### Grading Rubric – Quantitative Paper

<table>
<thead>
<tr>
<th>Topic</th>
<th>Points Possible</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction/background – explains why this topic is important, include references to support the rationale. This should end with your research question or hypothesis.</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Methods includes Design Participants (sampling, assignment, number, demographics) Measures Intervention Statistics used</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Results – what did the study find presented in an objective manner including the statistical analysis, should include a graph</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Discussion – refer back to your research question, this is where you pull it all together. How would you answer the research questions now? Also how do these results compare to the studies discussed in the introduction? What do these results suggest for practice.</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Spelling and grammar</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Clarity and organization</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>References, citation and reference list – uses APA style accurately</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td>42</td>
</tr>
</tbody>
</table>

- Never use proven
- Avoid using 1st person (I or we) remove
- Efficiency vs. effectiveness
- No capitalizing OT (occupational therapy)
- Avoid Normal
Name-Face Recognition:

A Study of Errorless Learning

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Introduction

There are multiple approaches to learning styles that can be used for facilitating knowledge acquisition. Specifically, the area of errorless learning has been pursued by researchers in an effort to divulge more information about the effectiveness of this learning method, as well as provide greater detail about the administration for the general population. The concept of errorless learning pertains to the specific delivery of learning by repeated and subsequent immediate feedback about the information presented. The learning method is based in reinforcing the information through repetition and continued success. Exact mechanisms of errorless learning remain unknown but have been attributed to both the use of residual explicit memory and implicit memory (Mount et al, 2007). Explicit memory refers to memory that we consciously recall, such as facts and events. Implicit memory refers to performance improvement that occurs without conscious or intentional recall (Mount et al, 2007). Errorless learning provides the learner with the opportunity for reinforcement that eliminates errors during learning process and is still non-conclusive for being superior to trial-and-error learning (Kessels & de haan, 2003).

Past research into errorless learning has provided limitations for associating the learning method to a general population due to inconclusive data. This is especially noted when few studies have looked at the effectiveness of errorless learning in as it applies to the real world situations (Mount et al, 2007). This limitation trails into the general population by making it difficult to correlate errorless learning to being beneficial in varied settings. Presented in Green et al (2005), found that higher learning potentials were generally associated with better skill acquisition and its effects were reduced at the immediate assessment among those trained with errorless learning. Errorless learning was found to alienate a defined line between low or high learning potentials and
the effect on long term learning for participants. The concept of a ceiling effect is noted across numerous studies, in which an imposed level of limited progression is seen and data does not follow the increasingly scale that has been attributed to errorless methods. Some studies have concluded that specific areas of errorless learning including the sample or control groups has not be affected by the techniques positive attributes. Such was the result for Kessels & de Haan in 2003, when the results on the healthy participant were less clear in this study, since these were confined by serious ceiling effects in the young group and a sample of the older group. A notable point made in this study was that generally speaking there was an overall improvement for both the young and older groups with the errorless learning technique. Since prior research has left errorless learning with an undefined position of effectiveness, this study seeks to validate the concept that errorless learning would enhance learning outcomes for an experimental group in comparison to an errorful learning group.

Method

Design

Based on a true-experimental design, the study consisted of 31 graduate students who were assigned by a random numbers table into two groups; the experimental errorless group and the errorful group as a control.

Participants

Participants were collected with convenience sampling from Touro University Nevada’s Occupational Therapy program. There were a total of 31 first year graduate students that were randomly numbered 1 through 31 then further divided into two groups using a random table of numbers and flipping a coin to determine the experimental (errorless) and control (errorful)
groups.

**Intervention**

Two different interventions were applied testing the effectiveness of errorless learning in comparison to errorful learning of face-name matching. For both groups, the face-name matching testing encompassed 11 notable recipients of the Eleanor Clark Slagle Lectureship award.

The errorless learning participants were presented with a list of names then were presented with a power point presentation outlining the faces and corresponding names. The participants were to say the names out loud as they were presented the name and face. Next the participants were to write down the names as they correspond to the face. The participants instructed to speak their guesses out loud and when correct, the name was provided along with picture. Lastly the name list was taken away, the test administration was the same presented photos of the 11 individuals, where the participants were to write the corresponding name to the photo shown.

The errorful learning group received the same list of names and was shown the same 11 pictures but was told to guess names out loud until someone in the group said the correct name. This step was repeated with the participants saying the names based on short term memory and after someone got the name right, the name popped up on the screen. Next the errorful group was shown the picture's without the name and had to write down the names without saying them out loud. After this was done, the researcher showed the pictures with their names together. Then the group had to flip over the sheet with the names before the researcher showed the pictures. The group then responded to the pictures by saying the name out load. The provided name list was then taken away and the test was administered in the same format as the errorless.

**Measure**

The errorless and errorful group data was scored by number of correct answers given for
each individuals list of 11 names. Point values were given based on correct responses broken down into 2 points per individual named. Point values were subdivided based on 1 point for the first name or combination first and middle name and 1 point for the last name. The allotted point maximum offered was 22 with partial credit given for first or last name that were correct.

**Data Analysis**

The data was analyzed using an independent sample t-test to examine if significant differences occurred between the two unrelated groups. Since both groups received different learning parameters during the course of the study and contributed unequal sample sizes (16 and 15 participants from each group) there was justification for use of an unrelated sample calculation for the t-test value.

**Results**

The sample consisted of one experimental group (errorless) and one control group (errorful) made up of occupational therapy graduate students. The errorful learning group consisted of 12 females and 3 male participants who ranged in age from 22 to 45 years and had a mean age of 28. The errorful learning group had similar gender ratio at 14 females and 2 males, with age ranges from 21 to 43 years, and a mean age of 29. The combined total came to 31 participants, broken down into 15 for the errorless group and 16 in the errorful group. The errorless group was comprised of 60 percent Caucasian, 13 percent Asian or Pacific Islanders, roughly 1 percent African American and Hispanic or Latinx, and less than 1 of other race. The errorful group was made up of 80 percent Caucasian, 18 percent Asian or Pacific Islanders, less one percent Hispanic or Latinx. Of the participants, the errorless group had one internationally accredited Occupational Therapist and the errorful group had one Occupational Therapy assistant.
See the table below for demographic data.

Table - 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>Gender</th>
<th>%</th>
<th>Male</th>
<th>%</th>
<th>Age</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Errorless</td>
<td>15</td>
<td>12</td>
<td>0.8</td>
<td>3</td>
<td>0.2</td>
<td>22-45</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Errorfull</td>
<td>16</td>
<td>14</td>
<td>0.88</td>
<td>2</td>
<td>0.12</td>
<td>21-43</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Caucasian</th>
<th>%</th>
<th>Asian/ Pacific Island</th>
<th>%</th>
<th>African American</th>
<th>%</th>
<th>Hispanic/ Latin</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errorless</td>
<td>9</td>
<td>0.6</td>
<td>2</td>
<td>0.133</td>
<td>1</td>
<td>0.067</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>Errorfull</td>
<td>12</td>
<td>0.75</td>
<td>3</td>
<td>0.18</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

From the data provided, there is an inferred relationship between the two groups for the gender and age based on the similar ratios of female and males and the nearly similar sample size. In terms of prior knowledge of Occupational Therapy both groups were comparable with one group having a COTA and one group having an international OT.
Based on this study, there was an observation that participants did in fact display the ability to retain information using the errorless learning technique when presented with new information for the first time. The comparison of the mean score data from the graph below displays that the errorless group had a calculated 17½ out of 22 points for the written test, while the errorful group had a marginal 14 out of 22 points.

There was a significant difference between errorless learning and errorful learning that was concluded from the level of significance value that was calculated at less than 0.05 \( p < 0.05 \), during the course of analyzing the data between groups. This level of significance figure represents the limited probability of viewing this relationship outcome for the study at a point in time.

Other important data that provides insight into the significance of errorless learning was the degree of freedom value that was 29 (df = 29). The degree of freedom value is based on the size of the sample in the study and is correlated with the level of significance \( (p < 0.05) \) to reject or accept the hypothesis. The t-test value when compared to a critical values chart (Howell, 1982). The value for the t-test was t = 1.85 and based on the critical value chart using the degrees of freedom value of 29 and a
level of significance at 0.05, the t-test value of 1.85 was accepted in accordance to the value being greater than 1.699. Thus there can be an inference that the hypothesis for errorless learning is true based on this study.

**Discussion**

The research collected in this study provided support for the hypothesis that errorless learning would provide greater improvement in learning outcomes than the errorful group in a sample of graduate level occupational therapy students. This data coincides with other research that concluded further errorless learning methods minimize reliance on chance and yielded higher levels of performance than the conventional approach such as errorful learning or trial and error learning (Green et al, 2005). Contradictory research was found to hold errorless learning as limited in showing effectiveness for instructional methods of enabling participants with different levels of memory to achieve retention of these functional skills (Mount et al, 2007). Research also has groups errorless learning within the same context as errorful or trial and error learning. The information gathered from this study can be viewed as evidence of the real world application of errorless learning to student learning outcomes such as teaching methods and possible study habits. As always there is the need for continued errorless learning research to be conducted to help enhance the specific benefits and limitations as it applies to the greater population. Studies thus far have been selective in targeting a specific population sample that has generalizable demographics or diagnoses in the sample. It is recommended that further research consider assessing errorless learning for a greater sample and in varied environments so that there can be more viable information for generalizing the effectiveness of errorless learning on the general population.

* Relate finding to past research
References


