This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike License. Your use of this material constitutes acceptance of that license and the conditions of use of materials on this site.

Copyright 2006, The Johns Hopkins University and William Brieger. All rights reserved. Use of these materials permitted only in accordance with license rights granted. Materials provided “AS IS”; no representations or warranties provided. User assumes all responsibility for use, and all liability related thereto, and must independently review all materials for accuracy and efficacy. May contain materials owned by others. User is responsible for obtaining permissions for use from third parties as needed.
Using and Making Models and Theories

William R. Brieger, MPH, CHES, DrPH
Johns Hopkins University
Section A

Theory-Based Models
Theory-Based Models

- Force field analysis
- Health belief model
- Social (cognitive) learning theory
- Theory of reasoned action/planned behavior
- PRECEDE framework
What Is a Model?

- A conceptual framework for organizing and integrating information
- A diagrammatic system of measurement (for example, mathematical or statistical models)
- A theoretical construct that explains relationships among variables; valued for predictability
What Is a Model?

- An ideal or exemplary program or method
- A simulation of reality in other dimensions (time, scale)
What Is a Model?

- A conceptual structure successfully developed in one field and applied to some other field to guide research and practice (for example, an analogy)
- When used interchangeably with the term *theory*, the visual representation of the elements of a theory
Characteristics of a Good Theory

- A theory should logically explain existing empirical generalizations and yield precise and accurate predictions of new generalizations.
- It should explain and predict better than other theories.
- It should explain empirical findings in substantive terms, not as artifacts of the methods employed to obtain them.
Characteristics of a Good Theory

- It should apply to complex real-life settings as well as to highly simplified and tightly controlled research contexts.

- It should be generalizable to well-defined and relevant universes and populations beyond the boundaries of the particular studies in which it was built and tested.
Characteristics of a Good Theory

- It should infer casual relationships between phenomena being investigated.
- It should define those phenomena in validly measurable terms appropriate to the explanations and predictions made.
Relationships Among Variables in a Model

- Independent $\rightarrow$ Intermediate $\rightarrow$ Dependent
- Independent
  - Age, gender, ethnic group, occupation
- Intermediate
  - Knowledge, attitudes, perceptions
- Dependent
  - Behavior, health status
Building Blocks of Theories

Variables and Concepts

- Value expectancies
  - This may also be termed “attitude toward a behavior” or “outcome expectancies” and is a type of cost-benefit analysis
  - People first need to have some concept of the potential or likely consequences of an action
Building Blocks of Theories

Variables and Concepts

- Judgment is made about whether that consequence or outcome is desirable or not
- Weigh the advantages / disadvantages
- Perceived efficacy of the proposed action is another way of looking at this concept
- Will the action produce a specified result, and is that result good?
Attitudes

- An attitude is a disposition toward an object, person, or situation.
- This disposition may be favorable or unfavorable.
- An attitude may develop from personal experience or through interaction with and learning from other important people in a person’s life.
Attitudes

- An attitudinal disposition is stimulated by the presence of or reference to the object, person, or situation of interest.
- Behavior of accepting or avoiding an object is not automatically influenced by an attitude.
Attitudes

- It is often the case that more than one attitude is present in a given circumstance, and, thus, behavior may be influenced by the stronger or more pressing attitude.
Norms and Their Perception

- **Norms** are socially accepted behaviors or social expectations of desirable behavior.
- People belong to reference groups—people to whom they look to get cues of what behaviors are acceptable in a given social situation.
- Reference groups include, but go beyond, peer groups.
Norms and Their Perception

- Perception of norms concerns what people believe their reference group expects them to do.
- People put a value on those expectations and consider whether or not they care what other people think they should do.
Norms and Their Perception

People belong to more than one reference group and may experience conflicting perceptions of what is “correct” behavior in a situation.
Skills Vs. Self-Efficacy

Skills

- The actual ability to perform a task is the basis of skill
- *Skill* is mastery of a task both physically and cognitively
Skills Vs. Self-Efficacy

- Self-efficacy
  - It is one thing for people to possess the cognitive and motor skills to perform a task, and quite another to have the confidence to carry out the action
  - Self-confidence is also termed *self-efficacy*
Skills Vs. Self-Efficacy

Self-efficacy

- People gain self-efficacy by observing others, listening to encouragement from others, and by practicing the behavior themselves
Locus of Control

- A person’s perception that he/she is the entity primarily responsible for life outcomes
- In the case of illness, the belief that one can personally prevent or make a difference in recovery from sickness
- These are issues of control
Locus of Control

- **External control** means that the person believes that chance, fate, or powerful people are responsible for life outcomes.
- While beliefs about **internal control** imply that the person him/herself can make a difference.
Perceived Threat

- Does a person perceive that there are specific circumstances that may arise that could threaten or harm him/her?

- This may be broken down into two components:
  - Threat of susceptibility—could it happen to me?
  - Threat of severity—if it happens, will the consequences be serious?
Knowledge and Beliefs

Knowledge

- Recollection of factual information
- But knowledge is culture-bound
- It is possible for people to memorize facts given at a clinic-based health talk but not believe them

Beliefs

- Accepted truths or certainties
Enabling Factors

- The physical and material resources needed to perform a behavior are known as *enabling factors*.
- These may include physical access to a service, possession of the funds needed to purchase a product, availability of transportation, and the time needed to carry out a task.
- The lack of resources is also termed *barriers*. 
Intention

- *Intention* is an intermediate variable between such factors as attitude or perceived norms and the actual behavior.
- Intention reflects a decision or willingness to undertake a behavior and is considered a good predictor of future performance of that behavior should the opportunity present itself.
Section B

Force Field Theory
A Basic Model
Force Field

- Field theory looks at vectors or forces working for or against a goal
- A straight forward tool for community level planning
- Places all the cards (variables) on the table

Continued
A Basic Model
Force Field

- Does not distinguish ‘types’ of forces or variables
- Offers strategy suggestions of increasing positive and decreasing negative forces
Force Field Theory

Dynamics of driving and restraining forces toward a goal

Restraining Forces

Driving Forces

Goal
Sleeping under a bed net
Bed Net Force Field

GOAL: obtaining insecticide treated bed nets

+ **DRIVING FORCES** +
  + beautifies home ———>
  + warmth in rainy season ———>
  + enhances social status ———>
  ++ restful/non-insect sleep ———>
  + some privacy in bed ———>
  + keeps bed clean ———>

TOTAL +7

- **RESTRAINING FORCES** ———>
  — initial cost high as school fees ———>
  — requires recurrent costs to treat ———>
  — hot to sleep under in dry season ———>
  — won’t prevent malaria/sun causes ———>
  — malaria is not a serious illness ———>

TOTAL -10

**STRATEGIES TO INCREASE:**
satisfied users to tell others of their positive experiences

**STRATEGIES TO DECREASE:**
create revolving fund or credit system to aid purchases
Force Field Strategies

- Increase the driving forces
- Decrease the restraining forces
- Do both
- Assess the “changeability” of the forces to target for increase/decrease
  - Easy to change
  - Resources available
  - Others will support, etc
### Strategies to Promote Bednets

<table>
<thead>
<tr>
<th>Reinforce driving</th>
<th>Counteract Restraining</th>
</tr>
</thead>
<tbody>
<tr>
<td>— Emphasize beauty, pride of ownership as status symbol</td>
<td>— Organize revolving fund and community credit scheme to address cost issues</td>
</tr>
<tr>
<td>— Satisfied users can promote with neighbors</td>
<td>— Address seriousness issues</td>
</tr>
<tr>
<td>— Stress benefits of restful sleep—link with beliefs about malaria, tiredness, overwork</td>
<td>— By contrasting adult and child illness</td>
</tr>
<tr>
<td></td>
<td>— As well as seriousness of adults missing work—losing money</td>
</tr>
</tbody>
</table>
Goal: Attending Antenatal/Prenatal Care (ANC)

**Driving forces**

- Enjoy meeting other women there
- Get some medicines (Folic acid, TT vaccine)
- May protect my baby
- Maternity center located nearby

*Total +6*

Source: The Basics

Continued 36
Goal: Attending Antenatal/Prenatal Care

Restraining forces

- Costs money to register
- If you go too early, may expose pregnancy
- Mother-in-law won’t support idea
- Takes time away from the work/market
- Injections may cause infertility
- Nurses often yell at people
Goal: Attending Antenatal/Prenatal Care

**Restraining forces**

- Total –10
- Driving – Restraining = – 6
<table>
<thead>
<tr>
<th>Strategies to Promote ANC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reinforce driving</strong></td>
</tr>
<tr>
<td>— Stress the enjoyment of songs and meetings by having mothers help develop new songs</td>
</tr>
<tr>
<td>— Ensure regular and adequate supplies of folic acid, etc.</td>
</tr>
</tbody>
</table>