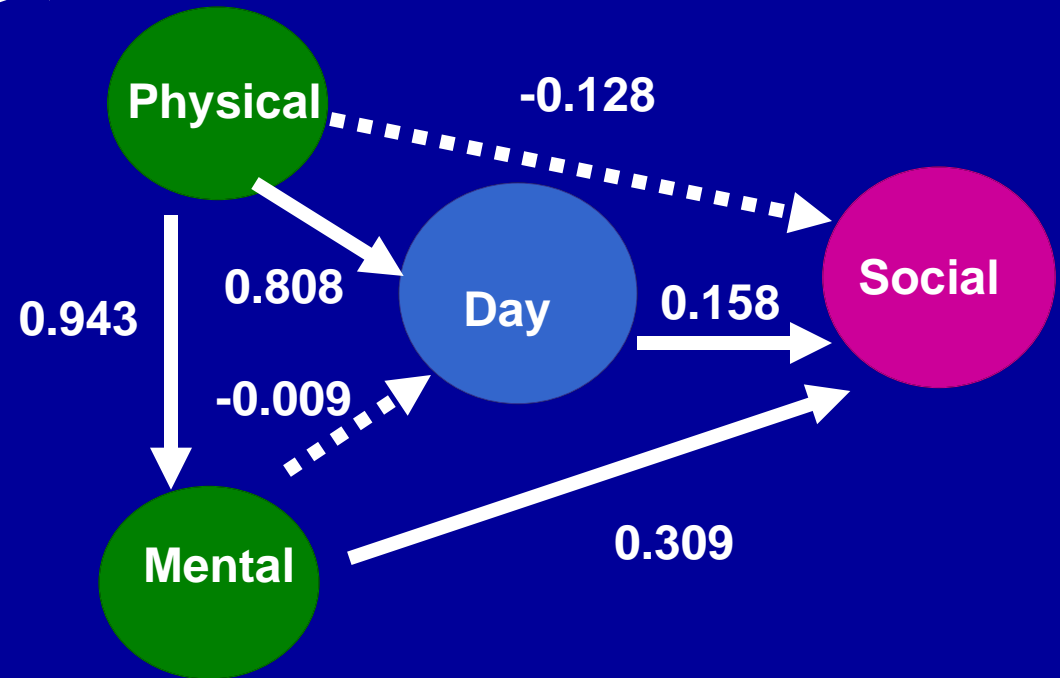
Physical to social mediated by mental.

Age Group

>50 years (n=319)



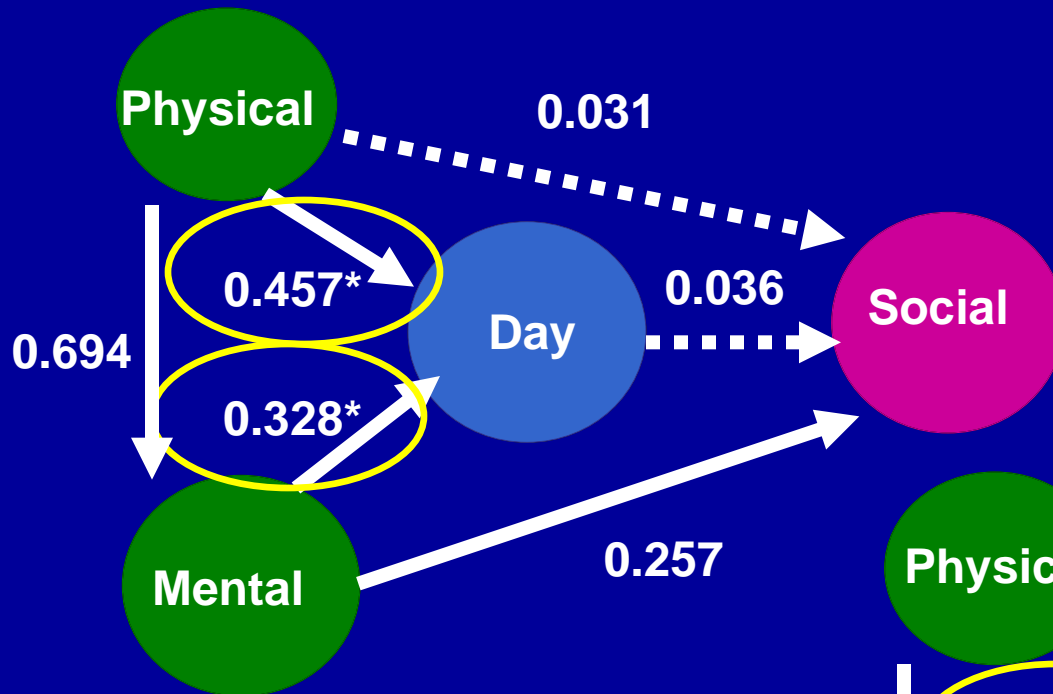
≤50 years (n=594)



**No significant difference
in disability relationships**

ARV Use

Not taking ARVs (n=130)



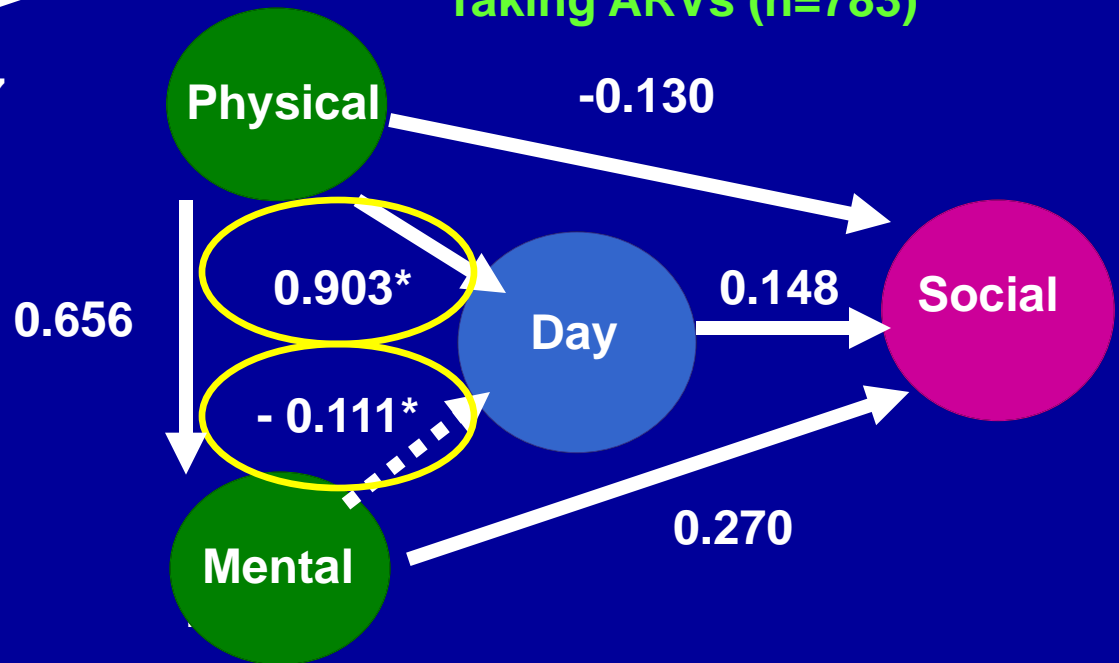
Not taking ARVs:

- Relationship to social entirely driven by mental.
- Significant relationship between mental and day

Taking ARVs:

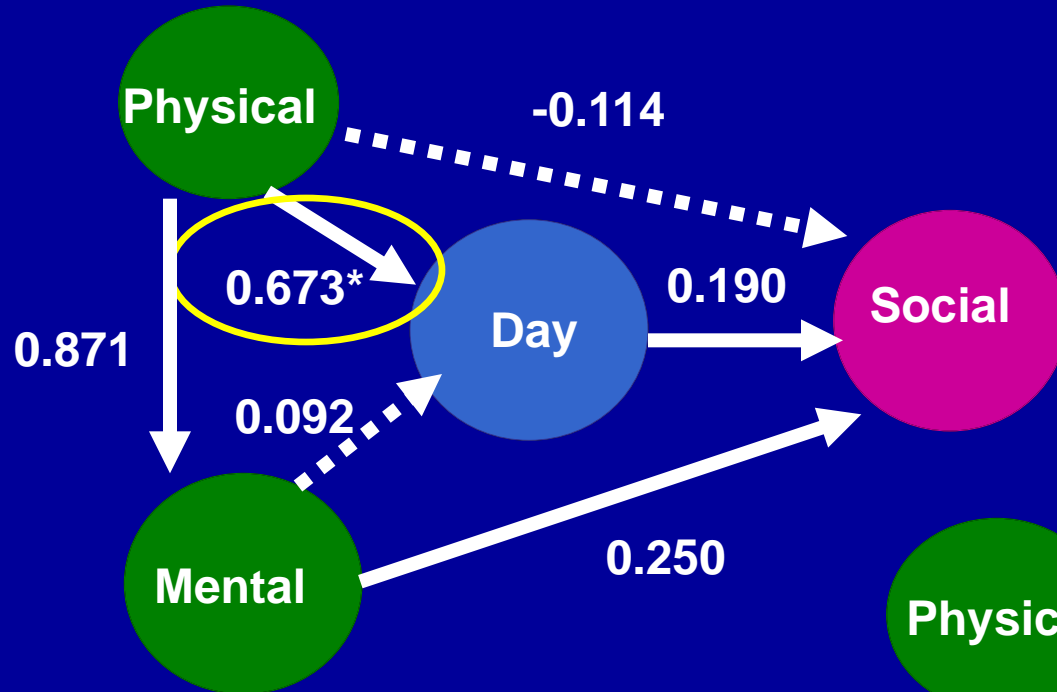
- Mediated relationship from physical to social via day and mental.
- Significantly stronger relationship between physical and day

Taking ARVs (n=783)



Year of Diagnosis

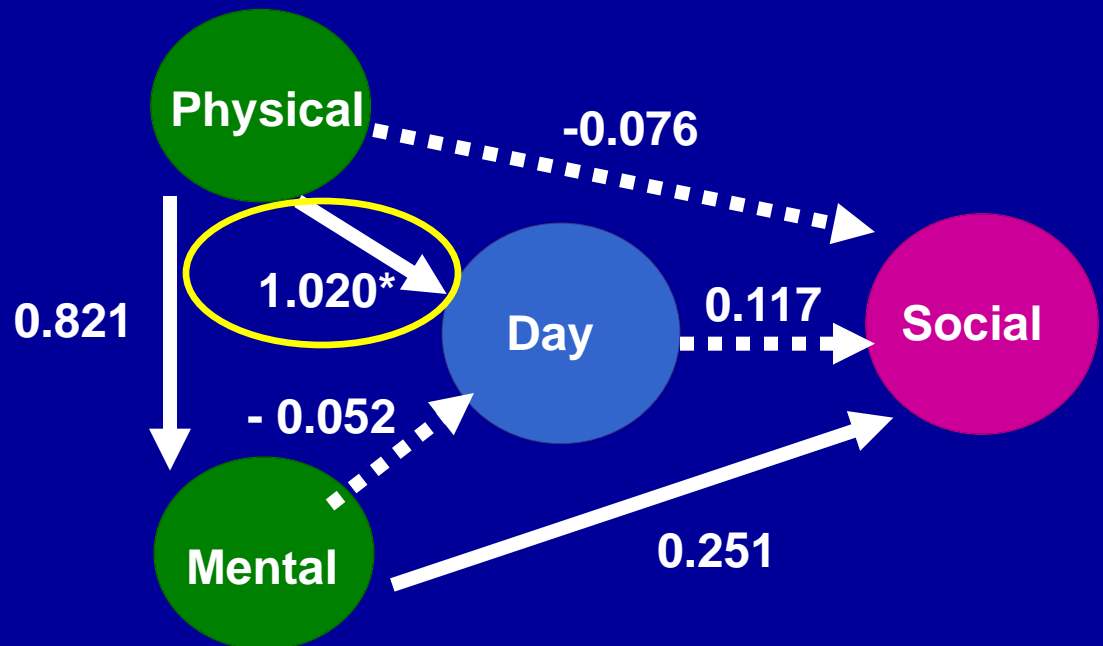
Diagnosed after 1996 (n=267)



Diagnosed 1996 or prior:

- Relationship to social entirely driven by mental.
- Significantly stronger relationship between physical and day

Diagnosed 1996 or prior (n=444)



Diagnosed after 1996

- Mediated relationship from physical to social via day and mental.

Conclusions

Dimensions of Disability

Strong direct relationship (>0.5)

- from mental health symptoms to challenges to social inclusion
- from physical symptoms to difficulties with day-to-day activities

Medium direct relationship (>0.2-0.5)

- from difficulties with day to day activities to challenges to social inclusion

Relationship between physical to social mediated by difficulties with day-to-day activities and mental health challenges with mental health having ++effect on social inclusion.

Personal Attributes - Contextual Factors

ARV use and length of time since diagnosis appear to have a moderating effect on disability for adults living with HIV.

Take Home Message for Rehabilitation

- Given the role mental health challenges has on the model, targeting interventions to improve mental health may help to enhance social inclusion.
- Considering personal attributes such as ARV use and length of time since diagnosis are important in understanding the disability experience.

Strengths and Limitations

Strengths

- Rich data source of measures that captures three of four dimensions of disability in the episodic disability framework
 - Physical, mental and cognitive symptoms
 - Difficulties with day-to-day activities
 - Challenges to social inclusion

Limitations

- Not captured in model (or OCS)
 - Uncertainty
- Primarily 'healthy' cohort living with HIV
- Limited to data collected from Toronto

Next Steps

- 1) How do contextual factors (stigma, social support, living strategies) influence the dimensions of disability?
 - Are they moderating or mediating factors?

- 2) Examine the episodic nature of disability
 - longitudinal SEM analysis
 - What dimensions of disability are episodic?
 - How are episodes of disability experienced?

- 3) How is disability experienced across among adults with HIV across different classifications of HAND?

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