Applying theory in health behavior research

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Background

- Nurse Practitioner in Primary Care

- PhD & Postdoctoral research
  - Appreciated stress-coping models & dealing with new situations
  - Applying Self-regulation theory to breast self-examination
  - Framing theory, attribution theory & seeking care for abnormal Paps

- Subsequent research
  - Examining a general theory of behavior to health behavior
  - Proposing, testing a theory of care seeking care
    - Breast changes
    - Asymptomatic screening
    - Hormone use with menopause
  - Applying self-regulation theory to cancer survivors & health promotion
  - Applying self-determination theory to health promotion behaviors
Health & Illness
Conditions of Concerns

• 1.
• 2.
• 3.
• 4.
• 5.
How are these Conditions related to Behaviors?

• 1.
• 2.
• 3.
• 4.
• 5.
Health Behaviors Are Diverse

- Seeking wellbeing
  - Eudaemonistic
- Asymptomatic Screening
- Symptomatic self-care behaviors
  - Independent
  - Dependent on HCP
- Treatment-related behaviors
Purpose

- Describe how basing research on theory can be especially useful and efficient
- Review commonly used models and theories r/t health behavior
- Apply models and theories to health promotion research
- Provide examples of customized interventions for target population
Outline for today

- Micro level - theory
- Individual level - target
- Patient-centered interventions
- Macro level
- Population level
Clarifying terms for today

- Illustration
- Concept – abstraction about a phenomena, based on observations
- Proposition – statement of relationship(s) among two or more concepts, tested or untested
- Theory - set of concepts & propositions that describe, explain or predict a phenomenon
- Conceptual framework – set of interrelated concepts re: a phenomenon or theme
How can we change health behaviors more effectively?

- Replicate prior intervention
  - Conceptually similar but new behavior
  - New population

- Replicate & Extend prior intervention based on
  - Theory
  - Research/Empirical findings
  - Clinical expertise
  - Logic & creativity
  - Combination of above

- Start from “scratch”
Imagine: Starting from Scratch
Why theories for behavioral research?

- A summary of primary, relevant concepts
- Analogy to a recipe or a map
- Utility –
  - Provides some structure, guidance
  - Facilitates efficiency
  - Supports replication
  - Allows for alteration
  - Flexibility
Analogies

- Illustration
- Menus: Conceptual Models
- Theories: Recipes
- Propositions: Combining ingredients
- Concepts: Ingredients
Why theories for behavioral research?

• Provides an overall picture of concepts r/t behavior of interest
• “Conceptual mapping”
• Antecedents → Behavior → Consequences
• Reflection
“Conceptual mapping” FORMAT slides 11-14 to match others

- Antecedents
  - Non-modifiable
    - Clinical history
  - “Less modifiable”
    Demographic

- “More modifiable”
  Knowledge
  Beliefs
  Affect
  Skills

Others?
“Conceptual mapping”

- Modifying concepts
  - Contingencies
  - Conditional effects
  - “It depends on”
    - Ex. gender
    - class

- Mediating concepts
  - Explanatory
  - How antecedents influence behavior
    - “Through which”; “In turn”
      - Education → Skill → New behavior
      - Education → Altered Perceptions → New behavior
“Conceptual mapping”

- Antecedent 1 →
- Antecedent 2, as Modified by Concept 3, →
- Antecedent 4, as Mediated thru Concept 5, →
- Health-related Behavior →
- Consequences - of what?
  - Health status?
  - Quality of life?
How to choose a theory to guide research?

- An iterative process
- Expertise - condition of concern
- Appreciation - dimensions of behavior
- Examining theories in literature
  - Adequacy
  - Logical
  - Parsimony
  - Accuracy/external validity
  - Complexity
  - Evidence for same
Choosing a theory

WHO?

Individual or

- Patients in hospital
- People in a clinic

WHAT UNIT OF ANALYSIS? -

Individual levels of behavior e.g.,

- Cessation of smoking
- Adoption of safer sex

Population focus?

- Caucasian vs. African American
- Latinos vs. Native Americans

- Group/Clinic or Population rates of
  - Smoking (r/t Lung Cancer
  - Safer sex (r/t Teen Pg)
Concerns & Health Behaviors

• WHAT - “Know your clinical problem”

• WHAT - Diagnose dimensions of behavior r/t it
  – Onset- New or ongoing?
  – Location – associations?
  – Characteristics –
    • done alone or not? w/ sx or not?
  – Aggravating/Hindering
  – Relieving/ facilitating
  – Temporal factors
One Theory of Behavior

- Behavior at T1
- Reinforcement post T1
- Behavior at T2

- Advantages?
- Assumptions?
- Limitations?
Another conceptual model

PERSONAL FACTORS
(Biological, Cognitive)

ENVIRONMENTAL FACTORS
(Physical or Social)

→ BEHAVIOR
A Classic Theory of Health Behavior: The original Health Belief Model

**Individual Perceptions**
- Perceived susceptibility to disease “X”
- Perceived seriousness (severity) of disease “X”

**Modifying Factors**
- **Demographic variables** (age, sex, race, ethnicity, etc.)
- **Socio-psychological variables** (personality, social class, peer and reference group pressure, etc.)
- **Structural variables** (knowledge about the disease, prior contact with the disease, etc.)

**Likelihood of Action**
- Perceived benefits of preventive action
- Perceived barriers to preventive action
- Likelihood of taking recommended preventive health action

**Cues to action**
- Mass media campaign
- Advice from others
- Reminder postcard from physician
- Illness of family members or friend
- Newspaper or magazine article
Background

Sociodemographic Factors
(e.g., education, age, sex, race, ethnicity)

Perceptions

Expectations
- Perceived benefits of action (minus)
- Perceived barriers to action
- Perceived self-efficacy to perform action

Threat
- Perceived susceptibility (or acceptance of the diagnosis)
- Perceived severity of ill-health condition

Action

Cues to Action
- Media
- Personal influence
- Reminders

Behavior to reduce threat based on expectations
Roots of HBM: Value Expectancy Theories

- Importance (Value) of
  - avoiding illness or getting well
- Beliefs (Expectation; probability)
  - that specific health behavior prevents or ameliorates illness
Health Belief Model

- Clarify - Theory?
- Applications
Health Belief Model

- Assumptions?
- Advantages?
- Disadvantages?
Health Belief Model

• Advantages
  – Intuitive appeal; understood
  – Widely used & Well tested
  – Supported with disease focus (e.g., cancer screening)

• Assumptions
  – Conscious, rational thought
    • Lack of consideration of unconscious behavior or habit
    • Lack of incorporation of relevant affect
  – Health valued over other domains in life
  – Cues - present, salient
Health Belief Model

• Disadvantages
  – May not include enough of relevant concepts
  – Measures of same concepts have differed across studies, making generalizations difficult
  – Cues – studied little
Social Cognitive Theory

PERSONAL FACTORS
(Cognitive & biological events)

ENVIRONMENTAL FACTORS
(Social and Physical)

BEHAVIOR

RECIPROCAL DETERMINISM
Social Cognitive Theory

PERSON $\rightarrow$ BEHAVIOR $\rightarrow$ OUTCOME

Self-efficacy expectations vs. Outcome efficacy expectations
Social Cognitive Theory

- Clarify - Theory?

- Applications
SCT

- Advantages
- Assumptions?
- Disadvantages?
Trans-theoretical model

- Origins, Purpose
- Research
- Debate
Trans-theoretical model (TTM)

Explanatory Concepts:

- Decisional balance
  - Pros: Cons
  - Ratio
- Self-efficacy
- Processes of change
  - Consciousness raising
  - Stimulus control

Outcome: Stage of Change

- Precontemplation
- Contemplation
- Preparation
- Action
- Maintenance
- Relapse
TTM: Stage of Change
Transtheoretical Model of Change

- **Pre-contemplation**
  - Dramatic Relief
  - Consciousness Raising
  - Help Relationships
  - Confidence \( \downarrow \)
  - \( \Delta \) Temptation
  - Con > Pro

- **Contemplation**
  - Self & Environment Re-evaluation
  - Higher Confidence
  - Con = Pro

- **Preparation**
  - Self- & Social-Liberation
  - Increasing Confidence
  - Con ≥ Pro

- **Action**
  - Stimulus Control
  - Counter Condition
  - Relationship
  - Confidence \( \uparrow \)
  - \( \downarrow \) Temptation
  - Con < Pro

- **Maintenance**
  - Self-Efficacy High
Trans-theoretical model

• Clarify - Theory?

• Applications
Trans- theoretical model

- Assumptions?
- Advantages?
- Disadvantages?
Standard Interventions:

Advantages & Disadvantages
Patient-centered interventions

In practice, clinicians

- Assess patients’ key characteristics (e.g., age, risk status, screening habits, beliefs, barriers)
- Adapt approaches to key characteristics
- Align approach with patients’ goals or preferences (e.g., frequency of mammography, or type of colorectal screening)
Patient centered interventions:

- In research, interventions in which:
  - Patient is assessed on selected characteristics
  - Content is selected to address characteristics of patients’ experiences
  - Process is responsive to patients’ goals or preferences

- Lauver et al., (2000) PCIs. RINAH
Targeted Intervention

- Customized to match characteristics of a group of people who share characteristics such as socio-demographic or behavioral factors
Tailored Intervention

- Customized to individual characteristic(s)
- Involves multiple dimensions on which to customize; dimensions may have many values
- Number of interventions may be finite
- May be based on theory
Process of Tailoring involves

- Assessment of individual characteristics
- Library of messages
- Protocol for selecting individualized text
- Channel for delivery
Using the HBM

<table>
<thead>
<tr>
<th>Baseline Assessments</th>
<th>Perceived Susceptibility</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Intervention or Message #1</td>
<td>High</td>
</tr>
<tr>
<td>High</td>
<td>#3</td>
<td>#4</td>
</tr>
</tbody>
</table>
Per TTM

If peoples’ stage is ___, then use processes of ___

<table>
<thead>
<tr>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consciousness raising</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Dramatic relief</td>
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<td></td>
<td>Environmental reevaluation</td>
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<td></td>
<td>Self-reevaluation</td>
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<td></td>
<td>Self-liberation</td>
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<td></td>
<td>Counterconditioning</td>
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<td></td>
<td>Helping relationships</td>
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<td></td>
<td>Reinforcement management</td>
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<td></td>
<td>Stimulus control</td>
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</table>

Time

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Using the TTM

<table>
<thead>
<tr>
<th>Baseline Assessments</th>
<th>Stage of Behavioral Change</th>
<th>Decisional balance Precontemplation</th>
<th>Preparation</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Pros low</td>
<td>Intervention #1 Address salience; pros</td>
<td>#2 Specific plans, how to act</td>
<td>#3 Affirm</td>
<td></td>
</tr>
<tr>
<td>If Cons high</td>
<td>#4 n/a?</td>
<td>#5 Strategies - dealing with difficulties of initiation</td>
<td>#6 Strategies - dealing with temptation, boredom</td>
<td></td>
</tr>
</tbody>
</table>
Effectiveness of Tailored messages

- Compared to standard messages, tailored messages have been:
  - Read more, remembered better, discussed more often
  - Liked more, agreed with more, understood better
  - More relevant, “meant for me”

- Effective in promoting some behavioral outcomes
How I chose a theory

• Clinical background
• Clinical problems seen by other HCPs
• Comparison of theories to clinical problem
• Critical analysis
• Conclusion
Theory of Care-Seeking Behavior

Clinical & Socio-demographic Factors → (Psychosocial) Affect Beliefs Norms Habits → Care-Seeking Behavior

- Affect: Anxiety about mammography & results
- Beliefs: About benefits & risk
- Norms: Professional recommendations
- Facilitators/External barriers: Affordability & accessibility

(Lauver, 1992; Triandis, 1980, 1982)
Program of Research

Based on theory,

- Assessed women’s salient feelings, beliefs, norms, & habits re: mammography procedure & results
- Identified, developed measures for concepts
- Conducted descriptive studies w/ measures
- Pilot study of tailored intervention
- Proposed larger scale, tailored intervention
PURPOSE

- To test effects of tailored messages on mammography & clinical breast examination over time
- To examine how messages & external barriers influence screening in combination
Design

- Had 3 groups
  - no message initially,
  - only recommendations, or
  - recommendations plus tailored discussion

- Recruited WI women
  - w/o cancer, w/o mammograms in prior 13 mos (I.e., habit of not being screened)

- Followed up at
  - 3-6 mos. & 13-16 mos

Lauver et al., (2003). Tailored messages… CANCER.
Applying, Tailoring

- Assessment of individual characteristics
- Library of messages
- Protocol for selecting individualized text
- Channel for delivery

- Assessed on beliefs, feelings, external barriers
- Protocols w/ written text
- Telephone
“What stood in your way?”

- Advanced practice nurses assessed
- Shared core content for all participants on selected beliefs, affect, barriers and
- Customized discussions by
  - Order
  - Depth /degree
  - Breadth/Interest
Participant
I have no relatives with breast cancer (Belief)

Nurse
I’m glad to hear that … You may think that you do not need a mammogram because you have no relatives with it. Yet, many women with breast cancer do not have any family members with it. So, all women can get breast cancer, even without cancer in the family…
Social Cognitive Theory

- Advantages
Participant

I am afraid of what I might find

(Feelings)

Nurse

Some women get worried about breast cancer, so it’s hard for them to do what they need to do to stop worrying--to have a mammogram! ... Most mammograms do not find cancer. Chances are you would learn that your breasts look normal, if you have one when you don’t have problems. Then, you could be relieved from worry about breast problems.
Financial Costs / External Barrier

➢Offering Factual Information
  • “…the cost of mammograms varies, but is usually in the amount of… and covered by…”

➢Assessing
  • “What health insurance/ coverage, do you have, if any?”
If women say they have Medicaid, Nurse Medicaid usually pays all of the cost. You should not have to pay any more.
Nurse:

If your income is quite low, the Wisconsin Well Women’s Program may be able to pay for your mammogram (Pap test and more). Shall I give you their contact information?

1-608-266-8311

or

http://dhfs.wisconsin.gov/womenshealth/wwwp/
Findings

- Overall, both our messages increased screening rates.
- But, even first follow-up evaluation calls prompted some screening among controls.
- Tailored messages increased screening rates in the long run, not the short run.
- Among those with high perceived barriers to screening, our tailored messages had the most effect.
Chosing another theory

- Focus on health promotion
- Push → Behavior → Pull
- Based on SDT
- Motivational aspects to behavior
- Consistent with personal & professional philosophies of practice & ethics
SDT Applied to Patient-Centered Interventions with Health behavior Goals

Williams, Geoffrey, Univ. of Rochester

Intervention

Supportive Relationship
Respecting Autonomy; choices in goals
Elicit Reasons/Motives & Obstacles
Collaborate on sub-goals & practical plans for attainment

Mediators

Perceived autonomous motivation for behavior change

Outcomes

Initial goal attainment & maintained Behavior change

Perceived competence for behavior change

Improved health outcomes
Recent Research

- Design
- Samples-Primary care patients
- Settings-US and Thailand
- Intervention
- Results
Current study

- Another PCI, pilot
- Focus on individual level yet
- Targeted to at risk population
- Tailored to women of low SES
- Individualized on their goals/values
Current study

- Design
- Sample
- Setting
- Intervention
  - Phase 1
  - Phase 2
What else influences health behaviors?

1. 
2. 
3. 
4. 
5.
A Conceptual Model for Interventions with Populations

The PRECEDE-PROCEED Model

Phase 5 - Administrative and policy diagnosis
Phase 4 - Educational & organizational diagnosis
Phase 3 - Behavioral & environmental diagnosis
Phase 2 - Epidemiological diagnosis
Phase 1 - Social diagnosis

Health Promotion

Health education
Policy, Regulation, Organization

Predisposing factors
Reinforcing factors
Enabling factors

Behavior & lifestyle factors

Environment

Health
Quality of life

Phase 6 - Implementation
Phase 7 - Process evaluation
Phase 8 - Impact evaluation
Phase 9 - Outcome evaluation

View example
Applications of the PPM

➢ To health promotion
  • physical activity
  • dietary behaviors

➢ To screening
  • E.g., cancer

➢ To disease prevention
  • smoking cessation
Phases 5 & 6
Socio-Political Context

➢ Creates & offers health promotion resources

➢ Funds disease focused services, in turn influencing
  • Predisposing
  • Reinforcing
  • Enabling Factors
Policy Makers

➢ Establish atmosphere of quality care

➢ Establish policies to foster resources for

  • Health education for individuals
  • Sensitively designed targeted messages for special populations
  • Programmatic Resources for screening
  • Enabling factors
Administrators can put policies in action & organizations

- Foster acceptable, user-friendly services
  - “Front desk” must be welcoming & facilitating
  - More one-stop shopping
  - Easy scheduling
  - Creative, experiential, In-services
- Enact policies for those who cannot afford
- Assure accessibility of resources about screening
  - Health literacy, Culturally appropriate
  - Transportation
Phase 6
Policy, Regulation & Organization

- Federal – HP 2010 goals; reimbursement
- State programs
- Local Screening institutions’ policies
  - Hours - evenings, weekends?
  - Location – buslines?
- HMOs & Use of HEDIS indicators
  - Use of skilled RNs to tailored discussions with those who lack screening
Health practitioners

- Front line workers
- Carry out local administration plans or
- New state-wide or federal plan
- To reach HP 2010 goals
Phase 6
Health Education Efforts

- Programs targeted to special group
  - At HMOs, work, church, library
- Informational Resources for special group
  - Web sites
  - Handouts
    - in clinic settings
    - in non-traditional settings - beauty parlors, locker rooms
Phase 4: Addressing Predisposing factors

- Beliefs
- Feelings
- Values
- Preferences
- Such factors can be reflections of Culture
Ex. “Common Sense” beliefs can guide patient behavior re: diseases/cancer:

- Identity of cancer - symptoms?
- Cause – treatable?
- Timeline - short or long development?
- Consequences – of dz & tx?
- Cure/Control – possible?
  - Leventhal
Phase 4
Predisposing: Cultural Beliefs

- What does cancer “act” like?
- What causes cancer?
- When does cancer start? How does it develop?
- What do you think happens to one who gets cancer? With, without treatment?
- What cures/controls are possible?
Phase 4
Reinforcing Factors

- Interpersonal dynamics
  - Partner, family, friends
  - Health practitioner
- Cultural norms
- Social acceptability
Phase 4
Reinforcing factors

- Positive consequences
  - “Not bad” experience
  - Normal results; good news
  - Taking care of family
- Uncertain results; more tests needed
- Negative Consequences of procedure
  - Pain, Embarrassment
- Address typical reinforcers in messages to special populations
Phase 4
Enabling factors ➔

➢ Resources targeted to special group
  • External programs or services
    ▶ Wisconsin Well Woman Program

➢ Skills at navigating the system
  • Need special appts for screening, or included with “annual”?
  • Make appts on own, or by referral?
Phase 3 → Health Status

- Behaviors
- Environments
  - Accessibility
  - Affordability
  - Acceptability