# CONCEPT EXPLICATION AND THEORY CONSTRUCTION

## PART I: MEANING ANALYSIS

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### *What are Concepts?*

Research concepts are the terms (words or phrases) that we use to direct how we look at a research problem and what we measure and analyze. They are the building blocks of our knowledge about communication or any other subject. Without them, we could not synthesize or accumulate scientific knowledge from observation of data in specific situations. Scientific research concepts have some special features that we need to know in order to learn what research is all about. But first, we should realize that research concepts are but a special type of concept and that more generally considered concepts play a vital role in our everyday lives.

Basically, concepts are the terms or labels we use to organize our everyday experiences and to communicate our experienced thoughts and feelings to others. Classification and comparison through the use of concepts are essential to dealing with the world around us. Fortunately, we are born into a world of concepts; we learn thousands of concepts through socialization and education throughout our lifetime. These are nouns, adjectives, verbs, and adverbs contained in our vocabularies. For example, the sentence "A competent journalist writes clearly" has four concepts: *journalist, competence, writing, and clarity.* If a person reading the sentence misunderstands any of these concepts, the meaning of the sentence may be lost.

Although concepts can be classified as nouns, adjectives, *etc*, we should not equate a concept and a linguistic term. A linguistic term is the smallest unit in a composition or text. It is a building block for larger linguistic units, such as a phrase, a sentence, or a paragraph. In the previous example, "A competent journalist writes clearly," there are five linguistic terms, but only four concepts.

A concept is a basic unit of meaning in our conception or thought. It can be a single word or a phrase. For example, consider the theoretical statement: "*Television violence viewing* is *positively related* to *aggressive behavior*." This statement has nine linguistic terms, but only three (italicized) concepts: television violence viewing, positive relationship, and aggressive behavior. Such a distinction results from the relationships between concepts and their referents. Each concept has its real world referent, which could be a subject or object, such as *journalist*, or a type of behavior, such as *aggressive behavior*, or *television violence viewing*, a quality, such as *competence*, a type of relationship, such as *positively related*, or any of various other types of referents.

| Concept | Referent | as distinct from: |
|---|---|---|
| journalist | subject or object | non-journalist etc. |
| aggressive behavior | type of behavior | non-aggressive Behavior, behavior in general, etc. |
| TV violence viewing | type of behavior | non-violent TV viewing, TV viewing in general, etc. |
| competence | personal quality | incompetence, etc. |
| positively related | statistical relationship | negative relationship, unrelated to, etc. |

We have seen that some linguistic terms lack real world referents and thus are not concepts. There are many other reasons why concepts are not equal to linguistic terms. One of them is that sometimes our thought is so complex and requires such precision that the idea can be expressed only by a combination of several linguistic terms, as for example, *television violence viewing*. Conceptually, we are saying that what is of concern is viewing of a *particular type* of television program, not simply undifferentiated viewing of television.

Communication is made easier for us by the knowledge that others in our culture share a large portion of our vocabulary and that they are likely to have some idea of what we mean when we use a particular concept. The fact that a concept is embedded in a sentence and in a set of preceding sentences also helps to reduce ambiguity of meaning. Most of the time we function fairly well without spending much time and effort in trying to be precise about definitions of the concepts we use. Rough understanding is good enough in most social situations, and the particular context of the interaction tends to clarify the meaning of a concept.

There are times when we need more accurate communication. For example, we need precise directions to find a street in a strange city or when we are about to take a prescribed medicine. Feedback from an examination in a demanding course may lead us to seek greater precision in understanding terms in our subsequent reading. We may also feel the need for more careful definition when we converse with others about an abstract concept that we care about a great deal. Feelings of being misunderstood and of confusion about what the other person has said are symptoms of definition problems.

Why do we experience misunderstanding and confusion? Partly because we don't spend time defining things either for ourselves or for others. The result of the lack of practice in definition is that we have difficulty when we communicate with others. When left without explicit definition, a given concept may come to have widely varied and private meanings for different people and people may attach different meanings to the same phenomena or ideas. The situation is only somewhat better for research concepts, but at least we have developed ways of making concepts more precise, and accurate communication more likely.

Singleton et al.'s glossary defines concepts as: "abstractions communicated by words or other signs that refer to common properties among phenomena" (p.482). Although this definition is incomplete, it does add some things to our understanding of concepts. It suggests that concepts are ***abstract*** because they identify some general property or dimension that is common to the phenomena or objects being examined. In using the concept "universities," we are implying that UW-Madison, Northwestern, and Harvard (*etc*.) have something in common. Perhaps it is a formal characteristic such as "a collection of organizations that have in common their goals as teaching and study in the higher branches of learning and empowered to confer degrees in special departments" (*Webster's Collegiate Dictionary*). Maybe it's that they have

"underdog" football teams. Whatever the basis for the communality, we are assuming that "universities" will be recognized by others as including UW-Madison and similar institutions.

But what is not implied when we use the term "universities" is that UW-Madison and the other institutions are alike in all respects. "Universities" is a more abstract and general concept than UW-Madison, Harvard, *etc*. The concept "universities" gains the advantages of generality, but at the expense of losing the detailed characteristics of each institution that represent ways in which they differ.

### *Types of Concepts*

There are some other things you should know about concepts. For example, they differ in what role they play either in everyday discourse or in scientific explanation. There are at least five types of concepts:

First, there are ***singular*** concepts that denote particular objects --persons (e.g., George Gipp, George Bush), places (e.g., Indiana, Peoria) or things (e.g., UW-Madison, Exxon). In scientific research, singular concepts represent the objects we study (observe, interview, *etc*.) and measure.

A second type, ***class*** concepts, are collections of singular concepts: e.g., politicians, cities, universities, individuals, television networks, *etc*. Class concepts are to describe and categorize the units of analysis of our research and the population from which our sample is drawn. They may be quite broad (e.g., individuals, newspapers) or more specific (e.g., eligible voters in Dane County, Wisconsin daily newspapers).

Third, ***relational*** concepts make connections between other forms of concepts: e.g., equal to, greater than, associated with, caused by, part of. Relational concepts are important in doing research because they link (i.e., state the nature of the relationship) between our variable concepts (e.g., The frequency of newspaper reading *is related to* knowledge about current economic conditions; newspapers *have more* local government news than does local television news).

Fourth, there are ***variable*** concepts--we'll call them simply ***variables*** for short--that distinguish among singular concepts within a class of concepts by evaluating them as to their possession of some underlying dimension or indicator: e.g., competence (of journalists), clarity (of writing samples), size (of universities), political knowledge (of citizens), violent television viewing (of children). Variables are crucial to scientific research in that they describe important ways in which our units of analysis (objects comprising the class concept) differ. In research, we try to identify variables that are important to the research questions asked about our units of analysis. We will say a lot more about that later.

Finally, there are ***meta-concepts*** that are statements about a singular concept or class of concepts that summarize their characteristics across a number of often unspecified variable concepts: e.g. nice person (regarding a particular person), *glasnost* policies (of the former Soviet Union), democracy (in the U.S. and other nations). Meta-concepts pose a potential communication problem if the receiver (listener or reader) is unsure about or misunderstands the set of variables intended by the sender (e.g., "nice person" may represent a summary over many

variables, the composition of which may vary for different people). Meta-concepts are frequently emotionally held and value laden, both factors adding to the difficulty in making them less amenable to calm, rational consideration.

Meta-concepts also present a challenge to the researcher. Complex concepts with many unclear or confounded dimensions must be unpacked if they are to be accessible for research examination. How can the researcher break down an ambiguous and/or complex meta-concept into variables or dimensions that can be communicated and investigated? The answer is the process of meaning analysis that we will examine later in this paper.

### *Scientific Concepts and Everyday Concepts*

Scientific concepts differ from our everyday concepts largely in terms of how we develop them and how we use them. They differ more in degree in these ways than in kind. That is, we could not easily pick out a list of concept labels and sort them neatly into boxes marked "scientific" and "everyday." In fact, the same label may be used for both kinds of concepts. Only by identifying the definition behind the label and its connection to observing or measuring it in the "real world" could we make a judgment as to its scientific quality.

Perhaps the best way to judge how well a concept meets scientific standards is to think of a set of criteria each varying in degree (say, from 1 to 10) from non-scientific to scientific. The first such criterion is ***abstractness***. To have any explanatory value, a concept should be more than just a description of an attribute of a singular object at a given point in time. It should be abstract in the sense that many objects would differ and hence could be compared on this variable concept. In another sense, a concept should be sufficiently abstract such that it could be observed in many places and times using varying methods of observation. We are tempted to say about variable concepts, the more abstract the better. Unfortunately, we must be hesitant to advocate maximum abstraction because abstractness operates in tension with some other scientific criteria for concepts. At least some degree of abstractness is desirable, however.

***Clarity of meaning*** is a second criterion of scientific variable concepts. The "intentional" and “technical” language of the researcher regarding what she/he means to convey in using the concept must be sufficiently clear. Because of the limits of verbal language, perfect clarity is never possible. The techniques of explication of concepts that we discuss later are useful to improving clarity of meaning.

***Operationalizability*** is a long word describing the degree to which the verbal or conceptual definition of a concept can be translated into ways of observing the concept among the objects (singular or class concepts) of interest. This is done through "extensional" language that stipulates how values (e.g., numbers, values) are to be assigned to the units of analysis on the basis of observational procedures. This is what we call ***measurement***. Observation is used here in a broad sense to include such procedures as participant observation, self-reports, text or content analysis, and experimental manipulation. Unfortunately, there is some tension between operationalization and abstractness. The more abstract the concept, the more difficult is operationalization. Easily operationalized concepts are apt to be lacking in abstraction. Again, the techniques of explication are useful. The apparent dilemma can be overcome. If used well, explication allows us to be profitably abstract and yet at the same time have well measured concepts.

A final standard for scientific concepts is ***precision***. It involves the degree to which the meaning of the concept and its theoretical and empirical relationships to other concepts (if any) can be communicated to other scientists and to non-scientists (e.g., policy makers, general public). That is, if the concept is to be useful to others it must be understood by others. Precision is broader than the other standards in that unless the concept is sufficiently abstract, clear in meaning, and complete in its operationalization, it cannot be precise in communication to others. Others must know not only what meaning was intended but also how and how well the operational measures fit the definition. Replication by other researchers, so crucial to the accumulation of scientific knowledge, requires that concepts have clarity. Precision is also essential to making valid inferences from research evidence.

As you will discover, most research concepts only partially meet these standards. Most are improvements over everyday concepts on these dimensions but most could also benefit from more careful explication. Concept development is, or at least should be, a continuing process.

To illustrate what we have said about concepts up to now, consider the following assertion: "*Television is harmful to the political process*."

This could be a sanitized version of an everyday conversation at a cocktail party. But statements like this are found in books and magazine articles criticizing the press and in commentary on the political scene. We could regard them simply as editorial or polemical arguments, but we could also treat them as serious theoretical statements capable of being empirically tested in research. Let's see what would happen if we were to treat the statement seriously as a quasi-theoretical statement and to evaluate the concepts it uses:

What are the concepts found in the statement? *Television* is obviously one variable concept, but the second is less clear. Presumably it has to do with the functioning of the political system, say *effectiveness of the political process*. Before evaluating these variable concepts, however, let's think about what other types of concepts are present or implied by the statement.

First, what *singular* or *class* concepts are involved here? That is, what units of analysis are being "harmed"? Where do we look to assess the "harm"? Is the author saying that television is affecting *citizens* adversely, or *political actors* (politicians or public officials), or *political content* in the press, or some combination of these? Further, what is the domain of political systems included in the statement? Are they referring to political processes in the United States, or some set of political systems, or all political systems? We cannot go further in designing research until the units of analysis are specified, e.g., U.S. adult citizens, American presidential candidates, *etc*.

Second, what *relational* concepts are involved? "Television *is harmful* to the political process" appears to be setting up a causal relationship or at least a *negative association* between television and the political process. Of course, we need more details about when (just now or forever) and how the influence of television is manifested.

Let's return to our *variable* concepts. "*Television*," the source of the alleged negative effect, is really an example of a *meta-concept* until it is explicated more fully. The nature of the comparison is unclear (television vs. what?) and we do not know how it varies or whether a single variable or a complex of variables underlies it.

*"Television*" certainly meets our first scientific conceptual standard of *abstractness*; unfortunately it is overly abstract. It fares badly on our second standard, *clarity of meaning*, in not telling us what is meant by the term. For example, is it that the *time* people spend watching television diverts them from participating in the system? If so, then "television" would be defined in terms of time-budgeting or displacement of other activities. Or is it that viewing television *entertainment content* that portrays politicians in a negative light harms the political process, or is it that watching television *news content* conveys mistrust? Or is the effect not directly on the television viewers, but alternatively enacted through *politicians focusing* on images rather than on issues when facing television cameras, or through *television reporters* asking different kinds of questions. All of these five alternative interpretations of "television" appear to be operationalizable; we can imagine reasonable ways of measuring each of them. But we need to decide on which dimension of "television" fits our "theory" before going on to evaluate the quality of measurement. Obviously, many definition problems must be solved before we can consider the precision of the concept.

"*Effectiveness of the political process*," the second variable, also suffers from a lack of *clarity of meaning*. What criteria (dimensions or indicators) of political process effectiveness should we use? Vote turnout, campaigning, political knowledge, and frequency of political discussion are possible and seemingly operationalizable criteria for assessment. But before moving to measurement, we need a theory of political process to guide us.

We should regard our examples of concepts, "television" and "effectiveness of the political process" as being pre-scientific; before they can be considered as acceptable scientific variable concepts they must be more fully explicated. Although we chose somewhat extreme examples, the problems of inadequate conceptualization is rampant in many areas of research. The lack of clear and operationalizable criteria is almost universal in evaluation research which frequently falls into the lap of the public relations specialist. PR sequence students take heed!!

### *The Logic of Concept Definition*

Sharing of meaning between sender (e.g., writer, speaker) and receiver (e.g., reader, listener) is the basis of all communication. Minimal sharing makes communication possible and the goal of much of our communication is to extend the degree of sharing of conceptual meaning. The purpose of conceptual definition is to increase the amount of shared meaning between the person stating the definition and other persons. In our everyday interactions, we don't devote much attention to definition for a number of reasons: we most frequently interact with family and friends with whom we have many common experiences, in most situations we have little need to make strong efforts to improve shared meanings; and most of us haven't practiced our definition skills in the past.

The development of special definition skills is common to journalists and public information specialists as well as to research practitioners. The journalist and information specialist must be able to understand and clarify the concepts of a given specialized field (e.g., science, government) or group (e.g., management, interest groups) and to communicate their own understanding in redefined form to a broader, less specialized audience. That is the mediating function of the communication professions. We should not expect that every concept or term used by a special field or group will be immediately understood; we need to know some basic

concepts in any specialized area before other terms become clear. Part of the journalistic task is to use our acquired specialized knowledge and skill to examine the specialized language or "jargon" of a field or group to determine which concepts are meaningful technical terms and which are merely indecipherable arcane prose. The useful "jargon" of today often becomes the "common sense" of tomorrow.

Communicating ideas to others is as much a responsibility of the research practitioner as it is of the journalist and information specialist. Concepts are the vehicle for conveying complex ideas and for making sense out of the confusion of research findings. But the researcher has an additional responsibility not shared by the journalist and information specialist. That is, that research concepts must be sufficiently well defined so that other researchers can ***replicate*** and extend the research findings linked to that concept. To go back to our earlier example, other research investigators must be able to understand precisely what "television" and "effectiveness of the political process" mean in order to replicate and extend whatever findings served as evidence for the assertion of their relationship.

***Concept explication*** is the process by which abstract concepts are systematically linked to observed variations in those concepts in the "real" world with appropriate methods. This is accomplished by carefully developing two types of definitions: ***conceptual definitions***, verbal descriptions of the essential properties the researcher intends to be included within the concept's meaning, and ***operational definitions***, procedures by which the concept is to be observed (as in participant observation), measured (as in sample surveys), or manipulated (as in experiments). For example, consider the concept *television violence viewing.* Its conceptual definition might be something like "the amount of exposure to televised violence." Its operational definition might be the person's self-ratings of "how frequently do you watch?" (every week, most weeks, once or twice a month, never) on a list of 12 entertainment television shows found to contain high levels of violent, anti-social content. Later, we will discuss problems with this definition. For now, just try to see the difference between the two types of definitions.

Two sets of procedures are involved in concept explication: ***meaning analysis***, in which logical procedures are used to define concepts with clearly connected conceptual and operational definitions; and ***empirical analysis***, which evaluates concepts on the basis of empirical evidence. For the most part, meaning analysis takes place in designing research *before* gathering data while empirical analysis is used after the research has been carried out. We will deal with meaning analysis this week; empirical analysis will be presented in Week 11 as part of Data Reduction and Scaling.

Chaffee (1980) discusses several steps to be covered in meaning analysis. We have condensed his steps here. They can be considered an outline or checklist, not necessarily to be taken in the order listed:

1. ***Preliminary identification of the concept***. For each concept, the first question to ask is whether this concept is a *variable* concept (i.e., is it clear that it varies among the units of analysis?; e.g., that individuals differ in their exposure to violent TV). If it is not a variable, how could it be made into one? Other early questions: what is the unit of analysis? What is the purpose for using the variable? How does the concept fit into the research problem?

2. ***Literature search***. Using various library resources to locate how previous researchers have used the concept, the next step is to organize and structure the literature. Some questions to be asked: what are the different conceptual meanings that have been assigned to the concept?; what have been the research purposes of each?; what operational definitions have been used?; what are the different labels under which the concept has been studied?; in view of the purpose of the study at hand, which of the various usages of the concept is most promising?

3. ***Empirical description***. The properties of operational definitions of the selected concepts are reviewed as to their central tendencies, range of variation *etc*. across the units of analysis studied and across time. Also to be noted are its antecedents and its effects shown in previous studies.

4. ***Develop a tentative conceptual definition***. For your research purposes, what does this term mean conceptually? What are its essential elements, research aside? What lower-order (less abstract) ***dimensions*** does this general concept subsume? What are instances or examples that could be developed into indicators of the concept? Much trial-and-error and revision of definition are involved here. From the conceptual definition we ought to be able to understand the boundaries of the concept and the conditions for observation. Concepts are defined by less abstract and more familiar terms, and ultimately by ***primitive terms***, words whose meanings are widely shared and incapable of further definition (e.g., individual, frequency, exposure) except by using synonyms (e.g., person, how often, viewing).

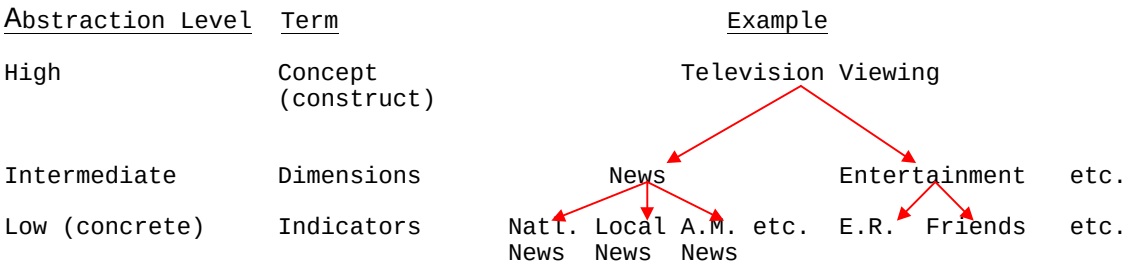
5. ***Define operationally***. Each dimension of the concept should be capable of direct observation or creation in the "real world" of experience. If possible, each dimension would have more than one empirical ***indicato****r* (items or instances). Ideally, each would be capable of observation with more than one method (e.g., observer rating, self-report measurement, experimental manipulation). The operational definition should include: the conditions of observation; details of question wording, rating scale, manipulation procedures etc.; and analysis procedures and statistical operations implied.

6. ***Data gathering***. The concept and its operational definition then should be included in actual data collection. The data will be used in the second major phase of the explication process, *empirical analysis*. Associations or correlations among the indicators of the dimensions are studied along with the empirical relationships of the focal concept to other concepts. This will be described more fully in Lab 11 under Data Reduction and Scaling.

***Meaning analysis***, the first of two parts in the explication process, thus involves moving downward in abstraction from relatively abstract *conceptual definitions* to concrete observable *operational definitions*. Because logical distinctions of language are used rather than empirical statistical procedures, meaning analysis is often called ***conceptualization***. We will treat meaning analysis and conceptualization as equivalent terms, as essential parts of the explication process along with empirical analysis that we will examine next month.

Complex or abstract concepts (e.g., television viewing) pose difficulties in trying to link them with appropriate operational definitions. As a result, it is often necessary to make less abstract distinctions within the more abstract concept by specifying and defining sub-concepts or ***dimensions***. For example, we could divide *television viewing* into two or more dimensions (e.g., *exposure to news*; *exposure to entertainment shows*). The building of complex research concepts through their dimensions is one reason scientific concepts are sometimes called ***constructs***. The other reason is that the researcher intentionally builds concepts (constructs) with precise meanings rather than depending on everyday concepts. For our purposes, research *concepts* and *constructs* will be considered as equivalent terms.

*Dimensions* are less abstract than the concept to which they refer, but they are more abstract than the concrete *indicators* that measure them. For example, the indicators for exposure to news might be: days per week watching the early evening national news; days per week watching the late evening local news; days per week watching the morning news; *etc*. The three levels (concept, dimensions, and indicators) are illustrated below:

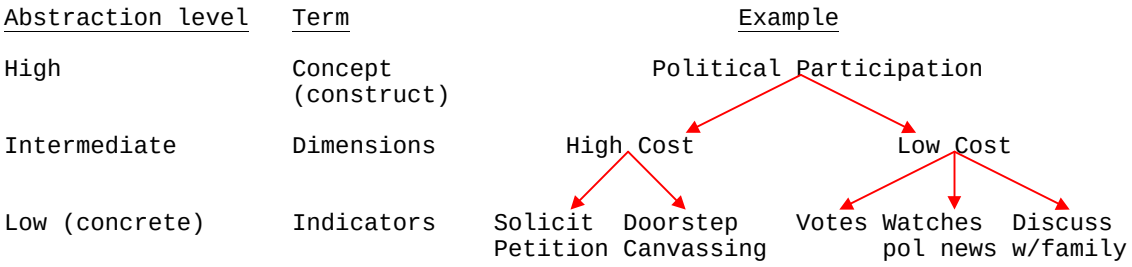



By dividing *television viewing* into two dimensions, *news* and *entertainment*, the researcher is asserting several things: that the indicators of news viewing will agree (i.e., those watching national news frequently will also tend to watch local news); that the indicators of entertainment viewing will agree (i.e., those watching *E.R.* also tend to watch *Friends*); and the indicators of news and of entertainment will show less agreement with each other than they do within each dimension. These assertions about agreement within dimension is a type of reliability called ***internal consistency*** that we will consider next week. These assertions are specific research hypotheses to be tested in the second stage of concept explication called *empirical analysis* which will be taken up next month.

The particular television viewing example is meant to illustrate the relationships of concepts, dimensions and indicators. Obviously, other dimensions and indicators might be used depending on the research problem. Entertainment might be divided into situation comedies and adventure-drama shows, for example.

There are theoretical as well as practical reasons for dimensionalizing a concept. Practical benefits occur from making an abstract concept less abstract by allowing its meaning to be more precisely communicated and its measures more precisely determined. Theoretical advances accrue in that different dimensions of a concept may have different antecedents (causes) and consequences (effects). By specifying dimensions of a concept, we can test a theory more precisely.

Another example will illustrate this point. *Political participation* is often used as a possible criterion of mass media effectiveness. That is, people who use the news media more might be expected to participate more in the political process. Before conducting research to test this statement, however, we must make the concept of political participation less abstract in order to have its conceptual definition link up with its operational definition. To develop operational indicators, we could proceed by deriving specific propositions from a theoretical perspective. Let's say we take a cost/effect perspective. It suggests that various participatory activities differ in the amount of effort required from participants and in the amount of effect on political processes or benefits to the participants. The general proposition asserts, for example, that political participation could be divided into high and low cost activities particularly, and that the two types of participation have different ***antecedents*** (variables influencing them) and/or different ***consequences*** or effects (variables affected by them). Fortunately, a considerable amount of theorizing and research has been done on political participation. Just as the previous mass communication literature suggests that *television viewing* is too broad (i.e., it is not a unitary concept) and must be divided into news and entertainment viewing, so too does the research evidence indicate that *political participation* is complex in having various dimensions each with different antecedents and consequences. Political theory and research indicates *high cost* and *low cost* might be a useful distinction.




The researcher might have added another layer of sub-dimensions between the Dimensions and Indicators. For example, high cost activity might be divided into *high monetary cost*, *high time and effort*, and *high disclosure and threat*, etc. This might broaden the concept of high cost depending on whether the various sub-dimensions had similar antecedents and effects.

Other researchers have explicated *political participation* in somewhat different ways. For example, it could be divided into *overt behavior* (e.g., voting, discussing politics) and *cognitive involvement* (e.g., reading the news, paying attention to politics, following the polls). Which explication depends upon several factors: the relation of participation to the particular research problem; the quality of the logical linkage between the concept and the proposed dimensions, and the outcome of the research findings in the empirical explication process.

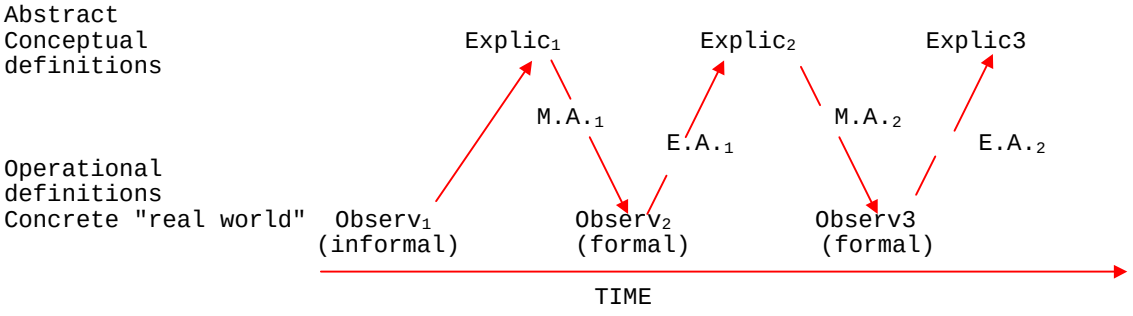
Other examples of meaning analysis are shown in this week's lab materials where the concepts *exposure to media communication campaigns* and *increase in knowledge about heart disease prevention* are discussed. Many more concepts will be presented during the course of the semester.

***Reconstructing Concept Definitions***

Understanding how research concepts are defined is as important to the research consumer (e.g., student, media practitioner, decision-maker) as it is to the researcher. A certain amount of frustration will be shared by both consumers and producers of research when they examine the research literature of mass communication or of any social science field.

First, many concepts will be left undefined or only the barest rudiments of a definition will be stated or implied. This comes about partly because some concepts are so common that they seem to need no redefinition each time they are used (e.g., age, education) and partly because academic journals, a major outlet for research findings, impose severe space limits on authors. Even more common is the writing about media in books and in the popular press where concepts and sweeping conclusions about them are drawn without anything resembling a conceptual or operational definition, much less evidence to support inferences made. Regarding the mass media, everyone is an expert.

A second less common source of frustration is research that specifies operational definitions but does not clarify the meaning of the key concepts beyond saying how they are measured. This is called simply ***working definition***--no conceptual definition beyond the concept label and observational procedures. The is exemplified by the researcher who says, after being asked what is meant by the concept IQ (intelligence quotient), "IQ is what my IQ test measures--no more and no less." Thirty years ago there was a popular approach in psychology called ***operationism*** that held that science could advance only if unobserved mental properties were stripped from concepts leaving only the specified conditions for measuring them directly or manipulating them experimentally. This position is less popular today and most scientific approaches see a need for conceptual definitions in redefining and clarifying research concepts. Having both conceptual and operational definitions allows us to work back and forth between meaning analysis and empirical analysis to gradually improve the definitions of key concepts. This iterative process is illustrated below:




Key: Explic = Explication Observ = Observation;
M.A.= Meaning analysis E.A. = Empirical Analysis

(Adapted from Donohew & Palmgreen, 1980)

In the above example, concept explication goes through a repetitive (iterative) process of informal observation, preliminary explication, formal observation, and further explication using both meaning analysis and empirical analysis. The goal is to develop better conceptual and operational definitions with stronger linkages between them.

A third source of frustration in the reconstruction of concepts is the limited contribution of a customary source of useful information, the dictionary. The attempt to look up a concept in the dictionary is apt to produce a set of synonyms for the concept listed at the same level of abstraction as the concept itself. What we need instead is its definition by *less* abstract terms focusing on a single dimension or a limited set of dimensions while excluding other alternative definitions from consideration. Dictionary definitions are inadequate substitutes for meaning analysis.

A complete explication of a complex research concept obviously takes quite a bit of time and effort. As a result, it is unlikely that even the most diligent researchers will be able to fully explicate the many research concepts germane to a particular research problem. Fortunately, some concepts have been used so frequently in the past and/or are relatively concrete (less abstract) that the connection between their conceptual and operational definitions needs little attention. *Educational level of the respondent* (number of years of schooling completed) and *media reliance* (which medium relied on most for news) are examples of concepts needing little further explication, although it is the case that findings involving these concepts may still be open to varying interpretations. The researcher's strategy is to focus on the major concepts that are less familiar or ambiguous in previous research. The hope is to improve the definition and observation of these major concepts as part of both research planning and in the analysis that follows the data gathering.

For the consumer of research reading the research of others, the problem is to try to understand the definitions offered and, where necessary, to reconstruct what has been done by those carrying out the research. That is, we need to go beyond simply noting the research findings by focusing on the concepts in trying to make sense out of them. This involves filling in missing definitions, making connections of why the findings came out as they did, and in general trying to answer "what has gone on here?" Reconstruction is a creative process not subject to immediate verification, but it is better than blindly accepting the research findings as "truth."

### *Concept Explication and Theory Construction*

As our previous examples illustrate, explication is closely related to building specific theories. This relationship can be understood in two ways. First, explication by linking conceptual and operational definitions of a concept makes theory testable or more amenable to testing. Second, explication advances or improves a theory and eventually may lead to construction of a new theory. Theory development and change occur because concepts are the building blocks of a theory and thus explication is an integral part of theory construction, which is the ultimate goal of scientific research.

But what is ***theory***? Perhaps the most useful single sentence definition is: ***an organized explanation of some recurrent phenomena of research interest***. But that requires further definition and some elaboration. The term "explanation" implies that theory should convey a ***sense of understanding*** to the person reading about the theory. That is the consumer or user of the theory should feel "OK, I see what the theorist means, I get the argument." It is not necessary that the user "agrees" that the explanation is empirically valid, only that it is clear and "makes sense." The term "organized" implies that the ***reasoning*** behind the explanation is stated in a logically deductive or inductive fashion (see Singleton *et al*.). That is, that theory is more than a predictive statement or "hunch." It tells us ***why*** the statement is made, and its logical basis.

The term "recurrent phenomena" implies what is being explained is sufficiently abstract to recur (i.e., to be observable in similar form in other times and places). Phenomena cannot recur in total detail (no two events are identical), but *conceptually similar* phenomena can be seen as repeating if defined with adequate abstraction. Theory thus differs from description in that the latter (description) may be specific in detailing what has happened in a particular time and place while the former (theory) states under what conditions conceptually similar phenomena will recur. It is in this sense that a good theory has predictive power. Both prediction and description may be part of theory, but neither is sufficient to define theory.

The distinction between prediction and explanation needs to be stressed. The crucial difference between the two is that ***prediction*** is a statement about the likelihood that an event (or phenomena) will occur in some undesignated future time while ***explanation*** is a set of organized statements about why and how a conceptually similar type of phenomena occur. A good explanation implies specific predictions, but a prediction does not necessarily imply explanation.

Let's expand the definition of ***theory*** using the concept types presented earlier. Defined in this way, theory is ***a collection of statements asserting a relationship between two or more concepts as they vary among a class of objects***. The "class of objects" (i.e., singular concepts within a class concept) are comprised by the ***units of analysis*** whose variation we are trying to explain. Examples units of analysis are: individuals, media organizations, nations, families, newspapers, *etc*. The "two or more concepts" represent variables (variable concepts)--ways in which the units of analysis vary. Examples of ways in which individuals vary are: gender, frequency of television news exposure, political participation etc. The nature of the "relationship" between variables is described by a relational statement: "is positively associated with," "is caused by" *etc*. Consider the following theoretical statement:

"Exposure to violent television content makes more likely the expression of antisocial aggressive behavior among adolescent children."

"Adolescent children" are the units of analysis (represented in the class concept) whose behavior we are interested in explaining. We are trying to explain "antisocial aggressive behavior", which is being used here as an effect or ***dependent variable.*** It is thus a variable concept, referring to levels of antisocial aggressive behavior. The statement is explaining aggressive behavior in terms of "exposure to violent television," the causal or ***independent variable***-- a variable concept referring to the amount of exposure varying across adolescent children. The assertion (relational concept), "makes more likely" links the independent and dependent variable concepts.

Thus far in the example we have specified the four concepts (class, relational, and two types of variable concepts). What else do we need to make this statement into a theory? First, we need a set of ***premises*** or ***assumptions*** that will explain in a logical way why the statement is being made about televised violence and aggressive behavior. The reasoning behind the theoretical statements is essential to developing a sense of understanding regarding the theory. For example, one premise might be that adolescents may learn the aggressive behavior depicted on television and imitate it in their daily lives. Another premise might be that television violence leads to high levels of physical arousal and that people in a physically arousing situation would be more likely to engage in aggressive behavior. Each of the two premises provides different reasons why television violence viewing and aggressive behavior are expected to be related.

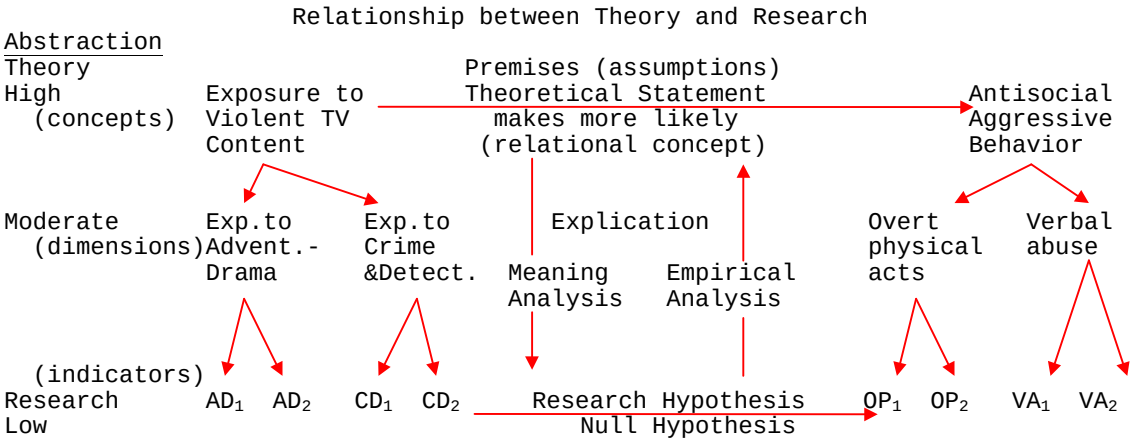
Both thus convey a sense of understanding, but they may not produce equally strong supportive evidence under various conditions. The choice between the two explanations may rely on empirical evidence testing each of the premises. The main point is that a statement in our example does not constitute an explanation by itself. Other theoretical statements should be called in to complete the logical reasoning that generates the statement. By "theory," incidentally, we generally mean not just a single theoretical statement but a whole collection of theoretical statements linked by sets of concepts and assumptions.

As implied by our discussion of meaning analysis, both of the concepts in the statement about the effects of violent viewing need to be explicated. Conceptual definitions with clear linkages to operational definitions must be developed in order to test the theoretical statement. It may be necessary to specify dimensions of the concepts as part of the explication process. Various types of indicators could be used for operational definitions. For violent television viewing, for example, we could *observe* and rate adolescents watching television, we could *measure* it by asking them how frequently they watch various shows we know to have different levels of violence, or we might experimentally *manipulate* violent viewing by controlling which programs they watch.

Once adequate indicators of the concepts have been developed, ***research hypotheses*** can be stated that link the operational definitions of the concepts. Research hypotheses parallel the more abstract theoretical statements. As a result of their being stated in the concrete, observable "real world," research hypotheses are much more specific than theoretical statements. Presumably many research hypotheses involving various operational procedures and measures could be generated from the same theoretical statement. A given research hypothesis, therefore, is apt to be only a partial representation of a given theoretical statement and an even smaller portion of a given body of theory. Testing a given research hypothesis is thus only a partial and indirect test of a more general body of theory.

Theory is thus tested indirectly through research hypotheses and even more indirectly because research hypotheses are tested through ***null hypotheses***. Null hypotheses are statistical hypotheses asserted that there is no (i.e., null) relationship between the variables specified in the research hypothesis. That is, we use our empirical data gathered in the study to test to estimate the likelihood that the relationship as shown could be due to chance. Don't worry about testing hypotheses at this point; we'll be taking that up more fully in Week 9. For now, just be aware of the difference between research hypotheses and null hypotheses.

The figure below parallels the figure in Week 3 of your workbook but inserts concepts from our violence viewing example:




In the example, the researcher has stipulated two dimensions of the Exposure to Violent TV Content (adventure-drama shows and crime-detective shows) and two dimensions of Antisocial Aggressive Behavior (overt physical acts and verbal abuse). Quite possibly other dimensions might have been specified. For purposes of the example, two indicators are shown for each dimensions--many others are possible. The indicators for the two dimensions of violent shows might be a list of such shows with the adolescent respondent being asked to indicate for how often he/she watches that show. The aggressive behavior indicators might be various physical acts and verbal abuse behaviors as rated by the adolescent, by teachers and/or by parents. Indices could be formed by combining these various indicators of these dimensions. If the indices are shown to be reliable (see next week's readings and lab), they would be used to test the null hypothesis of no relationships between indices of violence viewing and of aggressive behavior. If the evidence shows a relationship between violence viewing and aggressive behavior strong enough to reject the null hypothesis, we have found evidence supporting our research hypothesis and our theoretical statement.

A clear understanding of concept explication and theory construction is essential to understanding much of what follows in learning about research methods. Don't be upset if your feel uncomfortable about being hit all at once with concepts and theory. Try to learn the terms and develop an image or mental representation of the various conceptual models we have presented. Although abstract, the material is important and will be useful to you later in the semester and beyond. You will find that you will become more comfortable with the ideas presented here as you encounter them again in different contexts in the future.

## SUGGESTED FURTHER READINGS

Bunge, M. (1967). *Scientific research I -- The search for system*. Ch.2, Concepts and Ch. 3, Elucidation. New York: Springer-Verlag.

(Advanced and formal treatment of scientific concepts. It involves semantics, symbolic logic, and analytical philosophy. It is a very good reading for achieving higher levels of analytical sophistication.)

Donohew, L., & Palmgreen, P. (1989). Theory construction. In G.H. Stempel III and B.H. Westley (Eds.), *Research Methods in Mass Communication*. Englewood Cliffs NJ: Prentice-Hall.

(A fairly clear conceptual treatment of theoretical concepts, their definitions, and their connections with theory construction. It is intended as basic reading material for beginners in research.)

Hage, J. (1972). *Techniques and problems of theory construction in sociology*. Ch.1, Theoretical concepts, and Ch.3 Specifying the definitions. New York: Wiley.

(Hage's work is very well written, conceptually thorough and practical. This book was written for a graduate course on theory construction at UW--Madison. It is a must-read for graduate students in the social sciences.)

Hempel, C.G. (1952). *Fundamentals of concept formation in empirical science.* Chicago: University of Chicago Press.

(Hempel's writing is difficult, but the book is a masterpiece. It has become a classic work on concept formation and definitions in empirical science. Don't be intimidated by his examples from physical science and his use of symbolic notations. It is the original source for distinctions between meaning analysis and empirical analysis, conceptual definitions and operational definitions.)

Kerlinger, F.N. (1986). *Foundations of behavioral research* (3d Ed.). Ch. 3, Constructs, variables and definitions. New York: Holt, Rinehart & Winston.

(A basic textbook intended for first year graduate students. It is very clear and offers a fair treatment. It also touches on some of the issues not discussed in this paper; e.g., latent construct.)

Reynolds, P.D. (1971). *A primer in theory construction*. Ch.2, Concepts. Indianapolis: Bobbs-Merrill Educational Publishing.

(A basic textbook useful for both advanced undergraduates and new graduates. It offers a conceptual treatment on concepts and definition in the context of theory construction. A good place to clarify some of the special terms used here; e.g., concept, term, primitive term, etc.)

## GLOSSARY

***Abstractness***: A characteristic of scientific concepts. It refers to the degree to which a concept is distanced from some specific events or phenomena observed at some particular time and place, or to the range of objects or subjects whose characteristic is represented by the concept.

***Antecedent***: Events or phenomena that occur before some other events or phenomena and impact on the latter. They are sometimes called antecedent variables.

***Clarity in meaning***: A characteristic of scientific concepts. It refers to the degree to which its intended meaning is clearly stated and conveyed. It also refers to the degree to which clarity is achieved in a specific use of a concept.

***Class concept***: A concept that denotes some collection of objects or subject by summarizing the communalities among them.

***Concept***: A term or phrase used to identify an object or subject, or to represent a common characteristic of a class of object or subjects. They are the building blocks of thought and theory.

***Concept explication***: The process by which abstract concepts are linked to their real world variations so that they can be observed by appropriate methods. Logically, it involves both deductive and inductive reasoning. It can be further divided into meaning analysis and empirical analysis.

***Conceptual definition (theoretical, constitutive)***: Involves verbal descriptions of the essential properties that are to be included in the intended meaning of a concept. In research practice, it often specifies various dimensions of a concept.

***Consequence***: Events or phenomena that occur after the events or phenomena under consideration and are affected by them. They are often called consequent variables, or more simply, effects.

***Dependent variable***: In either theoretical statements or research hypotheses, it is the variable concept whose fluctuation (variation) is to be explained. It is assumed to be affected by the independent variable to which it is linked by a relational statement.

***Dimension (sub-concept)***: Distinguishable components of a more abstract concept that have higher levels of coherence than has the concept. Various dimensions of a concept may have different antecedents and consequences and thus theoretical statements must be stated for the constituent dimensions rather than for the more abstract concept.

***Empirical analysis***: Statistical and logical procedures involved in using research data to evaluate the quality of conceptual and operational definitions of a concept.

***Epistemological relationship***: The conceptual linkage between an abstract concept and its real world referents (indicators), which could be a specific object or subject, a class of

objects or subjects, or observable variations of a characteristic across a class of objects or subjects.

***Explanation***: A set of logically organized statements specifying why and how some observed events or phenomena have occurred. Because it lays out the specific conditions under which conceptually similar phenomena occur, it can be used to derive various specific predictions.

***Extension***: The opposite of intention. It refers to the conceptually constructed linkages between a concept and its real world referents.

***Independent variable***: In either theoretical statements or research hypotheses, it is variable concept used to explain fluctuation (variation) in the dependent variable. It is assumed to affect or influence the dependent variable to which it is linked by a relational statement.

***Indicator***: Concrete observable behaviors (*etc*.) indicating a concept or a dimension. It is concrete in that it can be directly or indirectly recorded by some research technique. Its epistemological relationship with the concept is that it is assumed to be invariant within some specified range of time, space and domain.

***Manipulation***: Procedure in experimental research where different inductions (e.g., message forms, instructions) are given to randomly assigned sets of subjects to estimate differences in response in some measured or observed dependent variable.

***Meaning analysis***: Logical and epistemological procedures used in developing conceptual and operational definitions of a concept. Along with empirical analysis, it comprises the iterative process of concept explication.

***Measurement***: Assignment of values (numbers or symbols) to units of observation according to rules. The rules are those specified in the operational definitions and reflect standards used by scientists or scholars in a given field. Measurement includes nominal or categorical assignment as well as more powerful forms: ordinal, interval and ratio measurement.

***Meta-concept***: A composite concept representing multiple characteristics of a class of object or subjects, often filled with affect and/or values. It can be decomposed into several concepts (e.g., democracy into a class concept representing a type of political system, or into a variable concept indicating the degree to which democratic ideals are practiced.

***Null hypothesis:*** A statistical statement that asserts that there is no relationship between the variables in the research hypothesis, or more precisely than any relationship or difference shown is simply due to chance or sampling error.

***Observation***: The recording of data from observational units pertinent to a given variable and compatible with its operational definition. Used very broadly and well as specifically applied. Specifically, it is a research method where an observer records data either as a non-participant (e.g., scores group interaction) or as participant in studying a group over time while playing some role in their lives. More broadly, it refers to the various forms

of obtaining data from observational units: direct observation, interviews, self-administered questionnaires, *etc*.

***Observational unit***: The collection of singular objects that we actually observe. They may or may not correspond to the units of analysis in any research project. Where they do not correspond, the data obtained from the observational units may be aggregated to provide measures of variables for the units of analysis.

***Operational definition***: Procedures by which a concept is to be observed (as in participant observation), measured (as in sample surveys), or manipulated (as in experiments). It details the rules, specific steps, equipment, instruments, and scales involved in measuring (*etc*.) a concept. All three types of operational procedures can be generally called either observation or measurement, using these two terms in their broadest sense.

***Operationalizability***: A characteristic of scientific concepts. It refers to the degree to which the linkage between the concept and its real world referents can be specified and its variation across a class of objects or subjects can be observed in the real world.

***Operationism***: A doctrine about scientific research which holds that the only fruitful and valid meaning of a concept is its measurement or operational procedure, nothing more and nothing less.

***Precision***: A characteristic of scientific concepts. It refers to the degree to which the concept is precisely measured and its intended meanings is agreed upon by communicators (scientists) and receivers (consumers of scientific research or policy makers).

***Prediction***: A statement about the likelihood that some specific event or phenomenon will occur in some designated future time.

***Premise (assumption)***: Propositions that supply the reasons for a theoretical statement. Premise is a term from symbolic logic; two or more premises are needed to draw a logical conclusion. Assumption is its synonym when applied more generally in theory and research. Assumptions should be testable with empirical evidence and often they are based on a considerable body of evidence from previous research. Assumptions are distinguished from postulates, which are more abstract untestable statements about human nature, world views value statements, *etc*.

***Primitive term***: Word or phrase whose meaning is widely shared and incapable of further definition except by using synonyms. They are used to define other theoretical terms in a theory.

***Referent***: Conceptual implied and empirically observable counterparts of a concept in the real world.

***Relational concept***: A concept that makes connections between other forms of concepts. The connections can be comparative (e.g., larger than, as long as) associative (e.g., positively related, negatively related), or causal (e.g., leads to, caused by).

***Research hypothesis***: Assertions about the relationship of two or more variables stated as concrete operational definitions. Their relationship is predicted from the logic contained in the corresponding theoretical statement and in the explication of the variables contained in the statement. A research hypothesis is stated before the empirical evidence is examined. The assertion describes the nature and/or the magnitude of the relationship.

***Scientific concept (construct)***: A concept that has been consciously invented, constructed or adopted for purposes of theory building and research. It should be clearly defined and may be broken down into less abstract (more specific) dimensions. It should meet four standards: abstractness, clarity in meaning, operationalizability and precision.

***Singular concept***: A concept that denotes some particular object or subject.

***Theoretical statements***: Assertions about the relationship of two or more relatively abstract variable concepts or their dimensions connected by a relational statement. They should be clear as to the units of analysis of concern and the conditions under which the statement should hold.

***Theory***: An organized explanation of some recurrent phenomena of research interest. It is a collection of (1) theoretical statements about the relationship between two or more variable concepts or their dimensions within a domain or collection of units of analysis under specified conditions; (2) the premises or assumptions providing the reasoning behind the theoretical statement; (3) two or more variable concepts and their conceptual and operational definitions; and (4) specific research hypotheses connecting operational definitions of the concepts included in the theory.

***Unit of analysis***: The collection of singular concept objects collected into and described as a class concept. Variation in the units of analysis is the focus of any research project. Units of analysis commonly used in mass communication research include: individuals, media organizations, media systems of nations, communities, families, newspapers etc.

***Variable concept***: A concept that distinguishes objects or subjects in terms of the degree to which they possess some designated characteristic (e.g., level of education, age, television viewing hours per day).

***Working definition***: A convenient operational procedure linking a concept to its real world variations for a specific research purpose. It does not necessarily imply a conceptual meaning of the concept and, thus, may not be generalizable beyond the specific research purpose.