

Self-Handicapping Behavior Among College Students: Predictors and Effect on the Performance in Chemistry

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ABSTRACT The self-handicapping behavior of college students was investigated by determining whether self-esteem, self-efficacy, locus of control, chemistry anxiety, and attitude toward chemistry can predict the behavior. Furthermore, the effect of self-handicapping behavior on the performance of the students in chemistry was analyzed in this study. Students from the Philippine Normal University and Technological University of the Philippines participated in the research and accomplished a series of instruments on the factors under study. Correlation and regression analyses were performed on the data. The results revealed that self-esteem, self-efficacy, chemistry evaluation anxiety, and attitude toward the difficulty of chemistry were significant predictors of self-handicapping behavior. In turn, self-handicapping behavior was found to significantly predict the performance of the students in chemistry. The results indicate that as the self-handicapping behavior of the students increases, the performance in chemistry decreases.

Keywords: Chemistry, Performance, Predictors, Self-handicapping

Introduction

Chemistry is an integral part of many, if not all, science-related degree programs. Hence, educational institutions exert all efforts to help make chemistry enticing to students taking up such programs. Aside from developing the content and pedagogy, they also pay attention and emphasize in motivating the students to like chemistry. The students are guided to view chemistry as challenging and enjoyable, not boring and difficult. Unfortunately, many students still perceive chemistry as a hard subject; not a very huge number of students would hurriedly come to a classroom or laboratory, craving to learn the lessons in chemistry (Johnstone, 2000). One of the many possible indications of the students' negative view of chemistry is a pattern of behavior called *self-handicapping*, first proposed by Jones and Berglas (1978), to mean the process by which individuals make up excuses or avoid efforts to preserve self-esteem and to enhance self-image in the face of potential failure. Hence, students who engage in this behavior tend to claim specific alibis and refuse to exert effort so that just in case they fail in a task, they already have an explanation, and thus they still feel good about themselves despite the failure.

Individuals manifest self-handicapping behavior through various ways or strategies. Kearns, Gardiner, and Marshall (2008) summarized some of the most common self-handicapping strategies that are typical to students. These strategies include overcommitting, being busy, procrastinating, exuding perfectionism, being disorganized, not putting in effort, and choosing performance-debilitating situations. Equally, choosing very difficult goals, claiming

test anxiety, being in a bad mood, blaming emotional and physical symptoms, claiming side effects of medication, alcohol and substance abuse prior to a task have been identified as self-handicapping strategies (Kearns, Forbes, & Gardiner, 2007). Self-handicappers engage in these strategies to protect their artificially inflated self-esteem and to appear competent in front of others despite of failing.

Students who believe that they may not succeed in an upcoming task become more inclined to self-handicap (Schwinger et al., 2014). Unfortunately, the probability that they would fail again thus increases. This failure would then make them feel that they could not accomplish the next task, so they would resort to self-handicapping again, and then fail again. Because of this scheme, the vicious cycle of failure–self-handicapping–failure would continue until it comes to a point when the students no longer feel the interest to study the subject—which would eventually reflect in their overall performance in the subject.

Given the need to determine if self-handicapping is a factor that may affect students' performance in chemistry, this study examines whether certain attributes of students, namely, self-esteem, self-efficacy, locus of control, chemistry anxiety, and attitude toward chemistry, predict their propensity to self-handicap in response to anticipated failure in chemistry. This study also investigates the predictive capability of self-handicapping behavior on the students' performance in chemistry.

Literature Review

The concept of self-handicapping can trace back its origin from one of the premises of Adler's theory, which proposes that people establish patterns of behavior to protect their exaggerated sense of self-esteem against public

disgrace (Feist & Feist, 2009). These protective devices are called safeguarding tendencies. According to the theory, the three common safeguarding tendencies—excuses, aggression, and withdrawal—are all aimed at protecting one's self-esteem, very much the same as the reason why people self-handicap. By giving excuses, resorting to aggression, and withdrawing from difficulties, the person can protect his weak, but posing to be superior, sense of self-worth.

Along with self-esteem, a number of different factors that curve an individual's behavioral patterns may also influence self-handicapping. Locus of control, for example, can be related to the excuses that people make whenever they fail in a task. The lack of belief in one's own ability, as well as anxiety and negative attitude, can also affect the way a person behaves to preserve his image in the face of potential failure.

Factors Affecting Self-Handicapping Behavior

Some of the numerous studies conducted to establish the profile of self-handicapping students are worth citing as they provide direction to the present study. For instance, Pulford, Johnson, and Awaida (2005) investigated the relationship of self-esteem, self-efficacy, and perfectionism with the self-handicapping tendencies of British and Lebanese students. College students from the University of Wolver Hampton and the University of Beirut participated in the research and completed the survey, which included the self-handicapping, self-esteem, general self-efficacy, and multidimensional perfectionism scales. The findings revealed that self-handicapping is negatively correlated with self-esteem and self-efficacy, which means that students who highly regard their own worth and ability have lower propensity to self-handicap. Furthermore, this behavioral pattern is consistent regardless of the person's cultural

background after proving that the tendency rouldes the same for both British and Lebanese students who participated in their study.

Similarly, Harsch's (2008) study focused on self-efficacy, locus of control, and self-handicapping of doctoral students and examined the relative roles of social cognitive factors in explaining dissertation completion. The respondents students in the doctoral level taking up counselor education programs in the University of Akron were divided into those who have completed their doctoral dissertation and those who have yet to. The results showed that those who have high self-efficacy and internal locus of control have lower levels of self-handicapping. The findings further indicated that those who completed their dissertations possess these characteristics. In contrast, non-completers exhibited low level of self-efficacy, external locus of control, and high level of self-handicapping.

Sahranc (2011), on the other hand, examined how self-handicapping relates to the levels of anxiety, depression, and stress of university students. The researcher asked students from Kocaeli University in Turkey to participate in the research and complete the survey composed of the depression, anxiety, and stress scale and the self-handicapping scale. The results showed that depression, anxiety, and stress correlate positively with self-handicapping. Analysis of data also revealed that high self-handicapping positively predicts the high levels of anxiety, depression, and stress of students.

In the local setting, Reyes (2002) identified the different strategies that self-handicappers commonly use through a researcher-made self-handicapping scale, which was administered to third year high school students. Three variables, namely, self-esteem, test anxiety, and attitude toward chemistry were examined. The results showed that self-esteem and test anxiety are strong predictors of self-

handicapping behavior, whereas attitude toward chemistry does not significantly predict it. The study recommended that researchers and educators pursue further studies on profiling a self-handicapper based on other variables.

The above mentioned studies provide empirical findings that can be bases for the present research. Self-esteem is the individual's evaluation of his/her own worth, whereas self-efficacy is one's perception of his/her ability to do a task. Locus of control, either internal or external, makes the individual place the perceived causes of the events in his/her own life. Chemistry anxiety is the fear felt when one faces tasks associated with the chemistry subject, while attitude toward chemistry the feelings and expression of favor or disfavor toward the chemistry subject. These factors have been found to be related to self-handicapping behavior.

In sum, based on the studies reviewed, low self-esteem, low self-efficacy, external locus of control, high chemistry anxiety, and negative attitude toward chemistry may predict self-handicapping behavior in students. With these assumptions, the present study aims to establish whether the given factors can actually predict self-handicapping. Individually, each factor has its own influence on the academic performance of students. However, the present study focuses only on the relation of each selected factor with self-handicapping and then on the direct influence of self-handicapping on the performance in chemistry.

Self-handicapping and Academic Performance

Several research works have also been conducted to determine the academic consequences of self-handicapping behavior. Gadbois and Sturgeon (2011) studied the effect of self-handicapping on the performance of Canadian psychology students in a series of tests and its relation to other factors like self-concept, self-efficacy, and test

anxiety. Their self-handicapping tendency, self-concept, self-efficacy, and test anxiety were assessed, and then their grades in three tests in a course obtained. The pattern of results for the factors studied appears consistent with those of the other studies reviewed. As for the academic performance, self-handicappers tend to have lower scores compared with non-self-handicappers in the series of the tests given to the students.

The same result was obtained in the research done by Javanmard, Hoshmandja, and Ahmadzade (2013). Employing male high school students from different tribes in Iran, the research sought to determine the relation of different variables, including self-handicapping, with academic achievement. The results showed that self-handicapping has a significant negative correlation with academic achievement. The analysis further revealed that academic achievement can be significantly predicted by self-handicapping behavior. Moreover, the outcome of the research demonstrated that the pattern of the students' self-handicapping behavior and achievement were not significantly different even though they were diverse in terms of tribes, fields of study, and grade levels.

Much research about self-handicapping, its predictors, and its implications on academic performance have been conducted in different parts of the world. However, very few dealt with the relation of the behavior to chemistry education and even fewer done in the local setting. Thus, this study intends to alleviate the scarcity of studies conducted in the country on this area of interest.

The performance of students in chemistry refers to their accomplishment in different learning activities and tasks in the subject, such as examinations, laboratory exercises, performance tasks, and others. When a student self-handicaps, he/she may engage in actions such as claiming illness during

a task, not preparing for a test, or deliberately doing other unimportant things before a performance to justify possible failure. Given that a self-handicapper already has an excuse for the failure, he/she would no longer exert effort to do well, a behavior that eventually sabotages the performance. The present study determines whether self-handicapping can really influence the performance of students in chemistry.

Methodology

Participants

Using the descriptive survey research design, data were collected from 70 college students composed of 26 students from the Philippine Normal University (PNU) and 44 students from Technological University of the Philippines (TUP), selected through purposive sampling. The PNU respondents were taking up Bachelor of Science in Chemistry for Teachers, whereas those from TUP Bachelor of Applied Science major in Laboratory Technology during the first semester of school year 2014–2015. All respondents were third year students who had already completed particular chemistry courses, namely, General Chemistry 1, General Chemistry 2, and Organic Chemistry in the preceding years.

Research Instruments

The researcher utilized six instruments to gather data: Self-handicapping scale by Jones and Rhodewalt (1982), Rosenberg's self-esteem scale by Rosenberg (1965), General self-efficacy scale by Jerusalem and Schwarzer (1995), Rotter's locus of control scale by Rotter (1966), Chemistry anxiety rating scale by Eddy (1996), and Attitude toward chemistry scale by Salta and Tzuograki (2004). Although based on literature review, the abovesited instruments are

already valid and reliable, they were still evaluated by a panel of experts to ensure the suitability for use in the local setting and for the target respondents. In addition, the Cronbach's alpha coefficients were obtained as follows: Self-handicapping scale–0.72, Rosenberg's self-esteem scale–0.84, General self-efficacy scale–0.82, Rotter's locus of control scale–0.61, Chemistry anxiety rating scale–0.96, and Attitude toward chemistry scale–0.89. The Chemistry anxiety scale has three domains: chemistry learning, chemistry evaluation, and chemical handling; while the Attitude toward chemistry scale has four domains: difficulty of chemistry, interest of chemistry, usefulness for future career, and importance in life.

Data Gathering and Analysis

The researcher briefly explained the purpose of the study and then asked the respondents to complete the survey sheets that contain the research instruments. The researcher then checked, tallied, and encoded the responses in each instrument and consolidated the student's general average of the final grades in their previous chemistry subjects for analysis.

The data gathered were subjected to various statistical analyses. The researcher used Pearson r correlation analysis to determine the correlation of each selected variable with self-handicapping behavior and of self-handicapping behavior with the performance in chemistry. Hopkin's (2002) scaling of correlation coefficients was used to interpret the correlation analysis results. The researcher also performed multiple regression analysis to determine the predictive capability of each variable on self-handicapping behavior. Regression analysis was also done to determine whether self-handicapping can predict the performance of students in chemistry. In all analyses, a result is considered statistically significant if the obtained p value is less than 0.05.

Results and Discussion

Predictors of Self-handicapping Behavior

The results of the correlation analysis between self-handicapping and each of the selected variables are shown in Table 1. Likewise, Table 2 presents the regression results that show whether a student's self-handicapping behavior can be predicted by self-esteem, self-efficacy, locus of control, and the domains of chemistry anxiety and of attitude toward chemistry.

Table 1. Correlations between self-handicapping and each of the variables

Variables	Pearson <i>r</i>	<i>p</i>	Remark
Self-esteem	-0.47	0.0000	Moderate; Significant
Self-efficacy	-0.36	0.0021	Moderate; Significant
Locus of control	0.25	0.0369	Low; Significant
Chemistry anxiety	0.46	0.0000	Moderate; Significant
-Chemistry learning	0.40	0.0006	Moderate; Significant
-Chemistry evaluation	0.55	0.0000	High; Significant
-Chemical handling	0.19	0.1126	Low; Not significant
Attitude toward chemistry	-0.29	0.0144	Low; Significant
-Difficulty of chemistry	-0.33	0.0056	Moderate; Significant
-Interest of chemistry	-0.28	0.0185	Low; Significant
-Usefulness for future career	-0.07	0.5465	Very low; Not significant
-Importance in life	-0.06	0.6043	Very low; Not significant

Table 2. Regression coefficient of each variable

Variables	Coefficient	<i>p</i>	Remark
Self-esteem	-0.36	0.0052	Significant predictor
Self-efficacy	-0.30	0.0332	Significant predictor
Locus of control	0.28	0.1441	Not significant
Chemistry learning ^{anx}	0.10	0.2196	Not significant
Chemistry evaluation ^{anx}	0.33	0.0167	Significant predictor
Chemical handling ^{anx}	-0.22	0.0662	Not significant
Difficulty of chemistry ^{att}	-0.25	0.0303	Significant predictor
Interest of chemistry ^{att}	-0.15	0.3494	Not significant
Usefulness for future career ^{att}	0.14	0.6509	Not significant
Importance in life ^{att}	0.21	0.2388	Not significant

^{anx}: chemistry anxiety; ^{att}: attitude toward chemistry

Self-esteem

The correlation coefficient between self-esteem and self-handicapping was -0.47 , with $p < 0.05$, as shown in Table 1. This result indicates that self-esteem has a significant moderate, negative correlation with self-handicapping behavior. The regression analysis also revealed that, with a regression coefficient of -0.36 (Table 2), self-esteem is a significant predictor of self-handicapping behavior ($p < 0.05$).

These findings are consistent with those in previous studies (Pulford, Johnson, & Awaida, 2005; Reyes, 2002), which also examined the relation between self-handicapping and self-esteem. The results imply that students who highly regard themselves and show positive stance about their self-worth tend to have lesser propensity to self-handicapping. Those who are already secured about themselves do not feel the need to do something just to appear competent. Hence, given that students with high self-esteem would self-handicap less than those with low self-esteem, then encouragement and other interventions that would boost students' self-esteem

could be beneficial so that they would not engage in self-handicapping behavior.

Self-efficacy

The correlation coefficient between self-efficacy and self-handicapping was -0.36 , with $p < 0.05$ (Table 1). The result indicates that, similar to self-esteem, self-efficacy is also moderately and negatively correlated with self-handicapping behavior. Self-efficacy has a regression coefficient of -0.30 , with $p < 0.05$ (Table 2), indicating that it is also a significant predictor of self-handicapping behavior.

Similar to the results obtained by Gadbois and Sturgeon (2011), Harsch (2008), and Pulford, Johnson, and Awaida (2005), the results in the present study revealed that students who have high self-efficacy have a low tendency for self-handicapping. Students engage in self-handicapping behavior to prepare for possible failure. Hence, if a student thinks that he/she can perform well in learning tasks given his/her perceived competence, then he/she need not prepare for failure through self-handicapping. In view of the results, self-handicapping behavior among students can thus be avoided if their self-efficacy is high. Therefore, improving this very important attribute through particular interventions would be significantly beneficial for the students.

Locus of Control

The correlation coefficient between locus of control and self-handicapping was $+0.25$ (Table 1). The result indicates that locus of control has a significant but low correlation to self-handicapping behavior, implying that students with either external or internal locus of control exhibit similar tendency to self-handicap. Furthermore, the regression result for locus of control shown in Table 2

indicates that this attribute does not predict self-handicapping behavior among students.

These contrast with those obtained in the research done by Harsch (2008), which showed that external locus of control is positively correlated to, if not a significant predictor of self-handicapping behavior. The findings in the present study imply that self-handicappers may not necessarily attribute their failure to external factors. Self-handicapping students also make up excuses that pertain to themselves such as illness, emotions, lack of interest, being busy, and others in the face of potential failure. Therefore, the low correlation between locus of control and self-handicapping indicates that some students who have internal locus of control may also tend to self-handicap. In such a case, they do not blame external factors for their failure; instead, they use their own conditions or actions as excuses if ever they do not succeed.

Chemistry Anxiety

The correlation coefficient between chemistry anxiety and self-handicapping was +0.46 (Table 1). Specifically, the domains of chemistry anxiety, namely, chemistry learning, chemistry evaluation, and chemical handling had correlation coefficients of +0.40, +0.55, and +0.19, respectively (Table 1). These values show that chemistry anxiety positively correlates with self-handicapping behavior. Chemistry learning anxiety showed a significant moderate correlation with self-handicapping behavior, and chemistry evaluation anxiety a significant high correlation. However, chemical handling anxiety showed a low correlation that is insignificant.

The regression analysis produced regression coefficients of 0.10, 0.33, and 0.22 for the respective domains (Table 2). Among the domains of chemistry anxiety studied,

the chemistry anxiety related to evaluation was found to be a significant predictor of self-handicapping behavior, with a p value of 0.0167. The studies of Gadbois and Sturgeon (2011) and Reyes (2002) focused on test anxiety in general. These previous research works concluded that test anxiety is positively correlated with self-handicapping. In this regard, the result of the present research is consistent with their findings:

The high correlation and the regression results show that the anxiety that students feel whenever they have an evaluation task in chemistry may trigger them to self-handicap. Students with high chemistry evaluation anxiety may engage in self-handicapping by refusing to review or by doing other unimportant things before an exam. They may also declare illness or emotional stress prior to an assessment task. The students may use these actions or claims as alibis in case they fail in the evaluation. Therefore, given that chemistry evaluation anxiety is a possible sign that a student engages in self-handicapping behavior, chemistry teachers should be mindful in understanding this particular behavior and in dealing with self-handicapping students accordingly to prevent the probable adverse effect on performance.

Attitude Toward Chemistry

The correlation coefficient between the attitude toward chemistry and self-handicapping was -0.29 (Table 1) a negative result indicating that the students' attitude toward chemistry inversely correlates with self-handicapping behavior. With regard to the specific domains of the attitude toward chemistry, the attitude that pertains to chemistry's difficulty, interest, usefulness for future career, and importance in life had correlation coefficients of -0.33 , -0.28 , -0.07 ,

and -0.06 , respectively (Table 2). Specifically, the students' attitude toward the difficulty and interest of chemistry had significant correlations with self-handicapping, whereas the attitude toward the subject's usefulness for future career and importance in life had very low, non-significant correlations.

These results imply that students who have a negative attitude toward chemistry because of the difficulty of the subject may tend to engage in self-handicapping behavior. Similarly, students who do not like chemistry because they do not find the subject interesting may also have the tendency to self-handicap. In contrast, regardless of the students' attitude toward the usefulness of chemistry for future career and the importance of chemistry in life, whether positive or negative, the propensity to self-handicap appears the same. In a previous study, Reyes (2002) found that the attitude toward chemistry does not influence the self-handicapping behavior of the student.

The regression coefficients of the domains of the attitude toward chemistry were -0.25 , -0.15 , 0.14 , and 0.21 , as shown in Table 2. Among the domains studied, only the attitude related to the difficulty of chemistry was found to be a significant predictor of self-handicapping behavior ($p < 0.05$). The findings imply that among the factors that may affect the attitude of students toward chemistry, their perception about the difficulty of the subject remains to be a main contributing factor, and the attitude brought about by the perceived difficulty of chemistry can cause the students to engage in self-handicapping behavior. If a student has a negative attitude toward chemistry because it is difficult, he/she may resort to making excuses and doing actions to prepare for failure in the subject that he/she dislikes. Hence, teachers should be aware that manifestations of disliking chemistry, especially pertaining to its difficulty, are possible signs of self-handicapping, which can eventually affect performance.

Teachers should also strive to modify the students' view of chemistry as a difficult subject.

Effect of Self-handicapping on the Performance in Chemistry

Table 3 shows the results of the correlation analysis done between the self-handicapping behavior and the performance in chemistry of the students.

Table 3. Correlation between self-handicapping and the performance in chemistry

Variable	<i>r</i>	<i>p</i>	Remark
Self-handicapping and performance in chemistry	-0.35	0.0029	Moderate; Significant

The result shows that self-handicapping has a significant moderate negative correlation with the performance in chemistry, with a correlation coefficient of -0.35 ($p < 0.05$). This finding implies that as self-handicapping increases, the performance in chemistry decreases, and vice versa.

The results of the regression analysis carried out to determine the predictive capability of self-handicapping on the performance in chemistry are presented in Table 4.

Table 4. Regression analysis between self-handicapping and the performance in chemistry

Variable	R^2	Coefficient	<i>p</i>
Predictor: Self-handicapping	0.1231	-0.5058	0.0002
Criterion: Performance in chemistry			

With self-handicapping as the predictor variable and the performance in chemistry as the criterion variable, the

regression analysis produced an R^2 value of 0.1231, revealing that self-handicapping can predict 12.31% of the variation in the performance in chemistry. With a p value less than 0.05, such prediction is significant. This result verifies that self-handicapping behavior indeed has an adverse influence on performance.

As shown in Table 4, the regression coefficient of self-handicapping for its predictive capability on the performance in chemistry was -0.5058 , with $p < 0.05$. The findings show that the performance in chemistry can be significantly predicted by self-handicapping behavior, implying that as a student self-handicaps, his/her tendency to perform poorly increases. When students have a ready excuse that they can use just in case they fail in a task, then they already have a reason not to exert the best effort to excel in the subject. Students may have the tendency to avoid or refuse to do certain learning tasks to project a high-esteemed image even in the face of failure. By creating an obstacle between oneself and the task, which is the main premise of self-handicapping, the performance of a student may be significantly decreased.

Therefore, understanding a student's self-handicapping tendency is important to prevent him/her from failing in learning tasks because failure could eventually make the student feel that he/she would not be able to accomplish the next task. This feeling of inadequacy might cause the student to engage in self-handicapping again, and by doing so, he/she would most probably fail again. As this vicious cycle continues, the overall performance of the student would be significantly affected by the behavior.

Given these findings, further understanding of this behavior is necessary to enable educators to deal with it accordingly as they help the students to perform better and to appreciate the chemistry subject.

Conclusions and Recommendations

Self-handicapping is done primarily to protect one's self-esteem and to project a good self-image despite possible failure. Hence, students who already have high self-esteem do not feel the need to act in ways to protect their image, unlike those who have low self-esteem. Similarly, students who have high self-efficacy believe that they can accomplish a task, so they do not have to engage in self-handicapping either.

Moreover, students who have high chemistry evaluation anxiety would self-handicap through various strategies, specifically before an examination or other evaluation tasks in the subject. Also, students who have a negative attitude toward chemistry because they find the subject difficult would tend to self-handicap more to prepare for failure in the subject that they dislike. Therefore, developing high self-esteem and self-efficacy and modifying the students' view about evaluation in and difficulty of chemistry are important to prevent the students from engaging in self-handicapping behavior.

When a student creates an obstacle between him and a task, his motivation to exert effort and excel in the task is lessened. This behavior is performance debilitating and eventually results in subsequent failure. Therefore, developing the students' attitude to prevent them from self-handicapping is valuable to avoid the unfavorable effect of the behavior on performance.

Several recommendations are set forth for future endeavors in relation to the present study. To understand further the profile of self-handicapping students, other variables that may influence self-handicapping behavior may be examined. Factors such as goal orientation, extro/introversion, learning style, and motivation are possible areas of interest that may

be related to self-handicapping. Besides these factors, socio-economic variables such as field of study, family's economic status, and occupation and educational attainment of parents may also be considered for further investigation.

A self-handicapping scale specifically designed to measure the self-handicapping behavior of students in relation to the chemistry subject can be developed and validated. It can then be administered during the students' chemistry period to give way to a more reliable connection between the subject and the behavior that is being measured

An experiment can be designed to study a specific self-handicapping strategy that students use while learning chemistry. For instance, the extent of the use of certain behavioral self-handicapping strategies, such as refusing to exert effort or doing irrelevant activities before a learning task in chemistry, can be another subject of research.

A counseling intervention for self-handicappers may be designed by guidance counselors to address the concern about self-handicapping. Particular teaching interventions that would modify the students' behavior may also be explored to prevent the possible academic consequence of self-handicapping.

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