I never reuse passwords! Development and Validation of a Security and Privacy Social Desirability Scale (SP-SDS) for end users without a background in computer science

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Who uses different passwords for all their accounts?

How many of you answered the question honestly?

Social Desirability Bias

Tendency to give answers in surveys that do not reflect true opinions, but rather socially desirable behavior.

Social Desirability Scales

- Assess the extent of social desirability bias

Social Desirability Scales

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Marlowe-Crowne Social Desirability Scale	TRUE	FALSE
There have been occasions when I felt like smashing things	○	○
I am sometimes irritated by people who ask favors of me	○	○

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Security and Privacy Social Desirability Scale (SP-SDS)

- 13-item social desirability scale
- Security and privacy-specific
- For end users without a background in computer science

Scale Development Process



Item Pool Creation – Item Generation

Item requirements: socially desirable and rarely occurring behavior or socially undesirable, but frequently occurring behavior

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Adjusting items of the MC-SDS

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Item Pool Creation – Item Generation

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Adjusting items of the MC-SDS



Surveyed CS and IT Security students

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Item Pool Creation – Item Generation

Item requirements: socially desirable and rarely occurring behavior or socially undesirable, but frequently occurring behavior



Adjusting items of the MC-SDS



Surveyed CS and IT Security students



Author generated items

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Item Pool Creation – Review Items



Expert feedback
(N=2)

Item Pool Creation – Review Items



Expert feedback (N=2)



Researcher discussion (N=6)

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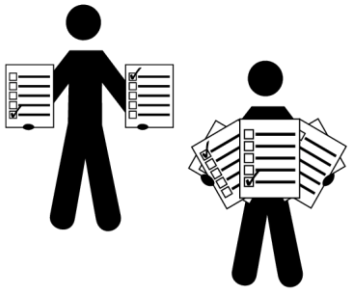
Item Pool Creation – Review Items



Expert feedback (N=2)



Researcher discussion (N=6)



Pilot testing (N=46)

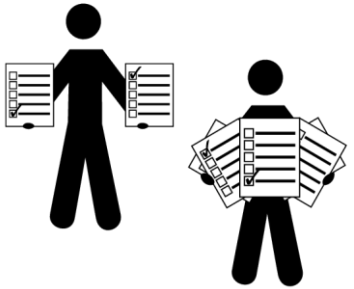
Item Pool Creation – Review Items



Expert feedback (N=2)



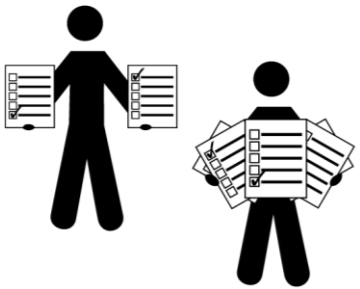
Researcher discussion (N=6)



Pilot testing (N=46)

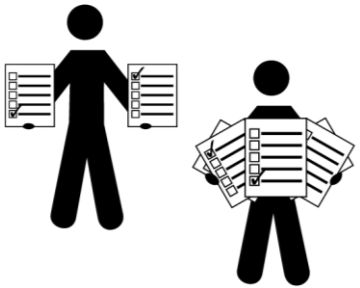
20 items remaining

Scale Development Study



Data collection
(N=297)

Scale Development Study

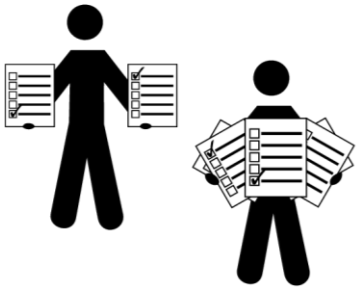


Data collection
(N=297)



Principal Component Analysis:

Scale Development Study



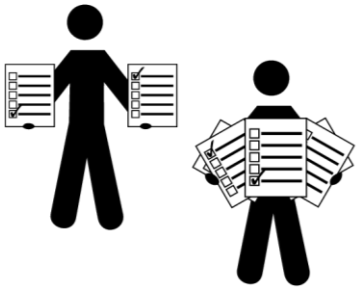
Data collection
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Principal Component Analysis:

- Removed 7 items

Scale Development Study



Data collection
(N=297)

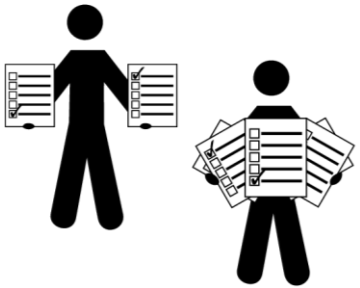


Principal Component Analysis:

- Removed 7 items
- Extracted 5 factors

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Scale Development Study



Data collection
(N=297)



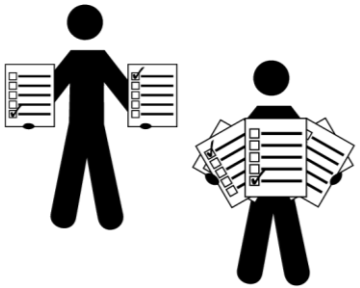
Principal Component Analysis:

- Removed 7 items
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Reliability

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Scale Development Study



Data collection
(N=297)



Principal Component Analysis:

- Removed 7 items
- Extracted 5 factors

Reliability

13 item scale

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Factor 1 – Data Protection

	TRUE	FALSE
I always read the privacy policy completely before I agree to them	○	○
I always read the terms and conditions completely before I agree to them	○	○
I always read the privacy policy before giving an app/application access to my personal data	○	○
I am always aware of what personal data is collected by the platforms I use and how it is used	○	○

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Factor 2 – Passwords

	TRUE	FALSE
I never reuse passwords	○	○
I use different passwords for all my accounts	○	○
I only use secure passwords (passwords that are long and complex)	○	○

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Factor 3 – Illegal Behavior

	TRUE	FALSE
If I knew I wouldn't get caught, I would use pirated software[1] [1] use of software that is not properly licensed	○	○
If I knew I wouldn't get caught, I would watch movies illegally	○	○

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Factor 4 – Ignore (Security) Advice

	TRUE	FALSE
I never ignore security warnings on my computer	○	○
I never ignore software update reminders	○	○

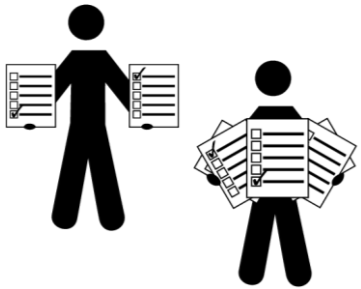
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Factor 5 – Online Behavior

	TRUE	FALSE
I have never considered posting a troll-comment[2] [2] comments that deliberately try to provoke an argument, conflict or emotional reaction	○	○
I am always just as polite online as I am in the real world	○	○

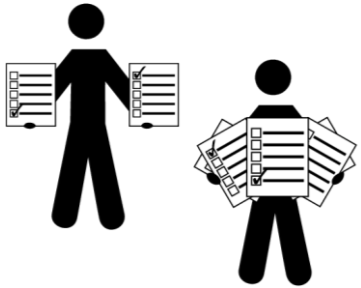
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Validation Study



Data collection
(N=824)

Validation Study



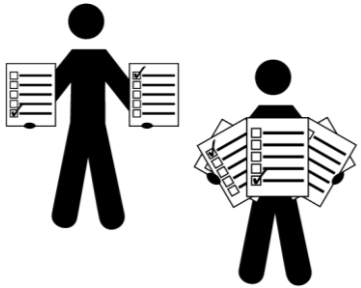
Data collection
(N=824)



Confirmatory Factor Analysis

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Validation Study



Data collection
(N=824)



Confirmatory Factor Analysis
Reliability

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Convergent Validity

- Correlation SP-SDS and MC-SDS: $r_T = .44$
- Correlation SP-SDS and BIDR: $r_T = .28$
- Correlation SP-SDS and EDRS: $r_T = .19$

Using the Scale - the Calibration Study



Not all items are considered socially desirable by all people

Using the Scale - the Calibration Study



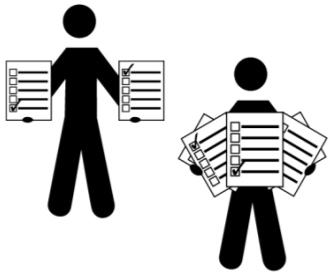
Not all items are considered socially desirable by all people



Calculate weighted social desirability scores

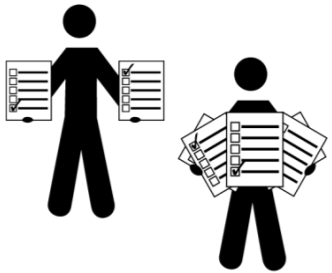
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Using the Scale - the Calibration Study

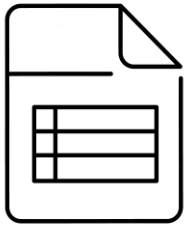


Data collection (N=867)

Using the Scale - the Calibration Study

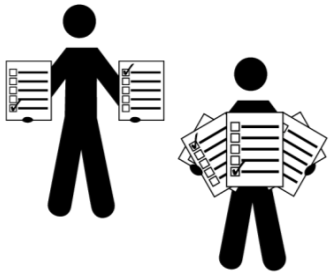


Data collection (N=867)



Social desirability ratings

Using the Scale - the Calibration Study



Data collection (N=867)



Social desirability ratings



Use ratings and formula to calculate scores

In a nut shell

- Security and Privacy Social Desirability Scale for end users without a background in computer science
- Calculate weighted social desirability scores

Full Scale:

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Sources

Douglas P. Crowne and David Marlowe. A new scale of social desirability independent of psychopathology. Journal of Consulting Psychology, 24(4):349–354, February 1960. ISBN: 0095-8891.

Dong-Heon (Austin) Kwak, Xiao Ma, and Sumin Kim. When does social desirability become a problem? Detection and reduction of social desirability bias in information systems research. Information & Management, 58(7):103500, November 2021.

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