

**Invited lecture for the
NIH/NIDCR Survey Research Methods Series**



**Purposes of surveys and questionnaires:
Assessing prevalence, risk, and outcomes**

Ken C. Winters, Ph.D.
Professor, Department of Psychiatry
University of Minnesota
winte001@umn.edu



Topics

1. General principles

- Characteristics of a Good Questionnaire and Survey
- Types
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured

2. Core purposes

- Epidemiological surveys
- Measuring risk and protective factors
- Outcomes measures

3. Sources of existing tools



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured
- **Core purposes**
 - Epidemiological surveys
 - Measuring risk and protective factors
 - Outcomes measures
- **Sources of existing tools**



Characteristics of a Good Measure: Design Properties

1. Clearly defined purpose

- What?
- Who?
- How?

2. Specific content

- Specific to domain of interest

3. Standard administration procedure

- Respondents receive same instructions and materials

4. Standard scoring procedure



Characteristics of a Good Measure: Psychometric Properties

Psychometrics = measurement properties
of a measure

1. Reliability

- consistency and stability

2. Validity

- Does the test measure what it was designed to measure?
- Content validity
- Construct validity



Characteristics of a Good Measure: Psychometric Properties

- **Consistency and stability**

“I would rather read a book than go to a party with friends.”

- Agree
- Disagree

“I go out with friends on weekend nights.”

- Never
- Sometimes
- Often



Characteristics of a Good Measure: Psychometric Properties

1. Reliability

- consistency and stability

2. Validity

- Does the test measure what it was designed to measure?
 - Content validity
 - Construct validity



Characteristics of a Good Measure: Psychometric Properties

- **Valid scales of a measure of health habits**
 - Exercise
 - Diet
 - Balance of work and recreation
 - Sleeping habits
 - ⊘ **Political preferences**



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - **Self-administered - scales vs individual items**
 - **Interviews – structured; semi-structured**
- **Core purposes**
 - **Epidemiological surveys**
 - **Measuring risk and protective factors**
 - **Outcomes measures**
- **Sources of existing tools**



Self-administered Format

1. Administration

- Individual administration
- Paper-pencil and computer versions

2. Scale-based measures

3. Individual item-based measures



Scales

- **Typical features**
 - **Multiple items measuring the same domain or construct**
 - **In most instances, about 6-10 items needed for a given scale**
 - **Each item needs to have the same forced-choice format (e.g., true or false; agree or disagree)**
 - **Total score (usually based on sum of the items) is the data point of interest**



Scales

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. My use of alcohol or drugs has caused many problems in my life.....	_____	_____	_____	_____
2. I can quit using alcohol or drugs on my own.....	_____	_____	_____	_____
3. I am glad to be in treatment.....	_____	_____	_____	_____
4. My problems are caused by alcohol or drugs.....	_____	_____	_____	_____



Individual Items



- **Typical features**
 - **Single item (or a few) measures the domain or construct of interest**
 - **Typical to have varying forced-choice options**



Individual Items

1. How satisfied are you with your life as a whole these days?
 1. Completely dissatisfied
 2. Quite dissatisfied
 3. Somewhat dissatisfied
 4. Neither, or mixed feelings
 5. Somewhat satisfied
 6. Quite satisfied
 7. Completely satisfied
10. Have you ever had to repeat a grade in school
 1. No
 2. Yes, one time
 3. Yes, two or more times
11. Did you ever attend summer school to make up for poor grades or to keep from being held back?
 1. No
 2. Yes, one summer
 3. Yes, two summers
 4. Yes, three or more summers
12. Have you ever been suspended or expelled from school
 1. No
 2. Yes, one time
 3. Yes, two or more times



Interview Format



- **Often used to obtain detailed information on life history and diagnostic information**
- **Computer-aided administration and scoring is becoming the norm**
- **Structured vs semi-structured**



Interview Format

Structured format:

1. “During the past month, did you feel very sad, blue or down in the dumps to the point where you were not your normal self?”

Yes

No

(based on the respondents answer)



Interview Format

Semi-Structured format:

1. “During the past month, what kind of mood were you in? Did you feel very sad, blue or down in the dumps? Was this feeling not your normal self?”

(probing questions: “Have others commented on your mood? Did you feel this way for every or nearly every day during the past month?”)

- True
- Possibly true
- False



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured
- **Core purposes**
 - **Epidemiological surveys**
 - **Measuring risk and protective factors**
 - **Outcomes measures**
- **Sources of existing tools**



Epidemiological Surveys

- **Surveys of large populations**
- **Typically self-administered measures**
- **Often combine both single items and scale-based items.**
- **Elements of user-friendly survey**
 - **Structure**
 - If too long, compliance diminishes; more than 60 minutes can be a problem
 - Content flow is logical
 - Branching to reduce response burden
 - **Item and response option wording**
 - keep each relatively simple
 - Should be at a 6th grade reading level
 - No double negatives



Epidemiological Surveys

5. Where did you grow up mostly?

1. On a farm
2. In the country, not on a farm
3. In a small city or town (under 50,000 people)
4. In a medium-sized city (50,000 – 100,000)
5. In a suburb of a medium-sized city
6. In a large city (100,000 – 500,000)
7. In a suburb of a large city
8. In a very large city (over 500,000)
9. In a suburb of a very large city
10. Can't say; mixed

6. What is your present marital status?

1. Married
2. Engaged
3. Separated/divorced
4. Single

10. Did your mother have a paid job (half-time or more) during the time you were growing up?

1. No
2. Yes, some of the time when I was growing up
3. Yes, most of the time
4. Yes, all or nearly all of the time

11. How would you describe your political preference? (Mark only one circle.)

1. Strongly Republican
2. Mildly Republican
3. Mildly Democrat
4. Strongly Democrat

5. Independent
6. No preference
7. Other
8. Don't know, haven't decided



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured
- **Core purposes**
 - **Epidemiological surveys**
 - **Measuring risk and protective factors**
 - **Outcomes measures**
- **Sources of existing tools**



Measuring Risk and Protective Factors

- Both item-based and scale-based are commonly used in the field
- Risk and protective factors = underlying contributor to a given clinical outcome
- A given risk or protective factor can represent the same dimension, and often can be accurately measured as either a risk or a protective factor.
 - conventional values (asset) or non-conventional values (risk)



Measuring Risk and Protective Factors

- Some variables are better measured as an asset rather than as a risk, and vice versa.
 - measurement issue (variability; willingness to report)
 - some research on which direction is preferred
- **Example: Self-Esteem in Adolescence**
 - Measuring as an asset is technically worse than measuring this factor as risk. A measure of *low-self-esteem* is more significantly related to health behaviors than a measure of *high-self-esteem*.



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured
- **Core purposes**
 - **Epidemiological surveys**
 - **Measuring risk and protective factors**
 - **Outcomes measures**
- **Sources of existing tools**



Simple Logic Model

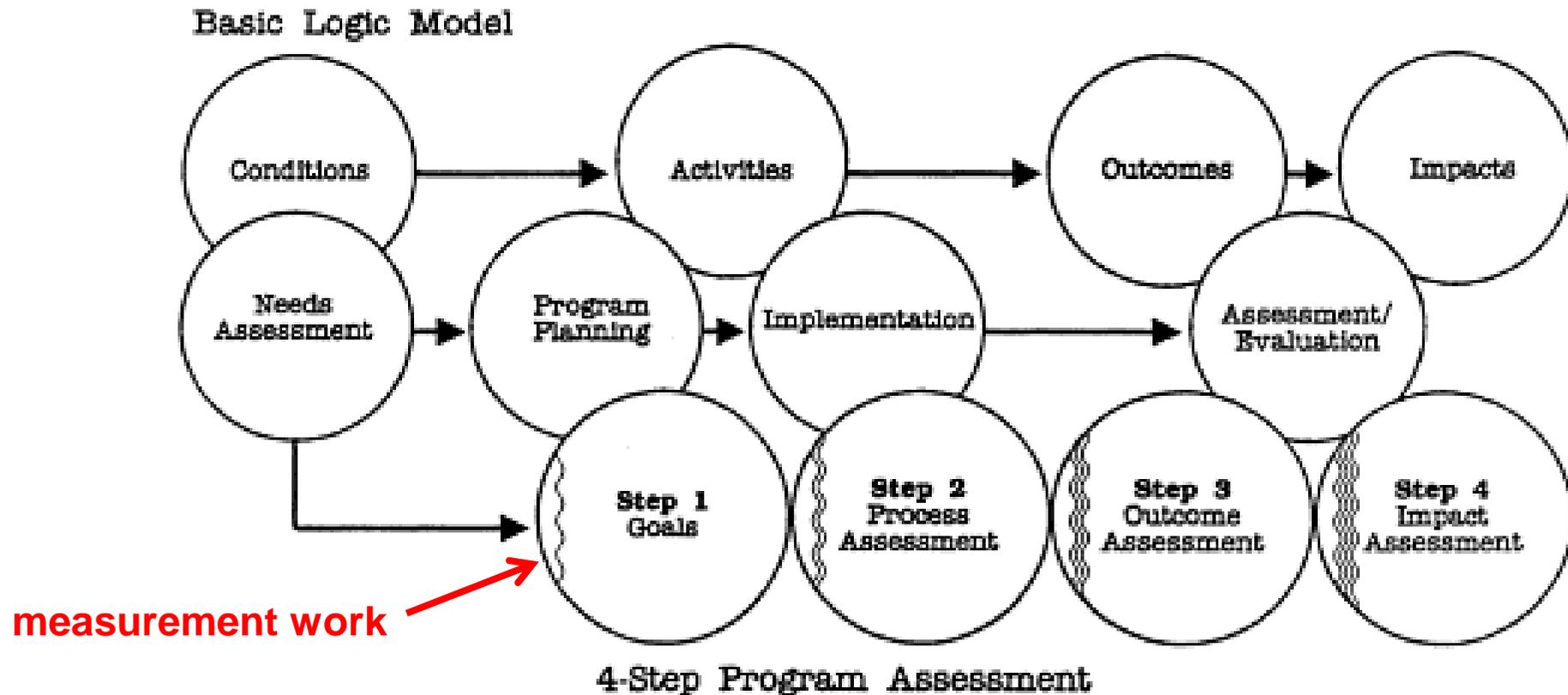


Figure 1. Logic Models and the 4-Step Program Assessment Model



Simple Logic Model

Basic Logic Model

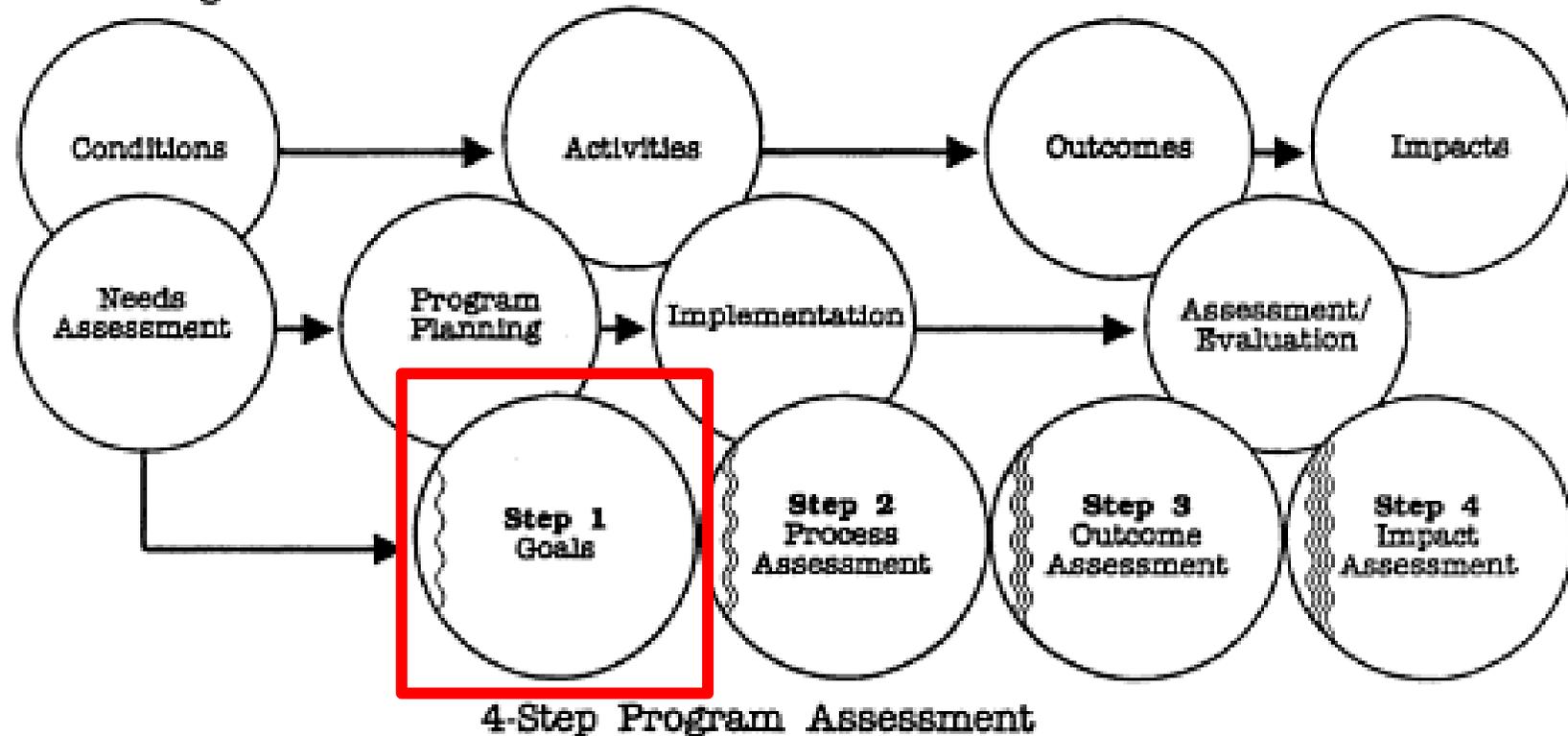


Figure 1. Logic Models and the 4-Step Program Assessment Model



Logic Model

Step 1: Goals

- **What are the primary goals of the project?**
- **What are the target groups you aim to reach?**
- **What do you hope to accomplish?**



Simple Logic Model

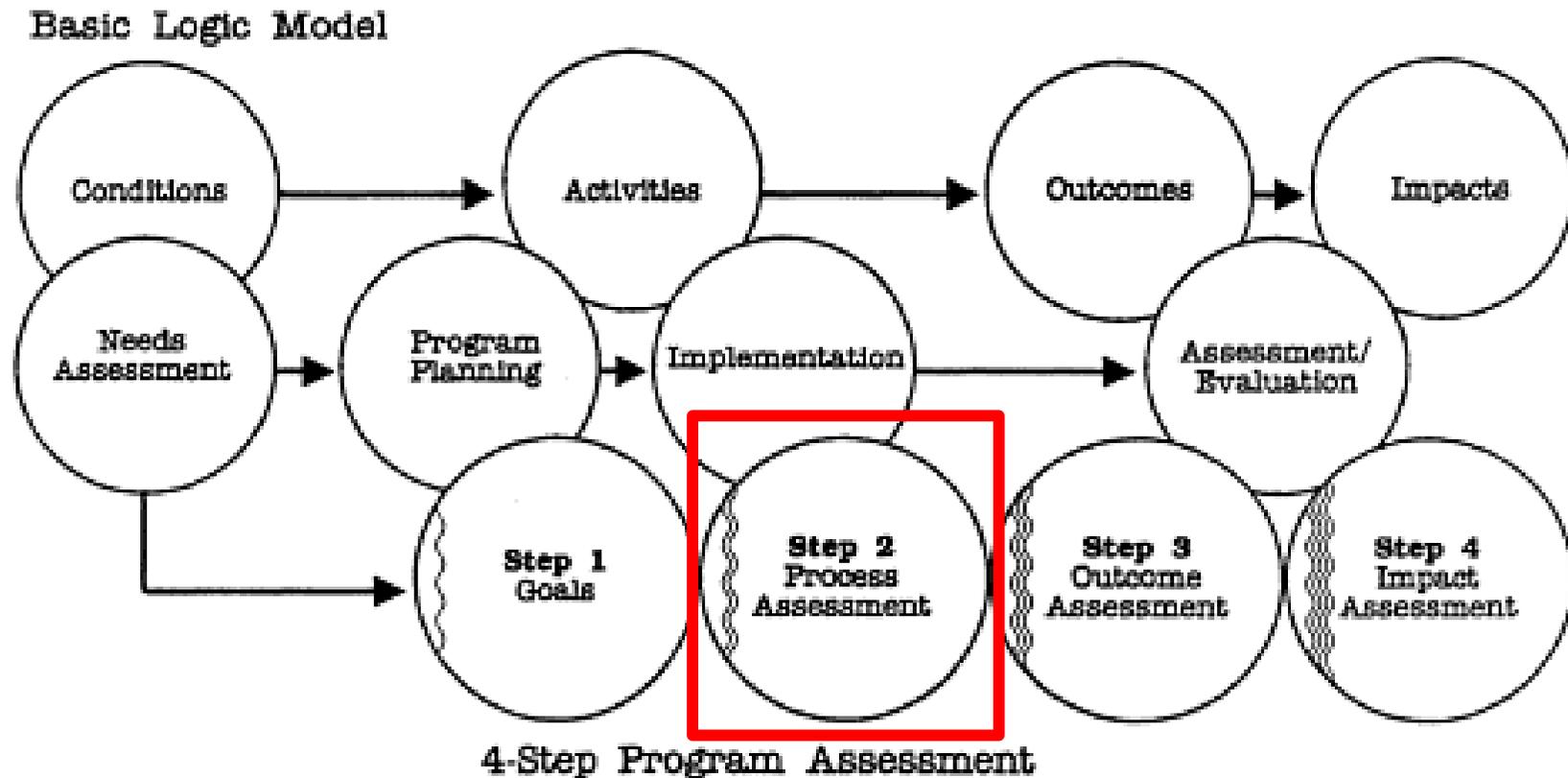


Figure 1. Logic Models and the 4-Step Program Assessment Model



Logic Model

Step 2: Process Assessment

- **Monitors activities that should lead to outcomes**
 - How many staff did what?
 - Nature and extent of planning meetings?
- **Provides accountability of your efforts to funder, administration, etc.**
- **Collects information relevant to why the program worked or did not work**



Simple Logic Model

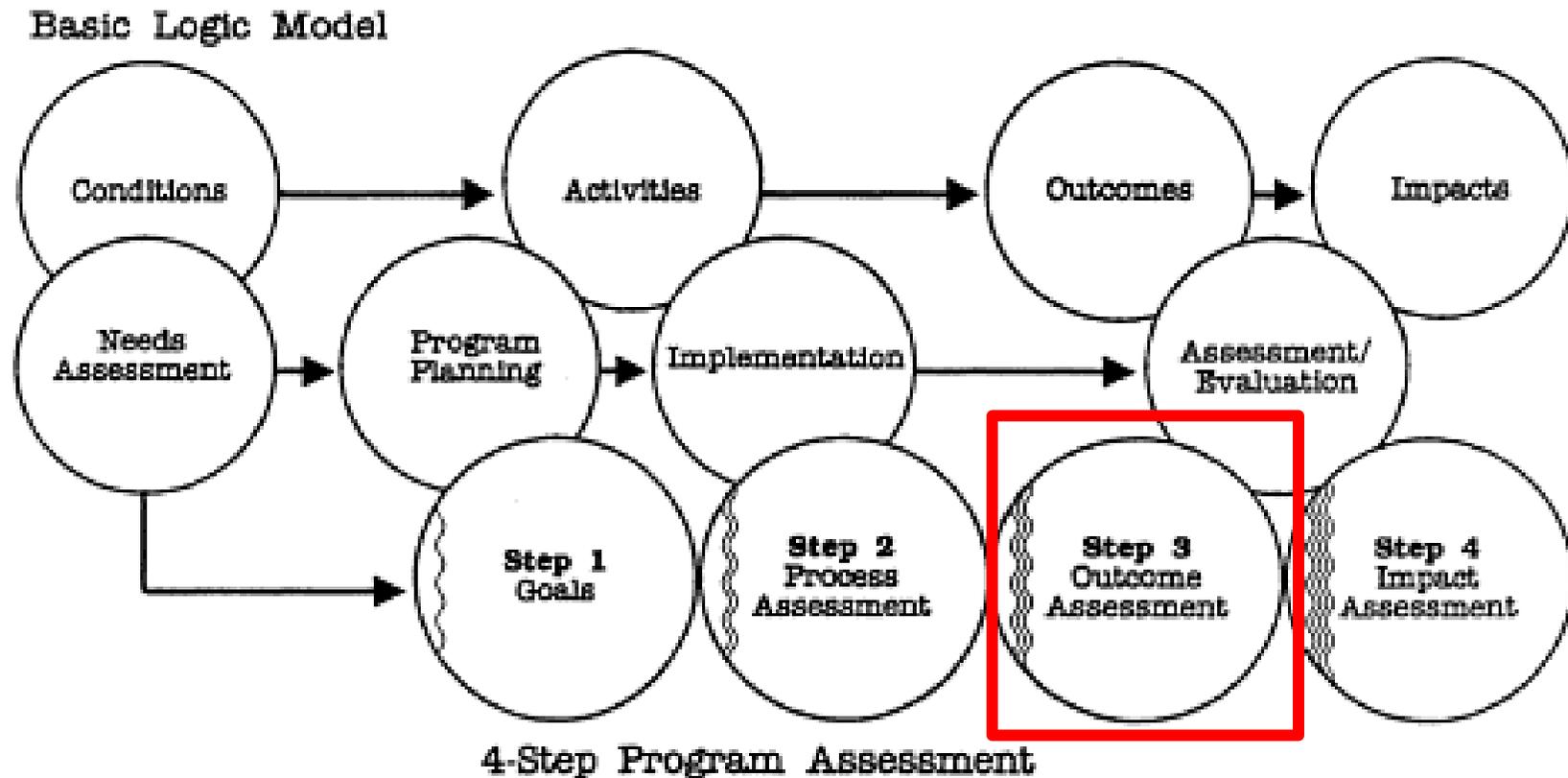


Figure 1. Logic Models and the 4-Step Program Assessment Model



Logic Model

Step 3: Short-term Outcomes

- **Measuring immediate or proximal effects**
 - What are the direct effects of the program?
- **Traditionally measured during or at completion of the program**
- **Examples**
 - Changes in the number of referrals
 - Improvement in scores on risk/protective factors



Simple Logic Model

Basic Logic Model

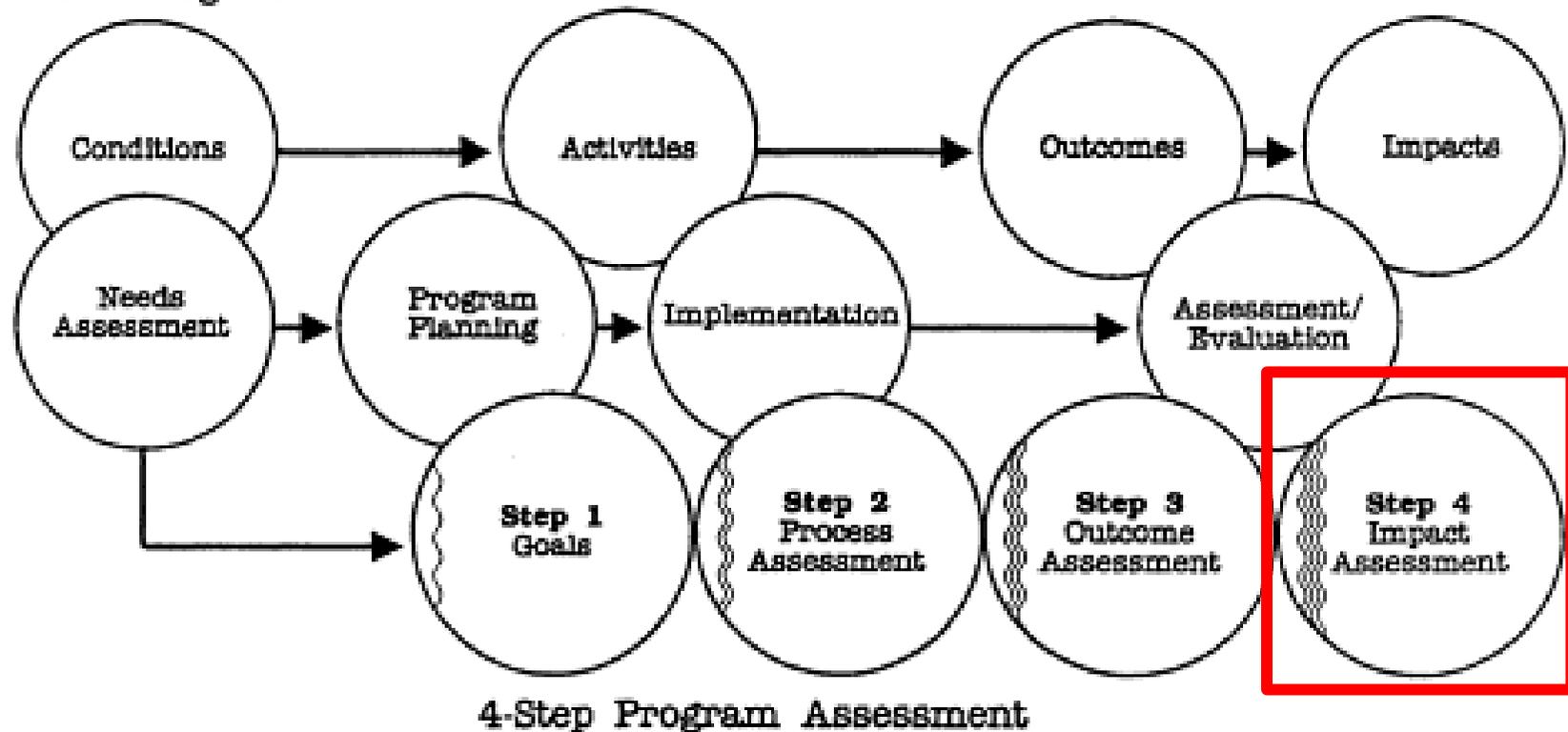


Figure 1. Logic Models and the 4-Step Program Assessment Model



Logic Model

Step 4: Long-term (Impact) Outcomes

- **Ultimate effects desired by the program**
 - **Examples from adolescent drug treatment:**
 - Reduction in drug use
 - Fewer DUI arrests
 - Reduction in school disciplinary actions
- **Traditionally measured after completion of the program (e.g., at 6-months follow-up)**
 - Archival records may also provide useful data



Topics

- **General principles**
 - **Characteristics of a Good Questionnaire and Survey**
 - **Types**
 - Self-administered - scales vs individual items
 - Interviews – structured; semi-structured
- **Core purposes**
 - **Epidemiological surveys**
 - **Measuring risk and protective factors**
 - **Outcomes measures**
- **Sources of existing tools**



Sources of Existing Tools

PhenX Toolkit <http://www.phenxtoolkit.org>

- The web-based *PhenX Toolkit* is a free service available to the public and is intended for use by investigators who are designing or expanding health-related studies.
- The Toolkit consists of a catalog of high-priority and scientifically rigorous measures for use in research efforts.



Sources of Existing Tools

The following information is provided:

- A brief description of the measure
- Protocol(s) for collecting the measure, with supporting images and tables
- Rationale for selecting the protocol for inclusion in the Toolkit
- Details about the personnel, training, and equipment needed to collect the measure
- Other information, such as any special procedures for collecting the measure
- Selected references



Sources of Existing Tools

- [Add to My Toolkit](#) #030000 Alcohol, Tobacco and Other Substances (14) »
- [Add to My Toolkit](#) #020000 Anthropometrics (16) »
- [Add to My Toolkit](#) #070000 Cancer (12) »
- [Add to My Toolkit](#) #040000 Cardiovascular (14) »
- [Add to My Toolkit](#) #010000 Demographics (15) »
- [Add to My Toolkit](#) #140000 Diabetes (15) »
- [Add to My Toolkit](#) #060000 Environmental Exposures (14) »
- [Add to My Toolkit](#) #190000 Gastrointestinal (12) »
- [Add to My Toolkit](#) #160000 Infectious Diseases and Immunity (15) »
- [Add to My Toolkit](#) #130000 Neurology (14) »
- [Add to My Toolkit](#) #050000 Nutrition and Dietary Supplements (12) »
- [Add to My Toolkit](#) #110000 Ocular (15) »
- [Add to My Toolkit](#) #080000 Oral Health (15) »
- [Add to My Toolkit](#) #150000 Physical Activity and Physical Fitness (14)
- [Add to My Toolkit](#) #120000 Psychiatric (14) »
- [Add to My Toolkit](#) #180000 Psychosocial (15) »
- [Add to My Toolkit](#) #100000 Reproductive Health (15) »
- [Add to My Toolkit](#) #090000 Respiratory (14) »
- [Add to My Toolkit](#) #170000 Skin, Bone, Muscle and Joint (10) »
- [Add to My Toolkit](#) #210000 Social Environments (15) »
- [Add to My Toolkit](#) #200000 Speech and Hearing (15) »



Sources of Existing Tools

http://www.mentorfoundation.org/about_prevention

- Several resources, including measures, for building an evaluation plan or strengthening your current program evaluation are provided.
- Each resource is summarized and then followed by either its web-based source or the link to a supporting document.
- Examples: Center for Substance Abuse Prevention (CSAP) Prevention Tool; Kellogg Foundation's Logic Model Development; CDC's library of multiple sources



Sources of Existing Tools

3. Sources of information of specific measures

- Mental Measurements Yearbook (Buros Institute)
- Tests in Print (Buros Institute)
- Tests: A Comprehensive Reference (Pro-Ed)
- PsychINFO (<http://www.psych.org>)



Thank You

For more information

Ken Winters, Ph.D.

winte001@umn.edu

