

論文

Investigating Motivation and Strategies: The Hawthorne Effect and Quick-writes

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Abstract

The research reported in this study investigates behavior changes due to the Hawthorne Effect over a two-week period. The Hawthorne Effect is change that occurs in the behaviors of participants if they are aware that they are under study. As such, measurements were taken from quick-write output levels (number of words written) from a randomly selected experimental group (n=15) and compared to another randomly selected control group (n=16). The results indicated a significant difference in pre-test and post-test mean outputs in both groups though no significant difference between group mean differences in post-test measures. However, the power co-efficient indicates sample size to be insufficient to produce significant differences between the experimental and control group. The discussion explores the degree to which the Hawthorne Effect can be used as a tool to increase learner output levels albeit in a short-term time frame with appropriate research design modifications.

Introduction

The Hawthorne Effect is a term that was coined based on the studies done at the Western Electric Company, Chicago from 1924 to 1933. From this original study, it found that female workers' productivity would increase,

No matter what the researchers did, productivity went up. Even when work conditions were made worse than they were originally, the women worked harder and more efficiently. The secret ingredient? The attention shown to them by all those concerned with the study was the variable which influenced their behavior. (Kompler, 2006)

Thus, the Hawthorne Effect has commonly been defined as the unexpected outcomes, which are believed to be dependent on the fact that the participants in a study have been aware that they are part of a study. Though the actual definition of the term is loosely defined and has been presented in literature with different and sometimes contradictory terms (Adair, 1984; Chiesa & Hobbs, 2008; Dickson, 2001; Kompler, 2006; Merrit, 2006); the definition adopted for this study is that people change their behavior if they know they are part of a study or receive special attention (Brown, 1988). To measure the extent to which the Hawthorne Effect would impact participant production levels, one aspect of a course writing program was used as the dependent variable: Quick-writes.

Quick-writing is also known as 'Free-writing'. In this paper, Quick-write is the term that will be used as it is the term used in the institution in which this study was conducted.

Literature Review

For many years writing classes focused mainly on the finished product. Compositions were supposed to meet rhetorical style standards, be grammatically correct and be organized appropriate to the genre in which it is to be presented. Though this continues to be an important aspect of writing classes, teaching pedagogy began to develop a new approach: process writing. In brief, process writing places importance and focus on a student's journey to his/her writing destination or final product (Brown, 2001). As mentioned above, quick-writing or quick-writes are part of this process. According to Jacobs (1986), "Quick-writing has three features: concentrating on content, not worrying about form, and writing without stopping." Brown (2001) provides the following directions (adapted):

1. Choose an idea that you are interested in, or have selected for you by your teacher.
2. Write that idea at the top of a clean sheet of paper.
3. For ten minutes, write without stopping. This means that you should be writing something down constantly.
 - a. Write down everything that comes to your mind.
 - b. Do not judge your ideas.
 - c. Do not worry about your spelling and grammar.
 - d. If you run out of things to say, continue writing whatever comes to your mind.

Quick-writes provide various benefits to students. It is a good way to help students develop ideas, and words to express ideas, by separating the creating stage of writing from the editing stage. Other

possible advantages of quick-writing are in generating writing quantity (the dependent variable in this study), thinking in the target language, developing the ability to write under the pressure of time, warming up for other writing activities including gaining ideas for first drafts of essays (Withrow, 1987, p. 49).

Another benefit of quick-writes is that they increase the writing fluency of a student. In Japan, there are many required and standardized, time-based tests such as the TOEFL in which essay style responses to questions must be produced. Indeed, a student's ability to write quickly for extended periods of time could and likely will be a factor correlated with test performance. Thus, students receive direct benefit in their writing ability as well as their course performance if they can increase their ability to write quickly and adopt the mechanics of the writing process. Further, if students can see an increase in performance by adopting strategies for quick-writes, then they are more likely to apply strategies in the future to other facets of language learning if appropriately guided by their instructor: using strategies appropriate to the task; in essence, having both the will and skill to improve at a task (Leroux, 2016, p. 29; Pintrich & De Groot, 1990, p. 38).

In direct support of the above, as per Experiential Learning Model, for students to experience writing speed gains, 'Immediate or concrete experiences are the basis for observations and reflections' (Kolb, 2005, p. 194; Kolb, 1984), The aforementioned are pre-requisites for deeper learning, critical thinking and, ultimately, autonomous learning (Bandura, 1986). Further, from the well-established theory of Self-efficacy (Bandura, 1977), direct experiences of success and to also witness peers' actions and subsequent successes are the foundations of positive self-efficacy. Positive self-efficacy is highly correlated with learner/participant achievement

Investigating Motivation and Strategies: The Hawthorne Effect and Quick-writes and has been evident in all areas of language development as well as relative achievement in a broad range of domains (Bandura, 1986, 1996; Schunk & Pajares, 2009; Zimmerman, 1995, 2000).

To this end, the following research question was posed: Would participants work harder to increase quick-write output if they knew they were under study/direct observation relative to a control group?

Method

Participants

The participants (N=31) were all Japanese students in an International English Program, which was associated with the Economics Department at a university in western Tokyo. Participant goals varied, but generally, these students wanted to use English in work opportunities abroad. Thus, many of the students were very motivated to learn English. There were 17 males and 14 females, and the mean age was 18.5 years. Though there are always proficiency level differences, the students are placed in the respective classes (both Pre-intermediate) based on TOEFL scores. These two classes provided the pool of participants.

Materials and Procedures

Group participants were selected randomly, literally out of a hat, by a person other than the tester (see Controlling for tester bias). Initially, there were thirty-six participants; however, over the course of the study certain participants became mortalities for various reasons.

The classes in question were held twice a week. In each class, for 10 minutes, participants engaged in a quick-write activity. A topic

for participant quick-writes is provided by the tester and remained consistent between the two classes. It should be noted that prior to quick-writes, participants engaged in 3 topic discussion exercises; one of these discussion topics would be the theme for their quick-write. Further, in addition to in-class quick-writes, participants completed 6 quick-write tasks for homework. The topic is selected from a list that was provided to them at the beginning of the course. Quick-write scores are recorded on a quick write recording sheet, which was collected to determine output levels (number of words).

Notification of the participants in each group was accomplished by the following method: each student received a set of quick write strategy instructions on a blue (opaque) folded sheet of paper. Participants that were selected to be the experimental group (H+) also had an additional message located above the instructions and were also notified of the length or end date of the study. The participants were identified on the paper by name and their admission into the study. Finally, explanation was provided in Japanese to avoid any misunderstandings though quick-write instructions were provided in English only.

Controlling for leakage and tester bias

The tester had no idea who was in which group, and the participants were advised in the notification not to communicate its contents with other participants, or with the tester, in order to reduce the possibility of leakage and/or tester bias. This was done in an attempt to safeguard internal validity. Leakage refers to the likelihood of participants talking to each other regarding their participation in a research study. Tester bias refers to the tester consciously or unconsciously giving extra

Investigating Motivation and Strategies: The Hawthorne Effect and Quick-writes or special encouragement to the experimental group. The tester did, however, distribute the notifications to the participants. Distribution was done twice: at the beginning of the study, and the following week. This was done to remind the participants in both groups of the importance of following instructions and to remind the experimental group that the study was in progress. No other changes in procedure occurred, and the process was identical for both groupings of participants: there was a mix of experimental and control group participants in each class. Reminders to record and always bring record sheets were provided by the tester and done every class.

Quick-write record sheets were collected prior to the study being conducted and after the study concluded to determine output levels. Mean totals were collected for 2 equal periods of time: prior to the study (2 weeks), and during the study (2 weeks). This was done to account for missed classes by participants as well as to accommodate for occasional homework non-completion.

Results

Of importance in this study is the determination that the randomly assigned treatment and control group were equivalent as indicated in sampling theory (Brown, 1988). To determine this, a homoscedastic examination of the two groups' (H+, H-) means (M) and standard deviations (SD) of the pre-test means was conducted (Table 1). The differences between the two means were not found to be significant (using Fisher's t) and applying the Bonne-ferrone adjustment at the 0.005 level. Therefore, randomly assigned groups were equivalent based on pre-test results examination (Green & Salkind, 2009; Tabachnik & Fidell,

2007).

Table 1. *Descriptive Statistics*

| | Group | <i>M</i> | <i>SD</i> | <i>N</i> |
|-----------|-------|----------|-----------|----------|
| Pre-test | H+ | 204.27 | 43.53 | 15 |
| | H- | 195.50 | 42.70 | 16 |
| | Total | 199.74 | 42.61 | 31 |
| Post-test | H+ | 229.67 | 44.44 | 15 |
| | H- | 202.81 | 36.61 | 16 |
| | Total | 215.81 | 42.16 | 31 |

The post-test results shown in Figure 1 suggest that the experimental group outperformed the control group given the gains presenting steeper increases and means for both groups were significantly higher than pre-test results.

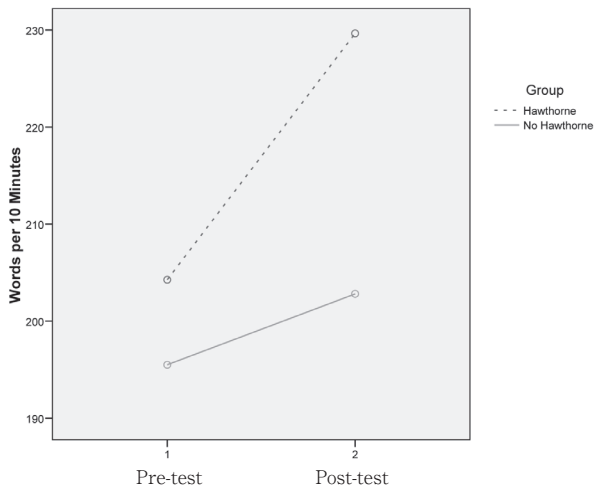


Figure 1. Pre-test and post-test increases for H+ and H groupings.

However, in Table 2, the power co-efficient (0.21) indicates that there was insufficient data to record any measurement of significance on a between group basis. As a result, we cannot reject the null hypothesis and the impact of the Hawthorne Effect remains a question not answered.

Table 2. *Two-way Analysis of Variance Source Table*

| Source | SS | df | MS | F | Partial Eta ² | Power |
|------------------|----------|----|---------|--------|--------------------------|-------|
| Within Subjects | | | | | | |
| PrePost | 4142.35 | 1 | 4142.35 | 58.78* | 0.67 | 1.00 |
| PrePost * Group | 1266.42 | 1 | 1266.42 | 17.97* | 0.38 | 0.98 |
| Error (within) | 2043.52 | 29 | 70.47 | | | |
| Between Subjects | | | | | | |
| Group | 4911.65 | 1 | 4911.65 | 1.43 | 0.05 | 0.21 |
| Error (between) | 99579.19 | 29 | 3433.77 | | | |

* $p < .01$

Analysis

The pre-test results were used for three purposes. First, they were used as a means for checking the initial equivalence of the two randomly assigned groups. Second, they were used to determine if there was any significant difference between pre-test and post-test results, and finally they were used to compare for any significant differences between groups; and thus, treatment efficacy.

The post-test results were investigated using two-way repeated measures analysis of variance. Then, the means for the two groups on each test were examined for significant difference.

Discussion

As briefly mentioned above, due to the low power co-efficient, no significant difference was detected in post-test means between the experimental (H+) and control group (H-). This does not mean, unequivocally, that no difference exists. There is simply not enough power in the data to identify a significant difference. This lack of power suggests that a larger sample size is required for this type of analysis (Tabachnik and Fidell, 2007). If the results are examined on the surface, it can be seen that the treatment group had a greater differential between pre-test and post-test means than did the control group. In this sense, it is possible to suggest that the Hawthorne Effect did indeed have a greater impact than just providing simple instructions/strategies when attempting to increase quick-write output. As such, further study, with larger sample sizes is a worthy endeavor.

In response to leakage concerns skewing the results, it is profitable to assume a longitudinal approach for this kind of study. If study participation was not a function of random selection, but rather one of class to class comparisons over time, then this control would be more effective. In other words, the research design would not include a concurrently operating control group. Treatment would be evaluated for effectiveness, and then over time, control group comparisons could be made at a later date. Due to the placement requirements of the institution, it could be reasonably assumed, if the criteria for placement did not change, that the classes would be generally equivalent. This assumption could be tested in a pre-test mean to pre-test mean comparison (t-test) between treatment and control groups. Thus, with this design there is still a principled collection and analysis of data with

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There are other limitations of this experimental design. Firstly, the study was initiated after the quick-write activities were several weeks old. This can be construed as both positive and as a drawback. On the positive side, participants would have already been made quite familiar with the quick-write process. Thus, improvement in output would be less likely to be caused by the practice effect. On the other hand, participants in this study were also beginning to suffer from fatigue and a general loss of motivation. Absences were higher than at the beginning of course and homework completion was also starting to wane. Timing considerations are also of importance if a study of this type was to be undertaken in the future. Based on observations of participant behaviors, this study would be best conducted at the 3rd week of quick-write activities.

Generalizability is another issue given the profiles of the participants. The program that the participants in this study belong to is considered an exclusive program: only students with high achievement are accepted. Further, in needs assessments done at the beginning of the program, a large majority of the students/participants set specific English language proficiency goals. Thus, it can be said that their level of motivation is likely to be higher than the typical 1st-year university student enrolled in an English language course. Consequently, any results obtained in

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this study have limited generalizability. As a result, the findings of this study would only prove applicable to programs and students with high motivation and/or those with specific English language competency goals.

Conclusion

Though the result of this study was not able to measure the Hawthorne Effect, nor even confirm or deny its existence, it does provide a framework for future research with improved designs. Further, studies of this phenomenon are important for learners and teachers in terms of using it as a basis for experiencing, noticing/observing, and reflecting on the benefits of appropriate strategy application (following instructions/strategies) to improve performance not only in quick-writes, but also in other second language acquisition facets, and/or other academic or career pursuits.

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