Stakeholder engagement during front-end design: Characterizing novice design practitioner behaviors

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Motivation & Research Questions

Human-centered design

Start here

Viable Business
Desirable Human
Feasible Technology

Design ethnography

Critical Design
Cultural Probes
Design + Emotion
Generative Design Research
Generative Tools
User-Centered Design
Usability Testing
Contextual Inquiry
Participatory Design
Lead-User Innovation
"Scandinavian" Methods
Human Factors + Ergonomics
Applied Ethnography

Knowledge gaps

	Social Science Use began during 1920s	Design Use began during 1980s	
Aspects of Ethnography		Use in Practice	Novice to Informed
Data Collection	Various methodologies have been developed and used in many studies	Thoroughly described in business & design literature; studied within HCI community	Few studies have looked into this area and few descriptions of skill development process
Synthesis & Analysis	Various methods developed and is considered key to research process	Few methods or detailed descriptions available in literature; formal use is not well-documented	No studies looking specifically at this area with respect to novice development
Application	Applied anthropology is well-established and has increased in use over time	Outcomes of design ethnography are described in general but not in particular	Not studies looking specifically at this area with respect to novice development

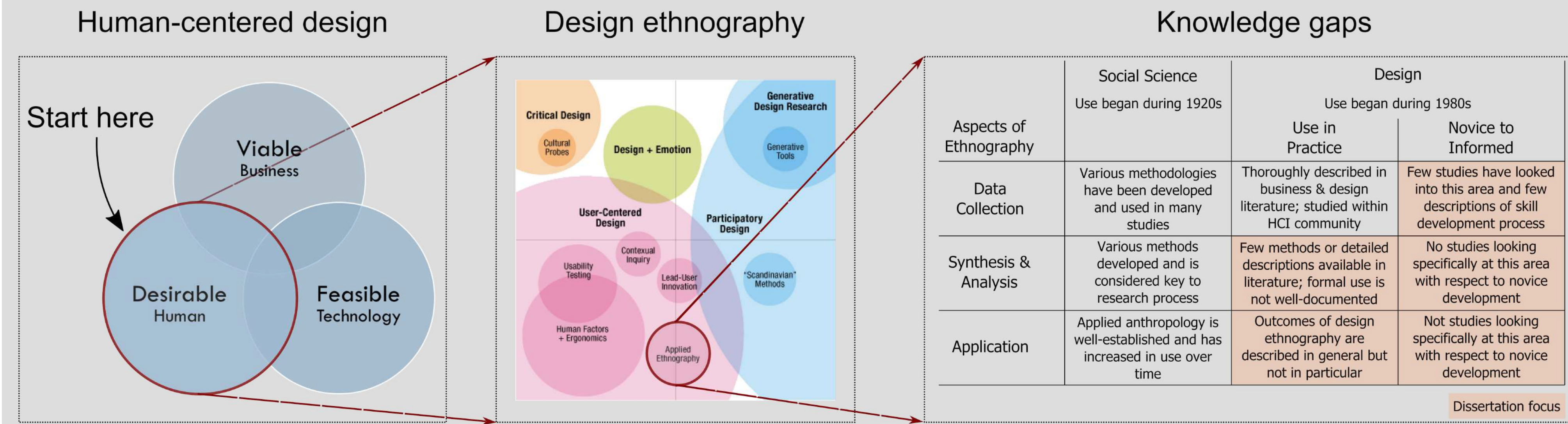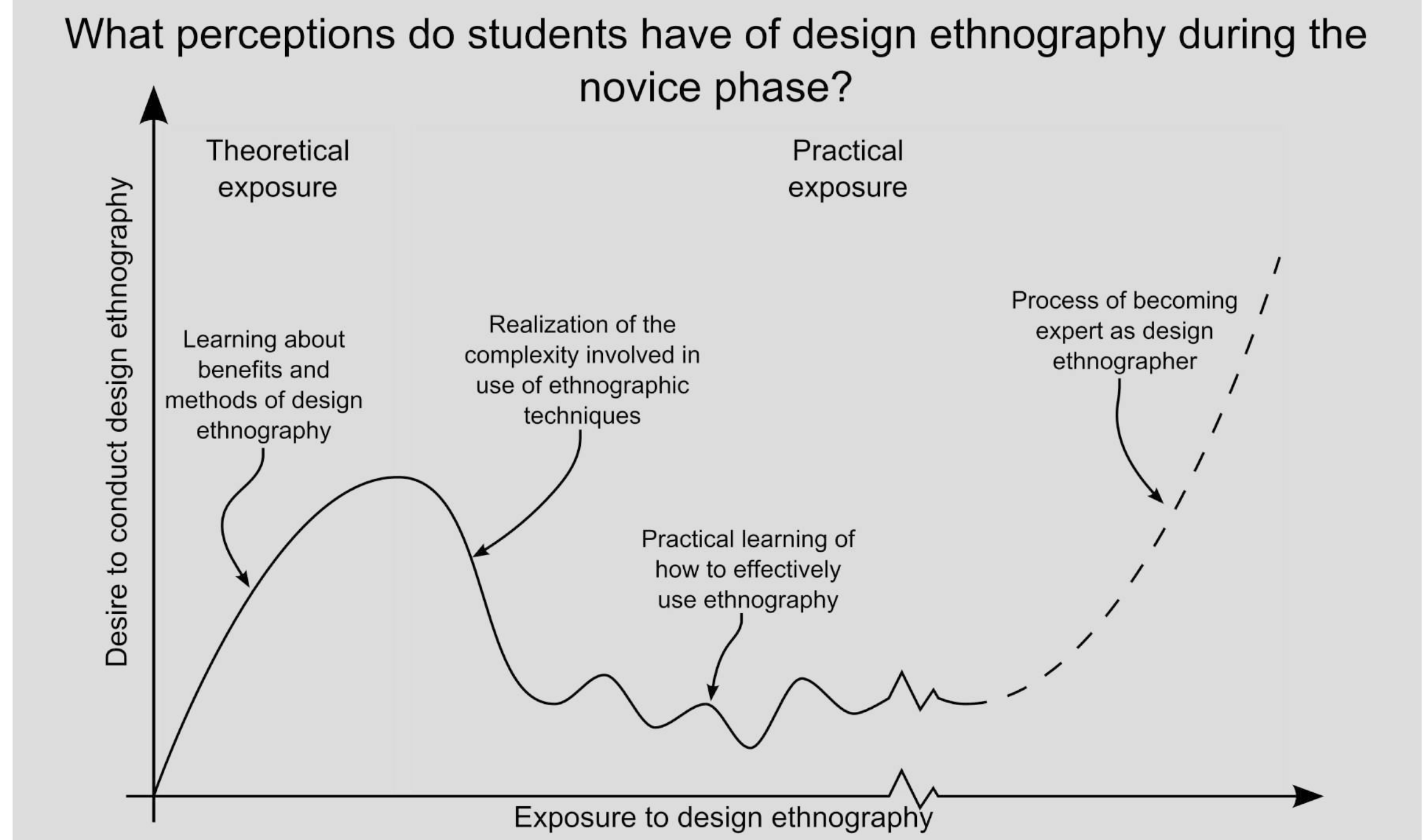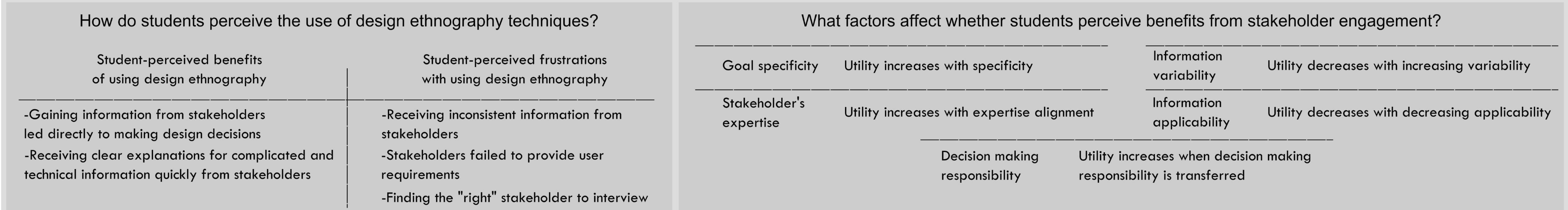Dissertation focus

Research questions

+ How do novice designers implement design ethnography techniques during capstone design?

+ How do novice designers collect and synthesize data when developing product requirements?

+ What factors differentiate novice from more informed designers when conducting stakeholder interviews?

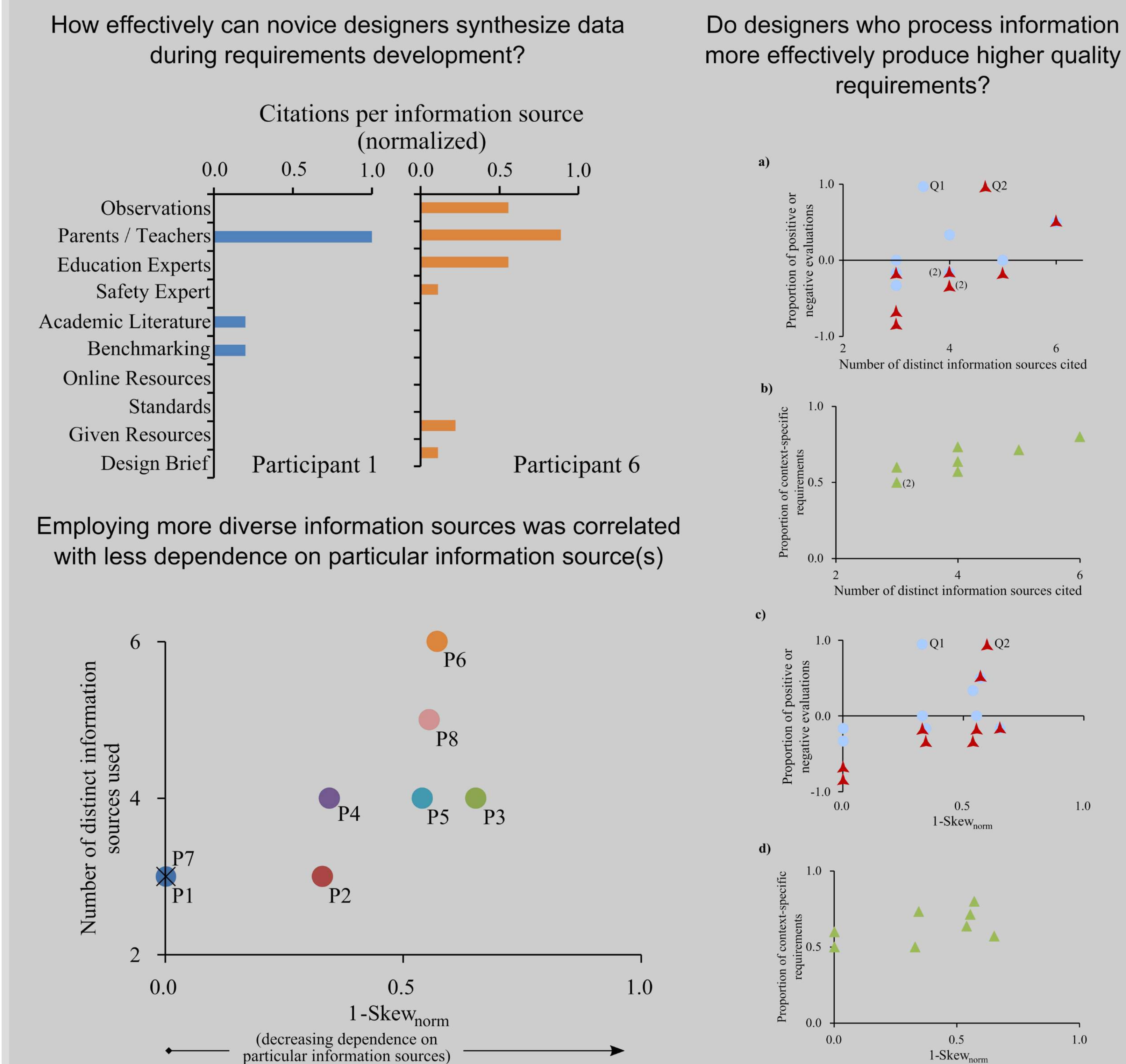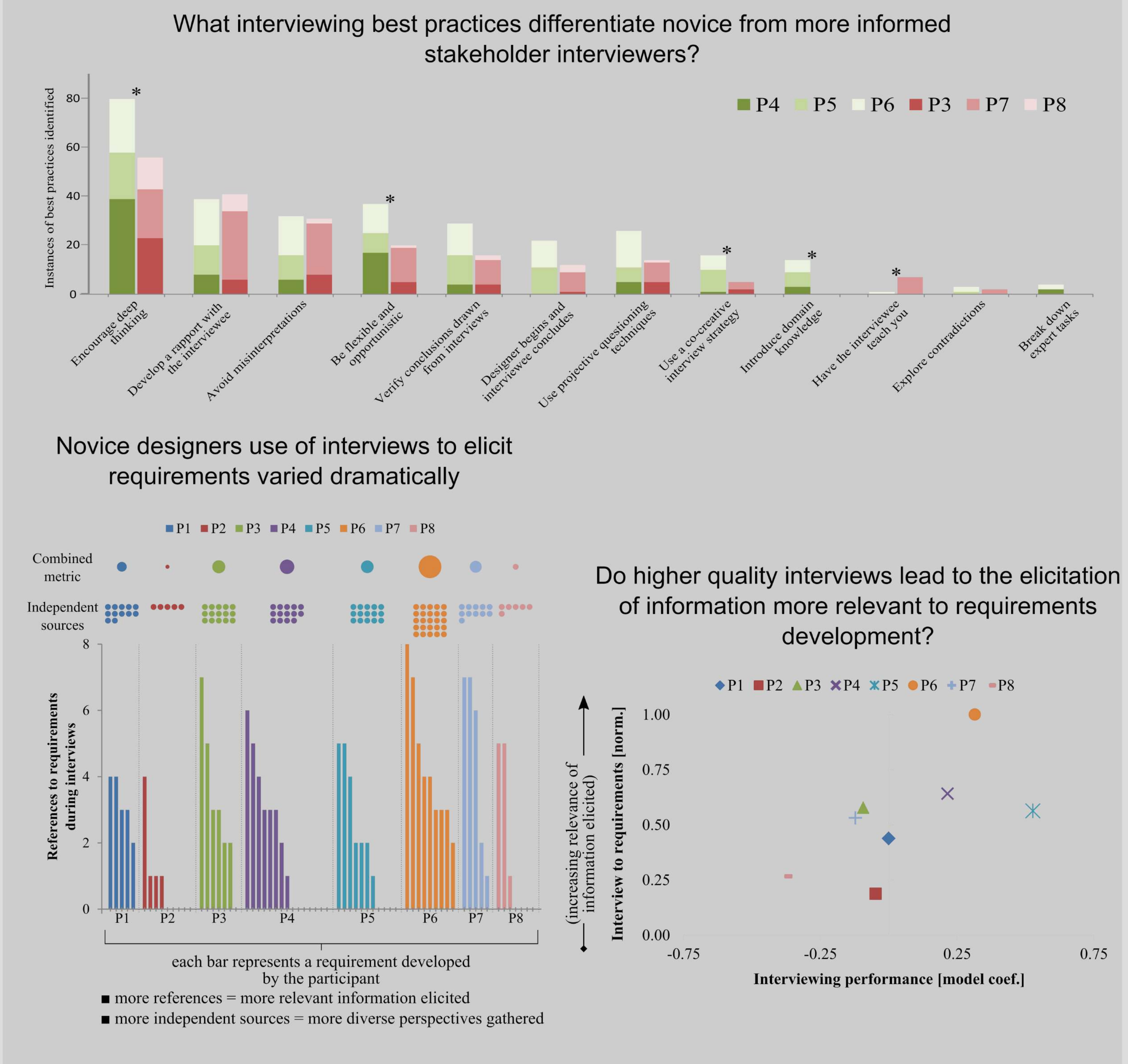+ How can we describe the developmental trajectory associated with design ethnography?

Results

How do students perceive the use of design ethnography techniques?

Student-perceived benefits of using design ethnography

- Gaining information from stakeholders led directly to making design decisions
- Receiving clear explanations for complicated and technical information quickly from stakeholders

Student-perceived frustrations with using design ethnography

- Receiving inconsistent information from stakeholders
- Stakeholders failed to provide user requirements
- Finding the "right" stakeholder to interview

What factors affect whether students perceive benefits from stakeholder engagement?

Goal specificity	Utility increases with specificity
Stakeholder's expertise	Utility increases with expertise alignment

Information variability	Utility decreases with increasing variability
Information applicability	Utility decreases with decreasing applicability

| Decision making responsibility | Utility increases when decision making responsibility is transferred |

Information processing

How effectively can novice designers synthesize data during requirements development?

Citations per information source (normalized)

Participant 1 / Participant 6

Sources: Observations, Parents / Teachers, Education Experts, Safety Expert, Academic Literature, Benchmarking, Online Resources, Standards, Given Resources, Design Brief

Employing more diverse information sources was correlated with less dependence on particular information source(s)

Number of distinct information sources used vs 1-Skew_norm

P6, P8, P3, P5, P4, P7, P1, P2

(decreasing dependence on particular information sources)

Do designers who process information more effectively produce higher quality requirements?

a) Proportion of positive or negative evaluations vs Number of distinct information sources cited (Q1, Q2)

b) Proportion of context-specific requirements vs Number of distinct information sources cited

c) Proportion of positive or negative evaluations vs 1-Skew_norm (Q1, Q2)

d) Proportion of context-specific requirements vs 1-Skew_norm

Interview performance

What interviewing best practices differentiate novice from more informed stakeholder interviewers?

Instances of best practices identified

P4, P5, P6, P3, P7, P8

Categories: Encourage deep thinking, Develop a rapport with the interviewee, Avoid misinterpretations, Be flexible and opportunistic, Verify conclusions drawn from interviews, Designer begins and interviewee concludes, Use projective questioning techniques, Use a co-creative interview strategy, Introduce domain knowledge, Have the interviewee teach you, Explore contradictions, Break down expert tasks

Novice designers use of interviews to elicit requirements varied dramatically

P1, P2, P3, P4, P5, P6, P7, P8

Combined metric

Independent sources

References to requirements during interviews

P1, P2, P3, P4, P5, P6, P7, P8

each bar represents a requirement developed by the participant
■ more references = more relevant information elicited
■ more independent sources = more diverse perspectives gathered

Do higher quality interviews lead to the elicitation of information more relevant to requirements development?

P1, P2, P3, P4, P5, P6, P7, P8

(increasing relevance of information elicited) Interview to requirements [norm.] vs Interviewing performance [model coef.]

Conclusions

What perceptions do students have of design ethnography during the novice phase?

Desire to conduct design ethnography vs Exposure to design ethnography

Theoretical exposure
Practical exposure
Learning about benefits and methods of design ethnography
Realization of the complexity involved in use of ethnographic techniques
Practical learning of how to effectively use ethnography
Process of becoming expert as design ethnographer

What does the novice to expert continuum look like for design ethnography?

Novice
+ Focus on context-free rules
+ Struggle to overcome ambiguity
+ Struggle to adapt to specific contexts

Advanced Beginner
+ Understand complexity
+ Adopt appropriate strategies

Competent
+ Develop repertoire of prior experience

Proficient
+ Relies on prior experience / intuition
+ Use experience to narrow focus

Expert

Future Work

What design ethnography techniques are most used within industry? In what contexts is it used?

What are the major differences between experts and novices when implementing design ethnography during front-end design phases?

How is design ethnography expertise developed within industry practices?