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The Use of Operational Definitions in Social Work Ph.D. Theses in India

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ABSTRACT: This article intends to present the way operational definitions are being defined in social work Ph.D. theses in India. Operational definitions are normally conceived as concepts being defined in operations that are observable characteristics of the definiendum for measurement. The operations of a definiendum should possess reliability and validity, and that it needs to be different from other concepts. Operational definitions in studies provide the operations of the concepts measured and the procedures of measurement. Deviations from the above-mentioned understanding of operational definitions are observed in Ph.D. theses, and hence the present study attempted to explore how operational definitions are used in Ph.D. theses. The study observed 44 social work Ph.D. theses uploaded (between 1999-2019) in Shodhganga, a reservoir of Indian theses, for their use of operational definitions using a concurrent mixed methods design. The findings indicate that operational definitions are conceived and used in various ways, most of which are not even meeting the purposes intended by operational definitions indicating a lack of understanding of what operational definitions are meant. This poses questions regarding the translation validity of the operational definitions, which have implications for the internal validity of the studies. The findings also indicate the need for rigorous research methodology coursework for Ph.D. scholars before commencing their research.

Keywords: operational definitions, concepts, measurement, social work, Ph.D. theses

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The internal validity of research depends on the accuracy with which it studies the study's objectives set initially. It depends upon various factors, such as how the tools for data collection are constructed, how the data are collected and analyzed, and how it infers conclusions. The data collection, analysis, and inference of conclusions will depend on the validity and reliability of the tools used to collect data. The validity of a tool depends very much on how the researcher has conceived the study's variables.

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The researcher's conception of the study's variables is found in how the researcher has operationalized the concepts of the study. The concepts become variables of the study when they are operationally defined or their observable characteristics with procedures to measure. This means the internal validity of a study depends very much on the accuracy or reliability and validity of the operational definitions of the concepts of the study. This article attempts to discuss operational definitions and present their use in social work Ph.D. theses in India.

Understanding operational definitions

The challenges faced by sociologists for an operational definition of operational definitions have led Stuart C. Dodd and Ethel Shanas to take up this challenge. They proposed this operational definition for operational definitions: "A definition [*genus*] is an operational definition [*apecies and definiendum*] to the extent that the definer (a) specifies the procedure [*definientia* (a)] (including materials used) for identifying or generating the definiendum, and (*b*) finds high reliability [*diffrentia* (*b*)] for his definition" (Dodd & Shanas, 1943). The operational definition given by Dodd and Shanas has two major components: a) "procedure;" and b) "high reliability." Procedure means the scientific procedures distinguishing and constituting operations of the concept for empirically measuring the concepts. That is to say that this "scoring procedure" (Mosenthal, 1985) is used to score the operations against the conditions or criteria already set. The abstract concepts are translated into observable characteristics in order to measure them empirically. The concepts thus translated are now called 'variables' of the study because they can assume various values in as much as they correspond to the operations of the concepts defined. Dodd and Shanas (1943) explain 'procedure' as the "communicated purposeful actions." Communicating the actions or operations of a concept clarifies whether the actions are purposeful, as a means to some end (Dodd & Shanas, 1943). Dodd and Shanas go on to explain how communication of the actions or operations makes the concept objectively observable, leading to more clarity by saying, "Communicating an action tend to make it more definite, formal, and repetitive, and these are connotations of the concept 'procedure'" (Dodd & Shanas, 1943). In other words, the concept thus communicated in its operations or actions can be easily observed and measured in terms of these operations. The operations or actions given for a concept must constitute the reality that the concept represents (Ribes-Iñesta, 2003). The validity of the operational definitions is thus becoming crucial when used to measure concepts in studies (Dodd & Shanas, 1943).

Dodd and Shanas (1943) define 'reliability' mentioned in their definition of operational

definitions as "…any index (genus) measuring the degree of agreement (differentia *a*) among observations of the same phenomenon (differentia *b*). Unreliability is the lack of such agreement or variation among observations." That is to say, the actions or operations should find agreement when the same phenomenon is observed or measured repeatedly. If every time the results vary, then the operational definition is not reliable. Reliability and validity are not the same concepts, and they need to be distinguished from each other (Dodd & Shanas, 1943). Referring to the use of reliability by psychologists in dealing with tests, reliability and validity are explained as "…' reliability' means 'how well the test measures whatever it measures,' while 'validity' means 'how well it measures what it claims to measure," (Dodd & Shanas, 1943). Commenting on Dodd's definition of operational definitions, Shanas paraphrases it as "a definition which has high reliability and specifies the procedures to be used to identify or obtain that which is defined" (Dodd & Shanas, 1943). If the operations considered essential for a construct are accurately defined, then it can be considered that construct validity is achieved (De Vellis, 2017 as cited in Mosenthal, 1985; Stone-Romero et al., 2009). If all the operations used to define a construct are inadequate or not covered all the actions or operations of the construct, then it lacks validity. Others have questioned the concepts of 'reliability' and 'validity and how they are understood in a wider sense (Adler, 1947; Dodd & Shanas, 1943; Moss, 1994). Leahey (1980) considers "the faith in operationism is a faith in myth" and that "strict operational definition is an impossible requirement for any science." However, this paper does not attempt to discuss them as it does not come under the purview.

The claim of fallibility theory that all knowledge is fallible (Hothersall, 2018) can also apply to operational definitions. As such, there is less confidence in claiming any operational definition as conclusively justified or as 100 percent certain (Hetherington, 2006, as cited in Fallibililsm, 2021). This tends to accept the idea that "all scientific claims are provisional and open to revision in the light of new evidence…" (Kuhn, 1996 as cited in Fallibilism, 2021). This cannot take to the extreme position of doubting all knowledge claims. For the practical purpose to go about and act out, it is required to consider the knowledge claims to be certain and valid in the given time and space unless new facts or new conceptual arguments challenge its validity and reliability. The operational definitions must be accepted as valid in the given time and space to measure the concepts under study, guarantee the probable, fallible and provisional nature of scientific claims. Otherwise, it will end up in chaos, absolute confusion and uncertainty, which may lead to the impossibility of making any knowledge claim. In other words, this will end up with absolute skepticism, where it is

challenging to make any knowledge claim (Hetherington, 2005). The practical question now is the way operational definitions are to be used in empirical researches.

The use of operational definitions in empirical researches

The researchers who measure variables need to have operational definitions to specify the actions or operations of the concept in the given context with the procedures of measurement (Slife et al., 2016). Emphasizing the need for operational definitions and their validity, Furlong et al. (2000, Mosenthal, 1985) say, "…researchers must be concerned with selecting operational definitions and measurement that measure what they intend to study…." Operational definitions need to have translation validity when used in studies to measure them. Krathwohl's (2009, as cited in Slife et al., 2016)) notion of translation validity is "the closeness with which the study's intended meaning of constructs matches their operationalization." The validity of the operational definitions is through "…conceptual argumentation as well as more traditional means such as converging operations and historical precedent in the literature" (Mosenthlal, 1985, abstract). There is also an argument against adopting the operational definition of others in a different context, whereas it would be more meaningful where a researcher replicates the same study (Williams, 1999). Therefore, in a particular context, the agreement among scholars about the operations of a concept and the logical conceptual argument will help identify the essential operations of a concept (Mosenthal, 1985). Hence, there is relevance in looking at how scholars have used the concept in the past for measurement purposes. Even if many researchers have used the same operational definition to measure concepts in their studies, it does not warrant its validity in the present study as it is conducted in a changed context (Mosentlal, 1985; Slife et al., 2016). Thus literature validity of operational definitions needs to be cautiously approached while considering the translation validity of the concepts in a new context. Considering the practical issues in the use of operational definitions in empirical researches, Slife et al. (2016) have suggested three conceptual tasks concerning the use of operational definitions:

> *a) Clarification in which researchers reflect on and classify their potential operationalizations; b) specification, in which researchers specify and take account of the difference between the construct of interest and what was studied via operational definitions; and c) justification, in which researchers assess and defined the translation validity of their particular operations.*

The discussion on operational definitions has raised questions about how Indian social work Ph.D. theses use operational definitions. An attempt has been made to observe how well the

operational definitions are used in Indian social work Ph.D. theses. For this purpose, in this study, the purpose of giving operational definitions, establishing the validity and reliability of operational definitions, making operational definitions, and the basic assumptions the researchers have about operational definitions have been observed.

Method

Analysis was conducted on data collected from 44 Ph.D. theses in social work from 18 social work institutions, including universities, affiliated colleges and autonomous colleges in India. These Ph.D. theses were completed between 2002 and 2018, of which 25% of studies were completed in the year 2016 alone. The studies were uploaded to Shodhganga (a reservoir of Indian theses) between 2013 and 2019, of which 70% were uploaded in 2019 alone. The studies are mentioned using a code number from 01 to 44 as "Thesis 01", "Thesis 33" not to identify the studies. Studies are adopting qualitative, quantitative and mixed-method strategies with various designs. The present study observed what is given under the heading of 'operational definitions' only to explore how the researchers in these studies have used operational definitions. The data were collected in two ways: 1) Using a checklist against which the observations were noted and finally quantified; 2) Descriptive qualitative data regarding the remarkable ways of giving operational definitions. Both the data collections were done concurrently. These qualitative data were used to explain and to provide a description of the way operational definitions are being used in the studies. Separate sections for qualitative data analysis and quantitative data analysis are not given. Rather the analysis of the qualitative data and the quantitative data are merged in the results section.

Results

The results of the observations of the Ph.D. theses for the way researchers have been using operational definitions in their studies are analyzed, and the results are given here. The quantitative data collected using a checklist and the qualitative data collected using observation are analyzed and converged to discuss the results.

Variables and operational definitions

The concepts become variables of the study when they are operationally defined in view of measuring them. This study checked whether the operational definitions are the variables of the study or something else. The results show that 22.7% of studies have the variables of the study operationally defined. Among the studies, 63.6% of studies have defined other terms as operational definitions, and just 13.7% of studies have some of the variables included in the

operational definitions. If the study's variables are not operationally defined, an attempt has been made to understand how it is operationally defined. It is found that 77.3% of studies have their key terms in the study are operationally defined, of which 6.8% have both key terms and variables operationally defined. Some studies have the heading as 'Operational definitions of the key/important terms.' It is also interesting that the study respondents are also operationally defined, and the percentage of studies that have operationally defined their respondents goes to 63.6%.

It is also observed that in some studies, study variables are separately given as 'variables of the study' but not defined as operational definitions (Thesis 11, 2019). In many studies, the study variables are separately mentioned, but they are not operationally defined. For instance, Thesis 32 has ten dependent variables, but none of them are found either in the operational definitions or in the conceptual definitions:

Conceptual definitions given are: 1) Youth/young people; 2) Children; 3) Adolescence;
4) Sex; and 5) Sexuality

Operational definitions given are: 1) Young people/youth; 2) Undergraduate college student; 3) Sexuality

Variables of the study are 1) Knowledge about reproductive health; 2) Knowledge about family planning; 3) Knowledge about STD; 4) Knowledge about HIV/AIDS; 5) Sources of information; 6) Myths about sex; 7) Attitude towards sex; 8) First sexual encounter; 9) Sexual behaviour, and 10) Current sexual activity.

In the same way, Thesis 12 has given four dependent variables, but "attitude" is the only variable operationally defined. The dependent variables and the operational definitions of the study are given below:

> Dependent Variable: 1) Reproductive health knowledge; 2) Attitude (of what is not mentioned); 3) Opinion towards sources of information; and 4) Reproductive health-seeking behaviour and utilization of services.
>
> Operational Definitions: 1) Awareness; 2) Attitude (towards what?); 3) Adolescence; 4) Reproductive and sexual health; 5) Psychological and emotional health, and 6) Sources of information.

Even when the attitude is defined, it is defined generally and not specified as to the attitude towards what in the study.

It is also found that scales are used to measure the study's variables but not mentioned in

the operational definitions. For example, Thesis 29 has five variables (dependent variables) measured in the study using five scales, but they are not mentioned in their operational definitions. There is a scale having 13 items used to measure 'effectiveness of programmes.' However, we do not find the 'effectiveness of programmes' as operationally defined (Thesis 06).

Meaning of terms given

Some researchers have the assumption that some terms need to be explained without any concern for measuring the variables. For instance, Thesis 34 has the heading as 'operational terminology,' but no operations of the concepts were given for measurement. The given terms are: Disappearance, victims, families and rehabilitation. There are other similar headings given by other studies also. For instance, 'Operational Definition of the Terms' (Thesis 10); 'Operational definitions of certain important terms as follows' (Thesis 19). It says that 'certain terms,' which means limited terms, are operationally defined, and the question naturally arises 'why not all-important terms?' The answer can be had from the thesis itself as it says, 'Further, other terms used in the study would be explained as and when they are used for the first time' (Thesis 19). The above statement shows that the researcher understands operational definitions as "explanation of terms" only. A similar use of operational definitions can be noted in many other studies also. For instance, Thesis 38 also has a similar usage of operational definitions as under the heading of operational definitions, it says, "operational definitions of the important terms used in the present study are given below for the sake of clarity." Here, clarity is used not to make the concept clear for its measurement operations but rather as explanations for the important terms.

There is also a study with only four key variables mentioned separately and included in operational definitions – but measuring tools/scales are not mentioned in operational definitions. However, they are mentioned under tools for data collection only. There are only four variables in the same study, and only they are to be operationally defined, but the number went to 39, which looks like various terms in the study (Thesis 40).

It is also observed that some of the operational definitions given are not even the key terms in the study. For example, what one study has operationally defined are: Empowerment, Women, SHGs, Tribal District, Non-tribal District, and Orissa (Thesis 44).

What is operationalized?

If the operationalized concepts are not the study's variables, it is interesting to know what has been operationally defined. They have operationally defined the respondents or other terms used in the study without having any intention to measure and without giving any procedures to

measure. Thesis 01 operationally defined the following: 'Social work students,' 'Master course,' and 'Fieldwork practice'; and Thesis 16 has 'Government Higher Secondary Schools' and 'Married women school teacher' under the heading of 'operational definitions. In the same manner, Thesis 28 has the following items operationally defined: 'Institution of Social Work Education (ISWE),' 'Head of the Institution of social work education,' 'Social work educator,' 'Senior social work educator,' 'Role of social work educator,' 'Knowledge base for social work education and practice,' 'Knowledge development,' and 'Indigenous knowledge.' In other similar instances of giving operationalization, for example, in Thesis 03, instead of operationally defining the concepts, the researcher has used more or less the same conceptual definition of the study without providing the procedures to measure it. It says, 'for the purpose of this study, the definition of a sex worker is largely the same as in ITPA, 1986.' Note that it says 'largely the same which is quite vague. How ITPA, 1986 defines sex workers is also not given. Why one should measure 'sex worker' is another question.

In the same way, operational definitions are provided for 'FGD,' 'Concurrent correlation embedded research design,' 'Case studies (CS's),' 'Mixed Methods Research (MMR),' 'Qualitative observation.' The rationale for operationally defining the study's research design and data collection methods can be questioned. Many studies have the respondents operationally defined, for example, Thesis 12, Thesis 14, and Thesis 24). "Transgender" is operationally defined in Thesis 24. It is also observed that Women, SHGs, Tribal districts, Non-tribal districts, Orissa are operationally defined (Thesis 44).

The same concept is also being operationally defined twice with altering the words and with slightly different definitions as given below (Thesis 18):

1. Communication barriers – "it means any obstacles or impediments or any interference which causes disturbances in any way while people want to communicate to others'
2. Barriers of communication – 'Obstacle in a workplace that prevent effective exchange of ideas or thoughts.

It is not clear again with what procedures and measures they will measure what has been operationally defined.

Operationally defined for the purpose of measuring

The operational definitions are to be given for the purpose of measuring the variables validly and reliably. We have observed whether the purpose of giving operational definitions in these studies is to measure the variable or not. The results show that for 65.9% of studies, the

purpose of providing operational definitions was not to provide criteria to measure the concepts defined. The studies given operational definitions for the purpose of measuring were just 22.7% only. There are a few concepts, or most of the concepts are operationally defined for the purpose of measuring in 11.3% of studies.

Many studies operationally define concepts as per some scales they have used to measure the concept in the study, for instance, Thesis 08, Thesis 09. Some studies have given operational definitions as a response to a given scale. For example, see how it is given in Thesis 21:

> Both conceptual definitions and operational definitions are given.
>
> E.g. Social Support
>
> Conceptual – "Gottieb (2000) defined social support as the process of interaction in relationships which improves coping, esteem, belonging, and competence through actual or perceived exchanges of physical or psychological resources'
>
> Operational – 'Social support in the present study is the respondents' response towards the social support scale which was developed by Mehra, Kulhara & Verma (1996).'

Many other operational definitions are made – operationalizing them as a response towards the scales used to measure the definiendum' e.g., mental health, stressful life events and quality of life.

Operational definitions of concepts are given as the scores determined in their respective scales. For example,

1. Low anxiety – "The individual who scores up to 30 in manual for Sinha anxiety scale (1968) is termed as low anxiety in this study."
2. High insecurity feelings – 'The individual whose scores 75 and above in security – in-security inventory of Govind Tiwari and Sinh (1975) are termed as high insecurity feeling in this study' (Thesis 41).

In some studies, even though all the items in the scale are not mentioned, operational definitions seem to be well defined, for instance, Thesis 09. In some studies, they say in the operational definition that the concept is measured using a particular scale, but the scale details have not been mentioned.

Literature validity and reliability

The reliability and validity of the operational definitions are very important for the internal validity of the study. Therefore, this article enquired how these studies substantiate the reliability and validity of the operational definitions they have given. It is done by checking whether they

have conducted a reliability and validity check of the operationalization given or whether the reference given has adopted the operational definitions from elsewhere. The results show that 86.4% of studies have neither given references nor have they given the process of establishing reliability and validity for the operational definitions they have given. The studies which have given references for all operational definitions are just four percentage only, whereas nine percent of studies have given references for some of the definitions of the operations given.

This article further explored how the theses have provided operational definitions when they have failed to substantiate the operational definitions by providing references of previously established operational definitions or the Procedure of validating the operational definitions by themselves. It was found that 79.6% of studies have operational definitions made as per the researcher's understanding regarding the concept. These studies seem to assume that the researcher has the freedom to operationally define the concepts according to what they find fit for the study without substantiating such definitions. Others have given the references of the previous authors or the scales used to measure the variable.

Operational definitions do not constitute the definiendum.

The operational definitions need to include all the actions or operations of the concept to distinguish it from all other concepts and ensure content validity. Therefore, this article attempted to observe how far the operational definitional definitions provide a face value of the operational definitions given (not made any attempt to check the reliability and validity of any concepts operationally defined in these studies by our own other than what is given in these studies). Almost half of the studies have operational definitions that need not necessarily constitute the definiendum. Sometimes, a concept with more operations in many other contexts has been reduced to mean a few specific operations in a particular context only.

In some studies, the operational definitions fail to give even a face validity, as in some cases, without even taking a test. The operational definition fails to provide validity for the concept defined. In certain cases, it went to the extreme of defining the opposite of the concept's meaning. For example, 'Family Support' is operationally defined as 'Family support refers to the family's interaction and relationship with the transgender, experiences of discrimination and marginalization in the family' (Thesis 24). Thesis 06 operationally defines "Awareness programmes" as 'includes programmes on environmental protection, career counselling, computer education, water management and sanitation.' It says that the mentioned items include, but not saying that the concept is constituted of the mentioned operations, nor does it try to ensure the

validity of the operations defined to constitute the concept, and as a result, the readers are left with no clue of measuring it accurately. Again, "CSR Practices" is operationally defined as 'The practices by which the organization adheres to in promoting CSR activities to the community at large' (Thesis 06). This definition also fails to specify the operations by which it is measured, not specifying the practices.

The need for operational definitions for the study

This article has also checked whether the studies have the purpose of measuring the variable or, as many of the studies being qualitative studies, have the purpose of exploring or understanding the phenomenon. The results show that 79.5% of studies have relevance for operational definitions, whereas 20.5% of studies do not have the relevance of providing operational definitions as their purpose was not to measure the concepts/variables because many studies have the purpose of exploring or understanding the phenomenon as they are qualitative or exploratory studies (Thesis 02; Thesis 05; Thesis 30; Thesis 35; Thesis 44). These studies do not have the purpose of measuring the concepts, which are operationally defined; still, they are operationally defined. It means that the researcher has no other purpose other than to explain the terms used in the study due to the researcher's limited understanding of what is an operational definition. Operational definitions are needed for Thesis 06, but what should have been defined as an operational definition is not defined, so it is still measured as low or high. E.g. 'effectiveness of CSR activities.'

Discussion and conclusion

The attempt to understand how operational definitions are used in social work Ph.D. theses in India by observing its use 44 theses uploaded to Shodhganga between 1999 and 2019 raise concerns over the quality of research being produced. The result is that 22.7% of theses only have their variables defined as operational definitions, and the rest of the theses have the key terms in the study, the respondents, places, and research designs, defined as operational definitions. Again, 22.7% of studies only have defined the concepts operationally for the purpose of measuring them in the study. Others have defined them 'operationally' for explaining the meaning of the terms used. The results also show that 4.5% of studies only have given references for all the operational definitions, and 9% of the studies have given references for some of the variables. This was to check whether the operational definitions have literature validity at least. The studies do not try to substantiate their operational definitions for reliability and validity by giving how they have arrived at such definitions. It is also observed that 79.6% of studies have their operational definitions as

per the understanding the researcher has of the concept defined without substantiating its reliability and validity or without ensuring whether their operations constitute the definendum. All these indicate the lack of clarity of the concept and use of operational definitions by the research scholars. This has serious implications for the quality of the research being produced. If the variables are not operationally defined and the operational definitions do not have reliability and validity, how is it possible to ensure that these studies accurately measured what they intended to measure? How can the researcher construct the tool if they do not know the operations of the concept measured? This means the internal validity of the study may be in question, leave alone the external validity. The lack of accurate understanding of operational definitions has serious implications on the research practice in the country. If the studies lack internal validity, then what use do these studies have for social work practice? It also points to the quality of research education and research supervision in the country. This is an indicator of the quality of research practice of the country. This will impact the quality of the research produced, which will also influence the impact of social work practice, which is very much guided by the research in the field. It is time for the academic community to rise to the situation to meet this challenge and develop practical solutions to address the issue. Therefore, the coursework for the Ph.D. courses needs to be rigorously conducted to make the scholars capable of producing quality research. The systemic factors in research education can also determine the rigour in researching the country.

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