

Quantitative and qualitative approaches in the study of poverty and adolescent development: separation or integration?

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Abstract

This paper examines the use of quantitative and qualitative approaches to study the impact of economic disadvantage on family processes and adolescent development. Quantitative research has the merits of objectivity, good predictive and explanatory power, parsimony, precision and sophistication of analysis. Qualitative research, in contrast, provides a detailed, holistic, in-depth understanding of social reality and allows illumination of new insights. With the pragmatic considerations of methodological appropriateness, design flexibility, and situational responsiveness in responding to the research inquiry, a mixed methods approach could be a possibility of integrating quantitative and qualitative approaches and offers an alternative strategy to study the impact of economic disadvantage on family processes and adolescent development.

Keywords: adolescent development; economic disadvantage; family processes; qualitative study; quantitative study.

Introduction

Poverty has been a social concern in the world. It is believed that poverty influences family processes which further affects adolescent development. Quantitative and qualitative research methodologies have been commonly employed to study the impact of economic disadvantage on family processes and adolescent development. There has been intense debate on the use of quantitative and qualitative approaches in studying social phenomena, with their distinctive philosophical orientations and characteristics. This paper examines

the characteristics, strengths, and limitations of quantitative and qualitative approaches of methodology with reference to the study of the impact of economic disadvantage on family processes and adolescent development.

Quantitative research methodology

Quantitative research methodology has the embedded root of positivism. Positivism perceives reality as objective and fixed that is governed by strict, natural, and unchangeable laws. It is independent of human consciousness. The world is deterministic, with causes that produce effects under predictable conditions. Human actions are subject to fixed patterns of life that are empirically observable. Science, as a tool of knowledge extraction, is based on strict rules and procedures that are deductive and nomothetic in nature. Hence, social research is a tool for studying social events so that general causal laws can be discovered and prediction of outcomes is possible (1). Positivists view science as 'empirical' rather than metaphysical. Any propositions which cannot be tested and verified are "literally meaningless" (2).

Stemming from the paradigm of positivism, post-positivism shares some fundamental principles of positivism. Post-positivism believes that objective reality is "out there". However, post-positivism exhibits some alternations from positivism on the ontological, epistemological and methodological dimensions. Post-positivism shares the ontology of "critical realism" (3), that is, it acknowledges the fact that the objective world is imperfectly known and measurable. Thus, claims to reality are subject to critical examination on approximating reality as closely as possible. Epistemologically, post-positivism takes the view of "modified dualist/objectivist" (3) which suggests that it is impossible to remove the influence of the subject entirely from the object of analysis and, thus, objectivity is considered as regulatory ideals (4). Methodologically, post-positivism employs "critical multiplism" (3), which suggests the use of multiple methods of inquiry. Post-positivists permit social scientists to discover reality utilizing quantitative methods in combination with qualitative methods.

Sharing the above philosophical orientation of positivism, the quantitative approach of research design has several characteristics. First, it relies on empirical methods with clear rules and procedures. Deductive methods such as hypothesis testing are employed. Accuracy and precision on measurement is required to ensure its reliability and validity. Second, value neutrality is required throughout the research. The researcher is an objective, neutral, and "disinterested" scientist. Third, representativeness and generalization of the findings to explain social phenomena and predict outcomes are

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essential. Fourth, quantification of the results is emphasized with the use of mathematical models, statistical procedures and presentations. Last but not least, reliability, internal and external validity, and objectivity are important quality criteria for research.

The quantitative research approach has dominated social science methodologies in the past decades. One merit lies in its power on the explanation of social phenomenon and prediction of outcomes. Social science, serving as a basis for "social engineering to improve the society" (5), should make its practical contribution in discovering social laws underlying the social world. The clear and well-defined rules and requirements on methodology, reliability, validity, and accuracy on measurement tools, and systematic procedures of data collection and data analysis provide researchers with precise and reliable evidence to explain social phenomena and predict outcomes. Another merit is its commitment on scientism and objectivity (6). Value neutrality of scientists would reduce biases and preconceptions, and move beyond common-sense beliefs (5). Furthermore, quantitative research allows statistical inference that ensures generalization of the findings to be possible. Last but not least, quantitative methods involving less advanced statistical analyses and complex research designs are relatively economical and time-saving methodological approaches when compared with the qualitative approach.

The quantitative approach has been criticized on its ontological and methodological assumptions. Ontologically, it is argued that whether reality is objective and "out there". The philosophical assumptions of positivism are criticized and rejected by the proponents of constructivism and post-modernism. Constructivists believe that reality is created, constructed, and enacted. As each person has one's own experience and unique interpretation of meanings of one's own act, the scope of findings on research should be ideographic rather than nomothetic. As a result, it is impossible and unrealistic to understand the reality through quantitative methods.

As a methodology, quantitative research is criticized as "methodologically inadequate" (7) to understand the social world that is complex and ever-changing. Patton (8) criticized the quantitative-experimental approach as it "1) oversimplifies the complexities of real-world experiences; 2) misses major factors of importance that are not easily quantified; and 3) fails to portray the reality and its impacts as a 'whole'". Second, critics of quantitative research often question whether quantitative research could really "measure" the essence of life of human beings, by setting human actions as measured "variables". Quantitative researchers are criticized as "abstract from this world...and seek a nomothetic or etic science based on probabilities derived from the study of large numbers of randomly selected cases. These kinds of statements stand above and outside the constraints of everyday life [of the subjects]" (p. 12) (9). Third, the subjective experiences and interpreted meanings of the "actors" might be neglected. Fourth, the positions and roles of researchers and respondents in quantitative research are also queried. As the researcher is responsible for determining the variables, setting hypotheses, deciding the research design, and measurement tools,

as well as controlling the context of studies, manipulation of the researcher could take place. In addition, respondents are turned into 'units' or 'objects' of study. Lofland (10) criticized the statistical portrayal of human acts by describing "those people appearing as numbers in their (statistical sociologists') tables and as correlations in their matrices!" (p. 3).

Quantitative research design is extensively used to study the impact of economic disadvantage on family processes and adolescent development. Two research strategies are commonly used. The first approach is to search for group differences by comparing the scores of the dependent variables in different groups, such as poor group vs. non-poor group and groups based on different duration of economic hardship (11-13). An example of this strategy is a quantitative research study conducted by Shek and Lee (13) examining family life quality (parenting quality and parent-child relational quality) and emotional quality of life (hopelessness, mastery, life satisfaction, and self-esteem) of Chinese adolescents with and without economic disadvantage. A total of 2758 Chinese adolescents responded to the measures and results suggested that parenting quality, parent-child relational quality, and emotional quality of life of adolescents experiencing economic disadvantage were generally poorer than those without economic disadvantage. The second strategy was to search for the degree or strength of relationships among the variables of economic hardship, family processes, and adolescent development (14-16). As an illustration of this strategy, Shek (15) conducted a longitudinal study examining the relationships between perceived family functioning and adolescent psychological well-being and problem behavior in Chinese adolescents experiencing economic disadvantage. Results based on 199 respondents showed that perceived family functioning was related to measures of adolescent psychological well-being (existential well-being, mastery, life satisfaction, self-esteem, and general psychiatric morbidity) and problem behavior (substance abuse and delinquency) in different time waves.

Quantitative research is capable of helping researchers to understand and predict relationships among economic disadvantage, family processes, and adolescent development. Relationships among variables are verified and paths of effects are portrayed through advanced statistical analytical techniques. Such analyses help to test theories and models on the impact of economic disadvantage on family processes and adolescent development. In addition, the strengths of objectivity, generalizability, parsimony, and precision also apply. Furthermore, validated measurement tools are extensively developed to measure economic hardship, family processes, adolescent development, thus facilitating the ease of implementation of the research.

Nevertheless, quantitative studies of the impact of economic disadvantage on family processes and adolescent development are prone to several shortcomings. First, although quantitative research can detect the relationships between economic disadvantage, family processes, and adolescent development, the processes of how changes happen can be undetectable. Second, as suggested by Wampler and Halverson (17), quantitative measurement is weakest in "capturing the complexity

of family life in the sense of an ongoing stream of behavior over long period of time that interweaves the perceptions of individuals with behaviors in relationships" (17). The perceptions of family relationships over time can change with many possibilities. Third, as quantitative research depends heavily on structured questionnaires with predetermined items, this restricts the respondents to express themselves freely and indicate the most meaningful and salient ideas and preferences. Fourth, quantitative research shows limitations on studying the subjective experiences of the respondents. Fifth, culture and ecology play an important role regarding the impact of economic disadvantages on family processes and adolescent development. However, quantitative research has weak contextual sensitivity.

Qualitative research methodology

Qualitative research is defined as "an umbrella term for an array of attitudes toward and strategies for conducting inquiry that are aimed at discerning how human beings understand, experience, interpret, and produce the social world" (18). Unlike quantitative research that holds a unified form of philosophical inquiry, a qualitative approach includes a variety of philosophical positions and methodological approaches arising from different foundations. The philosophical positions include interpretivism, hermeneutics, constructivism, and critical theory. Methodological approaches include ethnography, phenomenology, heuristic inquiry, ethnomethodology, grounded theory, symbolic interactionism, interpretive interactionism, participatory inquiry, narrative approach, and discourse analysis. Challenging the tenet of positivism, social scientists of these schools of thought believe that reality is created, constructed, and value-laden. Social science is actually "the pursuit of self-knowledge" (p. 7) (5), seeking clarity on people in selecting and acting on particular values, as well as searching meanings of their human actions. Rather than searching for causal relationships and prediction of outcomes in the quantitative paradigm, qualitative researchers concentrate on interpretive understanding (*verstehen*) which involves the need to "live through", or recreate, the experience of others within oneself" (p. 7) (5).

Although qualitative research diverges into different philosophical positions and methodological approaches, it has some commonly shared characteristics. Patton (8) highlighted ten themes of qualitative inquiry that are worth noting. They are naturalistic inquiry, inductive analysis, holistic perspective, qualitative data, personal touch of the researcher, capturing the constant and ongoing changes of dynamic systems, unique case orientation, context sensitivity, empathic neutrality, and design flexibility. Qualitative researchers believe that searching for meanings and essences of experience are of most importance in understanding human reality. Through detailed interviewing and observations of the subjects, qualitative investigators listen to their stories and voices. They are much closer to the subjects and capture their point of view (9). Another merit of qualitative research lies on its emergent design and flexibility, as well as its inductive logic of analysis that

allows exploration and creative synthesis of social reality to be possible and comprehensible.

Nevertheless, the qualitative approach is also prone to criticisms. Subjectivity brings limitation on qualitative research. The active involvement of the researcher in the data collection process, together with the interactive relationship between researchers and subjects, easily make the researchers "go native". In addition to the fact that data analysis relies greatly on the interpretation of researchers, there would also be high risk of subjective bias and personal preoccupation of the researchers that cause misinterpretation of the results. Second, representativeness and generalizability of the findings are questionable. Owing to small samples and uniqueness of individual cases, the data are not representative and the findings might not be generalized. Third, replicability of the research might not be possible. Fourth, as qualitative research provides only a descriptive account of the social phenomena, it has limitations on verification and explanation of cause-effect relationship, as well as prediction of outcomes. Fifth, reliability and validity of qualitative research, which is the conventional benchmark of "rigor" in research methods, is also challengeable. Although Guba and Lincoln (19) suggested another quality criteria for qualitative research based on trustworthiness, with its four components of credibility, transferability, dependability, and confirmability, the evaluative criteria and benchmarks need more research to be established. Sixth, the lack of strict rules and procedures as well as high level of subjectivity and relativism would go into an extreme of "anything goes" (20). Last but not least, it is a time-consuming and relatively expensive methodological approach when compared with quantitative research.

The qualitative approach is useful in understanding the impact of economic disadvantage on family processes and adolescent development. It is mostly found in exploratory research such as understanding changes of family lives and roles of family members living in poverty (21, 22), subjective experiences of adolescents and their family members (23, 24), perceptions of lives of adolescents (25), etc. It is worth noting that many studies are culturally specific, reflecting the characteristics of qualitative research that are naturalistic and contextually sensitive. Interviews, observations, field studies are common methods to allow the subjects to "voice" and "tell" their stories in face of economic hardship. As an illustration, Shek et al. (25) conducted a qualitative research study to explore the perceptions of present, ideal, and future lives of Chinese adolescents experiencing economic disadvantage. Twelve Chinese adolescents experiencing economic disadvantage were interviewed. Results suggested that adolescents had positive perceptions on present lives and future lives, although some negative feelings were experienced. Also, economic sufficiency emerged as a major theme from the perceptions of their ideal lives.

In addition, qualitative research gives a rich, in-depth, and detailed account of family processes and adolescent development perceived by families in poverty. Discoveries and new insights are gained from the stories and the voices of the subjects. New patterns and concepts also emerge. For instance, through the assessment of ethnographic studies of economic

disadvantaged families, Burton (22) developed the conceptual model of "childhood adultification" in economically disadvantaged families that involved contextual, social, and developmental processes in which children and adolescents prematurely assumed adult roles and responsibilities in their families. In addition, qualitative research is useful in understanding phenomena of family system such as family dynamics, patterns of interactions and communications, patterns of congruence and incongruence among members, ways to resolve conflicts, family boundaries, etc. (26). Furthermore, one of the merits of qualitative research is its context-sensitivity through naturalistic inquiry. Finally, qualitative research is useful in studying childhood poverty, as children and poor families can find difficulties in responding to questionnaires. Interviews and observations would be good methods to understand their experiences and situations in facing poverty.

However, there are several drawbacks pertinent to the use of qualitative research to study the impact of economic disadvantage. Qualitative research can be powerful in exploring and describing the situations of adolescents and families in poverty, but it is weak in portraying the cause-effect relationships among economic disadvantage, family processes, and adolescent development. Also, the problems of non-generalizability and non-representativeness also exist. Furthermore, subjectivity is a great challenge to qualitative studies with the direct involvement of researchers in data collection and interpretation. Last but not least, ethical hazards (27) are main concerns in qualitative research, particularly in studying family processes through observation and analysis of personal documents. The data collection process as well as public presentation of findings can be intrusive to the private life of the family.

Comparison of quantitative and qualitative approaches

It seems that quantitative and qualitative approaches are dichotomized with underlying philosophical orientations, focuses, and strategies of research. Based on the characteristics mentioned above, together with an outline by Corbetta (28), on the comparison between quantitative and qualitative approaches during different stages of research, the differences of quantitative and qualitative approaches are portrayed in Table 1. The divide of quantitative and qualitative approaches stems from the dichotomy of positivist-interpretivist orientations, with the former suggests that reality is 'out there', whereas the later suggests that reality is constructed. The positivist-interpretivist split results in intense debates on the purposes of research, roles of researchers, positions of values and contexts in research, relationships of researchers and respondents, relationships between facts and values in the process of investigation (5).

Possibilities of integration

While some researchers suggested that the quantitative and qualitative approaches could not be mixed (5, 29), other social

scientists argued for the compatibility of both approaches. Howe (30) posited the use of a different perspective, pragmatism, by stating that "truth is 'what works'" (p. 14). Patton (8) also advocated for pragmatism by calling for a "paradigm of choices" that recognizes different methods according to the purpose of the inquiry, the questions being investigated, and the available resources. Three canons for "paradigm of choices" are suggested: (i) methodological appropriateness, (ii) design flexibility, and (iii) situational responsiveness. Related to research methodologies of social work, Pelie (7) concluded that each approach (quantitative and qualitative) has a partial or an incomplete view of the truth and thus a situation synthesis is required. By employing the pragmatic view on research methodology, it seems that quantitative and qualitative approaches are not dichotomized as such and there is a possibility for integration.

Practically, Creswell (31) suggested three models of combined designs. The first is a two-phase design where the researcher first conducts a qualitative phase of the study and then a quantitative phase, or vice versa, with the two phases being separated. The second design is a dominant-less dominant design where the researcher conducts the study within a dominant paradigm with a small proportion drawn from another paradigm. The final is a mixed-methodology design in which the researcher mixes aspects of qualitative and quantitative paradigm in the design. Tashakkori and Teddlie (32) presented a taxonomy of mixed model studies based on three dichotomous dimensions, including type of investigation dimension of the research process (exploratory vs. confirmatory), type of data collection and operations (qualitative vs. quantitative), and type of analysis and inference (qualitative vs. statistical analysis and inference). A 2x2x2 cross-classification of the dimensions would result in eight types of models in conducting research. They are purely qualitative, purely quantitative, and six types of mixed model studies.

With reference to studies on the impact of economic disadvantage on family processes and adolescent development, mixed methods combining quantitative and qualitative approaches are present. An illustration includes the study of the family stress model suggesting the pathways of economic hardship, family processes, and adolescent development. Conger et al. (33) employed the dominant-less dominant design with confirmatory investigation, quantitative dominant and qualitative-less dominant data collection, and statistical analysis and inference are employed. Elder et al. (34) used a similar model in the Oakland Growth Study of family processes and child development. Quantitative methods of questionnaires, psychometric scales, Q-sort, as well as qualitative methods of observation and interviews were employed.

To investigate the usefulness and desirability of the mixed methods approach, Greene et al. (35) suggested five purposes for combining methods in a study: triangulation, complementarity, development, initiation, and expansion. A pure qualitative and quantitative approach each has its merits and drawbacks. Mixed methods go beyond their limitations and allow the most appropriate methods to be employed. It also allows qualitative and quantitative data to "be fruit-

Table 1 Differences of quantitative and qualitative approaches of research methodology.

	Quantitative research	Qualitative research
Fundamental principles		
Philosophical orientation	Positivism, post-positivism	Constructivism, interpretivism, critical theory, post-positivism
Nature of reality	Independent of human consciousness and governed by laws; external to subjects	Socially constructed by actors
Nature of science	Nomothetic, focus on universal causal laws	Idiographic, focus on uniqueness of individuals
Nature of knowledge	Fact accumulation Knowledge derived through sense impressions	Construction of reality Understanding meanings and interpretations (<i>Verstehen</i>)
Values	Value neutrality	Normative, value-laden
Roles of research		
Purpose	Explanation and prediction	Understanding of reality
Scope	Focus on measured variables	Holistic, focus on individuals
Quality criteria	Reliability and validity	Trustworthiness and authenticity, with components of credibility, transferability, dependability and confirmability
Process of research		
Relationship with theory	Confirmation Structured with logical sequences Deductive	Emergent Interactive and open Inductive
Relationship with environment	Manipulative Control of context	Naturalistic Context-sensitive
Values of researchers	Neutral and value-free, control bias through error elimination	Reflexive, rely on self-awareness of the researcher
Researcher's position	Outsider	Insider, subject-centered
Relationship between researcher and subjects	Distant, detached, neutral	Close, with empathetic neutrality
Participation of subjects	Passive	Active
Preparatory work		
Use of literature	Fundamental; used as skeleton of theory and hypotheses	Auxiliary; used for a better understanding of human experiences
Concepts	Operationalization requirement	Open to construction
Data collection		
Research design	Structured Predetermined and strictly planned	Unstructured Flexible through the course
Selection of sample	Selecting statistically representative sample, such as random sampling	Representativeness is not the primary focus
Instruments	Standardized, validated measurement	Not standardized
Nature of the data	Quantitative data	Qualitative data
Data Analysis		
Target of analysis	The variable	The individual
Analytical focus	Focus on variations between variables	Understand the experiences of the informants
Analytical techniques	Mathematical and statistical techniques	Interpretation of the meanings and experiences of subjects
Results presentation		
Data presentation	Tables	Extracts from texts, documents, and narratives of interviews
Generalization of results	Generalization is possible	Conceptual generalization, with time and context specificity

fully combined to elucidate complementary aspects of the same phenomena" (p. 558) (36). In addition, mixed methods allow methodological triangulation that enhances reliability of the research. Another advantage of mixed methods lies in appropriateness of the methodologies to study the phenomena. Methods that are more responsive to the research questions are selected in the study. Furthermore, mixed methods

would allow more flexibility for the researchers in research design and create fewer constraints. Last but not least, mixed methods can expand both the scope and breadth of the study. It is noteworthy that the mixed methods approach has been the focus of much attention in adolescent developmental research, such as evaluation of positive youth development programs for adolescents (37–39).

However, the mixed method design is not a panacea. A pragmatic perspective on integrating quantitative and qualitative approaches is open to challenge. Pragmatism is viewed as a rapprochement that oversimplifies paradigmatic differences of the approaches into variations of procedures and techniques. The hidden epistemological difficulties are ignored (40). In addition, one should bear in mind the complexities of conducting both quantitative and qualitative research. "Harmonization" of qualitative and quantitative methods in a study is critical. As a metaphor, the mixed methods is like an orchestra. When musical components are carefully arranged and performed steadily, it increases the quality of performance and result in resonance. On the contrary, noise would be pollution. Mixed methods can increase the scope and breadth of the study, but they can also spoil the study. Finally, cost and time should be taken into consideration.

Conclusions

Research is the window to understand human reality. Quantitative and qualitative approaches, rooted with different paradigms, exhibit different characteristics. When applying to the study of impact of economic disadvantage on family processes and adolescent development, both approaches demonstrate their strengths and limitations. With the employment of the pragmatic view on research methodology, a mixed methods design would be possible. However, the use of quantitative, qualitative, and mixed methods approaches could not be discussed in a nutshell. The purpose of inquiry, objectives of the study, as well as the research questions are crucial to determine the approaches used. An open discourse and creative synthesis of quantitative and qualitative inquiries is called for.

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