Using the HINTS for Conducting Theory-Relevant Research

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My Objectives

- **To review ways of depicting theories, as a basis for doing theory-relevant research, & to present "terminologies" that are used for each**

- **To discuss HINTS content relative to these ways of depicting theories**

- **Bottom-line: HINTS is a good resource for manuscripts targeted to specific theory-relevant constructs; and it is therefore a good resource for the "Preliminary Work" section of a grant proposal   [H.I.N.T.S = "hints" for further research]**

Depicting Theories

- **Four approaches:** (lots of opportunities!)

   > The "hierarchical" organization of the elements of the theory

   > The "functional" representation that shows the hypothesized causal logic, or logic diagram, among the constructs

   > The "mathematical and/or pictorial" format, that specifies quantitative rules between constructs, or, trends to expect to see in graphs/diagrams

   > The "qualifiers" or special circumstances that affect the application of the theory in specific contexts ("moderator variables")

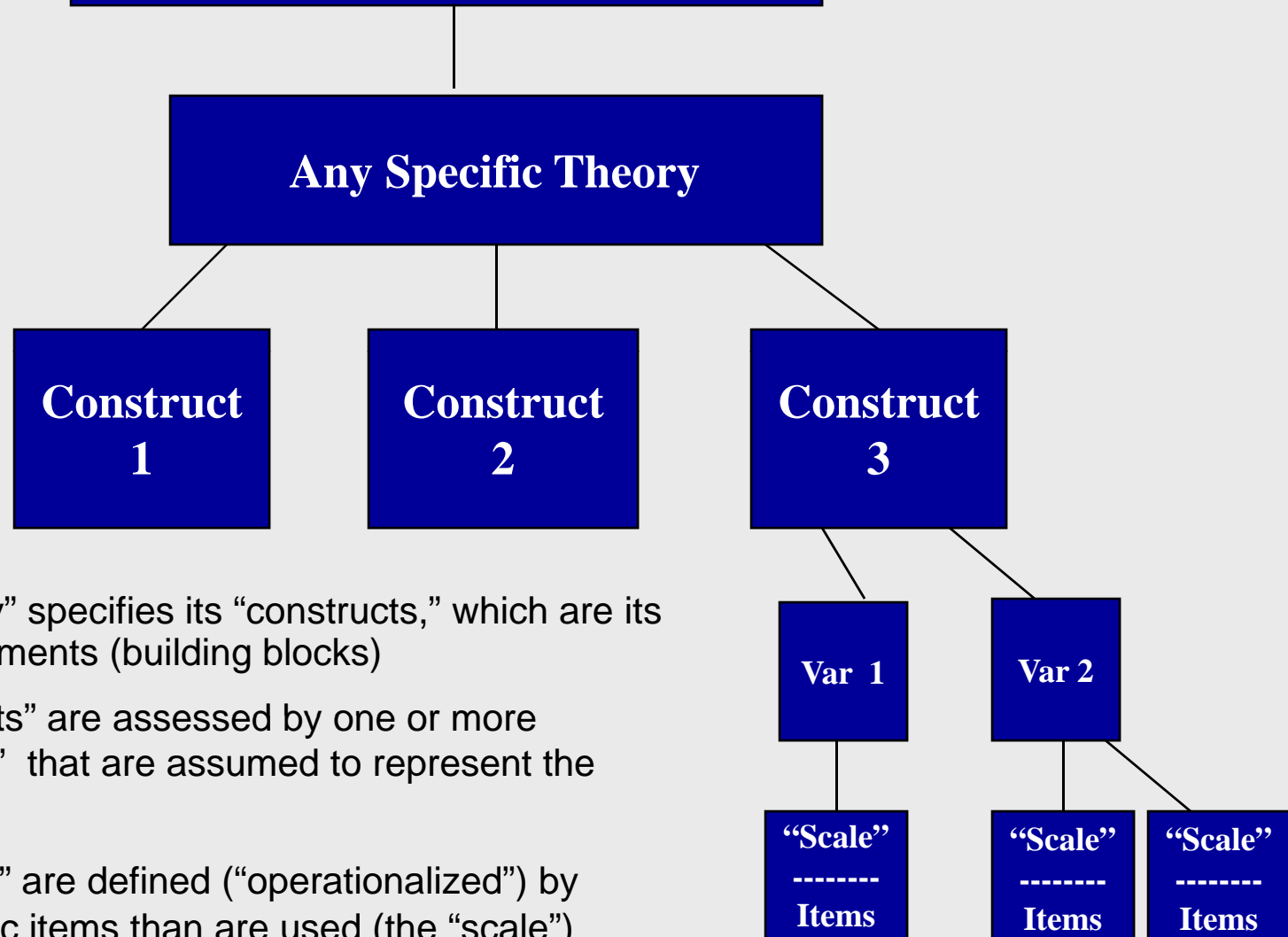# (1.) The Hierarchical Representation

- **A "top to bottom," levels-based diagram**

Hierarchy: Relevant "Language"

- Paradigms

- Constructs

- Variables

- Scales

- Items

- Goodness-of-fit

Paradigm for Conceptualizing the Bases of Behavior

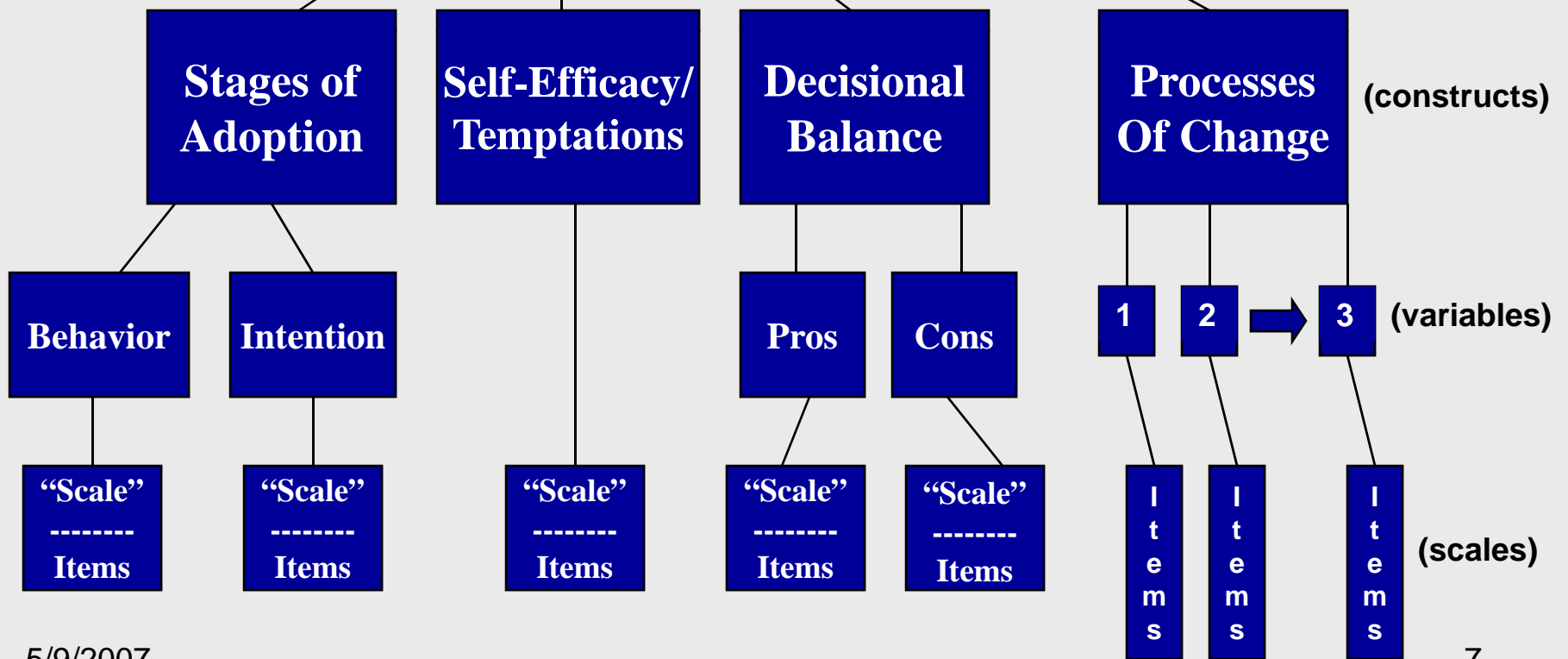**Paradigm**: A framework for why or how a health behavior "happens"

Any Specific Theory

Construct 1

Construct 2

Construct 3

Var 1

Var 2

"Scale" -------- Items

"Scale" -------- Items

"Scale" -------- Items

> A "Theory" specifies its "constructs," which are its major elements (building blocks)

> "Constructs" are assessed by one or more "variables" that are assumed to represent the construct

> "Variables" are defined ("operationalized") by the specific items than are used (the "scale")

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Deliberative, Logico-Rational, Value-Expectancy (paradigm)

Transtheoretical Model

Stages of Adoption | **Self-Efficacy/ Temptations** | **Decisional Balance** | **Processes Of Change** (constructs)

Behavior | **Intention** | **Pros** | **Cons** | **1** **2** **3** (variables)

"Scale" -------- Items | "Scale" -------- Items | "Scale" -------- Items | "Scale" -------- Items | "Scale" -------- Items | Items | Items | Items (scales)

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Hierarchy: Research Questions

- **What is the prevalence of any key construct?**

- **Can we create "scales" with good psychometric properties?**

- **What is the goodness-of-fit, if a construct is based on 2+ variables?**

- **Are psychometric properties robust across different populations?**

- **Are the constructs/variables/scales relevant for all health behaviors?**
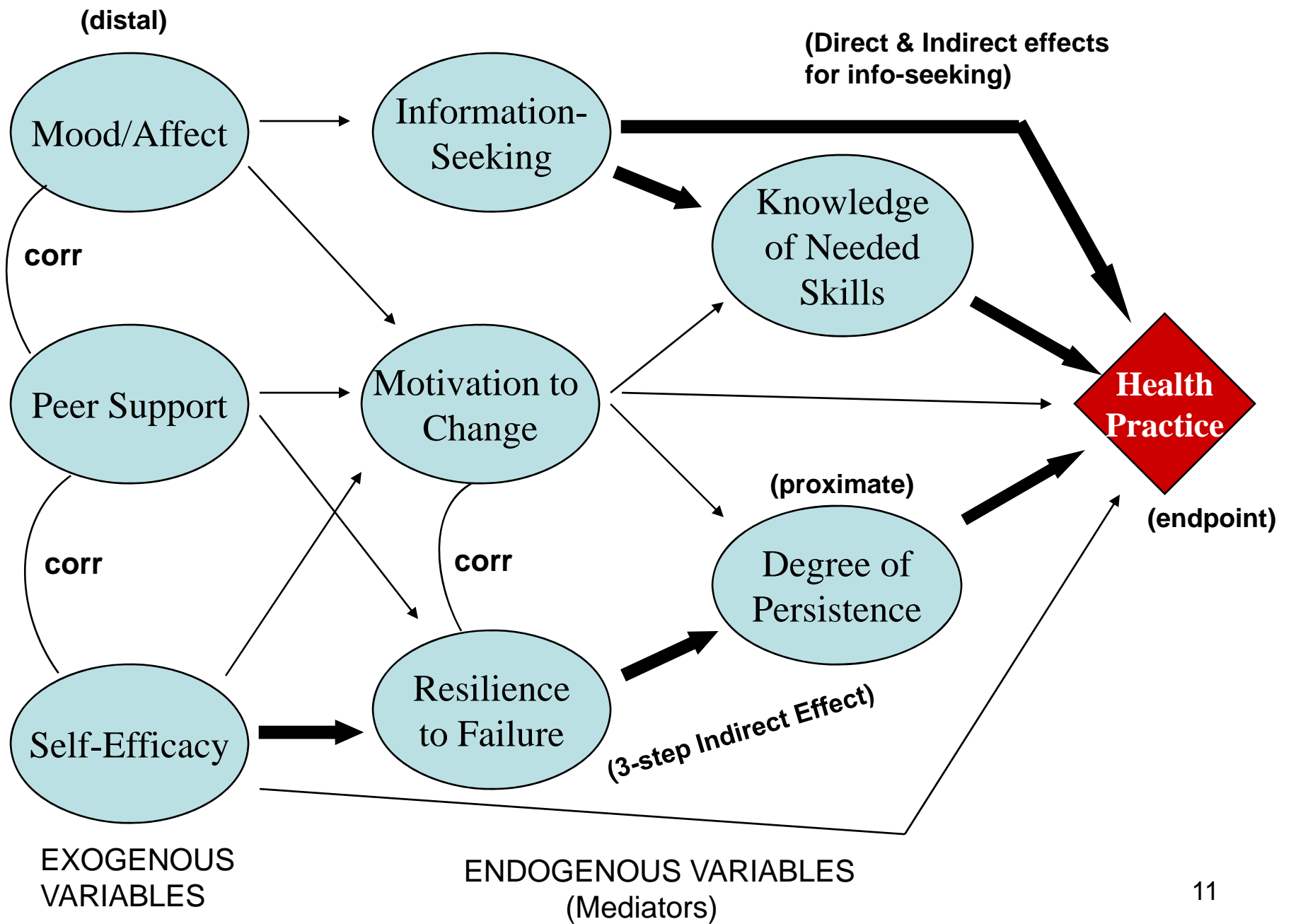
(2.) The Functional Representation

- **Putting the theory "into motion"**

- **A "domino-type" causal diagram**

- **Foundation for the intervention causal diagram**

Functional: Relevant "Language"

- An endpoint (the "dependent variable")

- Proximal & Distal variables

- Exogeneous variables

- Mediators; Endogeneous variables

- Direct & Indirect Effects

- Completely independent vs. Correlated variables

- Moderator variables

- Linear progression vs. "Feedback loops"

- Goodness-of-fit

(distal)

(Direct & Indirect effects for info-seeking)

Mood/Affect

Information-Seeking

Knowledge of Needed Skills

Health Practice

corr

Peer Support

Motivation to Change

(proximate)

corr

corr

Degree of Persistence

(endpoint)

Self-Efficacy

Resilience to Failure

(3-step Indirect Effect)

EXOGENOUS VARIABLES

ENDOGENOUS VARIABLES (Mediators)

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Functional: Research Questions

- **Do direct and indirect "paths" exist as hypothesized?**

- **Are the paths relevant across populations?**

- **Are the paths relevant across behaviors?**

- **Can we document "feedback loops"?**

- **Are constructs independent or correlated?**

(3.) The Mathematical/Pictorial Representation

Relevant "language":

- **Combination rules among variables**

- **Multiplicative vs. additive relationships**

- **"Cross-overs" or "U-shaped" curves**

Relevant analyses:

- **Hypothesis-testing for the specified associations**

(4.) The "Qualifier" Variables Aspect

- **Usually called "moderating variables"**

- **Theory descriptions often have "qualifiers" or circumstances under which the aspects of theory may need modification… e.g.: "a presumption that people have the resources to take action."   SES variables are sometimes cited.**

- **Moderator variables can also be identified by analyses that show situations/contexts in which adaptations are needed; Implies changes the causal diagram**

Moderators: Research Questions

- **What contexts require adapting the elements of a theory?**

- **Moderators can affect any of the prior ways of depicting theories:**

    > **The hierarchical**

    > **The functional**

    > **The mathematical/pictorial**

What Can HINTS Contribute?

- **There are "<u>Challenges</u>": Based on the nature of the survey design and content**

- **There are "<u>Considerations</u>": Cross-sectional nature not-withstanding, what else about the HINTS survey has to be factored in?**

- **There are "<u>Possibilities</u>":   Given the Challenges and Considerations, what seems to be the "low hanging fruit," and the potentials for "valued added" theory-relevant analyses?**

HINTS: [1] Some Challenges

- **As a cross-sectional survey, what can be inferred from the data, vis-à-vis causal relationships? (not much)**

- **Question wording and Response options:**

    > Behavior-specific vs. General (e.g., worry, risk)

    > Survival-rate questions are not stage-specific; and, fixed response options may not match 5-year survival rate collapsed across all stages

    > Health behaviors as DVs: How much "depth"?

- **National population   DoesNotEq Local circumstances**

HINTS: [2] Some Considerations

- **Regardless of what was "planned" for HINTS, each question is its own piece of information (that can be good!)**

- **What constructs were purposely built into the HINTS? Are there sections of the survey that purposely cluster theoretically relevant information, in order to take advantage of a thematic set of questions?**

  > **HINTS has individual variables with theory-relevance; not any complete theory**

HINTS: [3] Some Possibilities

- **Hypotheses from trends… "Based on what we saw from 2003 to 2005 on an IV, what do we expect in 2007, based on 'XX' conceptual framework?"**

  > Consistent with the communications principles that were a foundation of HINTS

- **Context-specific modifications for specific theory-relevant constructs, based on characteristics of a population and/or a health behavior**

  > Perhaps the biggest opportunity in the HINTS

- **Prevalence estimates for theory-relevant variables. Will assist with surveillance (Note: This assumes that the variables have a plausible link to a health-relevant behavior or to a health goal)**

HINTS: Possibilities (2)

- **Suggestions for adding new angles to a theory's constructs (e.g., What if stages of adoption, either TTM or PAPM, are associated with trust in sources of health information? Or with mental models?)**

- **Plan future HINTS content to include the key elements of a full possible causal diagram (DV as endpoint, "exogenous" starting variables, potential mediating variables)**

- **Bottom line: HINTS is a good resource for targeted manuscripts, on specific theory-relevant constructs; and, it is a good resource for the "Preliminary Work" section of a grant proposal [H.I.N.T.S = "hints"]**

Not Possible With HINTS So Far

- **Testing "Paradigms" versus each other**

- **Testing "Theory A" vs. "Theory B"**

- **Investigating longitudinal relationships**

- **Testing whole theories**

- **Doing in-depth analyses of social variables**

- **Investigating provider-patient communication**