Priming & Memory: Writing utensil effects of word lists retention

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INTRODUCTION

Research question:

Will writing with a permanent writing utensil have a greater outcome for the effects on memory?

Purpose:

To determine if the retention of memory on word lists, when using a permanent writing tool, is greater than writing in something erasable, like a pencil.

What influenced this?

INTRODUCTION

Background

- Molden, in 2014, discussed what social priming is and how it imprints stimuli within our brain to influence our actions.

- In 2010, Goldfarb, Aisenberg, and Heinik introduced a study outlining how social priming reduces the Stroop effect, and improves cognition abilities.

Hypothesis

Individuals who write with permanent writing tool will have higher rates of memory associated with words.

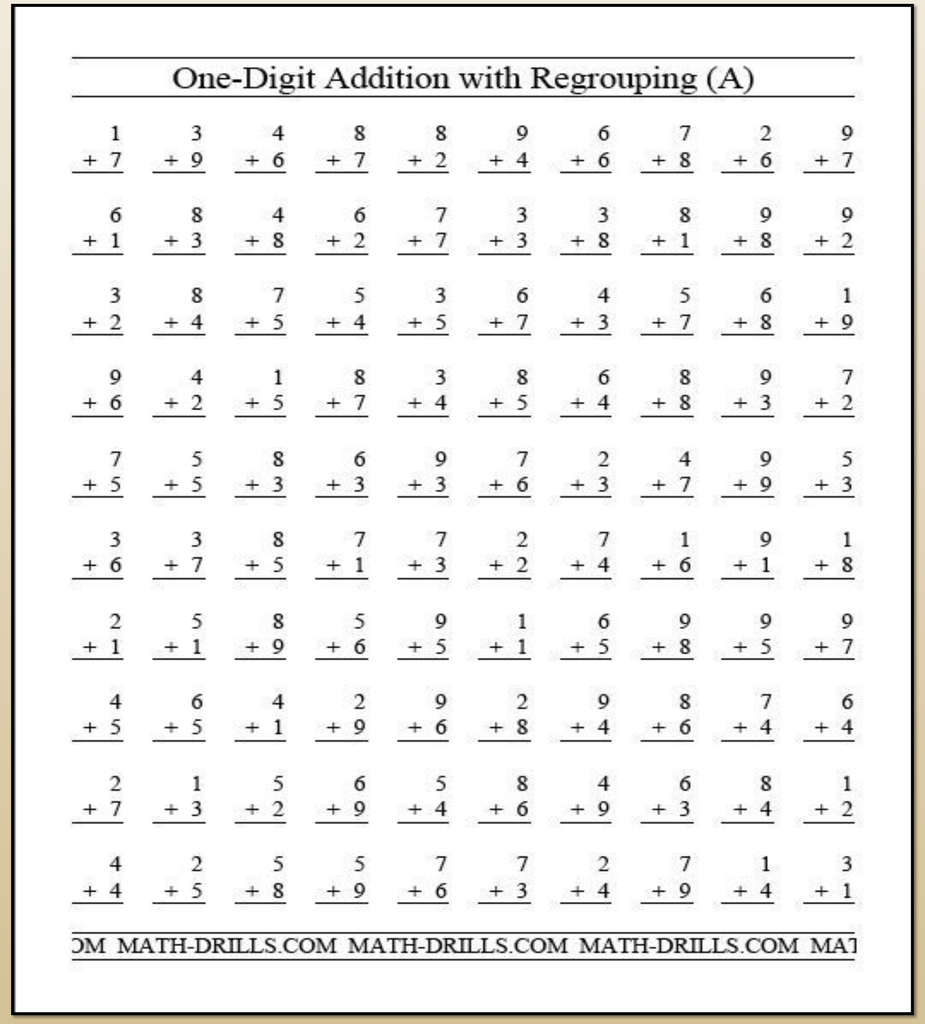
METHODOLOGY: “STUDY 1”

First Stimuli

- Genetic
- Chaos
- Vacuum
- Spell
- Snow
- Injection
- Knock
- Resource
- Fast
- Roll
- Call
- Exile
- Corruption
- Flexible
- Game
- Degree
- Executrix
- Spite
- Recording
- Exposure
- Belief
- Process
- Compensation
- Provide
- Manual
- Pop
- Prejudice
- Modest
- Whole
- Nope

https://randomwordgenerator.com/

Figure 1: Example of Second Stimuli - Simple Addition Problems



One-Digit Addition with Regrouping (A)

1 + 7	3 + 9	4 + 6	8 + 7	8 + 2	9 + 4	6 + 6	7 + 8	2 + 6	9 + 7
6 + 1	8 + 3	4 + 8	6 + 2	7 + 7	3 + 3	3 + 8	8 + 1	9 + 8	9 + 2
3 + 2	8 + 4	7 + 5	5 + 4	3 + 5	6 + 7	4 + 3	5 + 7	6 + 8	1 + 9
9 + 6	4 + 2	1 + 5	8 + 7	3 + 4	8 + 5	6 + 4	8 + 8	9 + 3	7 + 2
7 + 5	5 + 5	8 + 3	6 + 3	9 + 3	7 + 6	2 + 3	4 + 7	9 + 9	5 + 3
3 + 6	3 + 7	8 + 5	7 + 1	7 + 3	2 + 2	7 + 4	1 + 6	9 + 1	1 + 8
2 + 1	5 + 1	8 + 9	5 + 6	9 + 5	1 + 1	6 + 5	9 + 8	9 + 5	9 + 7
4 + 5	6 + 5	4 + 1	2 + 9	9 + 6	2 + 8	9 + 4	8 + 6	7 + 4	6 + 4
2 + 7	1 + 3	5 + 2	6 + 9	5 + 4	8 + 6	4 + 9	6 + 3	8 + 4	1 + 2
4 + 4	2 + 5	5 + 8	5 + 9	7 + 6	7 + 3	2 + 4	7 + 9	1 + 4	3 + 1

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https://www.math-drills.com/

METHODOLOGY: “STUDY 2”

Figure 2: Example of Methodology

35 words at 5 seconds each

Word List Stimuli

90 seconds

Addition Problems

70 words at 3 seconds each

Memory Recognition Stimuli

Figure 3: Grading Sheet

DOB: Writing Instrument Used: ID:

1.Outlet:No
2.Halt:No
3.Motorist:Yes
4.Bill:Yes
5.Hardship:No
6.Sofa:No
7.Combination:Yes
8.Line:Yes
9.Productive:No
10.Rack:Yes
11.Monopoly:No
12.Case:No
13.Merit:Yes
14.Predict:Yes
15.Battlefield:No
16. Rest:No
17.Morale:Yes
18.Institution:Yes
19.Relative:No
20.Tube:No
21.Slow:Yes
22.Familiar:Yes
23.Clarify:No
24.Analyst:Yes
25.Mechanical:Yes
26.Key:No
27.Register:Yes
28.Hour:No
29.Incident:No
30.Speed:Yes
31.Ton:Yes
32.Trait:No
33.Fail:No
34.Slump:Yes
35.Court:Yes
36.Prison:Yes
37.Qualified:No
38.South:Yes
39.Clinic:No
40.Depend:Yes
41.Restrict:No
42.Junior:Yes
43.Tenant:Yes
44.Spectrum:No
45.Heaven:Yes
46.Toll:No
47.Countryside:No
48.Shed:Yes
49.Burn:No
50.Fortune:Yes
51.Member:No
52.Revoke:Yes
53.Fountain:No
54.Delicate:Yes
55.Umbrella:No
56.Rule:Yes
57.Value:No
58.Mile:No
59.Blow:Yes
60.Dismiss:No
61.Elbow:Yes
62.Culture:No
63.Inject:No
64.Construct:Yes
65.Front:No
66.Dare:Yes
67.Study:No
68.ProtestYes
69.Small:Yes
70.Cattle:No

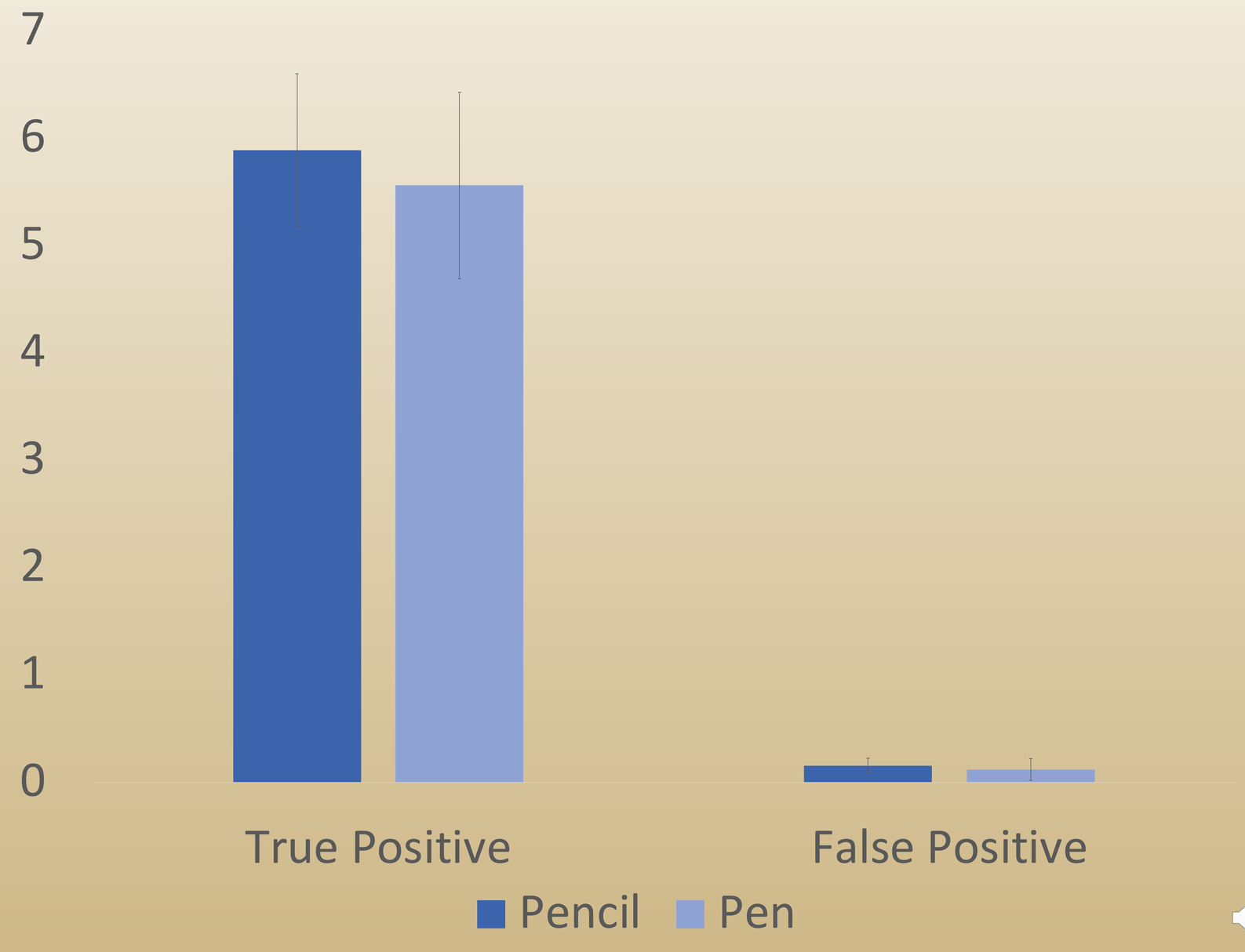
Correct # of Words:
False Positives:
False Negatives:

RESULTS: “STUDY 1”

- There *was not* a significant difference in the score of pencil (M=5.89, SD=1.54) and pen (M=5.56, SD=1.88) true positive conditions; t(17)=.412, p=.686.

- There *was not* a significant difference in the score of pencil (M=.153, SD=.157) and pen (M=.121, SD=.219) false positive conditions; t(17)=.354, p=.728.

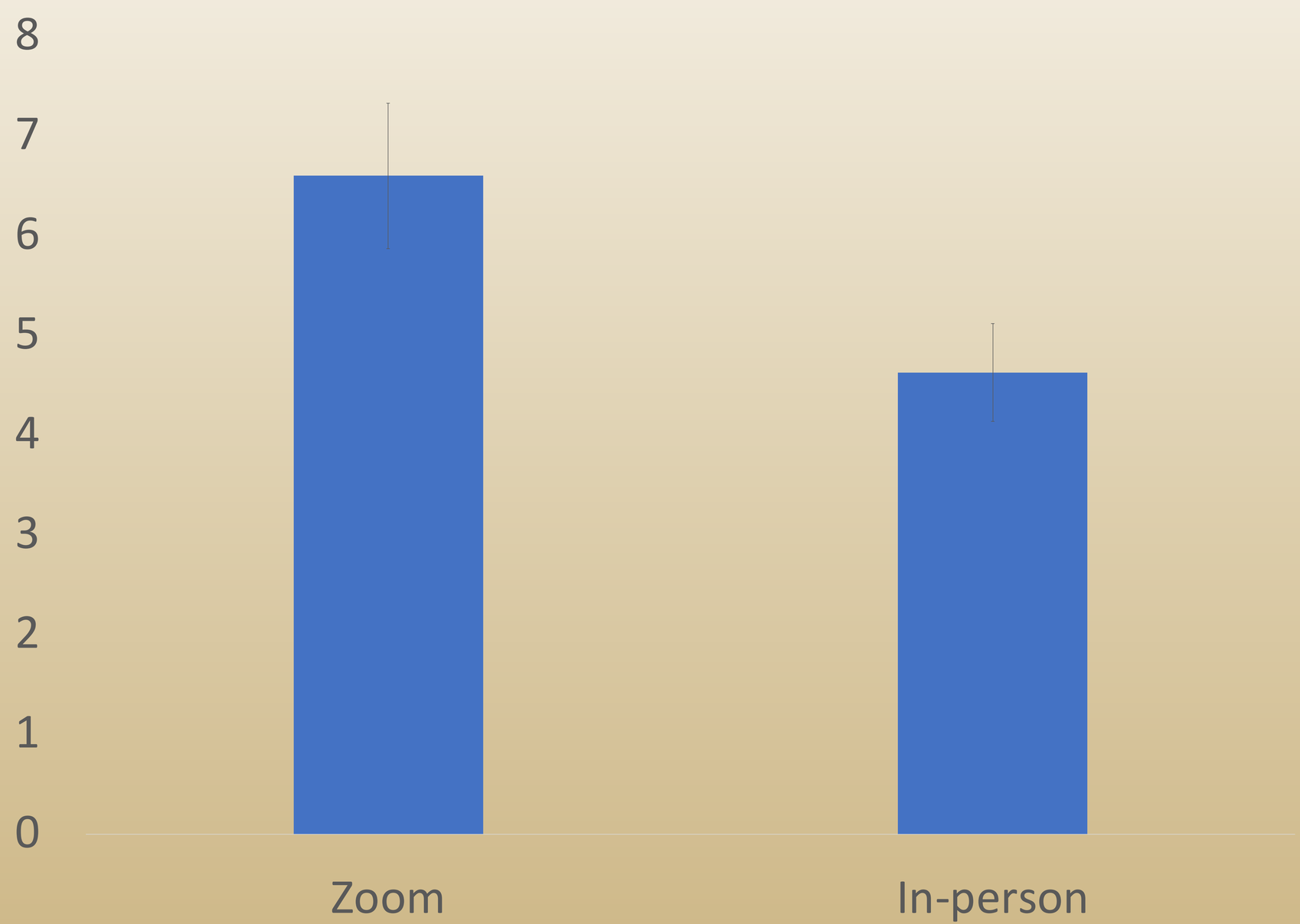
Figure 4: True Positive & False Positive Rate



RESULTS: “STUDY 1”

- There *was* a significant difference in the score of Zoom (M=6.60, SD=1.578) and in-person (M=4.63, SD=1.061) conditions; t(17)=3.027, p=.008

Figure 5: True Positive Rate through Process Done by



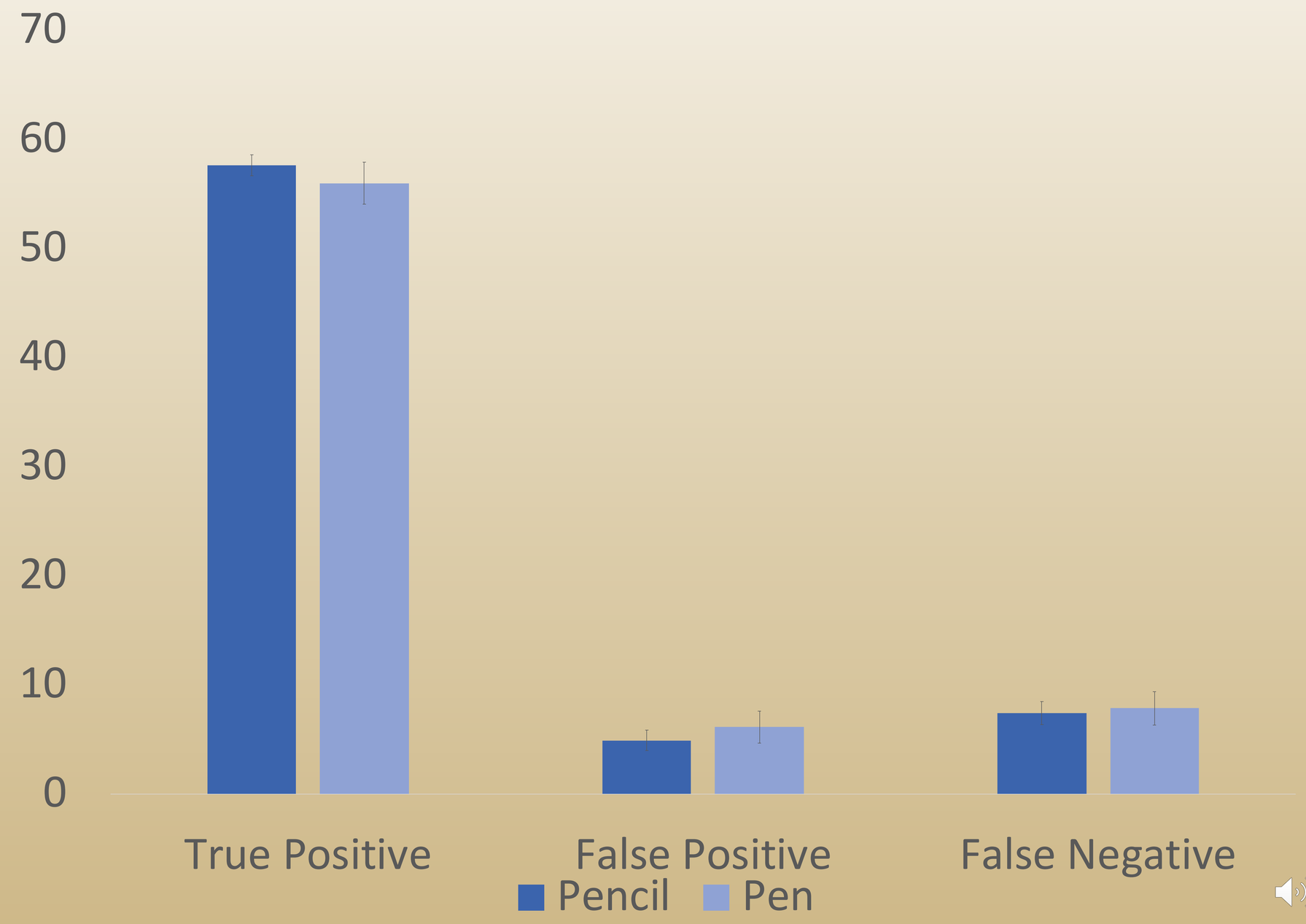
RESULTS: “STUDY 2”

- There *was not* a significant difference in the score of pen (M=56.00, SD=5.20) and pencil (M=57.64, SD=2.59) true positive conditions; t(27)=1.058, p=.300

- There *was not* a significant difference in the score of pen (M=6.14, SD=3.96) and pencil (M=4.93, SD=2.53) false positive conditions; t(27)= -.968, p=.342.

- There *was not* a significant difference in the score of pen (M=7.86, SD=4.13) and pencil (M=7.43, SD=2.85) false negative conditions; t(27)= -.320, p=.752.

Figure 6: TP, FP, NP Rates



DISCUSSION

Findings

- In “Study 1,” there were no significant differences between pen or pencil in any conditions. However, those who performed over zoom showed a significant difference over those in-person.
- In “Study 2” there were no significant differences in any conditions.

Analysis

- My hypothesis was wrong in indicating that pen would show greater results in memory recall and recognition.

How can the research be improved?

DISCUSSION

Limitations

- Small convenience sample
- Gender is not evenly represented
- Class assignment

Future Studies

- Account for any disorders participants may have
- Understand why students performed better through zoom
- Control for the writing utensils that participants are already comfortable with

THANK YOU!

REFERENCES

Goldfarb, L., Aisenberg, D., & Henik, A. (2011). Think the thought, walk the walk—Social priming reduces the stroop effect. *Cognition, 118*(2), 193-200. doi:http://dx.doi.org.proxy.lib.fsu.edu/10.1016/j.cognition.2010.11.004

Molden, D. C. (2014). Understanding priming effects in social psychology: What is "social priming" and how does it occur? In D. C. Molden (Ed.), *Understanding priming effects in social psychology; understanding priming effects in social psychology* (pp. 3-13, Chapter viii, 264 Pages) The Guilford Press, New York, NY. Retrieved from https://login.proxy.lib.fsu.edu/login?url=https://www-proquest-com.proxy.lib.fsu.edu/books/understanding-priming-effects-social-psychology/docview/1648594720/se-2?accountid=4840