

“Yours is better!”

Participant Response Bias in HCI

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Microsoft

Research
india



change



dub

HCI is expanding and diversifying



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There are large differences between the people being studied and those studying them

Demand characteristics are aspects of a study that convey the investigator's hypothesis to participants

Demand characteristics may result in participant response bias



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Demand characteristics may result in participant response bias



Response bias can influence the outcome of studies with human participants

What about demand
characteristics in HCI?

How do social and demographic factors influence demand characteristics?

Let's design an experiment to explore demand characteristics in HCI



Let's design an experiment to explore demand characteristics in HCI



Completely identical video clips

Observe participants interacting with technological devices



Interview Script

“Thank you for participating in my experiment. I am a computer scientist and I'm trying to improve video players on mobile phones. I want you to watch a short video on these two phones and tell me which one looks better, or if they look the same. The same video will play on both phones, **but this phone uses my new player** [indicate phone]. Please tell me your honest opinion and please concentrate because I will play each video only once. Do you have any questions? Ok, watch this one first. **This one uses my new player** [play video]. Now watch this one [play video]. Which one do you think looks better or do they look the same? Why? Thanks very much!”

Two different interviewers



Foreign interviewer and local interviewer

Participants: Auto rickshaw drivers



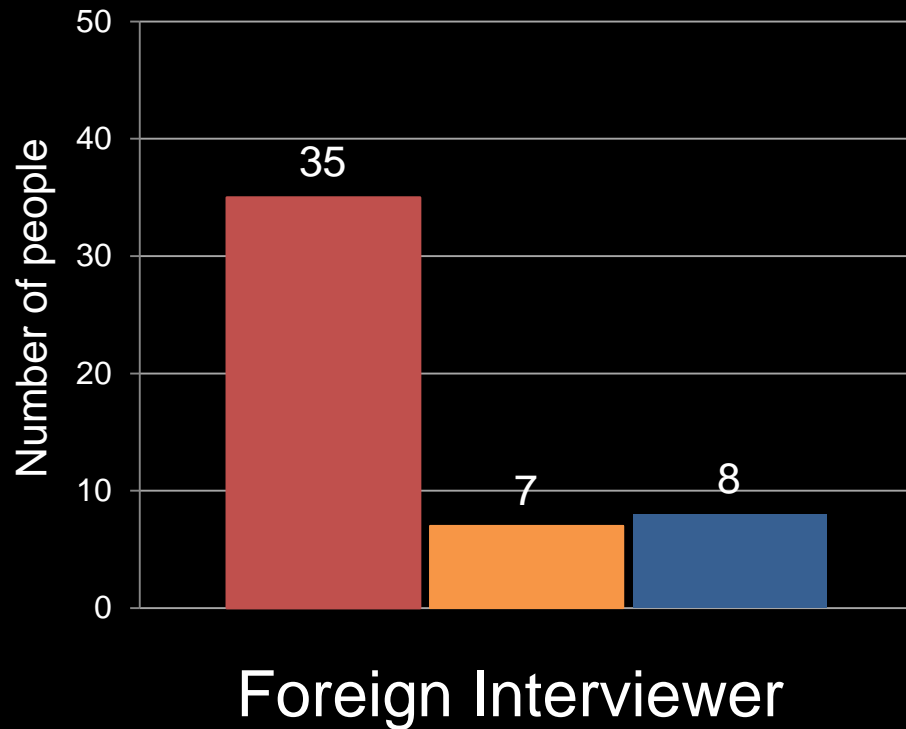
250 male participants aged 19 to 72 (M=37, SD=11.2)

Conditions tested with the identical video clip

	Rickshaw Drivers
Foreign Interviewer (+ translator)	50 participants
Local Interviewer	50 participants

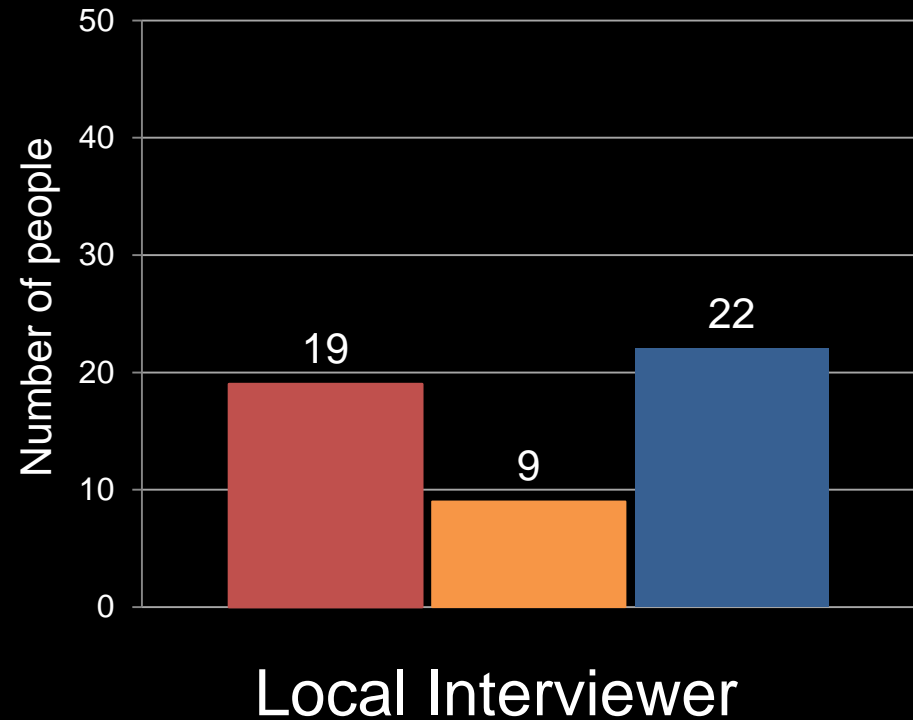
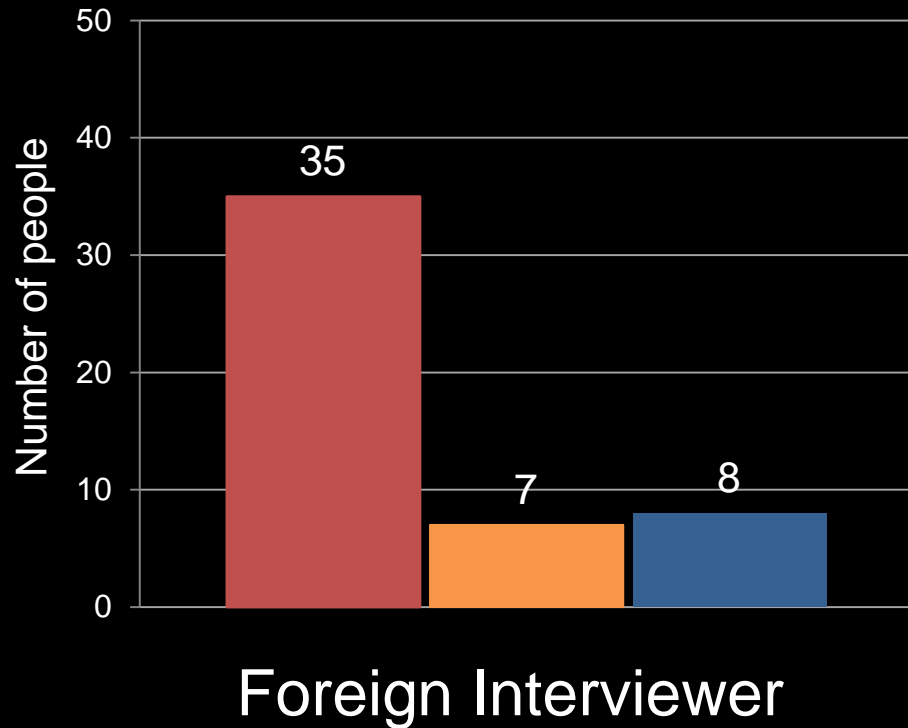
Participant Responses

- Preferred interviewer's video
- Preferred other video
- Thought videos looked the same



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- Preferred interviewer's video
- Preferred other video
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Demand characteristics can result in substantial participant response bias

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Social and demographic factors influence the amount of response bias

What happens if the two clips are different?

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What happens if the two clips are different?



What happens if the two clips are different?



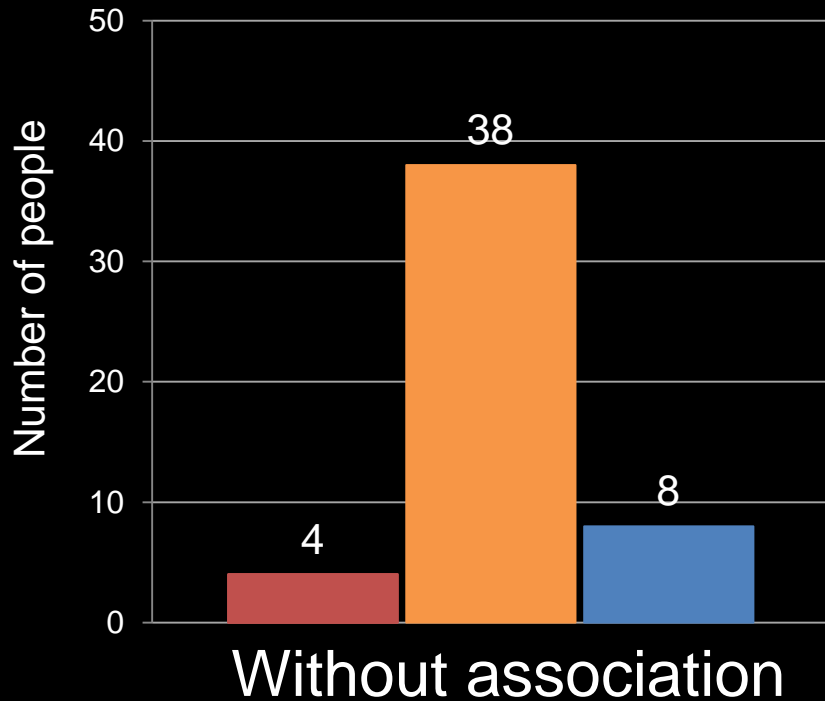
Interviewer always associated to the low-quality clip

Conditions tested with the degraded video clip

	Rickshaw Drivers
Without association	50 participants
Foreign Interviewer (+ translator)	50 participants
Local Interviewer	50 participants

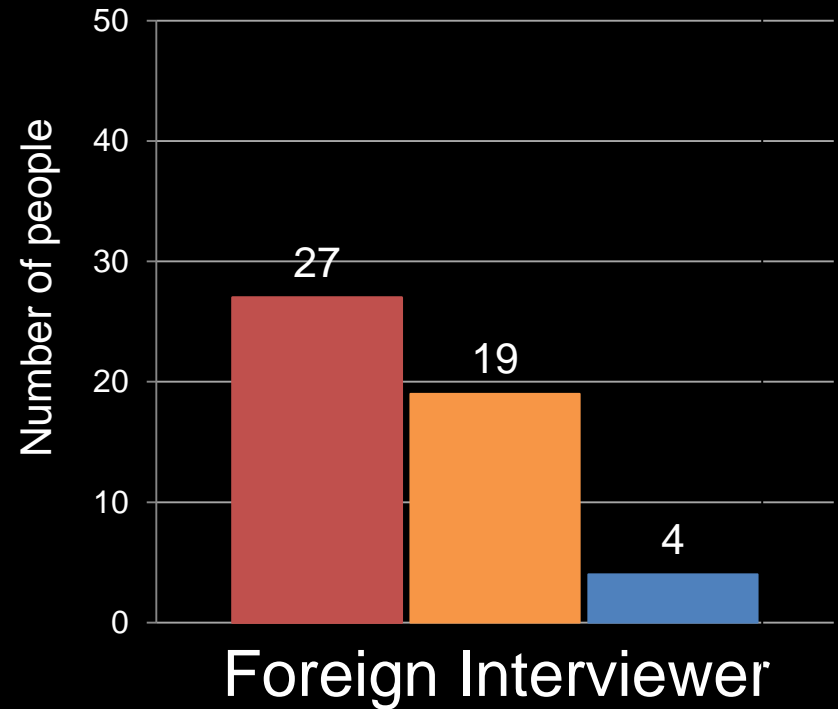
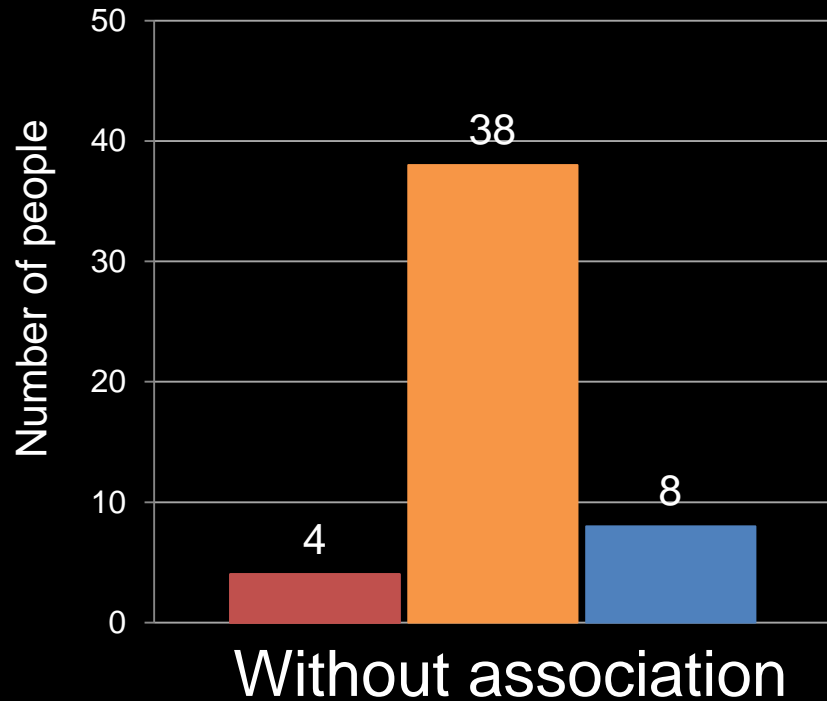
Participant Responses

- Preferred low-quality video
- Preferred high-quality video
- Thought videos looked the same



Participant Responses

- Preferred low-quality video
- Preferred high-quality video
- Thought videos looked the same



The characteristics of the interviewer can determine the outcome of the study

Explaining participant responses

Explaining participant responses

“The quality of the background color and figures is too light in that player while the quality of the color and graphics is better in [your] one. Will [your] new player be introduced in the market?”

Explaining participant responses

“I prefer this one (associated) because the other one wasn't clear at all. This one was fully clear. I can definitely show you the difference if we watch them together. I've given you my honest opinion, so please don't be cross with me if it wasn't the right one.”

Detailed and insightful participant comments can't be taken at face value

What about other participant groups?



200 male university students aged 19 to 41
($M=25$, $SD=3.8$)

Responses with university students

- Identical videos: 2:1 response bias

Responses with university students

- Identical videos: 2:1 response bias
- Degraded videos: order of magnitude difference

Responses with university students

- Identical videos: 2:1 response bias
- Degraded videos: order of magnitude difference
- “I feel that in the newer version which you have coded, whenever there was a significant color contrast between two parts of an image, your version was somewhat smoother and less pixelated.”

There is still substantial response
bias in studies with peers

Limitations

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- Presence of a translator for some interviews

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- The effects of social status and ethnicity will vary from culture to culture

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- Presence of a translator for some interviews
- The effects of social status and ethnicity will vary from culture to culture
- Many other aspects of demand characteristics

What can we do to minimize demand characteristics in HCI?

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- Be aware that response bias affects all studies
- Dissociate from a particular design or solution
- Minimize the differences in social status between investigators and participants

What can we do to minimize demand characteristics in HCI?

- Be aware that response bias affects all studies
- Dissociate from a particular design or solution
- Minimize the differences in social status between investigators and participants
- Use triangulation to validate data collected

Demand characteristics influence the outcome of studies with human participants



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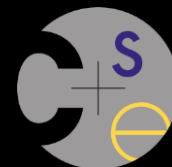
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