17-803 Empirical Methods

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Exemplar Interview Studies

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"Great artists steal"

(Unclear, often misquoted: https://quoteinvestigator.com/2013/03/06/artists-steal/)

Outline for Today

▸ Dissect exemplars of semi-structured interviews in (CS) research practice

▸ IRB

Examples

▸ Singer, L., Figueira Filho, F., & Storey, M. A. (2014, May). Software engineering at the speed of light: how developers stay current using Twitter. In Proceedings of the 36th International Conference on Software Engineering (pp. 211-221).

▸ Barwulor, C., McDonald, A., Hargittai, E., & Redmiles, E. M. (2021). "Disadvantaged in the American-dominated internet": Sex, Work, and Technology. In Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI) (pp. 931-936).

▸ Wash, R. (2010). Folk models of home computer security. In Proceedings of the Sixth Symposium on Usable Privacy and Security (SOUPS) (pp. 1-16).

▸ Aranda, J., & Venolia, G. (2009, May). The secret life of bugs: Going past the errors and omissions in software repositories. In Proceedings of the 31st International Conference on Software Engineering (pp. 298-308).

Security Folk Models Paper (Wash, 2010)

▸ "Home users are installing paid and free home security software [(anti-virus, anti-spyware, firewall, …)] at a rapidly increasing rate.

▸ "Nonetheless, security intrusions and the costs they impose on other network users are also increasing.

▸ "To design better security technologies, it helps to understand how users make security decisions, and to characterize the security problems that result from these decisions.

▸ "I investigate the existence of folk models for home computer users. Folk models are mental models that are not necessarily accurate in the real world, thus leading to erroneous decision making, but are shared among similar members of a culture.

Wash, R. (2010). Folk models of home computer security. In Proceedings of the Sixth Symposium on Usable Privacy and Security (SOUPS) (pp. 1-16).

Security Folk Models Paper (Wash, 2010)

▸ "Research questions:

- ▸ How do home computer users conceptualize the information security threats that they face?
- ▸ How do home computer users apply their mental models of security threats to make security-relevant decisions?

▸ "Many of these problems extend beyond the home; […] likely to generalize to a whole class of users who are unsophisticated in their security decisions. This includes many university computers, computers in small business that lack IT support, and personal computers used for business purposes."

Wash, R. (2010). Folk models of home computer security. In Proceedings of the Sixth Symposium on Usable Privacy and Security (SOUPS) (pp. 1-16).

Security Folk Models Paper (Wash, 2010)

▸ "iterative methodology […] multiple rounds of interviews punctuated with periods of analysis and tentative conclusions."

▸ "The first round of 23 semi-structured interviews was conducted in Summer 2007. Preliminary analysis proceeded throughout the academic year, and a second round of 10 interviews was conducted in Summer 2008, for a total of 33 respondents. This second round was more focused, and specifically searched for negative cases of earlier results."

Wash, R. (2010). Folk models of home computer security. In Proceedings of the Sixth Symposium on Usable Privacy and Security (SOUPS) (pp. 1-16).

Security Folk Models Paper (Wash, 2010)

▸ "Respondents were chosen from a snowball sample of home computer users evenly divided between three midwestern U.S. cities.

  ▸ "snowballing through recommendations ensured that the contacted respondents would be information-rich and cooperative

▸ "Purposefully selected respondents for maximum variation.

▸ Interviews averaged 45 minutes each; audio recorded and transcribed.

Software Engineering Twitter (Singer Et Al, 2014)

‣ "Like many disciplines that rely on human knowledge and invention, Software Engineering is rapidly transforming."

‣ "Many software developers use [Twitter] to communicate about software engineering topics, but we do not know why some developers adopt it and fervently use it, while others do not and question its value."

‣ "While most developers will have a hunch regarding the benefits and drawbacks of microblogging, research has yet to provide empirical evidence for such hunches."

‣ "Uncovering how developers have appropriated Twitter for their work could help software engineering research better understand developers' needs and challenges […]. Understanding the reasons for non-use could shape the design of better tools that would help software engineers make sense in this fast-moving world."

Singer, L., Figueira Filho, F., & Storey, M. A. (2014, May). Software engineering at the speed of light: how developers stay current using Twitter.
In Proceedings of the 36th International Conference on Software Engineering (pp. 211-221)

Software Engineering Twitter (Singer Et Al, 2014)

▸ "We conducted a Grounded Theory-based [4] study, which consisted of three phases of data collection (exploratory survey, interviews, validation survey), and iterative phases of analysis."

▸ "First, we sent an online survey with open questions to 1,160 GitHub users […] and we received 271 responses."

▸ "In the second phase, we interviewed some of the survey respondents who had volunteered for interviews. [We used] the exploratory survey responses as a guide for the semi-structured interviews."

▸ "During our analysis of the exploratory survey and interview data, we wrote memos about recurring themes and emerging concepts, constantly comparing our findings on different levels of abstraction. This analysis led to our five research questions."

▸ "We then employed axial coding, iterating through our exploratory survey responses and interview transcripts, to answer our research questions. The final set of themes that emerged informed the third phase of our research: a validation survey sent to 10,000 GitHub users, receiving over 1,200 responses. "

Singer, L., Figueira Filho, F., & Storey, M. A. (2014, May). Software engineering at the speed of light: how developers stay current using Twitter. In Proceedings of the 36th International Conference on Software Engineering (pp. 211-221)

Sex Workers Paper (Barwulor et al, 2021)

▸ "There is a 'paucity of empirical data' about the role of technology in the business of sex work.

▸ "This sizeable, digitally-facilitated workforce faces significant challenges with a unique set of social, political, legal, and safety constraints.

  ▸ "may be exacerbated by the fact that many sex workers sit at the intersection of multiple marginalized identities.

▸ "No existing work in HCI examines technology-enabled sex work as a business directly and empirically through interviews with sex workers themselves."

Barwulor, C., McDonald, A., Hargittai, E., & Redmiles, E. M. (2021). "Disadvantaged in the American-dominated internet": Sex, Work, and Technology.
In Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI) (pp. 931-936).

Sex Workers Paper (Barwulor et al, 2021)

▸ "Our findings offer insight into

  ▸ how the internet is used for sex work by sex workers,

  ▸ how mainstream technological platforms discriminate against this group, and

  ▸ how technologists can better support inclusive and non-discriminatory online spaces for this sizeable, marginalized segment of the global workforce."

Barwulor, C., McDonald, A., Hargittai, E., & Redmiles, E. M. (2021). "Disadvantaged in the American-dominated internet": Sex, Work, and Technology.
In Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI) (pp. 931-936).

Sex Workers Paper (Barwulor et al, 2021)

▸ **29 semi-structured interviews** in late 2018 with sex workers in Germany and Switzerland, where sex work is legal

▸ Interview guide:

  ▸ context in the industry (e.g., how long, what type of work).

  ▸ context on their non-work-related technology use (e.g., how long using the internet).

  ▸ how they used technology for sex work.

▸ "The interview questions used in this analysis are included in the Appendix."

▸ "To ensure that we were up-to-date on appropriate and region-specific terms workers preferred to use when talking about their work, [we] conducted an informal analysis of four publicly-accessible online sex-worker forums. This **forum analysis** was not intended as a research artifact but rather used to help us develop the most effective interview protocol."

Sex Workers Paper (Barwulor et al, 2021)

▸ "After we drafted the interview protocol, we hired a sex worker as a consultant to review our protocol for appropriateness and to ensure a member of the community under study was involved in the research to the extent that they desired to be involved [68]. The consultant was paid market rate for their work."

▸ Three different approaches to recruit:

  ▸ direct contact;
  ▸ contact through sex-work organizations; and
  ▸ participant-driven (snowball) sampling.

Sex Workers Paper (Barwulor et al, 2021)

▸ "The interviews lasted approximately one hour, with the shortest running 30 minutes and the longest running two hours.

▸ "Interviews were conducted by one of three researchers in either English or German, depending on the participant's preference. The English and German interviewers met after approximately every five interviews to ensure they remained consistent in interview length and mitigated any issues or variances in the protocol that had arisen.

▸ "Participants choose from one of three interview modes: chat, voice, or video.

▸ "For participant safety, all interviews were conducted using private paid 'rooms' on Appear.in, an end-to-end encrypted communication service.

▸ "We paid interviewees the equivalent of $75USD (75CHF or 60 Euros) for their participation in the form of an Amazon gift card or money transfer.

Sex Workers Paper (Barwulor et al, 2021)

▸ "We recognize the importance of our position as scholars in relation to this research [6, 9, 26, 73] and thus describe our identities, their alignment with those of our participants, and how our identities may create limitations in this work.

▸ "All of the researchers involved in this work identify as women. This is a limitation of the work, as we have participants who identified as other genders and whose experiences may have been better interpreted by researchers with those identities.

▸ "We have differing sexual orientations, as did our participants. We also have differing nationalities (German, Hungarian, American, and Liberian), some of which overlapped with the regions in which our participants mentioned being born. We have differing races (Black and white) and ages (early 20s through mid-40s), as did our participants.

▸ "Our lack of researchers of races other than Black and white, and our lack of researchers 50 and older is a limitation of this work, as it does not mirror all of the demographic axes of our participants.

Secret Life of Bugs Paper (Aranda & Venolia, 2009)

▸ "Modern large-scale software development demands managing huge quantities of bugs on a daily basis."

▸ "Project health is measured by bug counts, for instance, and productivity by the rate of bugs closed."

▸ "Amid such abstractions it is easy to forget that every bug has a story behind it."

▸ "As researchers, we often rely on repositories of software project information as the main or only source of evidence to extract the histories of bugs and other work items."

▸ "However, the use of these electronic repositories as reliable and sufficient accounts of the history of bugs or work items has not been properly validated."

Secret Life of Bugs Paper (Aranda & Venolia, 2009)

‣ "This paper reports on a field study of coordination activities around bug fixing that used a combination of case study research and a survey of software professionals."

‣ The goal of our study is to provide a rich, contextualized, work-item-centric account of coordination in bug fixing tasks.

‣ We executed a field study in two parts. The first was a multiple-case exploratory case study of bug histories. The second aimed to validate our case study findings with a survey of software professionals (developers, testers, and program managers).

Secret Life of Bugs Paper (Aranda & Venolia, 2009)

▸ Our data comes from software development at Microsoft's product divisions.

▸ The unit of analysis of our case study was the history of a closed bug. Our cases were selected randomly.

▸ We obtained as much information as we could from its electronic records. [Then] we traced backwards by contacting the people that had last touched or were referenced by the bug record. Once found, we interviewed them to get their understanding of the history.

Summary

We Have Seen:

▸ Quite similar types of research questions

  ▸ Open ended
  ▸ Goal is to build understanding / theory

    ▸ Grounded, bottom up

▸ Quite diverse study designs

  ▸ From only interviews
  ▸ To various mixed methods with interviews as one step

▸ Generally <u>very</u> careful execution

▸ Generally <u>very</u> detailed and transparent reporting

  ▸ Clear motivation for why method was chosen
  ▸ … why a specific design decision (e.g., sampling strategy)
  ▸ Honest and forward acknowledgement of limitations

▸ Generally simple, straightforward writing

Credits

▸ Graphics:
  ▸ Dave DiCello photography (cover)