

Triangulating the Concepts of Vulnerability and Resiliency in Fishing Reliant Communities: The Use of Mixed Methodologies Incorporating Primary & Secondary Data

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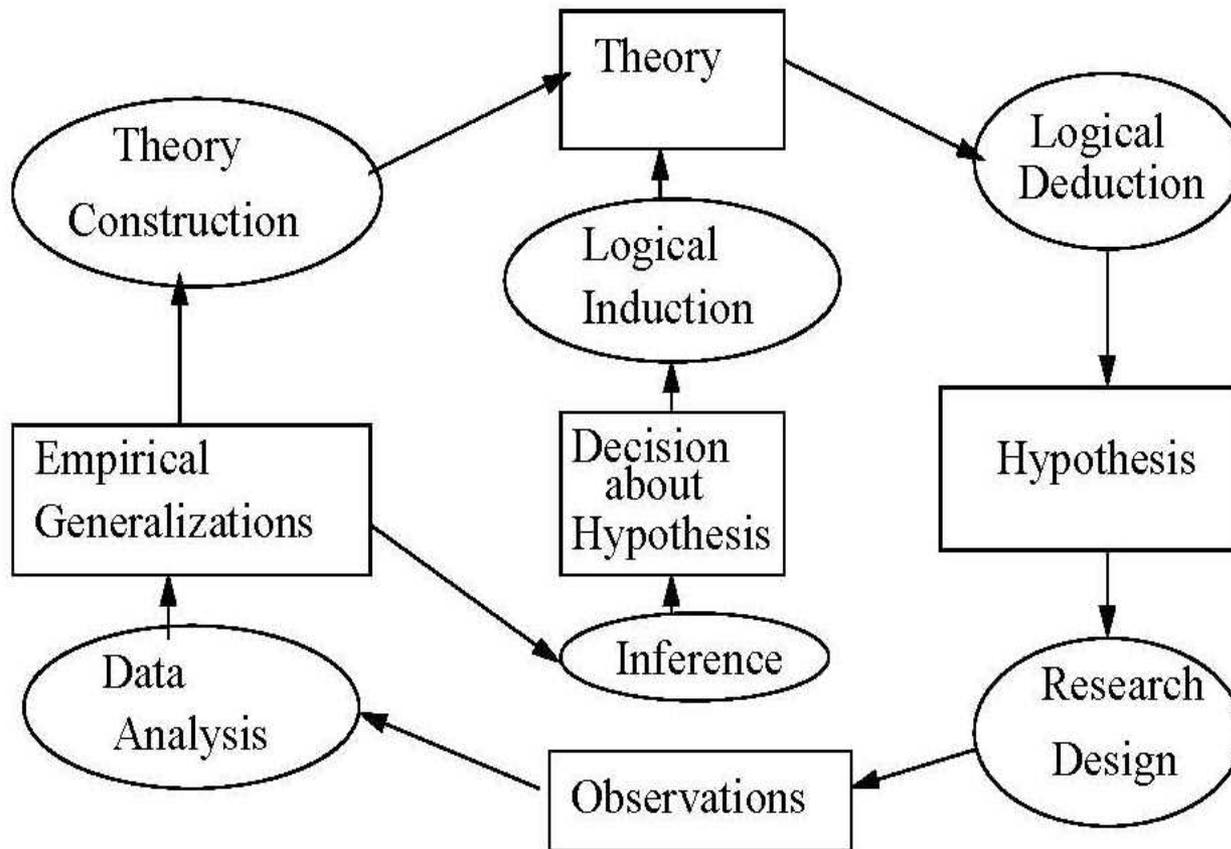
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The Wheel of Science

1. Walter Wallace's "Wheel" diagram of the research process:



Triangulation & Mixed Methods

- ▶ Triangulation in the social sciences refers to validity tests from several separate methodologies

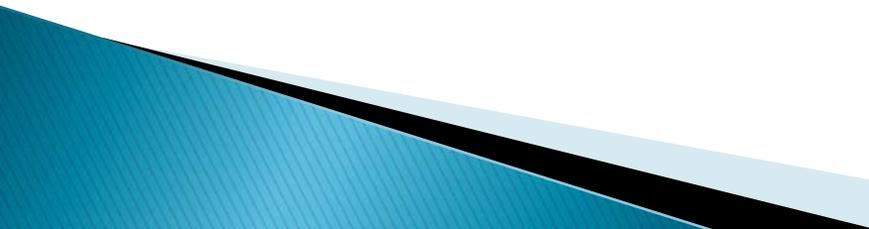
“We can say that when several unrelated approaches point to the same conclusions, the probability of their validity is increased” (Ervin 2005 P. 191).

Ervin, Alexander M. (2005) Applied Anthropology: Tools and Perspectives for Contemporary Practice 2nd Edition. Allyn and Bacon: Boston, MA.

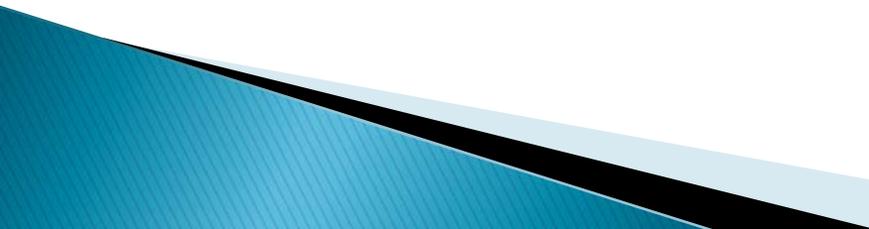
Qualitative Methods

- ▶ Qualitative, Inductive, and Idiographic
- ▶ Community Case Study Approach
 - Key Informant / Action Informant Protocols
 - Personal observation
 - Inventories of Infrastructure
- ▶ Cultural Models Analysis
 - Emergent Reality
 - Key Words
- ▶ Challenges and Solutions with Interrater Reliability

Qualitative Methods

- ▶ 1. How long have you fished in this area?
 - ▶ 2. Did your parents and grandparents fish also?
 - ▶ 3. Is fishing the biggest source of income for your family?
 - ▶ 4. Currently, whom do you sell your catch to?
 - ▶ 5. In your opinion, how much has fishing in this area changed?
 - ▶ 6. How has the fishery changed?
 - ▶ 7. What do you think has caused changes in fishing as a way of life?
 - ▶ 8. What do you think has caused changes in the fishery?
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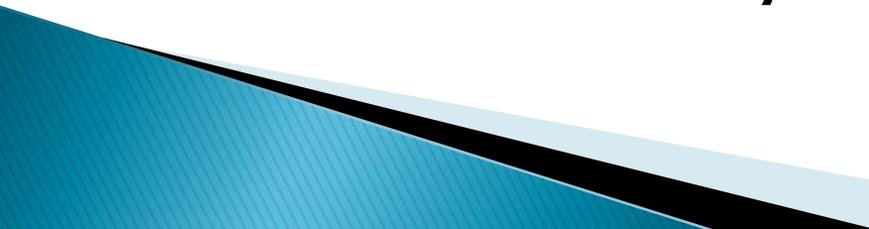
Qualitative Methods

- ▶ 9. Would you say that you live in a fishing community?
 - ▶ 10. How would you say you're doing?
 - ▶ 11. How have you adapted to fishing changes in the past?
 - ▶ 12. Do you belong to any fishing or other support group?
 - ▶ 13. What appeals to you about fishing?
 - ▶ 14. What might make you want to leave the fishery?
 - ▶ 15. What do you say is the biggest problem for you as a fisherman?
 - ▶ 16. What is the biggest problem for your community?
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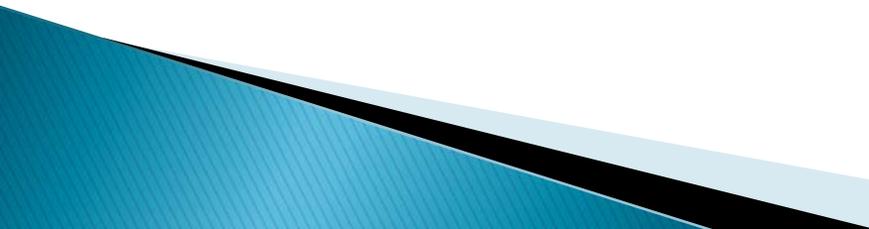
Quantitative Methods

- ▶ Quantitative, Deductive, and Nomothetic
- ▶ Began with a Review of Literature
 - Identified Theoretical Domains of Resiliency–Vulnerability
 - Identified Possible Secondary Data Indicators of the Domains
- ▶ Constructed Composite Measures of Each Domain using a Confirmatory Factor Analysis–Latent Structure Framework

Domains of Resiliency–Vulnerability

- ▶ Two ends of a continuum or separate concepts?
 - We use the language of continuum in the analysis as a heuristic aid and to simplify the analysis
 - We accept the validity of separate concepts
 - Respondents seemed to focus primarily on vulnerability in the emergent process
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Domains of Resiliency–Vulnerability

- ▶ Population Composition
 - ▶ Poverty
 - ▶ Housing Characteristics
 - ▶ Labor Force
 - ▶ Natural / Technological Disasters
 - ▶ Housing Disruptions
 - ▶ Personal Disruptions
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Emergent Views of Resiliency– Vulnerability from Cultural Models

- ▶ Key Word Categories
 - Infrastructure
 - Land/Water use changes
 - Catch Levels
 - Place in Community
 - Operating Expenses
 - Institutions
 - Disasters
 - Regulations

Interrater Agreement

- ▶ Interrater reliability is the degree to which independent observers evaluate the characteristics of a subject and reach the same conclusion
- ▶ In this case there are two completely differing sets of criteria and processes.
- ▶ Here a high level of agreement reflects convergence of a construct with reality.
- ▶ In other words rather than being a reflection reliability (receiving the same results from repeated measures using the same criteria) it is a reflection of both construct and external validity (the link between a construct and observed reality).
- ▶ A more accurate term would be interrater agreement.

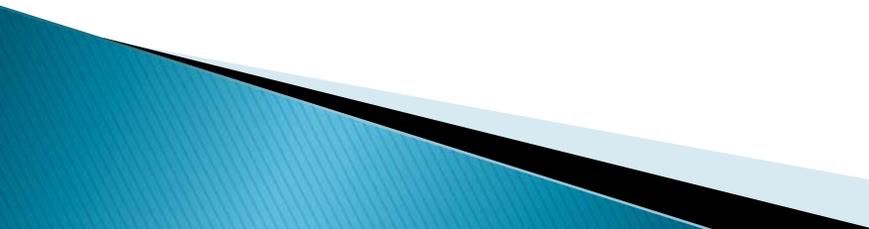
Measures of Interrater Agreement

- ▶ Percentage matched and Pearson's r often over-inflate the level of agreement due to random matching.
- ▶ For Example, with 3 categories there is a 1 in 3 chance for each rater to randomly select the same category so 11.1% of matches are due to random matching ($.333 * .333 = .111$)
- ▶ Cohen's *Kappa* adjusts for random matching and is a far more conservative measure
- ▶ *Kappa* likely underestimates agreement because it only counts EXACT matches

Modal Response Methodology

- ▶ To evaluate the agreement of the social indicators with the ethnographic research it was necessary to code the indices into the same categories employed in the qualitative analysis: 1) low, 2) medium, and 3) high
 - ▶ Each separate community (N=125) was coded into one of the thirds (low, medium, or high) based on the index factor score
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Modal Response Methodology

- ▶ Possible Methods: Summing and Single Index Development All With Significant Problems
 - ▶ To produce a single score a simple modal response coding scheme was employed
 - ▶ The category that occurred most frequently within a community was assigned to that community
 - ▶ When there was a tie between the low and high categories the medium response was assigned.
 - ▶ Such an approach has obvious face validity and produces results consistent with much more complicated but flawed procedures.
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Community	Quantitative Resiliency-Vulnerability Indices							Quantitative Modal Response	Qualitative Ethnographic Assessment	Differing Classification
	Population Composition	Poverty	Housing Characteristics	Labor Force	Natura/Techno Disasters	Housing Disruptions	Personal Disruptions			
Port Lavaca	High	High	Low	High	Low	Low	Low	Low	Low	
Seadrift	High	High	Low	High	Low	High	Low	High	High	
Port O'Connor	High	Medium	Low	High	Low	Low	Medium	Low	High	*
Palacios	High	High	Low	High	Low	Low	High	High	High	
Seabrook	Low	Low	Medium	Low	High	High	Low	Low	Low	
San Leon	Medium	High	Low	High	High	Low	High	High	High	
Galveston	High	High	Low	High	High	Medium	High	High	High	
Texas City	High	Medium	Medium	High	High	Low	Medium	Medium	Medium	
Bacliff	Medium	High	Low	High	High	Medium	High	High	Medium	*

Matched on 7 of 9 Communities

77.78% Matched

Kappa .625, P .005



Conclusions

- ▶ The two techniques produced similar results
 - ▶ The social indicators were robust and obsolescence was not much of an issue in comparative frameworks
 - ▶ NOAA NMFS should consider adopting an information system based on Key Indicators to aid in Social Impact Assessment
 - ▶ This system can identify places in need of further ethnographic study...particularly in places with rapidly evolving situations
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