

Chapter 13: Operationalizing

“Nailing it Down”

Untruth being unacceptable to the mind of man, there is no defence left for absurdity but obscurity.

—John Locke

This chapter examines how controversial claims can be reformulated so as to make them testable.

A controversy may appear to rest on a question of fact. Many people argue, for example, that violence on TV increases violent behavior in children. The problem, however, is that the phrases, “violence on TV” or “violent behavior” are not sufficiently clear to indicate what evidence would count for or against the proposition.

Operationalizing: what is it?

Consider the following:

- a. Watching TV violence increases violence in children.
- b. Aggression promotes further aggression.
- c. Welfare creates dependency.

All of these statements appear to make a factual claim. But it is not obvious what evidence one ought to look for to support or refute them. *Operationalizing* is a technique by which vague statements can be recast as testable hypotheses.

We operationalize when we take a statement with vague yet critically important terms and develop ways (operations) for interpreting these vague terms more specifically. This specification enables us to look for the appropriate evidence to determine the truth of the original statement. For example, take the statement *aggression promotes further aggression*. In this statement the vague yet critical term is *aggression*, perhaps even *promotes*. Our operations (methods of interpretation and specification) should give us answers to questions like:

1. What is or isn't a case of aggression? (A punch, a nasty word, any physical contact?)
2. How will we determine if aggression has increased, decreased or remained the same? (By counting instances over time, measuring the force of the blow, or the “nastiness” of the words?)
3. Does *promotes* mean *causes* or merely *correlates directly with*?

Until some specification is done, the debate over whether aggression promotes further aggression cannot be settled.

Here is another example: some people claim that *watching TV violence increases violence in children*. In operationalizing the critical terms we ask:

1. What, exactly, does watching *TV* mean here? Does a child have to pay close attention to it, or would just leaving it on in the background count? What about “channel surfing”? How do we determine *how much* TV a child is watching?
2. What counts as *violence*? Football? Mighty Mouse? A Rambo movie? Documentary footage from a war? The scene of a traffic accident?
3. How are we to determine if kids have become more or less violent? From their play-acting? From their actual fighting? From their arguments or threats?

In its strongest sense, we operationalize when we define terms like “watching TV” or “violence” in ways that can be measured. At the very least we would want to be able to tell whether a child has watched *more* or *less* or the *same amount* of TV on one occasion as compared with another occasion. And we would want to be able to say whether their behavior on certain other occasions was *more* or *less* or *equally* violent.

The Advantages and Disadvantages of Operationalizing

Operationalizing has both advantages and disadvantages. One advantage is specificity. After operationalization, we should be able to determine whether there is evidence for or against a given hypothesis. We can settle the controversy about the issue.

A disadvantage is that operationalizing necessarily involves interpretation and a narrowing down from broad, vague, concepts. The result is that we end up with sharper and often less generally agreed to specifications. People often then disagree on which of several possible specific interpretations best catches the “sense” of the original vague statement.

Words are like money. There is nothing so useless, unless when in actual use.

--- Samuel Butler

For example, in looking at the effects of watching TV violence on violence in children’s behavior, we may decide that *violence* should be defined as

engaging in a physically vigorous act intending to harm another person.

But TVs are machines. They do nothing more than sit there and emit varying patterns of light on their screens. Obviously, by this specification of the term violence, there is no such thing as *TV violence*. Consequently, we reject the original statement that watching TV violence increases violence in children as nonsense.

This way of settling the issue is not likely to satisfy those concerned by the original formulation: *Watching TV violence increases violence in children*. They would likely complain that we have defined away the problem rather than tackled it. What they mean by *TV violence* is something like

portrayals on television of violent behavior

that is,

portrayals on television of persons engaging in a physically vigorous act intending to harm another person.

But some people might want to include football as violent, even though the roughness cannot be assumed to be intending another player harm. Others might argue that *acting* violent, so long as the viewer knows it is acting, is not the same as *being* violent. So “TV violence” should not be understood to include examples of “pretend” violence.

Words are like leaves; and where they most abound / Much fruit of sense beneath is rarely found.

--- Alexander Pope

These considerations illustrate how it is possible to arrive at competing operationalizations of the same term. This may provoke disagreement about which is the “best” operationalization. The greater the specificity, the more likely a complaint will arise that the defined term is “too narrowly interpreted.” However, such disagreements are not settled by further operationalizing, but by philosophical, moral, political or pragmatic argument.

In the steps given next, we show how to develop an operationalization of a hypothesis.

Step 1) Identify the important but vague terms to be operationalized.

For example, in the following five hypotheses the important but vague terms are italicized.

Hypothesis A: Watching *TV violence* increases violence in children.

Hypothesis B: *Birth order* affects *success* in life.

Hypothesis C: *Reward* depresses *free play behavior*.

Hypothesis D: Use of *corporal punishment* in a family varies directly with *socio-economic status*.

Hypothesis E: Higher *reading skill levels* increase *income-earning ability*.

Step 2) List alternative interpretations for each term. Reformulate the hypothesis in terms of the preferred interpretations.

For example, let us consider the hypothesis that watching TV violence increases violence in children. In the following chart several interpretations are given for the terms *watching TV* and *violence*.

watching TV	violence
a. being in a room where a TV is on	a. vigorous physical action inflicted on another with intent to harm
b. paying rapt attention to what is on the TV	b. vigorous physical action, e.g. roughhousing

c. occasionally glancing at the TV	c. visual representations of vigorous physical actions ...
d. "channel surfing"	d. any representation of vigorous physical actions ...etc.

Note that these different specifications of the terms can combine to produce sixteen (4x4) different interpretations of the hypothesis that watching TV violence increases violence in children; for one example, "The more a child is in a room where a TV is on presenting a visual representation of vigorous physical action, the more will the child herself show such behavior."

Step 3) Identify methods for detecting increases or decreases in the events specified by the important terms.

It will often turn out that there are alternatives to chose among. If the reformulated hypothesis we are dealing with is "The more a child is in a room where a TV is on presenting a visual representation of vigorous physical action, the more will the child herself show such behavior," then we may come up with any of the following measurable interpretations of the terms "being in a room where a TV is on" and "show such behavior".

being in a room where a TV is on	show such behavior
a. number of minutes within room	a. number of instances of replicated behavior represented on TV screen
b. number of minutes in room within 20 feet of TV	b. number of instances of infliction of any kind of harm on any person within 1 hour of seeing TV
c. number of minutes not engaged in other absorbing activity in room with TV	c. number of instances of any physical activity
d. number of minutes in room with only one TV in it.	d. number of instances of actual or pretend violent behavior.

(Note that there are sixteen possible operationalizations (4x4) of the one of sixteen possible revised hypotheses derived from our interpretations of the original hypothesis: Watching TV violence increases violence in children.)

Our original controversial statement, "Watching TV violence increases violence in children" has yielded 256 different testable hypotheses! There is not merely one issue in dispute! There is considerable hard work in sorting these many operationalizations out. Choosing the most reasonable one for research is much less fun and far less glamorous than engaging in public debate. But without operationalizing, the debate is largely meaningless. Perhaps this is why some controversies tend to persist.

Step 4) Specify what evidence would count against the hypothesis.

Suppose, now, we construct a possible operationalization from the chart given in Step 3. Let's choose this formulation:

“The greater the number of minutes spent by a child in a room with a TV depicting the physically vigorous infliction of intended harm on people, the greater the number of instances of the infliction of harm will be committed by the child within one hour of that TV viewing.”

Any of the following test results could reasonably be taken as disconfirming the hypothesis:

1. Minutes in TV room increases, but commission of violent acts does not.
2. Minutes in TV room increases, but commission of violent acts goes down.
3. Minutes in TV room stays the same, but commission of violent acts goes down.

To generalize: you must be able to say what experimental results, if they occur, would count against your operationalized interpretation of the original hypothesis.

Chapter Highlights

- A controversy may arise because a potentially factual dispute is couched in vague terms with alternate interpretations.
- Through operationalizing we can specify what evidence would count for or against some interpretation of the vaguer formulation.
- Operationalization involves
 - 1) a possible controversial narrowing of the original hypothesis,
 - 2) a recasting of the important terms into countable categories, and
 - 3) the formulation of what evidence would bear on the rejection of the hypothesis.

Operationalization is not always successful, but should be attempted whenever possible. At the very least it expands our sense of the alternative interpretations that may contribute to a controversy.

Other Related Chapters in This Text

1 First Steps	4 Definitions
2 Slogans	9 Nature of Consensus
3 Reification	

Keywords for Further Data Base Search

evidence	Popper	Feyerabend
disconfirmation	correlation	measurement
hypothesis	experiment	testing

Review Activity

Try to operationalize the statement that *Birth order (among siblings) affects success in life*. Follow the steps given above. Determine which of the statement below are reasonable operationalizations of the original. Which of them, if true count against the original statement.

1. The oldest man in Chicago is the richest.
2. Middle children have more successful marriages than their eldest siblings.
3. Oldest siblings are most likely to be remembered throughout history.
4. Offspring's average income correlates highly with parents' average income.
5. No youngest daughter has ever become a world-famous sculptor.