

MAKING A DIFFERENCE WITH “THE SAME” OLD, SAME OLD

Erica Kirk & Emily Tran, Michigan College of Optometry

Introduction

- A patient’s responses during a subjective refraction are imperative to finding the optimal refractive end point of a prescription, but “the main difficulty [is that]...patient responses may be highly influenced by the question being asked” during a refraction (Shah et al, 2009).
- As an optometrist guides a patient through a subjective refraction, they may tend to shorten their instructions for the sake of efficiency which can unintentionally mislead a patient in their responses.
- All clinicians must balance efficiency with providing adequate instructions to a patient in order to reach an optimal prescription in a timely manner. Thus, our question follows: does the inclusion or exclusion of “same” as an option to the patient affect the spherical end point of the final prescription?

Methods

Participants

- Twenty-four students from the Michigan College of Optometry Class of 2022 were enrolled to participate in the study.
- All participants were between the ages of 22 and 32, without systemic or ocular conditions which may cause refractive error to fluctuate.
- Each student was enrolled in their first year of optometry school to ensure unfamiliarity with the refraction process to prevent bias during the experiment.

Procedure

- Objective retinoscopy was performed to approximate each subject’s refractive error, followed by the widely accepted and taught sequence of subjective refraction.
- Two subjective refractions were performed on every subject.
- Subjects were instructed using Script #1 while performing their initial subjective refraction, and then Script #2 was used during the second refraction.
- Subjective refractions were performed at least 1 week apart.

Script #1

“Now, I am going to show you two different options. Let me know which option is more clear... 1 or 2?”

Script #2

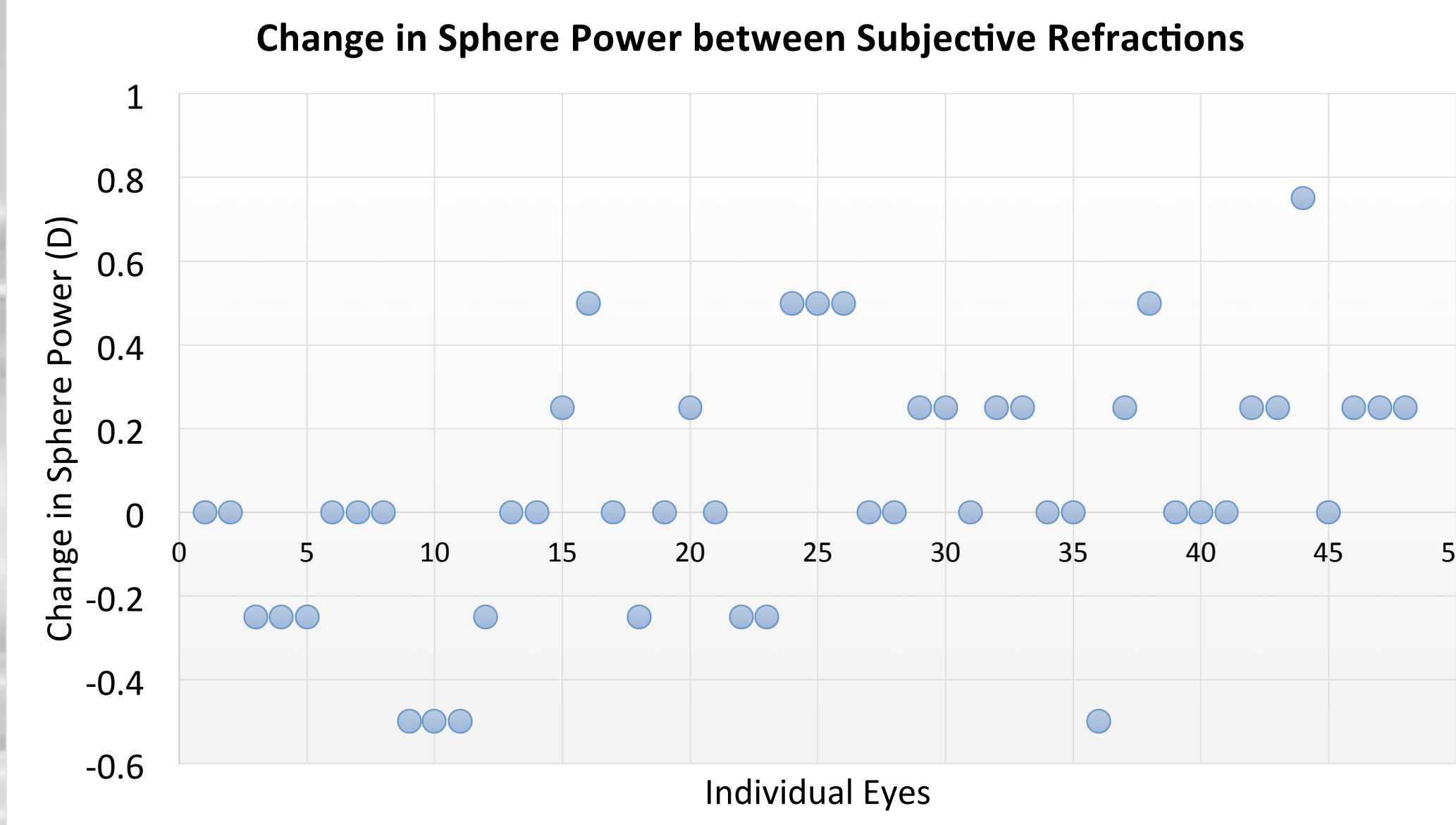
“Now, I am going to show you two different options. Let me know which option is more clear, or if they appear the same... 1 or 2, or the same?”

Results

- For simplification of the experiment, only the spherical component of the prescription was analyzed at the completion of both refractions.
- Because the average and standard deviation for the entire population were unknown, t test hypothesis testing was used to analyze data.

Hypothesis

- Subjects will over-minus themselves when not presented with “the same” as an option.



Graph 1. Amount of change in spherical end point for individual eyes between subjective refraction #1 and subjective refraction #2

T Test Hypothesis Testing

- H_0 = there will be no change in refractive end points when the subject is presented with the option of choosing “the same.”
- H_A = there will be a difference in refractive end points when the subject is presented with the option of choosing “the same.”
- μ (n 48) = +0.052 D \pm 0.29 D
- t score = 1.242
- p-value = .2203 \geq 0.05

Final Results

- There was an average small hyperopic shift in the spherical component of the refraction when subjects were presented with the option of choosing “the same,” indicating subjects tend to over-minus themselves if they are unaware that the two lenses may look the same.
- Data analysis indicates that our results are not statistically significant for the sample population. There is a high probability of achieving an identical outcome to this experiment by chance. Thus, we must reject H_A in favor of H_0 .

Conclusions

- It would seem counterintuitive for clinicians to deviate from or shorten the “standardized protocol” by which subjective refractions are taught.
- After examining the results from our 24 subject study, we have concluded that offering “the same” as an option does not significantly affect the spherical end point of the subjective refraction.
- While it is important for optometrists to understand the desired end point for a refraction, it may not be entirely necessary to detail instructions at length to every patient.
- However, future testing will have to be done to determine if it affects exam flow and efficiency of the subjective refraction.

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