Undergraduate Psychology Research Methods Journal

Volume 1 | Issue 19 Article 10

6-2016

Effect of Learned Helplessness on Students

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This experiment was conducted in order to see if a relationship existed between learned helplessness and students. In other words, I sought to see if enforced learned helplessness would have a negative impact on student test performance. Learned helplessness can be defined as the belief that a task or an obstacle has an outcome that is outside an individual's realm of control (Marshik, Kortenkamp, Cerbin et al., 2015). In order to test learned helplessness, anagrams were used. Anagrams may be defined as groups of letters that are scrambled, and then are attempted to be unscrambled in order to form words. For example, the word "television" could be made into an anagram by scrambling the letters to form "nivsioetel." In order to enforce learned helplessness, I used three different lists: List A, which is easy to solve, List B, which is impossible to solve, and List C, which is possible but difficult to solve. List B consisted of participants that have learned helplessness enforced upon them. My hypothesis was that students who have learned helplessness enforced upon them will be less likely to be able to solve anagrams in a second trial, demonstrating that Learned helplessness discourages future attempts. This study could have positive implications in school settings through test score improvement.

Learned helplessness can be defined as the belief that the outcome of an event is not within control of an individual (Marshik, Kortenkamp, Cerbin et al., 2015). In other words, an person thinks that there is no reason to try, since an event is impossible to influence one way or another. Learned helplessness can be applied to any event, but is commonly seen in academic situations. Specifically, students are prone to suffering from learned helplessness, feeling as though there is not a point in applying effort in particular subjects since they will not find success regardless of application. Falling to learned helplessness in school could lead to

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problems for students in the future, since academics tend to lay groundwork for future success, both professionally and socially. Studying learned helplessness could help those working and participating in academic settings to identify instances of it, and potentially overcome it through repetition. In addition, this research could help lead to more recognition of the concept, which could help students overcome it and transition this skill into professional and social settings.

Overmier and Seligman (1967) founded learned helplessness by using canine subjects as participants, measuring response to electric shocks. In order to enforce the learned helplessness, the canines in the experimental group were restrained and forced to feel shocks that were significant, but did not cause harm to the dogs. These shocks were administered by a series of wired panels on the surface of the floor. The dogs in the experimental group were initially able to avoid the small shocks by leaping over a miniscule gate. However, when the restraint was used to enforce the shocks, the dogs were unable to escape the sensation. By using these restraints, learned helplessness was enforced, and the dogs would learn to believe that the shocks were unavoidable. The findings revealed that a fairly significant amount of trials including the dogs that were forced to endure the shocks would not make an effort to get over the gate that would allow them to avoid shocks, even when the harness was removed (Overmier & Seligman, 1967). Through this experiment, conclusions about behavior relating to learned acceptance of failure came about. It was found that the dogs, while having the means to escape the shocks, would not make an effort to escape them.

Previous applications have been carried out in the field of learned helplessness. For example, Firmin, Hwang, Copella, and Clark (2004) attempted to draw an association between learned helplessness from failure and frustration levels, which could result in implications for future test taking. According to Buss (1963), failure frustration is a leading cause of aggression in university students. The relevance of Buss's (1963) work is that it displays how easily frustrated students can be, and how quickly emotions can rise within an individual. Firmin et al.'s (2004) study tested students that attended school in the Midwest. A total of 61 students participated in the study. In order to conduct the study, a test was created, but the questions were broken into two sets. The tests had the same set of questions and content, but the sequence of questions was organized oppositely for test B. (Firmin et al., 1963.) Both tests consisted of questions ranging from simple to challenging. Test A had the challenging questions at the beginning of the exam, while test B had the challenging problems at the end of the test. The researchers sought to see whether or not the location of difficult problems had an impact on the success rates of the easier questions. Their prediction was that the students in group A, consisting of the test that had hard questions at the beginning, would have fewer simplistic problems solved correctly when compared to group B, in which the test had the easier questions toward the beginning (Firmin et al., 2004.)

Firmin, Hwang, Copella, and Clark (2004) uncovered a significant difference in the number of correctly solved simple problems between the two groups. Group A had a

significantly lower score than group B did on correctly solved simple questions. These findings fit with Firmin et al.'s (2004) hypothesis that having the frustrating questions toward the beginning of the test would cause discouragement for the rest of the exam, even if the questions were simpler. Possible implications from Firmin et al.'s (2004) study could be applied to exams, both standardized and subject based. Because this study found significant differences in test scores due to a manipulated variable, the results could be applied in order to improve students' test scores. (Firmin et al., 1963) Also, students' projective scores could be more accurately demonstrated if the exams are created in a way that allows students to have better levels of success without changing the content. For instance, a student may see a rise in an ACT score if the problems were set up in order to help the student find success, rather than being thrown in a random order.

Another study by Frankel (1977) focused to see if there was a correlation between learned helplessness and failure anxiety, known also as failure avoidance. According to Mandler and Sarason (1952), this failure anxiety is defined as an emotional response that is evoked by situations that relate to education and learning. Frankel's study used participants that were to participate in cognitive tasks. The first task was rather simplistic, but only half of the participants received criticism on their outcome (Frankel, 1977.) The researcher manipulated the second task, being an anagram, by notifying the participants that the list would be either rather simple or challenging (Frankel, 1977).

The results did not appear to align with the predictions of the researchers. It was found that the participants who were in the no-feedback group did not display worse performance on the anagram set, even when the participants were told that the anagrams were challenging (Frankel, 1977). To the contrary, those participants in the no-feedback condition showed better performance on the very difficult condition when compared to the feedback condition (Frankel, 1977). A potential reason behind this result could be that the participants found encouragement in the "difficult" anagram list if they were to find one or two words correct initially. This could lead to the participants gaining confidence, which would counteract the intention of the experiment.

Frankel and Snyder (1978) examined test performance ability in relation to conditions of high or low success levels. There were 41 participants, all of whom were students attending college. There were 10 women and 31 men partaking in the study. The participants received $4 for participating. Each participant was asked to complete one remedial task, one anagram, and one task where they were allowed to pick their difficulty level (Frankel & Snyder, 1978.) Two groups were used in this study, an unsolvable and solvable group. In the solvable group, both tasks given prior to the anagram had a possible solution, and feedback was given to the participants (Frankel & Snyder, 1978.) For the impossible group, no feedback was given to the participants. The first task had the participants identify a correct answer to a problem from multiple-choice formatted answers. The second was an anagram, and telling the participants

different levels of difficulty prefaced it. The third task did not actually take place, but the participants were asked to describe what level of difficulty for the task they would be most likely to want to perform (Frankel & Snyder, 1978.)

Frankel and Snyder's (1978) found that there was a significant difference in the number of words solved correctly in the anagram task between the easy description and hard description. The simple description had the researchers tell the participants that the anagram set was simply, and they were quite confident that the words could be solved quickly. The difficult description had the researchers inform the participants that other students and participants were having difficulty completing the anagram list, and it was common that the students would not find solutions (Frankel & Snyder, 1978.) In addition to impacting the performance of the anagram set, the level of difficulty described had a significant impact on the participants' choice in difficulty level for the third task, which did not actually take place. Participants who had a more difficult time with the anagram list selected an easier task a much higher amount than those participants who did well on the anagram list.

Method

Participants

There were a total of 17 participants in my study. Each participant signed up for my study using Lindenwood Sona Systems. Students were drawn from the Lindenwood Participant Pool (LPP), which is a pool of students who are eligible to take part in studies and receive extra credit.

If allowed by their professors, the students received extra credit in their respective classes. Of the participants, there were 6 men and 11 women. There were 4 freshmen, 4 sophomores, 6 juniors, and 3 seniors. Seventeen of the students were full time students, and there were no part time students. Thirteen of the students were primary English speakers, and 4 students spoke another language as their primary language. One student spoke Nepali, 1 student spoke Spanish, 1 student spoke Thai, and 1 student spoke English and Japanese bilingually as their primary languages. Every participant was a student at Lindenwood University.

Materials

The Lindenwood Participant Pool, which participants signed in order to get credit for participating, gave me sign in sheets. Along with this sheet, I was provided small slips that participants would fill out so that they would be able to receive credit for the study. I developed an informed consent letter informing the participants of what was expected of them in the study (see Appendix A). The informed consent letter communicated to the participants that they would be taking part in a study that asked them to attempt to unscramble two sets of letter scrambles that would take no longer than 20 min. Additionally, I created four demographic questions that each participants would answer, in order to receive knowledge about the participants while still maintaining individuality (see Appendix B).

For the test materials, I developed three lists of letter scrambles in total. List A consisted of letters that are relatively easily unscrambled to form words (see Appendix C). List A consisted

of four to five letters, and I created an answer sheet in order to check responses (see Appendix D). List B contained letters that were impossible to unscramble in order to form words (see Appendix E). List B consisted of four to five letters. List C used letter scrambles that were more difficult than the first list to unscramble, but still completely possible to solve (see Appendix F). List C consisted of letter scrambles that had five or more letters, and I created an answer key for List C in order to check responses (see Appendix G). Each list consisted of 10 letter scrambles. In order to create the second list of letter scrambles that were impossible, I took the letter scrambles from the first list and changed the third letter of each set of letters. There were no categories used in any of the lists.

In order to solve the anagrams, the participants were told to use a pen or a pencil. The experiments took place in the basement of Young Hall. In order to time the participants, my research assistant and I used our mobile phones with built in timers. Finally, I created a feedback letter that informed the participants of the purpose of my study, which also gave my contact information in case of questions in the future about the experiment. Along with the feedback letter (see Appendix H), I also developed a tip sheet for solving letter scrambles that was given to the participants at the end of the experiment (see Appendix I).

Procedure

When the participants arrived to the study, they were asked to sign two copies of the informed consent letter and then to give back one copy for my records. The participants were

given the second copy of the informed consent letter to keep. Along with the informed consent, each participant was asked to sign a sign in sheet that would be turned into the Lindenwood Participant Pool at the end of each week. After signing the informed consent letters and the sign in sheet, the participants were asked to fill out a demographic survey that consisted of four questions that I created. After completing the demographic surveys, the participants were told that they would be asked to attempt to unscramble different letter scrambles in order to form words.

The experiment was a between-groups study. Each participant was assigned to either Group 1 or Group 2, and they were assigned by alternating the order of signing up, so every other participant would be in Group 1. Participants in both Groups 1 and 2 were told that they would have 5 min to attempt to unscramble List A. The participants were informed when a timer was started.

After attempting to unscramble their respective first lists of letter scrambles, each participant was asked to attempt List C, which was an additional list of 10 letter scrambles. There was no time limit for the second set of letter scrambles, and the participants were told to attempt to solve as many as they could figure out. After giving up one time, the participants were encouraged to look over the letter scrambles one last time to see if they could solve anymore before being finished. After looking over the list once more, the participants were told that the experiment was completed.

After the experiment had been completed, the participants received a feedback letter, a tip sheet for solving letter scrambles, and were debriefed on the purpose of the experiment. The participants were informed which set of letter scrambles they were given, in order to avoid a reduction of confidence in their ability to solve letter scrambles in the future. Finally, the participants were asked if they had any questions for me regarding the experiment, and then were thanked for their participation. Before leaving, the participants were asked to fill out a small slip that would allow them to receive extra credit for their participation. Additionally, the students received a tip sheet that I created that is helpful with future anagram solving.

Results

The purpose of my study was to see if a connection existed between impossible letter scrambles and words solved when the solutions are possible. In other words, I was attempting to see if learned helplessness would have an impact on how students perform on future assessments. I hypothesized that participants that had the impossible letter scramble list initially would have a significantly fewer number of solved letter scrambles on the second list given to them when compared to those who were initially given simple letter scrambles.

An independent samples *t*-test was conducted to compare anagram-solving ability, measured in words unscrambled correctly, between a neutral condition and a learned helplessness condition. The independent variable was the list of words given to the participants, being either the List A, or List B, consisting of letters that are impossible to unscramble. The

dependent variable was the number of words solved correctly by the participants on List C by the participants who received List B, which was measured by counting the number of correctly unscrambled words. It was found that there was a significant difference in scores of the learned helplessness condition ($M = 4.56$, $SD = 2.51$) and the neutral condition ($M = 8.25$, $SD = 1.83$); $t(15) = 3.43$, $p = 0.004$.

These results suggest that learned helplessness has a significant impact on anagram-solving ability. More specifically, my research suggests that when a student or individual has learned helplessness enforced upon them, future performance of similar tasks, in this case anagrams, decreases significantly.

Discussion

The target of my study was to see the relationship between learned helplessness and future performance, through means of letter scrambles. The focus of the results was on the number of words correctly unscrambled from the list of letters given to both groups of participants after the initial list was attempted. My prediction was that the students who were in the learned helplessness condition, those who had a list of letters that were impossible to unscramble in order to form words, would have a significantly lower number of words unscrambled correctly when given a second list that consisted of letter scrambles that were possible to unscramble when compared to the neutral group. The results implied that there is a significant difference between the neutral group and the learned helplessness group, showing that

the learned helplessness group had roughly an average of four less words unscrambled. Nevertheless, the data may be extreme since it was such a small sample size (*N*=17).

While my prediction was correct that the learned helplessness group was able to unscramble fewer words than the neutral group, I was actually expecting the learned helplessness group to unscramble fewer words than it actually did as a whole. As a group, the learned helplessness group successfully unscrambled an average of 4.56 words, which seemed to be high compared to the expectation that I had. There are a few reasons that this could have happened. First, it is possible that the selection of students were simply skilled at working with anagrams, which would make the results prone to being higher in regards to the number of words solved correctly. Second, it is possible that since the sample size is so small, that if the experiment were to be continued, the average would be lowered, since more people are participating. Third, it is conceivable that the students were able to catch on to the purpose of the experiment. Since all 10 words on the first list were impossible for the learned helplessness group, the students may have realized that the list was unable to be solved, meaning that the manipulation would not function as intended. Finally, it is also likely that effort levels would come into play for the second list performance. For instance, there were students who, even though no words were found, insisted on attempting every single set of letters on both lists, which demonstrates a high effort level. As well as high levels of effort, some students were able to find word and letter combinations from different language, such as in Spanish or Nepali. It would be very interesting to continue the

research to see how the numbers would change with more participants coming from a more diverse pool.

A potential source of error could come from two major places: foreign languages and the letter scramble "cuyk" which was found in the impossible list. In addition, another word "sect" was possible to find in the impossible list, yet no participants were able to identify this word. In the experiment, there were students who spoke multiple languages. There were letter scrambles in the impossible letter set that could be used to form words in a different language, which was a factor that I did not consider. This could have changed the results because it encourages students to continue trying, even if the words may not be in English. The second potential source of error is the letter scramble "cuyk." In order to make sure that letters could not be unscrambled to form words, I had multiple people test them out by attempting to form words with the letters. Participants in this study kept finding "yuck" from this particular letter combination. While yuck is classified as onomatopoeia, or a word that is a sound, not an actual word, finding this onomatopoeia may have encouraged students to continue to try and unscramble the letters. While small, these two sources of potential error could have skewed my results.

These results could have positive implications in academic settings, more specifically related to test taking, both standardized and regular subject tests. For standardized tests, multiple subjects are tested over, and students have a tendency to burn out while taking one test after another. It is very possible that if a student feels as though they performed poorly on the first

portion of an exam, their performance on the rest of the standardized test may be skewed, since the effort level and level of optimism could be decreased. A way to overcome this potential problem would be to help students by separating each subject by including either a light-hearted activity or a mental break, which would act as a "reset" window for students.

In regards to regular subject tests, it is common for students to have a subject that is claimed to be their worst performing subject. Many times, the reason for this is that the students have had negative experiences with a particular class or teacher that has unintentionally enforced learned helplessness upon them. Due to this, the levels of effort in the particular subject may be decreased, affecting a student's academic representation as a whole. If students are able to understand the impact that learned helplessness has, it could be possible to overcome it through practice and positive build up by professors.

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Appendix A

Informed Consent

I _____ (print name) understand that I will be participating in a research experiment that requires me to attempt to solve two sets of word scrambles and complete a demographic survey. I understand that I should be able to complete the experiment within 20 minutes total. I understand that I can skip any question that I am not comfortable answering. I understand that my participation is totally voluntary, and if at any time I am uncomfortable, I am allowed to withdraw from the study without penalty. I understand that the information obtained from my responses will be kept confidential and will only be used for data collection. My responses will be kept confidential and the data collected is only used for educational and research purposes. I understand that my participation is not restricted due to any personal information, such as primary language. I verify that I am at least 18 years of age and I am legally able to consent or that I am under the age of 18 but have parental consent form filed with the LPP office that allows me to consent as a minor.

Participant Signature

_____ Date: _____

Researcher Signature

_____ Date: _____

Researcher:
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Appendix B

Demographic Survey

1. What is your academic standing?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Other

2. Are you a full time student?
    a. Yes
    b. No

3. What is your primary language spoken?

    a. _____

4. What is your gender?
    a. Male
    b. Female
    c. Other

Appendix C

Group 1 List 1 Letter Scrambles

rpeag

tcas

boko

wtera

malp

cudk

lhigt

otsta

hpeno

lvie

This list of letter scrambles will be given to group 1 as the initial list.

Appendix D

Group 1 List 1 Answer Key

Grape (Can also spell pager)

Cast (Can also spell cats)

Book

Water

Lamp (Can also spell palm)

Duck

Light

Toast

Phone

Evil (Can also spell live or vile)

This list of words serves as the answer key for group 1. It will not be given out to participants.

Appendix E

Group 2 List 1 Letter Scrambles

rpoag

tces

boro

wtira

matp

cuyk

lhegt

otrta

hpino

lvue

This list will be given to group 2. These letter scrambles are impossible to unscramble to form words.

Appendix F

Group 1 and 2 List 2 Letter Scrambles

rcpumtoe

nagrde

rysitho

bsamnete

boktoeon

fstaberak

tofbolal

sesalsg

itnetern

btelto

This list will be given to participants in both groups after the initial list of letter scrambles.

Appendix G

Groups 1 and 2 List 2 Answer Key

Computer

Garden

History

Basement

Notebook

Breakfast

Football

Glasses

Internet

Bottle

This list serves as the answer key for the second set of letter scrambles. It will not be given out to participants.

Appendix H

Feedback Letter

Dear Participant,

Thank you very much for participating in my research experiment. This study involving word scrambles was conducted in order to test whether or not learned helplessness has an impact on ability to solve future word scrambles. Learned helplessness can be defined as the belief that an individual does not have any control over the outcome of an event. There were two groups of subjects, Group A and Group B. Each group was given a different list for the first trial. The subjects in Group A received word scrambles that could be solved. The subjects in Group B received a list of letters that were impossible to unscramble to form a word. I hypothesize that students in Group B will have a significantly lower number of words unscrambled correctly when solving the second list. In other words, I believe that if a student has learned helplessness enforced upon them, then their ability to complete word scrambles even when possible will be diminished.

Remember that your personal information will not be disclosed. I am only interested in the data as a whole as compared to individual datum. Your personal information will not be released. If you are interested in seeing the completed results after the study, or should you have any questions regarding the study, you are free to email me at my email address that is listed below. Thank you again for participating in my study. Your contribution is valuable.

Sincerely,

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Appendix I

Tip Sheet by Alex Moll

Tip Sheet

- Attempt to rearrange the letters in a different way. Doing this allows you to see the combination of letters in a different way, which may make it easier to see the hidden word.
- Separate the vowels and consonants from each other. By separating them, it is easier to see if the consonants can line up into a particular word. If an answer becomes evident, plugging in the vowels becomes much easier.
- If you cannot figure out a word, come back to it! Sometimes taking a break from attempting to solve a particular word lets your brain see it with fresh eyes the next time it is reviewed.