Abstract
A number of studies have been conducted to look at differences between left- and right-handed individuals performing different motor tasks (Walker & Henneberg, 2007). Judge & Stirling, 2005; Perelle, Ekman & Manosvit, 1981; Nalçacı, Kalaycıoğlu, Çeek & Genç, 2001. Walker and Henneberg (2007) included both left- and right-handed individuals writing with their non-preferred hand. This study aimed to gather an equal number of left- and right-handed participants to write out a given sentence three times a day from a total of 28 days to see if left- or right-handers have an advantage in learning motor skills with their non-preferred hand. The participants were college-aged students who volunteered to be part of the study. Handicuedness was determined using the Dutch Handedness Questionnaire (Van Strien, 2002). Writing was assessed on a recording sheet rating the following features of letters and words: how many times a letter or word was repeated, the spacing of letters and words, and how much it varied. A recording sheet was given to each participant from the beginning of the study. Participants also performed a grooved pegboard test before and after the study with each hand to see if the writing practice influenced finger dexterity. The ratings from the writings were analyzed using a mixed ANOVA in order to see if there were any significant differences amongst left- and right-handers across days. Post hoc tests showed that there was a significant improvement in hand writing across days. Most learning occurred within the first two weeks of practice, regardless of handedness. There was a significant difference in writing improvement between left- and right-handers. In addition, the writing task showed no significant change in finger dexterity as a result of the 28 days of practice.

Purpose
The purpose of this study was to see if either left- or right-handed individuals would have harder time learning to write with their non-preferred hand.

Hypotheses
1. Left-handed individuals will improve while writing with their non-dominant hand significantly more than right-handed individuals, as determined by their hand writing rating scores from day 1, day 14, and day 28.
2. There will be a significant improvement between pre- and post-study Grooved Pegboard test times while using one’s non-dominant hand.

Methods and Procedures
Participants
• College-aged volunteers (N=15, 7 left- and 8 right-handers).

Before study
• Participants completed Dutch Handedness Questionnaire (Van Strien, 2002).
• Participants provided sample of normal hand writing.
• Participants completed Lafayette Grooved Pegboard Test (See Figure 1).

During study
• Participants wrote statement, “The quick brown fox jumped over the lazy dog” 3 times a day using non-dominant hand for 28 days. (See examples in Figure 2)

After study
• Re-tested on Grooved Pegboard and completed short survey.
• Hand writing assessed on consistency (on scale of 1 to 3) of letter shape, size, position relative to line, shaping of words, rigidity, roundness, and how similar it was to initial sample of hand writing.
• Analysis – 2 (groups) x 2 (times) Mixed ANOVA and a 3 (groups) x 3 (days) Mixed ANOVA both with Bonferroni post hoc test (alpha level set to .05)

Results
Grooved Pegboard (Refer to Figure 1)
• No significant difference between pre- and post-means while using non-dominant hand, F(1, 13) = 0.224, p > 0.05.
• No significant interaction found between tests and writing hand group, F(1, 13) = 0.148, p > 0.05.
• No significant difference between the two writing hand groups (i.e. left or right) and pre/post-test means, F(1, 13) = 2.929, p > 0.05.

Hand Writing Rating (Refer to Figure 3)
• Significant differences were found in writing hand rating scores across all days (day 1, day 14, day 28), F(2, 24) = 37.754, p < .0005.
• Significant differences were found among the groups, F(2, 12) = 0.025, p = 0.015. Left-handers had better ratings than right-handers.

Discussion
Even though left-handers wrote better with their non-dominant hand than right-handers, hypothesis 1 was supported as both groups improved their hand-writing about the same across the 28 days of practice. These results contrast those of Walker and Henneberg (2007) who found that right-handed individuals improved their hand writing more than their left-handed counterparts. A possible explanation could be due to a more equal number of left- and right-handed individuals in this study. They on the other hand only had three left-handed participants out of a total of 21.

The results of Grooved Pegboard Test did not support hypothesis 2 and showed that completing the writing assignment three times a day for 28 days did not improve one’s finger dexterity with their non-dominant hand.

Conclusion
1. Left-handers do have an advantage when learning to write with their non-preferred hand.
2. The writing assignment did not help participants improve their Grooved Pegboard Test times.

Key References

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