

Correlation report

Business



This is a report of a study to assess the reliability and validity of the self-efficacy optimism personality inventory, a subtest of the Questionnaire for the Assessment of Personal Optimism and Social Optimism Extended (POSO-E), as a predictor of achievement in an academic setting. “ Self-efficacy optimism” refers to the tendency of expecting positive consequences based on one’s own behaviour. Fifty first year Psychology students completed a questionnaire that measured their degree of optimism.

For each statement, students had to decide whether the statement was uncharacteristic or characteristic of them.

Their score was tabulated and correlated with their first term course grade. An analysis of the results indicated that there was no significant relationship between self-efficacy optimism and academic achievement. The limitations of the study and implications for future research are also presented. Self-efficacy as a component of social cognitive theory was first presented in Bandura’s 1977 article on “ Self-efficacy: towards a unifying theory of behavioral change”. Lane and Lane, Pajares, Schweitzer and Koch) Self-efficacy is “ the beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Pajares, 1996, p.

544) or, more simply stated, the belief that one is able to do a task successfully. It is said to influence “ initiating behavior, how much effort will be applied to attain an outcome and the level of persistence applied to the task in the face of difficulties and setbacks. ” (Lane and Lane, 2001, p. 687)

Self-efficacy has been a focus of study in several diverse areas including investigations into phobias, depression, pain control, health and athletic performance. (Schweizer and Koch, 2001) Pajares reported that another major focus of studies is in academic settings including “ the link between efficacy beliefs and college major and career choices, particularly in the areas of science and mathematics ” and that “ mathematics self-efficacy of college undergraduates is more predictive of their mathematics interest and choice of math-related courses and majors than either their prior math achievement or math outcome expectations and that male undergraduates report higher mathematics efficacy than do female undergraduates.

“(Pajares, 1996, p. 551) There have been studies on how effective self-efficacy is as a predictor of academic performance. “ Research findings are generally consistent with the notion that high self-efficacy is associated with successful performance...” (Lane and Lane, 2001, p. 688) One such study was reported in Social Behavior and Personality.

Competencies believed to be necessary for academic success, such as time management, and academic performance, were correlated with self-efficacy measures. As well, because there was a 13 week time lapse between measuring self-efficacy and performance outcome, self-efficacy was measured one week later to determine the “ stability of self-efficacy measures” (Lane and Lane, 2001, p.

687). The results showed that “ stable self-efficacy measures were associated with 11. 5% of performance variance with confidence to cope with the intellectual demands of the program as the only significant predictor”.

Lane and Lane, 2001, p. 687) Closely related to self-efficacy is optimism, the “ expectation of positive outcomes” (Schweizer and Koch, 2001, p.

564) In their article, “ The assessment of components of optimism by PSOS-E,” Schweizer and Koch reported on “ the development and validation of a self-report questionnaire for measuring three types of optimism, which is called POSO-E”. (Schweizer and Koch, 2001, p. 571) As part of their report of three studies, Schweizer and Koch presented results on the validity and reliability of the self-efficacy optimism scale.

The results showed that all correlations were of “ acceptable size and that the range of the means was also favourable. (Schweizer and Koch, 2001, p.

571) A major finding of this study was that self-efficacy optimism indicated a strong correlation with achievement orientation and “ ,,,, can be expected to predict performance in more complex situations.... ” (Schweizer and Koch,

2001, p. 571) The findings of studies conducted by researchers such as Bandura, Pajares,

Lane and Lane and Schweizer and Koch indicate the need to further understand the relationship between self-efficacy optimism and academic achievement. Bandura led the way in identifying the concept of self-efficacy optimism and he and other researchers have found that self-efficacy can better predict if a certain action will produce positive results than past behavior. As reported above, there has been increasing interest in studying self-efficacy and academic motivation (Pajares, 1996) and self-efficacy and academic achievement (Lane and Lane, 2001).

Researchers have also examined particular personality traits that are important in achieving positive outcomes, optimism being one.

While Schweizer and Koch's findings indicate that self-efficacy optimism has a significant connection to academic achievement. (Schweizer and Koch, 2001), it is necessary to further test the reliability and validity in a real life situation. The first year psychology class at Huron College set out to prove that there was a positive relationship between self-efficacy optimism and mid-term grades.

It was expected that students who scored high in self-efficacy optimism would be successful academically and those who scored low in self-efficacy optimism would not achieve as high marks. If the hypothesis is proven to be correct, strategies can be devised that will further academic achievement or encourage more positive attitudes.

METHOD Participants The participants in this study were fifty first year Psychology students at Huron College, University of Western Ontario. The students were between the ages of 18 and 19 and there were more females than males participating in the study.

Apparatus The materials used were the Questionnaire for the Assessment of Personal Optimism and Social Optimism Extended (POSO-E) subtest, which measures self-efficacy optimism, a pencil to complete the questionnaire, a piece of paper with the raw data organized into 3 columns, and the Pearson Product Moment Correlation Coefficient, used to correlate the self-efficacy optimism score and the mid-year course grade. The Pearson Product Moment

Correlation Coefficient is a formula frequently used to determine reliability and validity of data.

Analyses of the reliability and validity of each of the sub-tests of the POSO-E questionnaire has been carried out. The results for the self-efficacy sub-test showed that the means were within an acceptable range for the values assigned to the response options, between 1.

81 and 2.94 (Schweizer and Koch, 2001) and the correlations were larger than 50 (Schweizer and Koch, 2001), indicating that the items addressed self-efficacy optimism well. (Schweizer and Koch, 2001) The investigation also reaffirmed that self-efficacy is a component of personal optimism.

Schweizer and Koch, 2001) The researchers, reporting on the relationship between the optimism scales and particular personality measurements, found that “..

the highest correlation was observed between self-efficacy optimism and achievement orientation”. (Schweizer and Koch, 2001 p. 569). Procedure

The participants were asked to complete the POSO-E which consisted of ten statements that measured self-efficacy optimism. Students were asked to select whether a statement was characteristic or uncharacteristic for them, using a four point scale, one being the least correct and four being the most correct.

At a subsequent class, the same participants were given a copy of raw data that comprised three columns. One column was the participant’s ID number, the second was the individual’s average optimism score out of four on the sub-test described above. The third column had the mid-year Psychology

grades, out of 100, for that individual, which the Psychology teachers had calculated. Participants were then asked to randomly select the optimism score and grade for each of 50 students and show whether there was a relationship between these two variables using the Pearson Product Moment Correlation Coefficient.

RESULTS For each of the 50 students selected for the study, optimism scores and grades were used. Standard deviation is used in the calculation of the Pearson Product Moment Correlation Coefficient.

It is the average of the differences between the scores in a distribution and their average (or mean) whether or not the individual score is above or below the mean. The standard deviation from the mean of both the expectations of the students and their subsequent grades were calculated first.

The formula to find Standard Deviation for a sample is the square root of the sum of the deviation of each of the items in the sample, from the mean of the sample, squared, divided by the number of items in the sample minus one. The standard deviation for a population uses the same formula except the denominator is the number of items, rather than the number of items minus one. As the number of items in the sample increases, the significance of dividing by N instead of N-1 decreases.

For ease of calculation, the definition with N as the denominator was used.

Because of the large size of the sample, it is believed that using this definition did not significantly alter the results. The Pearson Product Moment

Correlation Coefficient was then used to calculate if there was a correlation between the students' expectations and their marks. . When $r > 0$.

24, $p < 0.05$, the correlation is statistically significant. Results for this study showed that $r = .13$ and, therefore, $p > .05$ Since $r < 0$.

24, there was no significant relationship between self-efficacy optimism and academic success.

DISCUSSION The purpose of the Huron study was to assess the reliability and validity of the self-efficacy optimism personality inventory, a subtest of the Questionnaire for the Assessment of Personal Optimism and Social Optimism Extended (POSO-E), as a predictor of achievement in an academic setting. Self-efficacy optimism refers to a person's tendency to expect positive outcomes from their own actions. Previous studies have supported a positive relationship between self-efficacy in school situations.

Studies have shown that perceived competence in math is a better predictor of choice of a course major and career path than prior math achievement.

Self-efficacy research has also shown a positive relationship with academic performance. Further studies have presented results that show a relationship with self-efficacy optimism and academic success. To further understand the connection between self-efficacy optimism and academic success, the Huron study set out to show that there was a statistically significant correlation between self-efficacy optimism and school achievement.

Students completed a personality inventory to measure "self-efficacy optimism" and the results were correlated with mid-term grades. An analysis

of the results indicated that there was no significant relationship between self-efficacy optimism and academic achievement.

This is at odds with the results presented in the Schweizer and Koch study where self-efficacy optimism was a valid and reliable predictor of academic achievement. The results of the Huron study show that it is not a valid and reliable predictor of academic achievement.

The reasons may lie in factors related to the study itself including sampling techniques. Sampling relates to how the sample represents the population. The Huron study sample was a population of interest and was not representative of the general population.

There were more females that took part in this study than males, the age range was limited to 18 and 19 year olds and all of the participants had a similar educational level. Another limitation may be in the reliability and validity of the sub-test.

As stated in Schweizer and Koch's article, the items were translated from German to English and it may be that the questions were not as relevant for an English-speaking group. (Schweizer and Koch, 2001) As well, the sample for the Item Analysis Study was composed of an older age group, with a mean age of 26.89 years, (Schweizer and Koch, 2001) and the questions may not be as relevant for first year university students.

- There are several areas that would prove valuable for future research. A second study should be initiated that addresses the limitations of the first study to determine if different results are achieved.

Previous studies have focused on gender differences including male students having more optimism about their success in mathematics than female students. Future studies should examine self-efficacy optimism, academic achievement and the additional variable, gender. If gender differences are proven to be significant, strategies could be developed that would improve school performance for the underperforming group. Further investigations could build on a previous study carried out with the same Huron College students that examined gender differences in behaviour based on different types of tasks performed.

Using the Mehrabian Achievement Scale (MACT), it was shown that males preferred taking part in more difficult tasks while women preferred more calming tasks. Future research could look at optimism, gender differences and achievement in certain specific areas of study. It would also be valuable to study if there are differences in the relationship between the results from the self-efficacy optimism sub-test and academic achievement for high school students, college students and university students.

Approaches to improving grades could be developed if there is a significant correlation. It would be of interest to know if there is a difference in the results if students are tested for self- efficacy optimism at the beginning of the year and again after they get their midterm grades. This also would help account for students having a bad day that could influence their degree of optimism.

It is only through rigorous study of variables that might impact academic achievement that can we know how to maximize student learning