CONCEPTUAL ISSUES RELATED TO MEASUREMENT IN FAMILY RESEARCH

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Scholars from a number of disciplines are directing more attention to epistemological, conceptual and methodological issues associated with family research. These issues include concerns about theoretical and operational definitions of family variables (Feetham, 1984; Gilliss, 1983), debates about technical aspects of measurement and analysis (Hudson & Murphy, 1984; Schumm, Milliken, Poresky, Bollman, & Jurich, 1983; Schumm, Barnes, Bollman, Jurich, & Milliken, 1985), and fundamental questions regarding the appropriateness of the logical-positivistic tradition of scientific inquiry as the pathway to knowledge about the family (Becvar & Becvar, 1988; Bednar, Burlingame, & Masters, 1988). Approaches to method and measurement follow conceptual decisions. Therefore, the purpose of this paper is to identify some core conceptual concerns related to measurement in family research and to pose questions and make suggestions to those interested in clarifying some of the associated problems. Among the problems are the following.

1. Confusion and inaccuracies in the research literature related to definitions of the term "family". These include problems with how to measure the "whole", the propensity to rely on singular informants, the importance of context and external versus internal definitions of the family.
2. Incongruencies in use of conceptual definitions, operational definitions, design and analysis methods that threaten the validity of research findings.
3. Incongruence between the logical-positivistic methods currently used and accepted by the research community and family systems principles.
4. A lack of respect for qualitative research methods resulting in theory and measurement gaps as a consequence of poorly defined constructs and processes.

Definitions of the family

The family has been described as a complex unit with distinct attributes of its own (Gilliss, 1983). It contains individuals who are unique and who inter-

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act in various ways with other individuals, subgroups within the family and the family as a whole. Questions about who to study, which parts to examine and how to measure the whole are concerns of family researchers. One of the most troublesome problems encountered has been the difficulty in obtaining accurate information *from* the family *about* the family. Part of this problem comes from confusion and errors about conceptualizations of the family in the literature. Close examination of family literature reveals that the concept of family is often not defined nor is the family a basic unit of analysis in the research (Feetham, 1984).

There is considerable confusion about how to measure the aggregate and its component parts (Feetham, 1984; Gilliss, 1983; Jacob & Tennenbaum, 1988). Family members may provide responses about themselves, about others in the family or about their relationships with subunits or the family as a whole. As well, subgroups within the family can provide perspectives on these components and, finally, the family as a whole may produce a response to a variety of research questions. The information obtained about and from these various sources provides different data that must be analyzed and interpreted in a way that is consistent with the conceptualization of the family constructs.

A review of the literature on family theory and measurement revealed that there are four considerations that must be made explicit when the term "family" is used: the level of inquiry (i.e., individual, dyad, triad, whole unit), the context within which the family is viewed (i.e., dependent or independent variable), source of definition (i.e., internal versus external), and properties and attributes of the different levels of inquiry.

Level of inquiry

According to systems theory, the whole is greater than the sum of its parts (Bertalanffy, 1968). At present, a tool that quantitatively captures the family does not exist. One reason for the absence of such a tool may be that questions remain about how to conceptualize the family as a whole. Gilliss (1983) has struggled with this conceptual and measurement issue for years. For example, she has been concerned with the measurement of subjective stress in the family unit, using a minimum of two adult members from each family as data sources. When the mean stress scores of individual family members were compared to a family unit score, which the family group reported, no differences were found (Gilliss, 1981). Dobbins (1982) replicated this work with similar results. Is there no difference between the sum of individuals and the group? How much does the process of arriving at a group consensus measure influence the outcome? Or does the instrumentation fail to capture the aspect of the family that is greater than the sum of its parts? At this time, even the multivariate analysis techniques are additive (Gilliss, 1983).

Despite the theoretical underpinnings of family systems theory which imply that the sum of the variables studied is more than the sum of the parts, seldom is this whole measured in family research. Wakefield, Allen and Washchuck (1979) reviewed reports of federally-funded research and found that most of the studies tended not to examine the family as a unit, but studied family members as individuals. More recently, Jacob and Tennenbaum (1988) reviewed 19 journals of family research between the years 1980 and 1985. They concluded that instruments specifically designed for the assessment of family system properties, although sometimes found in the literature, are relatively few in number and are still in an early stage of development.

The family is usually defined as individuals bonded by a biological or legal relationship. In other studies, families are defined as those persons having a "functional" relationship with one another. Families may be described as nuclear, intergenerational or extended. They may or may not cohabitate with each other. An implicit assumption in much of the research related to families is that these definitions are comparable and that specifying a social role relationship or legal or biological bond conveys an understanding regarding the commonality of feelings, perceptions, behaviours and identity of those individuals as a unit.

Some researchers have used one member as the "family" and make inferences based on this person's response to other family members. In most instances, this individual is the mother in the family and much of this research involves family health behaviours or family development (Bokemeier & Monroe, 1983). The use of this singular informant results in an obvious threat to the construct in question. For example, mothers of schizophrenic children reveal their own reality when they provide a history of the child (Gilliss, 1983). Gathering information from only one informant is valid when the researcher's theoretical framework emphasizes the importance of the individual's perception of the family experience, as does symbolic interaction theory (Uphold & Harper, 1986). However, interpretations and definitions in the research may result in these data being used to describe and predict family views.

Lobo (1982) used the mother or wife to report the daily well-being of each family member and family unit. Using a multiple regression and correlational technique, Lobo identified which individual member's well- being was the greatest contributor to family well-being. This source of data collection may be legitimate, if the research question is only interested in mother's perceptions. However, the extent to which individuals themselves would define their own health similarly was not explored.

Olson and Portner (1983) used the FACES II (Olson, Sprenkle & Russell, 1979) to measure family cohesion and adaptability. The tool was designed to

be administered to individual family members in order to gain information about the family as a unit. Olson and Portner (1983) reported lack of agreement among family members in the scores on FACES II. This raises the question of which member's report is most useful for what purpose. As well, it demonstrates the importance of obtaining scores from as many family members as possible to gain a more complete picture of the family system (Jacob & Tennenbaum, 1988). Schless and Mendels (1978) have also demonstrated that interviewing additional informants provides significantly more data about the family.

Many of the epidemiological studies of family have also used individual family members as sources of data about other family members and the family as a collective (Gillis, 1983). The underlying issue in these studies is construct validity. Does the measure truly assess the construct in question?

Context

Although there is controversy about the sources of data and the information these data provide in the research of families, there is agreement regarding the effect of context on family data. It is recognized that the same question asked of a person individually may result in different data than when asked of the same person within the context of other family members (Feetham, 1991). Therefore, context becomes an important variable in the conceptualization of family research questions.

The family itself may be conceptualized as the environment or context within which individual behaviour is studied. For example, the family may be viewed as the context within which the individual develops. Barnard (1984) studied family structure as an independent variable predicting child performance. In other instances, the family may be defined as the dependent variable studied in relation to behaviour of individual members. The individual's behaviour is then defined as the context within which to understand family functioning. For instance, the Feetham Family Function Inventory was developed to measure the family's adaptation to a child with a chronic health problem (Roberts & Feetham, 1982).

It is interesting to note that in studies of pathological families the focus is on the ill family member as the independent variable, implying a direct causality of the presence of the ill family member to the family outcomes. In contrast, investigations examining families described as healthy tend to use a measure of the healthy family as the independent variable and outcomes related to individual family members as the dependent variable (Feetham, 1991).

Whether or not family is an independent, dependent or intervening variable is not a concern. Of importance is the clarity with which the family is

defined and the consistency of the theoretical definition of the family with the operational definition and the subsequent design.

Definition source

Although the family may be viewed as an open system interacting with other systems, the definition of the family is usually an externally imposed one. Punctuation of the family system boundaries is necessary, particularly for purposes of defining family membership for comparison. However, it is important for researchers to acknowledge this external definition as an artificial delineation that may not represent boundaries that the family would view as meaningful.

Qualitative research methods that use the family as a definer of its membership may be beneficial for some research questions. This work may result in a richer understanding of "functional" families. For example, in research related to families of the terminally ill, patients were asked to identify the individuals who they considered to be family members involved in or affected by the illness (Kristjanson, 1986). One patient who was a practising nun identified her "spiritual family" because these people provided daily care and contact. In this same study, subjects identified neighbours or close friends who were "like family" because of frequent contact time or because of their close emotional bond to the patient. Understanding who constitutes these "functional families" may be a particularly relevant area of research in itself.

Properties and attributes

A number of scholars have attempted to clarify and identify qualities of families by developing organizing frameworks for family phenomena. Straus (1964) was one of the earliest to suggest the notion of analytical, structural and global indicators as they relate to families. Analytical indicators are measures of attributes or behaviours of the individuals who constitute the family unit. For example, age or alcohol consumption of individual family members might be measured within this category. Structural indicators are those that provide information about the relatedness of family members to one another and the interaction of the members with one another (Gilliss, 1983). These are the most process oriented and permit a view of function and interdependence (Straus, 1964). This category might include self-report methods of data collection or observational techniques. Global indicators are those that describe the unit as a collective. Some examples might be socio-economic status of the family or income of the family unit (Gilliss, 1983). This framework is helpful in clarifying components of the family.

Fisher (1982) distinguishes between *family research* and *family-related research*. He describes *family-related research* as relational and family

research as transactional. Relational data are data collected from two or more family members about family constructs. The scores from individuals are combined and the analysis results in a descriptive level statement regarding the sum or average of family members' perceptions of family events, history or attributes (Fisher, Kokes, Ransom, Phillips, & Rudd, 1985).

Family research does not measure independent elements because of the level of complexity of the interactions and the fact that relationships among variables are not linear (Fisher, 1982). The data are not indicators from individual family members, but are derived from the functioning of the entire family unit (Feetham, 1991). Data collection of this type requires naturalistic observation and contingent, structured interaction (Bavelas, 1984; Fisher et al., 1985). This transactional view of the family suggests that research questions and designs must allow examination of sequences or patterns of family behaviours (Feetham, 1991).

Unfortunately, much of the empirical work done in the area lacks explicit theoretical or conceptual frameworks. This creates problems in evaluating the choice of instruments used in the studies and clouds interpretation of findings.

In summary, it is apparent that there is no one agreed upon conceptualization of the family. This is not feasible nor is it recommended. Rather, the operational definition of the family selected for the study and the procedures used to obtain the data must be congruent with the theoretical framework used to guide the research. In particular, research questions that address the family as a unit must be conceptually, procedurally and analytically appropriate to the aggregate (Gilliss, 1983).

Loyalty of Research Methods to Systems Theory

In the preceding section of the paper, the underlying principles of systems theory have been alluded to as an issue related to measurement of family phenomena. The importance of conceptual clarity as a basis for measurement decisions necessitates a more detailed examination of some of the underpinnings at the heart of family systems theory. As well, it is pertinent to question the match between the research paradigm used to study family phenomena and family systems theory.

The Logical-Positivistic tradition

The notion of "good science" that pervades the present day scientific community is nestled quite solidly and comfortably in the logical-positivistic tradition. "Since the seventeenth century, physics has been the shining example of an 'exact' science, and has served as the model for all other sciences"

(Capra, 1983, p. 42). This view began with the work of scholars such as Descartes and Newton who presented a mechanistic world view of scientific inquiry that emphasized objectivity, reductionistic principles and the belief that science deals in certainty (Becvar & Becvar, 1988). An assumption underlying this approach is a belief in ultimate causality (Steinglass, 1987).

Social scientists today have relaxed some of the rigidly held reductionistic views and accept that there may be multiple causes associated with a problem and claims of certainty have given way to statements of probability. Subjectivity itself, in the form of cognition and beliefs, is now a legitimate topic for systematic, controlled observation and study. However, the basic assumptions of this scientific paradigm remain, and the methodology still advocated involves hypothesis testing of a priori theories that purport to be accurate maps of the world (Becvar & Becvar, 1988).

During the first half of the twentieth century psychology was also dominated by mechanistic reductionistic theories of the stimulus-response variety. The advent of family therapy revealed the inadequacies of these theories. Those who treated families as nothing more than the sum of their individual members soon discovered that they were missing something (Nichols, 1984). Both the new physics and systems theory challenged fundamental assumptions in the logical-positivist, empirical science (Becvar & Becvar, 1988).

Family therapists also began to examine basic assumptions about causality. Initially, troubled families were treated as a collection of disturbed individuals. Later, families were viewed as mutually causative systems, whose complementary behaviour reinforces and perpetuates the nature of their interactions. A major theoretical shift occurred: from mechanical to systems theory with an associated shift from linear to circular causality (Nichols, 1984).

Systems theory

As early as 1928, Ludwig von Bertalanffy first introduced a systemic perspective to provide a basis for an "organismic" approach to biology (Steinglass, 1987). He claimed that understanding biological phenomena could be improved by examining processes that lead to the increasing complexity of organization. This theory has been widely applied as general systems theory to other fields, such as community health, engineering, computer science and family studies. Systems theory suggests a universe that constitutes one organism. In the purest sense of this perspective, we would not see parts or subsets of the whole (Becvar & Becvar, 1988). This view is captured in the deceptively simple axiom: "The whole is greater than the sum of its parts." Von Bertalanffy (1968) also believed that living organisms were essentially open systems, maintaining themselves with continuous

inputs from, and outputs to, the environment. He emphasized living systems as wholes, in contrast to previous analytic and summative approaches; he substituted a dynamic conception of life for previous static and machine analogies; and he attributed primary activity to living organisms, rather than primary reactivity. From a family perspective, this means that the family system is best understood as a product of its organizational characteristics, which implies a different view of causality and, therefore, of defining pathology. The focus becomes organizational patterns with attention to interactional behaviour, structural organization and balance or stability of the system as a whole. Thus, the key concepts introduced in systems theory are wholeness, organization and relationships (Steinglass, 1987).

The dilemma

Despite the popularity of the systemic perspective among many scholars today, the primary legitimate science remains a logical-positivistic one. The traditional quantitative reductionistic methods fall short of capturing the depth and wholeness that is represented in family systems theory. Nevertheless, the lures of simplicity, clarity and unidirectionality seem too appealing to abandon and have indeed produced valuable scientific knowledge. And family researchers represent a scientific group caught in the crossroads of two perspectives.

Arguments for continuing the practice of logical-positivistic research methods to study family systems concepts are based on a belief that it may be difficult to obtain support and credibility for family research that is not based on the traditionally accepted logical-positivistic method (Becvar & Becvar, 1988). Kniskern (1983) argues that the reductionistic perspective is most accepted and, therefore, empirical findings researched and presented in this tradition are more respectable and will, therefore, help to advance the field. To do so, however, may serve to reinforce this model and thus detract from the potential usefulness of helping society evolve another paradigm that might become the accepted view.

Kuhn (1970) suggests that the emergence of a new paradigm, such as the systemic perspective, implies the need for a method logically consistent with the paradigm. Gurman (1983) extends this requirement further by arguing that it is unethical to evaluate family therapy with a method that implies more certainty than is warranted. As well, the validity of such findings is suspect, given the mismatch between constructs and methods. Another "ethical imperative" might be to seek to be logically consistent within ourselves and our paradigm, and to let research methods evolve, be used, and be published even in the face of the inhospitable charges of our research as inferior.

The notion of objectivity characteristic of the logical-positivistic tradition is also inconsistent with systems theory (Becvar & Becvar, 1988). The whole

idea of a scientific experiment rests on the assumption that the observer can be separate from the experimental apparatus and that the experimental apparatus "tests" the theory (Briggs & Peat, 1984). In contrast, Becvar and Becvar (1988) argue that what we observe is a function of the means we use to measure the phenomena of interest and of our theories that suggest what might be "out there". According to Capra (1983), observer and observed influence each other and the activity of scientific study changes what is being measured. Subjectivity, or the values and biases of the researcher, can no longer be treated as error because the paradox is that we study ourselves (Becvar & Becvar, 1988).

An issue related to the scientific paradigm within which family research is conducted is the notion of *purpose*. In the traditional reductionistic view, the aim of knowledge is to control and predict. From a systemic perspective causality does not exist, therefore, control is not a logical outcome.

If one accepts the belief that the observer is the observed, and that reality is not a constant, absolute, static phenomenon waiting to be measured, then efforts to control and predict are futile. The outcome of this type of scientific inquiry is description. This outcome is no small feat. And despite the disclaimers in most "good" research that sample sizes are too small and that findings cannot be generalized, consumers of research read, internalize (to varying degrees) and "know" this information after incorporating it with their own values and world views. The clinician uses knowledge generated from research to help provide a probable context within which the individual family or client is understood. The error occurs when this empirically generated "general" understanding is accepted as complete. Therefore, even qualitative descriptive research is generalized, at least cognitively, by clinicians. And the claims of objectivity made by reductionistic scientists are likely untrue.

Reconciling two paradigms

How does the family research community reconcile the opposing perspectives of these two world views? Although the logical-positivistic tradition may at some future time evolve into a more systemic research paradigm, family science is in need of research and conceptual clarity today. To abandon the reductionistic method of inquiry appears unwise. It has produced some fruitful information and is *one* approach to knowledge. However, family researchers who use this paradigm must clarify the limitations of their work more explicitly and acknowledge that the phenomenon studied is not the way it was before it was studied. It is different by the very act of observation (Becvar & Becvar, 1988).

It is also practical and inevitable that family research will continue to include examination of parts. For this type of research a reductionistic

quantitative method appears less worrisome. For example, some data analytic tools, such as path analysis, may provide useful ways of examining non-recursive interactions among family parts (Alwin & Hauser, 1975; Godwin, 1985, 1986; Lehrer, 1986; Schumm, Southerly & Figley, 1980). The emphasis in this research should be on patterns of interaction, sequences of exchange, direct and indirect interaction effects and on understanding the functions of the relationships among variables.

Simulated laboratory techniques may be useful in allowing observation and measurement of family phenomena, however, their approximation to real life is questionable and issues of coder reliability are a concern (Gilliss, 1983). If attention is given to training raters and findings are not over-interpreted, then this work has merit as a source of theory development that may be tested later in natural settings.

Exploratory analysis (Ferketich & Verran, 1986; Verran & Ferketich, 1987) is also a tool that may be particularly applicable to the analysis of family data. Noting patterns of distributions of scores across family members is useful for detecting outliers and may help guide decisions about the appropriateness of sum or mean scores (Appelbaum & McCall, 1983).

As well, there is a need for further work with dyadic relationships in families, in particular, more knowledge is required about processes and interactions among siblings (Jacob & Tennenbaum, 1988). For this type of study, "partial" quantitative methods hold merit. The use of different quantitative statistical methods may be a fruitful way of understanding complex family phenomena. For example, Schumm et al. (1985) describe the use of multivariate multiple regression, typological analysis and repeated measures designs as ways of capturing complexities of family data. At this time, however, for the reductionistic data analytic approaches, the elusive "whole" still remains a measurement enigma.

Depending on the research purpose, the place of qualitative inquiry methods may be more appropriate and consistent with systemic principles. Lewis (1950) advocated living-in with families as a means of providing structure and access to meanings. Kristjanson (1986) used qualitative interviews to identify health professional behaviours important to families of terminally-ill cancer patients. This work was later used to develop a tool to measure family satisfaction with advanced cancer care (Kristjanson, 1989; in press). Participant observation was also used by Hansen (1981) and Henry (1973) to observe family patterns with normal and mentally-ill families. Steinglass,Davis and Beerenson (1977) studied alcoholics and their family members in a laboratory setting. The patient and family members were hospitalized and the patient was permitted to become intoxicated. This work resulted in insight into the relationship between drinking behaviour and fam-

ily interaction. Haley (1962) pointed out that, in contrast to experiments with individuals in which the interpersonal factor is controlled, family experiments seek to measure that interpersonal factor. From these qualitative works emerge theoretical formulations that can be tested experimentally.

Although the qualitative methods have enjoyed a long and rich tradition in sociology and anthropology (Duffy, 1987), these methods are frequently criticized by other disciplines for not meeting standards of scientific adequacy.

One reason for reservations about qualitative research arises from the persistent tendency to evaluate those methods against criteria that are appropriate to quantitative research. Morgan (1983) argues that applying the criteria of one research tradition to another is nothing more than self-justification, because these criteria inevitably favour the research tradition that generated them. A number of scholars have proposed criteria of rigor more appropriate to evaluation of qualitative research (Aamodt, 1983; Cobb & Hagemaster, 1987; Glaser & Strauss, 1966; Guba & Lincoln, 1981). These include credibility of the findings, applicability, consistency and confirmability (Sandelowski, 1986). As well, specific strategies have been developed to address these criteria, such as use of an "audit trail" or triangulation of data sources.

The qualitative approaches to research are more consistent with family research and are worthy of further attention. This work can be fundamental to theory building, as constructs relevant to family research are identified and described.

According to Bednar et al. (1988), the success of any method of inquiry is directly related to the clarity with which the central conceptual elements in the field are defined and measured. These authors recommend a five-step process to scientific maturation: punctilious observation (which can range from the informal methods that often precede creative hunches, to structured case-study methods, to the observational techniques of qualitative inquiry, to the rigorous quantification of theoretical constructs); development of descriptive taxonomies that define, describe, differentiate and order crucial variables; refinement in the measurement of central variables; establishment of empirical relationships between and among the variables; and finally, development of theories based on empirical data.

A number of other authors agree that description and measurement are prerequisites to rigorous experimentation (Cook & Campbell, 1979; Shontz & Rosenak, 1985). Bednar et al. (1988) argue that the research efforts of family studies are out of harmony with what would normally be expected from such a young discipline, and they have moved too quickly to experimental studies

examining relationships among variables in the field. They suggest that family research is in desperate need of more fundamental descriptive information before proceeding with this more advanced undertaking.

Some would argue that the traditional positivistic (quantitative) method and the qualitative methods are two irreconcilable opposites. For the purposes of conceptual clarity and analysis, this discussion has polarized these world views. However, as Gould (1984, p. 7) states: "Dichotomy is the usual pathway to vulgarization. We take a complex set of arguments and divide it into two polarized positions - them against us. We then portray 'them' as foolish caricature of extremes in order to put 'us' in a better light." The issue is not which method is "correct" but that each contributes a portion of the truth and that one may be more useful than the other in guiding human affairs (Harman, 1977).

Given that reductionistic, quantitative methods will produce data that are incomplete and do not capture the density and complexity of family systems theory, it appears that some discord is inevitable. As well, qualitative methods of research may be helpful in revealing properties and processes related to the family as a unit and may elucidate important theoretical constructs and contextual variables.

Conclusion

Conceptual and methodological problems are intertwined in current family research. Greater conceptual refinement will help sharpen some of the blurring of family dimensions and will permit more precise measurement decisions. At a higher conceptual level, attention to the research paradigm most appropriate to the research question and constructs of interest is warranted. The place for qualitative research must be recognized.

However, it would be inaccurate to assume that qualitative research can replace quantitative knowing. Quantitative researches have to trust and build upon qualitative knowledge with the aim of achieving an integrated epistemology. This integration does not imply a blur of methods that are indistinct and unrecognizable. Rather, researchers must be systematic and precise about the level of the research questions addressed, the focus of inquiry (individuals, subunits, family), and the research method that will provide the most conceptually valid and meaningful results.

In summary, approaches to measurement issues associated with family research should include the following.

1. Use of more qualitative methods to delineate family constructs and capture the "whole" more accurately.

2. Qualifiers associated with reductionistic research that specify the effects of the observer on the phenomena and the uncertainty of the findings (Becvar & Becvar, 1988)

3. Clarity in conceptualizing which parts (or wholes) of the family are studied in an effort to match methods with conceptualizations.

4. Acknowledgement of the gap that exists between data generated from a logical-positivistic method and family systems theory.

5. Development of innovative ways to combine methods of inquiry to more completely access family systems constructs.

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RÉSUMÉ

Concepts de mesure en recherche sur la famille

Le présent document constitue une analyse des questions conceptuelles clés relatives à la notion de mesures dans le domaine de la recherche sur la famille et présente des recommandations sur la façon d'envisager ces problèmes. On y traite notamment : a) de la mesure de l'unité familiale, b) de la précision des définitions familiales, c) des problèmes de validité conceptuelle, d) de la pertinence des principes de la théorie des systèmes familiaux par rapport à la recherche positiviste logique traditionnelle et e) de l'apport relatif des méthodes de recherche qualitative et quantitative. On y souligne les points forts et les points faibles des méthodes de mesure spécifiques.

L'auteur prône un plus grand raffinement des concepts, afin d'apporter un éclaircissement aux dimensions des familles visées par les recherches et de permettre de prendre des décisions plus réfléchies et plus précises quant à ces mesures. A un niveau conceptuel supérieur, tenir compte du modèle de recherche le mieux approprié à la question expérimentale est justifié.