Mitigating Users' Misconceptions About FIDO2 Biometric WebAuthn

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Study 1 | Identify Misconceptions

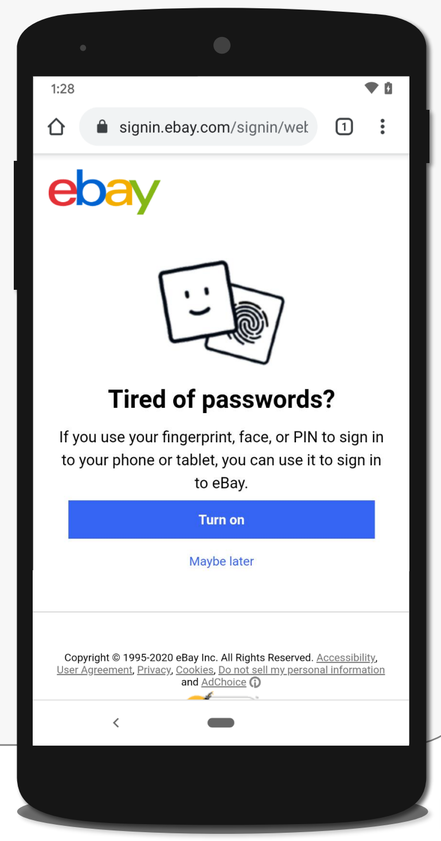
RQ What **misconceptions and understandings** do users hold during first use of **biometric FIDO2**?

METHOD

- Registration & authentication with biometric FIDO2 seeing *Baseline* notification
- Online survey about misconceptions, usability, and security perception
- 42 Prolific crowdworkers on personal smartphones

→ 67% think **biometric** data is **sent to website**
43% think **biometric** data is **not safe** from **attackers**
93% **unaware** of **fallback**

Baseline



[2]

FIDO2

Private key in TPM

Public key on server

Authentication:

1. User unlocks priv. key with biometrics
2. Device signs server challenge
3. Server uses pub. key to verify signature

Who even knows how FIDO2 works?

fido™ [1]

- No password
- Phishing resistant
- Biometrics stored locally

BUT

How should users know that?
How can we communicate FIDO2?
How can we increase adoption?

?

Study 2 | Develop Notifications

RQ What info do notifications need to mitigate misconceptions and communicate advantages best?

METHOD

- Online participatory co-design focus groups with 27 participants

→ **Four Themes:**

1. Convenience
2. Security
3. Comparison to passwords
4. Availability

"No one except you has access"

"Never leaves your phone"

"Only stored on your device"

Study 3 | Evaluate Notifications

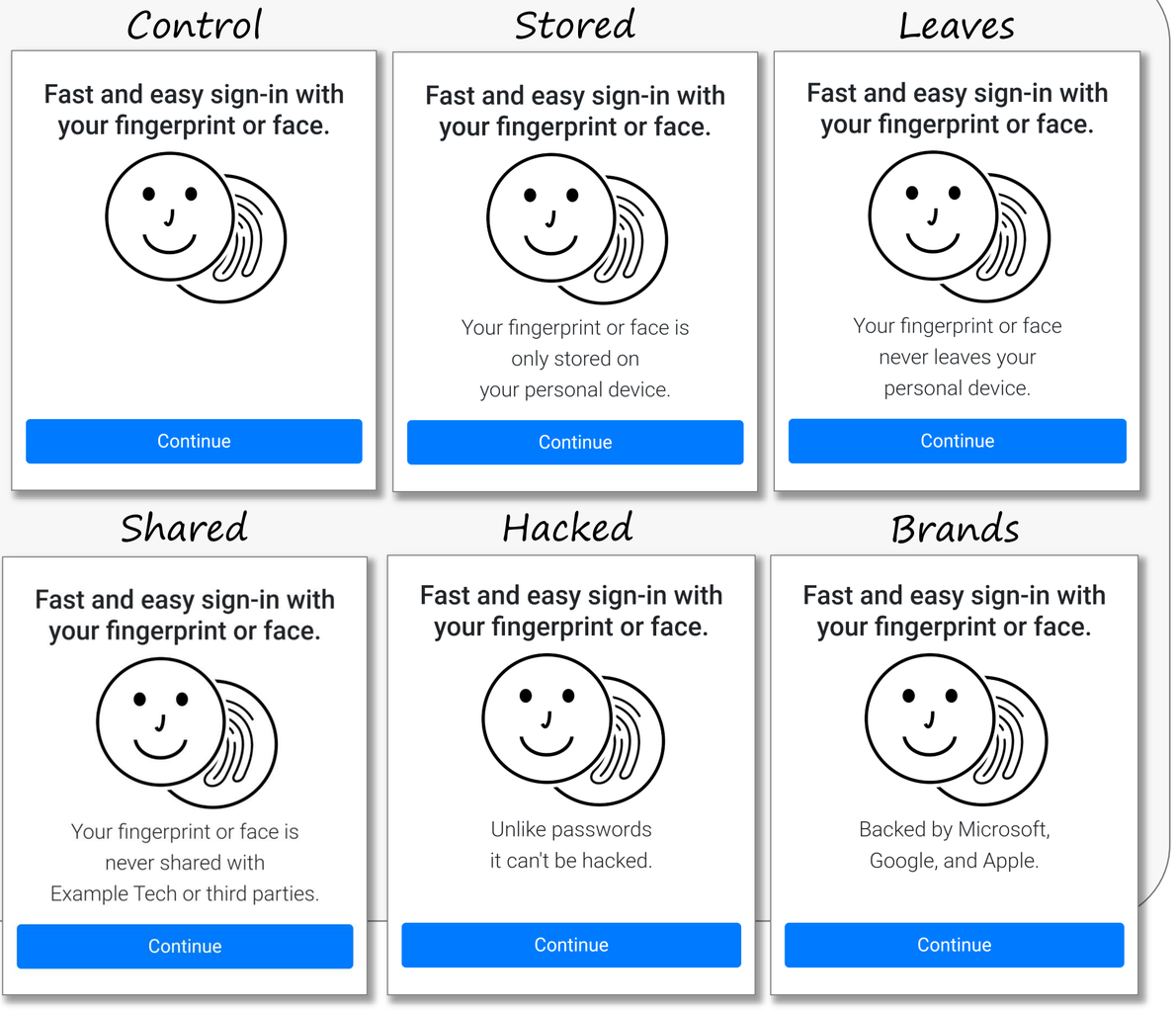
RQ Which notification mitigates the misconceptions best?

METHOD

- Registration & authentication with password, non-biometric FIDO2, or biometric FIDO2 testing 6 notifications
- 345 Prolific crowdworkers

→

- Biometric FIDO2 **perceived more secure** than non-biometric FIDO2 or password
- **Fewer** participants **think biometrics** are **sent to website** (Control 66% vs. Stored 45% & Leaves 50%)



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[3] USENIX Logo. usenix.org, July '22.