



Measuring User Responses to Age Verification Architectures: Evidence from a Deceptive Online Experiment

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User Behavior Toward Online Age Verification

- **User behavior is legally relevant:** Age verification laws aim to protect minors, but adults' access can be chilled if users don't perceive these systems to be trusted or usable
- **Compliance doesn't guarantee user adoption:** Systems can meet legal and technical requirements yet still fail if users avoid, mistrust, or abandon age verification
- We provide behavioral evidence on how adults respond to age verification

RQs

We conducted a deceptive, between-subjects online experiment to examine adults' behaviors and attitudes when faced with age verification while attempting to access a gambling site.

RQ1: How do different age verification methods affect users' decisions to access an online gambling site?

RQ2: How do disclosures of data handling practices affect those decisions?

RQ3: What are users' attitudes toward different age verification mechanisms?

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RQ2: How do disclosures of data handling practices affect those decisions?

RQ3: What are users' attitudes toward different age verification mechanisms?

Preliminary Study Design



Experiment

(participants randomly
assigned to 1/6 conditions)



Survey

on attitudes and
perceptions

- Recruited 99 U.S.-based participants (≥ 15 per condition) from Prolific
- Took 10 minutes to complete with \$2.50 for compensation

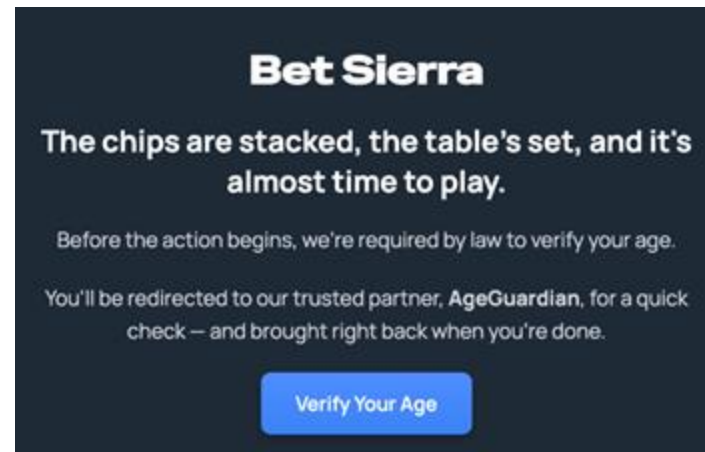
Experiment Setup



recruited to
“evaluate usability
of gambling site”
(deception!)



partial disclosure of
study purpose;
debrief provided
after experiment

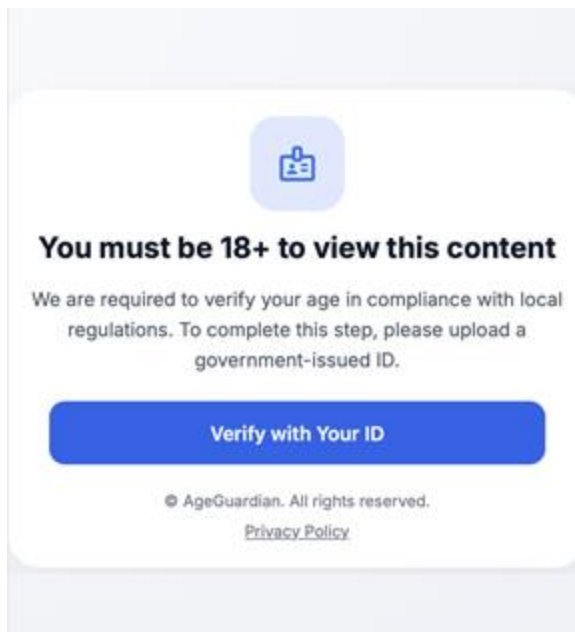


content gated by age
verification before gaining
access

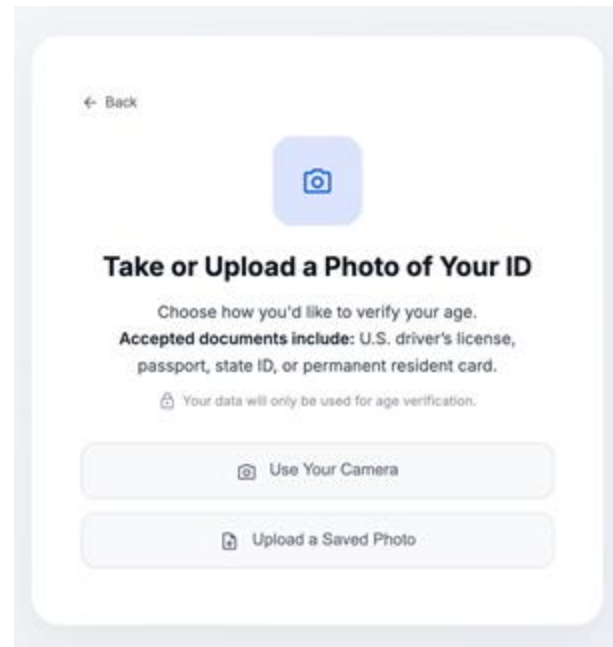
Experiment: AgeGuardian



Transition Page



AV Requirement



Upload Options

Experiment: AgeGuardian

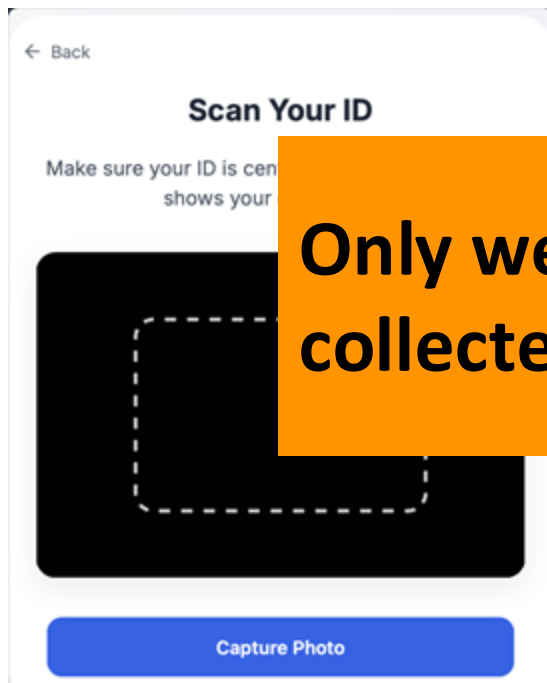
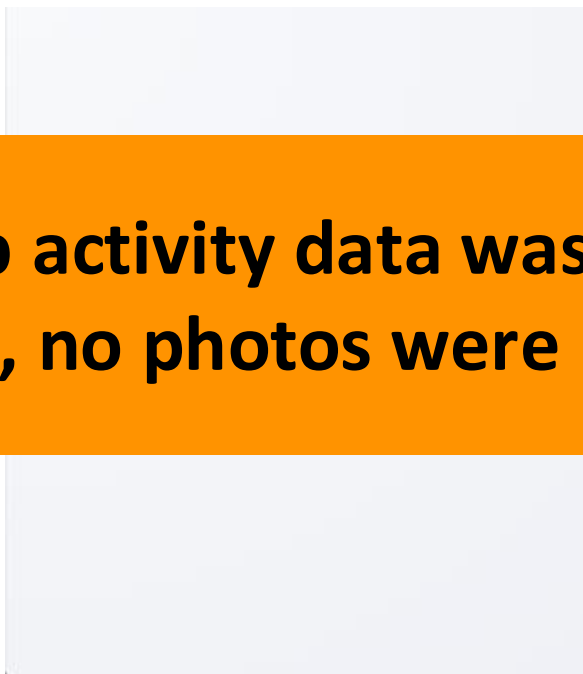
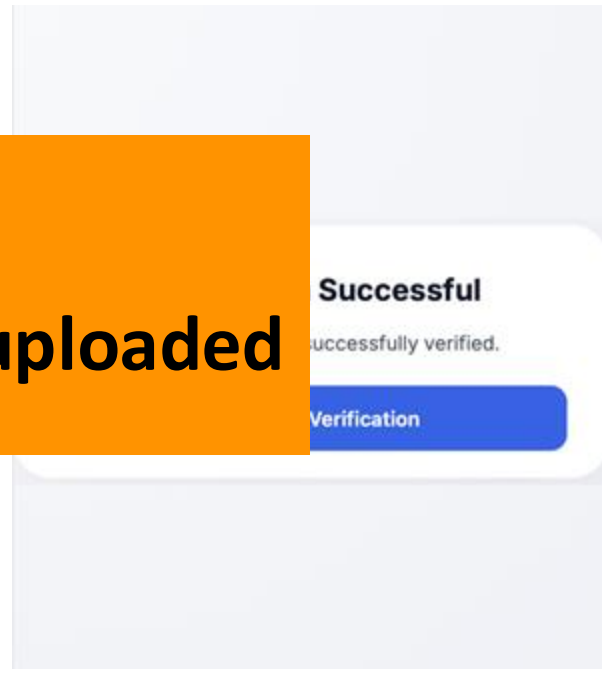


Photo Taking



Loading



Final Page

Only web activity data was collected, no photos were uploaded

Experiment Conditions for RQ1



Checkbox
Self-Attestation



Gov-ID

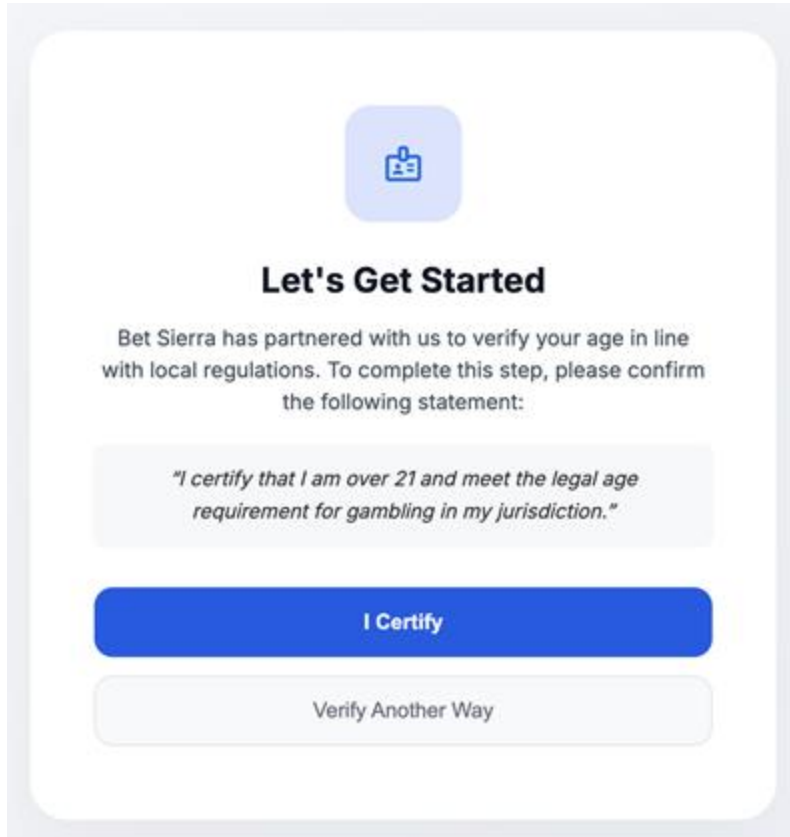


Gov-ID with Real-Time Selfie
for Identity Matching



AI Age Estimation

Experiment Conditions for RQ1

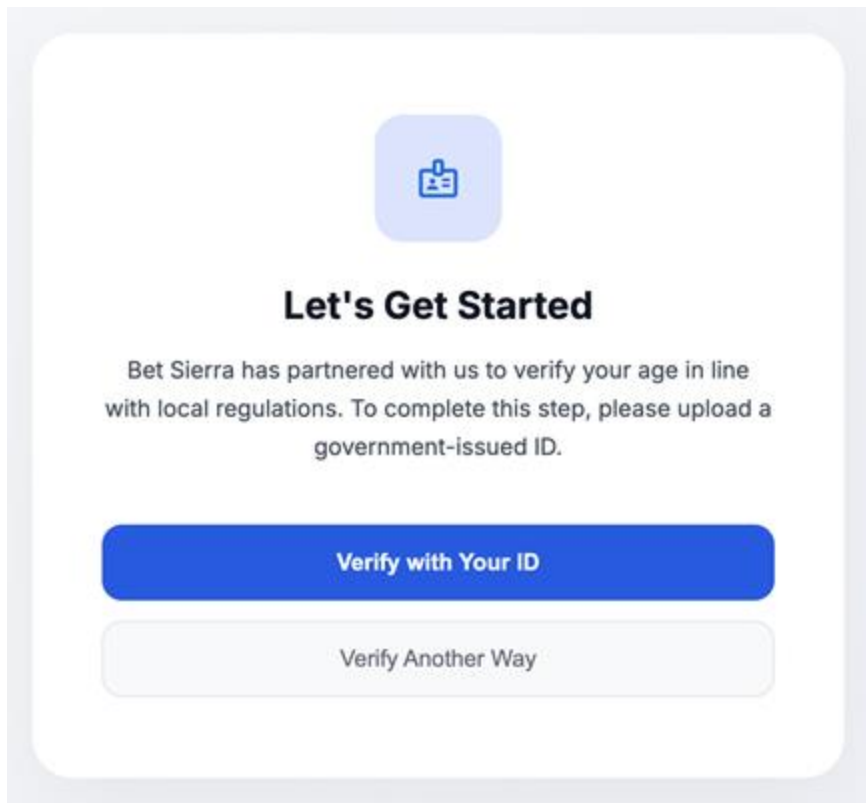


The screenshot shows a mobile app interface for a self-attestation process. At the top, there is a light blue rounded square icon containing a white ID card symbol. Below this is the heading "Let's Get Started" in bold black text. The main text reads: "Bet Sierra has partnered with us to verify your age in line with local regulations. To complete this step, please confirm the following statement:". Below this text is a light gray rounded rectangle containing the statement: *"I certify that I am over 21 and meet the legal age requirement for gambling in my jurisdiction."*. At the bottom, there are two buttons: a prominent blue button with the text "I Certify" and a light gray button with the text "Verify Another Way".



Checkbox
Self-Attestation

Experiment Conditions for RQ1





Let's Get Started

Bet Sierra has partnered with us to verify your age in line with local regulations. To complete this step, please upload a government-issued ID.

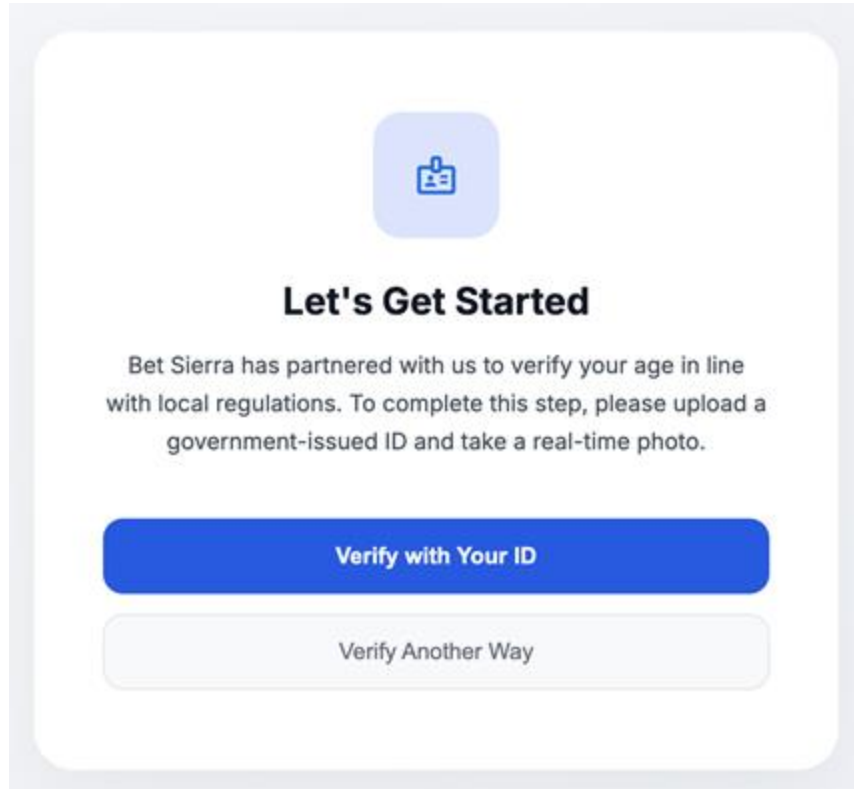
Verify with Your ID

Verify Another Way



Gov-ID

Experiment Conditions for RQ1





Let's Get Started

Bet Sierra has partnered with us to verify your age in line with local regulations. To complete this step, please upload a government-issued ID and take a real-time photo.

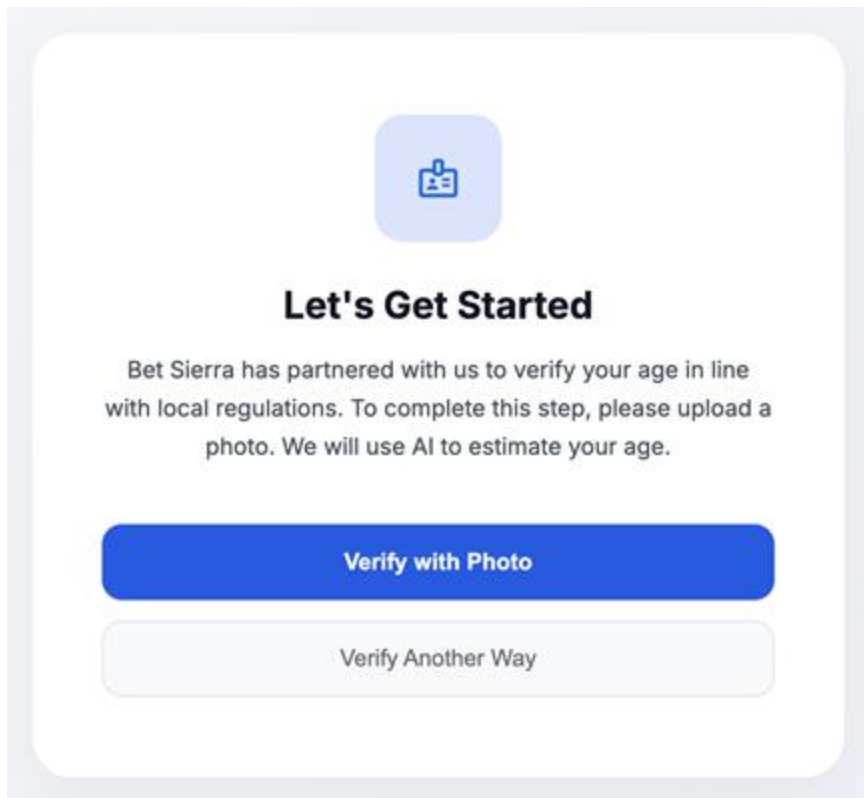
Verify with Your ID

Verify Another Way



Gov-ID with Real-Time Selfie
for Identity Matching

Experiment Conditions for RQ1



The screenshot shows a mobile app interface for age verification. At the top, there is a blue icon of a document with a checkmark. Below it, the text "Let's Get Started" is displayed in bold. A paragraph of text follows: "Bet Sierra has partnered with us to verify your age in line with local regulations. To complete this step, please upload a photo. We will use AI to estimate your age." At the bottom, there are two buttons: a blue button labeled "Verify with Photo" and a light gray button labeled "Verify Another Way".

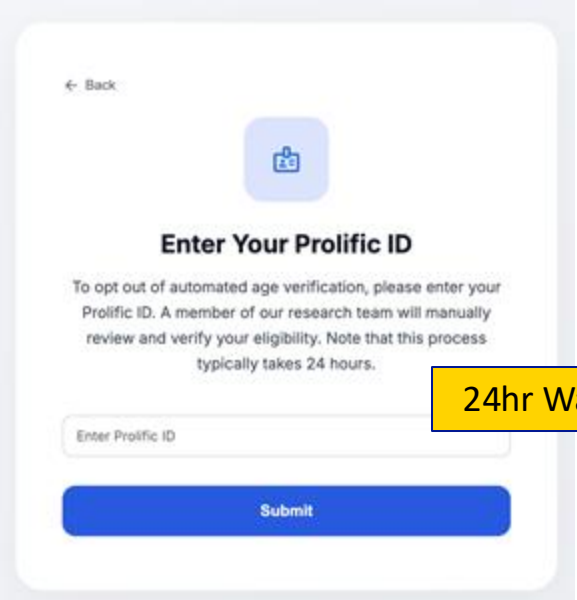


AI Age Estimation

Evaluation Metrics

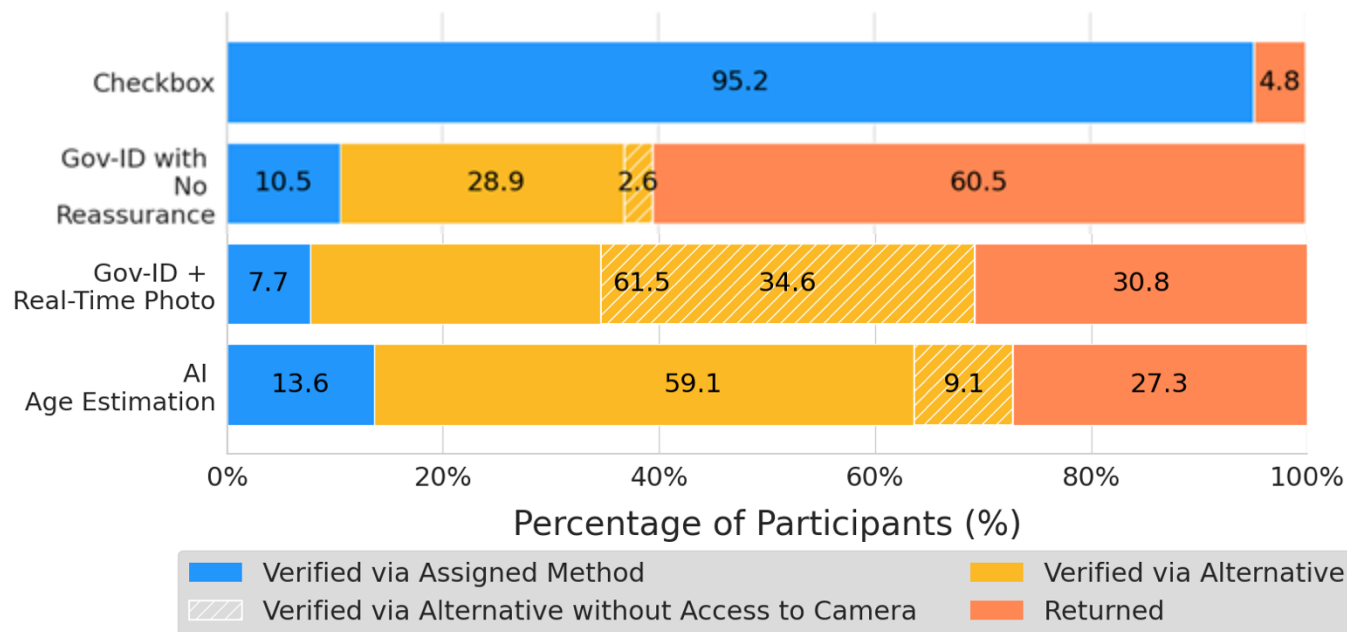
RQ1: How do different age verification methods affect users' decisions to access an online gambling site?

- Measured completion rates
- Measured alternative path usage
- Counted those who “returned” the study on Prolific after consenting

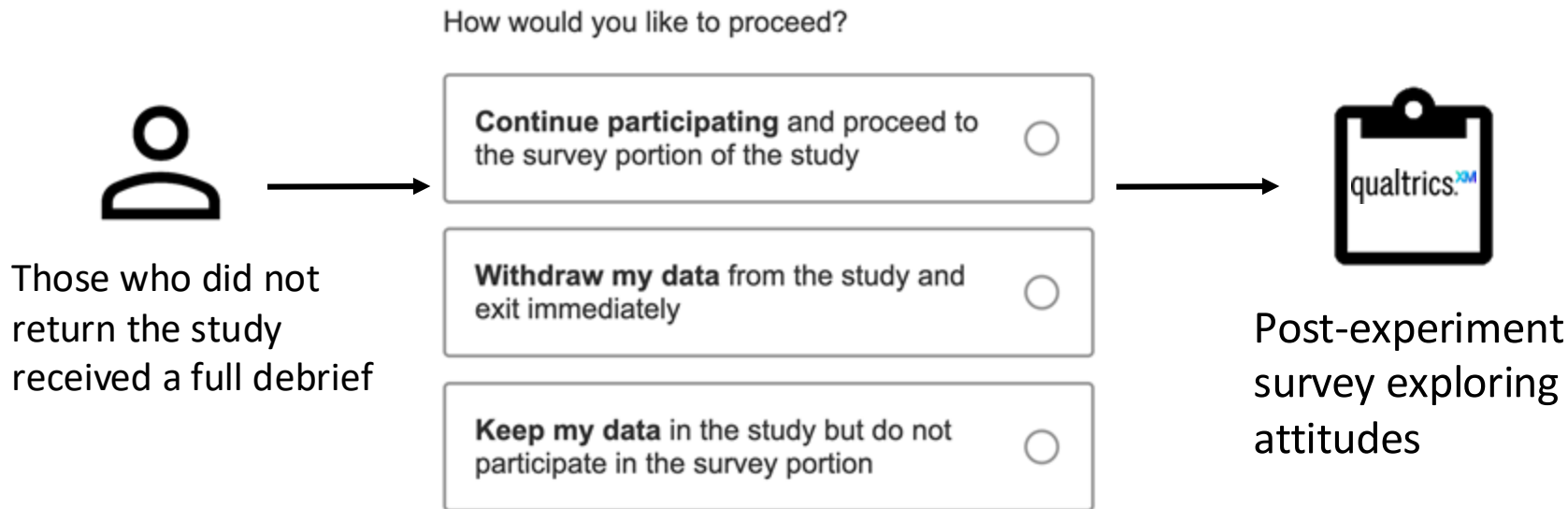
A screenshot of a mobile application interface for age verification. At the top left is a back arrow and the word "Back". In the center is a blue square icon with a white ID card symbol. Below the icon, the text "Enter Your Prolific ID" is displayed in bold. Underneath, a paragraph explains: "To opt out of automated age verification, please enter your Prolific ID. A member of our research team will manually review and verify your eligibility. Note that this process typically takes 24 hours." Below this text is a white input field with the placeholder text "Enter Prolific ID". At the bottom is a large blue button with the word "Submit" in white. A yellow rectangular callout box with a black border is positioned to the right of the input field, containing the text "24hr Wait".

Example completion interface
Alternative method

Completion Outcomes Across AV Methods



Survey Setup



Attitudes and Perceptions

- Distrust of unfamiliar site collecting their data:

“I won’t be sharing any personal information or images with companies that I don’t trust.”

- Confusion about the multi-party architecture
- Self-attestation was easy to complete but not effective:

“Not requiring additional verification beyond my confirmation made it seamless for me, but I have concerns with its ability to catch people who are under 21 who will lie.”

- Skepticism about AI age estimation accuracy:

“AI can glitch and ruin things for a lot of people.”

Limitations & Next Steps for Full Study

“Even though the instructions said this was a third-party site, Prolific's rules say that gathering of such participant PII is not allowed...I thought, I'm definitely NOT uploading a photo of my ID”



facebook Ads



Limitations & Next Steps for Full Study

Gambling site typically
requires ID verification
for payment



Takeaways

- Participants avoided methods they found intrusive or technically demanding
- Participants distrusted unfamiliar parties collecting their data
- Multi-party architecture obscured user understanding of data flows and accountability

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