Healthcare Provider Simulations to Reinforce Integration of Foundational Sciences and Clinical Recommendations

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INTRODUCTION

- Patient simulations have been used extensively in pharmacy education to allow students to practice clinical skills.[1]

- Most simulations include interactions with standardized patients, and students have limited encounters with standardized healthcare providers, where a different level of justification and scientific terminology are required.[1]

- Throughout the pharmacy curriculum, students are required to demonstrate their improvement and growth in critical thinking skills.[2, 3]

- The "Tell Me Why" simulations were developed by faculty from biomedical/pharmaceutical sciences and clinical therapeutics to foster integration of knowledge, critical thinking, and clinical reasoning.

OBJECTIVES

- The objectives of this study were to design and evaluate a new "**Tell Me Why**" simulation series that requires students to:
  1. Recognize an incorrect treatment recommendation from a provider
  2. Use critical thinking and clinical reasoning skills to make an appropriate recommendation
  3. Use medical and scientific terminology to justify the recommendation.

METHODS

- This IRB-approved study was conducted in fall 2023 and spring 2024.

- Second-professional year students completed two simulations, one in the fall (Cardiology) and one in spring (Pain), in which students interacted with a provider who suggested a suboptimal theraputic recommendation.

- For each simulation, the case writers worked with coordinators from integrated system-based therapy courses to identify recommendations that have a strong scientific evidence to foster integration among foundational sciences (biomedical and pharmaceutical) and therapeutics.

- Individual students interacted with a facilitator (faculty, APPE student or resident) that presented an inappropriate or suboptimal treatment recommendation.
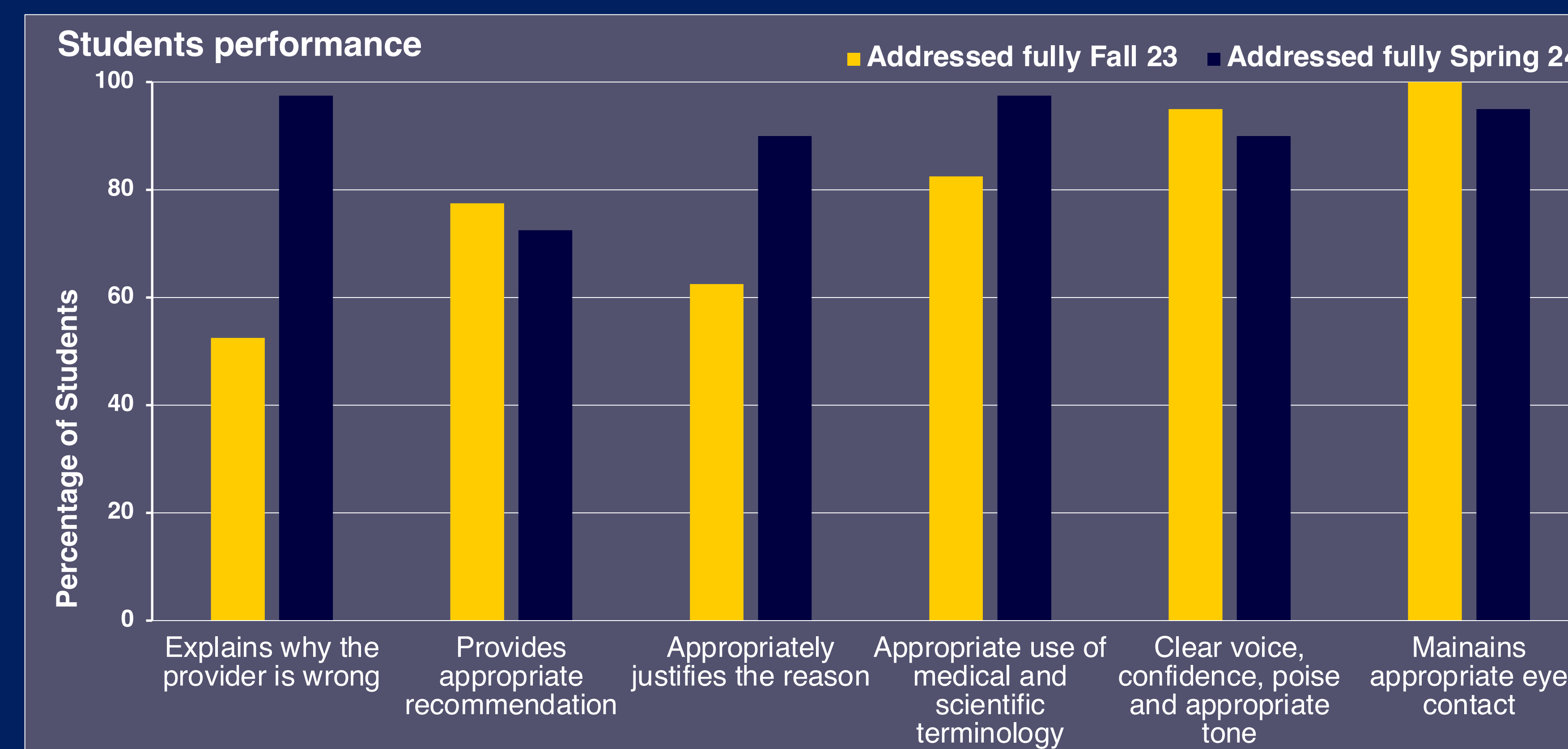
METHODS

- Students had 5 minutes to identify the error, justify why the provided recommendation was incorrect, and suggest an appropriate recommendation for the patient.

- Students were evaluated using a standardized rubric (Table 1).

- Following each simulation, students completed a post-survey with their perceptions and comfort level in using medical terminology and justifying their recommendations. Survey was adapted [4.]

- Facilitators shared common errors and clinical pearls during a debrief.

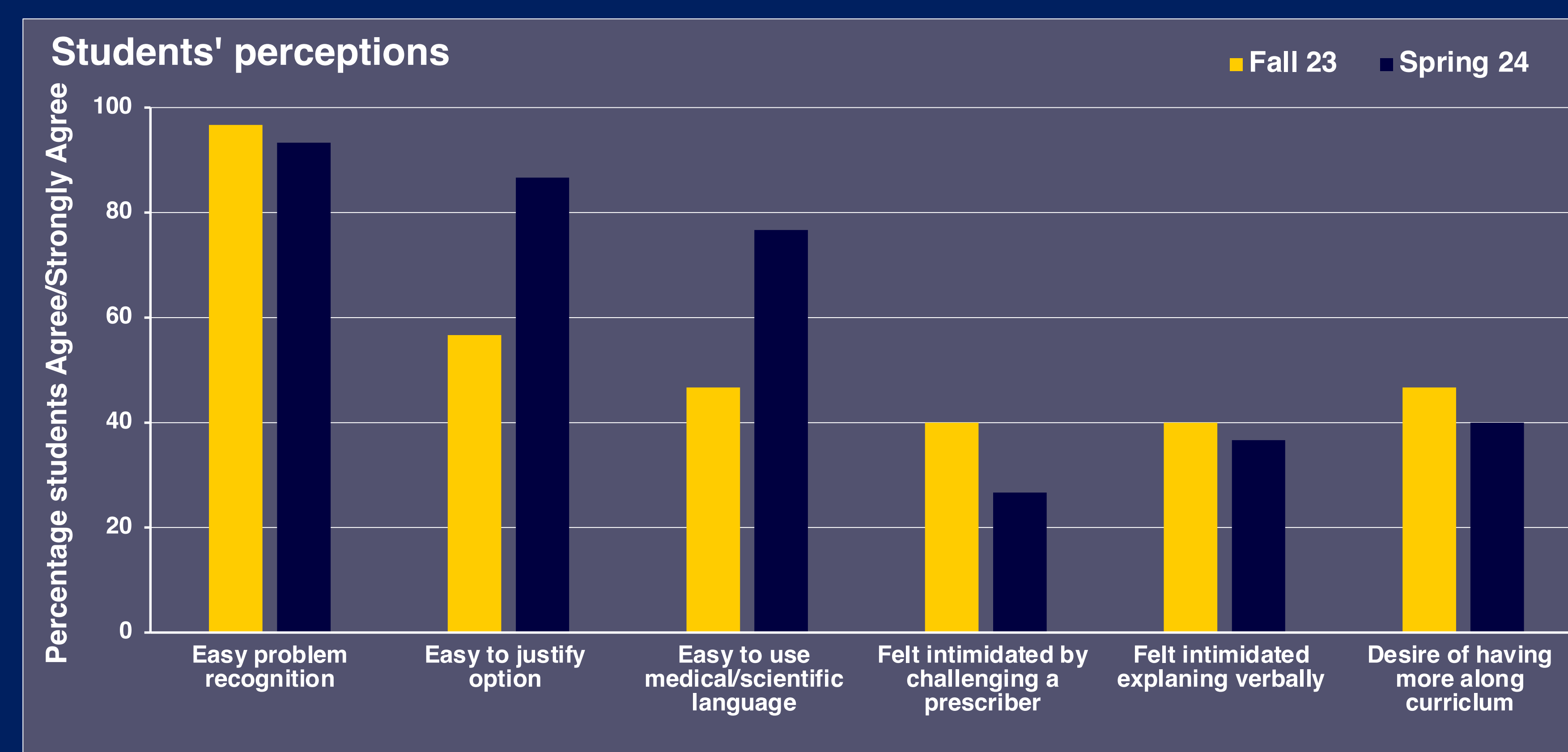## RESULTS

Figure 1. Assessment rubric and students' performance results

Students performance — Addressed fully Fall 23, Addressed fully Spring 24. Percentage of Students: Explains why the provider is wrong; Provides appropriate recommendation; Appropriately justifies the reason; Appropriate use of medical and scientific terminology; Clear voice, confidence, poise and appropriate tone; Mainains appropriate eye contact.

N=40 all students completed both encounters. The Fall 23 case had two problems (bar graphs showing average of both) while the Spring 24 has only one. Students were graded with a 3-category rubric (not addressed, partially addressed, and fully addressed). Graphs show percentage of students that fully addressed each point in the rubric.

Figure 2. Students' self-perception on the activity

Students' perceptions — Fall 23, Spring 24. Percentage students Agree/Strongly Agree: Easy problem recognition; Easy to justify option; Easy to use medical/scientific language; Felt intimidated by challenging a prescriber; Felt intimidated explaining verbally; Desire of having more along curriculum.

N=30 (only students that filled the survey for both encounters were counted) 5-category Likert-scale was offered to students. Results from agree and strongly agree category were combined and percentages were calculated.

RESULTS

- Forty students completed simulations in fall'23 and spring '24.

- Thirty students completed the post-survey for both scenarios. Results of their performance as well as their self-perception are shown in Figures 1 and 2.

- Students improved in **explaining why the recommendation was incorrect** from the fall to spring semester (52.5% *vs.* 97.5%). There was also improvement on using their **scientific and clinical reasoning skill**s **to justify why it was wrong** (62.5% *vs.* 97.5%), and use of **medical and scientific terminology** (82.5% *vs.* 97.5%).

- Students' self perception revealed an increase in self-confidence, reducing feeling intimidated by changing the medical recommendation from fall to spring simulations (40% *vs.* 26.6%), or by verbally justifying the recommendation (40% *vs.* 36.6%). Further similar simulations will assess if the intimidation continues to decrease as multiple exposures to similar challenges are repeated throughout the curriculum.

- Less than 50% of students shared that they have experienced this type of challenge in their practice setting (30% or 23.3% for each encounter, respectively).

CONCLUSION AND IMPLICATIONS

- This "Tell Me Why" simulation series was designed to connect scientific reasoning behind therapeutic recommendations, with the goal of fostering the application of foundational sciences knowledge in clinical scenarios.

- Scores and perceived confidence improved on the second encounter, although intimidation was still a factor in student comfort in making treatment recommendations.

- Since less than half of students have experienced encounters challenging a provider, these types of activities provide a safe environment to develop skills to decrease medical errors.

REFERENCES

[1]Seybert AL. "Patient simulation in pharmacy education". Am J Pharm Educ. 2011, 75:187
[2]Brudvig TJ. "Critical Thinking skills in health care professional students: a systematic review" J Phys Ther Educ, 2013
[3]Cone C, Godwin D, Salazar K, Bond R, Thompson M, Myers O. "Incorporation of an explicit critical-thinking curriculum to improve pharmacy students' critical-thinking skills". Am J Pharm Educ 2016, 80:41.
[4]Taiabul Haque et al. 2014, Symposium on Usable Privacy and Security (SOUPS) 2014, July 9–11, 2014, Menlo Park, CA. Applying Psychometrics to Measure User Comfort when Constructing a Strong Password

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