Comparative Analysis of First- and Third-Year Pharmacy Students’ Perceptions of Student-Regulated Learning Strategies and Motivation

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The purpose of the study was to examine variation in self-regulated learning strategies and motivation as reported by 92 full-time students enrolled in the first and third year of the professional pharmacy curriculum. Student’s perceived self-regulation was measured with the Self-Efficacy for Self-Regulated Learning Scale (SESRL). Motivational domains including intrinsic motivation, extrinsic motivation and task value were measured with the Motivational Strategies for Learning Questionnaire (MSLQ). Additional information on student demographic characteristics were obtained. Results were analyzed using a one-way MANOVA, between group design. Results reveal variations in self-regulated learning strategies and motivation between the two groups. First year students were more externally motivated and reported a greater reliance on recall ability than their senior counterparts. Whether these differences are a function of the cohort or due to developmental issues with matriculation is to be determined through longitudinal studies.

INTRODUCTION

Research into students’ regulation of their learning activities and achievement began with the development of a social cognitive theoretical model by Bandura(1). This model suggests that students can activate and sustain cognition, behaviors, and affects to direct and manage their own learning. Stated another way, self-regulated learners “seek to accomplish academic goals strategically and manage to overcome obstacles using a battery of resources”(2). Subsequent work revealed that students who attain higher levels of academic achievement frequently rely upon more effective learning strategies and are more intrinsically motivated than other students(3-6).

Zimmerman and colleagues were among the first to measure student’s use of self-regulated learning strategies. Through one-on-one interviews with high school students, these investigators identified 14 categories of self-regulated learning(7). To ease data collection and evaluate self-regulated learning in college students, Gredler and Garavalia developed a 33-item survey instrument, the Self-Efficacy for Self-Regulated Learning (SESRL) Scale, using similar constructs to those identified by Zimmerman and colleagues(8). The SESRL Scale measures five constructs of self-regulated learning. These domains include General Organization/Planning Strategies, External Regulation, Typical Study Strategies, Environmental Restructuring, and Recall Ability(8). Conceptual definitions of each of the five constructs are provided in Table I. All domains, except External Regulation, reflect desirable learning strategies. External Regulation is not desirable because it reflects the degree to which students depend on others to structure learning.

Another variable that affects achievement is the motivational orientation of the student. Students who are extrinsically motivated are more concerned with performance and how well they are doing relative to peers, while students who are more intrinsically motivated are more interested in developing competence and increasing understanding(3). Students who are intrinsically motivated also use more effective learning strategies and are interested in learning for the sake of learning.

Evidence exists that shifts occur in learning strategies and motivation over time and across disciplines. Vermetten and colleagues at the Tilburg University in the Netherlands conducted a two-year longitudinal study of law, art, economic, and social science students to evaluate whether shifts occurred in learning strategies(9). They observed changes of various magnitudes across the disciplines. Economic and art students reported greater shifts in learning strategies than their law and social sciences counterparts. Similarly, Hastings and colleagues evaluated changes in pharmacy student’s motivational orientation, observing a decrease in intrinsic motivation within the first professional year(10). In addition to their findings, they suggested a need for future longitudinal research in the area of changes in self-regulated learning strategies and motivation.

In the present exploratory, cross-sectional study, we examined potential differences in students’ self-regulated learning strategies and motivation as reported by 92 full-time students enrolled in the first and third year of the professional pharmacy curriculum. Student’s perceived self-regulation was measured with the Self-Efficacy for Self-Regulated Learning Scale (SESRL). Motivational domains including intrinsic motivation, extrinsic motivation and task value were measured with the Motivational Strategies for Learning Questionnaire (MSLQ). Additional information on student demographic characteristics were obtained. Results were analyzed using a one-way MANOVA, between group design. Results reveal variations in self-regulated learning strategies and motivation between the two groups. First year students were more externally motivated and reported a greater reliance on recall ability than their senior counterparts. Whether these differences are a function of the cohort or due to developmental issues with matriculation is to be determined through longitudinal studies.

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strategies and motivation during the first and third year of the professional degree program. We expected to find differences in the level of motivation within the degree program given the findings of Hastings and others(10). With a sample of first year students, Hastings et al. found evidence that students felt less intrinsically motivated towards coursework, less secure in the learning environment, and less in control of their learning. Therefore, student regulation of learning and motivation are important variables to investigate in greater depth. We sought to expand upon the findings of Hastings et al. by investigating students’ motivational orientation and use of self-regulated learning strategies for two classes enrolled in different years of the professional degree program.

In 2000, we initiated a study to determine whether students admitted at different points in the curriculum would have statistically significant differences in perceptions regarding learning strategies and motivation. We hypothesized that no variations in self-regulated learning strategies would be observed between the two groups given that no statistically significant differences in admission criteria were observed. In contrast, however, we believed that student motivation would differ for the two groups of students, who are at different points in the curriculum.

METHOD

Participants

The participants were 92 full-time students enrolled at a school of pharmacy in the Midwest. Fifty-five percent and 45 percent of the respondents were in the first and third year of the professional program, respectively. Admission criteria for the two cohorts were compared and no significant differences emerged. First year students were enrolled in a management and marketing course. Third year students were enrolled in a pharmacology course. The average age of the first and third year students was 23 and 25 years, respectively. The cumulative grade point average for each group at the beginning of the semester was 2.98 and 3.10 and was not significantly different. Additional demographic information is presented in Table II.

Instruments

All respondents completed a consent form and participant information form, including demographic information such as gender, age, race, primary language, number of hours enrolled this semester, number of hours worked per week, hours per week for course preparation, and expected course grade. The primary variables in the analysis were measured with the survey instrument presented in Appendix A. Two major constructs are assessed: (i) perceptions of self-regulated learning, and (ii) motivation. The scales used to measure self-regulated learning and motivation are derived from prior studies(8,12).

Self-Regulated Learning. The Self-Efficacy for Self-Regulated Learning (SESRL) Scale was developed by Gredler and Garavalia(8) with a sample of college students at a research university. The instrument is designed to measure students’ perceptions of their ability to self-regulate learning. The items are derived from prior research(7,11). Factor analyses of the measure indicate five subscales: General Organization/Planning Strategies, External Regulation, Typical Study Strategies, Environmental Restructuring and Recall Ability(8). Response options range from one (not well or not at all) to five (very well or very often), reflecting students’ perceived effectiveness and frequency of strategy use. Gredler and Garavalia report Cronbach alphas of 0.87, 0.68, 0.74, 0.74, and 0.73 for the five factors, respectively(8).

Motivation. The Motivated Strategies for Learning Questionnaire (MSLQ) is an 81-item instrument developed by Pintrich, Smith, Garcia, and McKeachie at the University of Michigan(12). Factor analyses of the instrument with various samples revealed 15 stable subscales. These subscales measure unique constructs and are frequently used independent of the larger instrument depending upon the research questions under investigation. Three subscales were selected that measured the

Table I. Conceptual definitions of subscale domains

| Self-Efficacy for Self-Regulated Learning Subscales | 1. General organizing and planning strategies — students’ ability to manage their time, organize their work, and meet deadlines. Also, measured with this subscale is the frequency with which students engage these strategies. |
| 2. External regulation — also referred to as other-directed regulation, this subscale measures the degree to which the student depends on external sources to manage learning, such as instructor goals/objectives and outlines of material prepared by others. |
| 3. Typical study strategies — the ability to take effective notes and use them for study purposes. |
| 4. Environmental restructuring — the extent to which the student controls or modifies the learning environment to reduce distractions and increase concentration. |
| 5. Recall ability — how well the student remembers information presented in class and in other course materials. |

Motivated Strategies for Learning Questionnaire (selected) Subscales

| 1. Intrinsic goal orientation (Motivation) — the degree to which the student participates because he/she is interested in the task as an end in itself, as opposed to a means to an end. For example, a student completes a research project because of an interest in the subject matter, not just to earn a good grade. |
| 2. Extrinsic goal orientation (Motivation) — the degree to which the student participates in order to achieve a goal through the completion of the activity, such as earning a good grade by completing an assignment or receiving praise by doing good work. |
| 3. Task value — the appeal, importance, and usefulness of the task in the student’s opinion |

Table II. Demographic profile of respondents (n=92)

<table>
<thead>
<tr>
<th>Gender</th>
<th>First-year N (percent)</th>
<th>Third-year N (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>13(25)</td>
<td>19(46)</td>
</tr>
<tr>
<td>Female</td>
<td>38(75)</td>
<td>22(54)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>37(73)</td>
<td>33(80)</td>
</tr>
<tr>
<td>Non-caucasian</td>
<td>14(27)</td>
<td>8(20)</td>
</tr>
<tr>
<td>Hours Spent Working Per Week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5</td>
<td>12(24)</td>
<td>12(30)</td>
</tr>
<tr>
<td>6 to 15</td>
<td>18(35)</td>
<td>15(37)</td>
</tr>
<tr>
<td>16 to 25</td>
<td>15(37)</td>
<td>11(27)</td>
</tr>
<tr>
<td>Greater than 25</td>
<td>2(4)</td>
<td>3(6)</td>
</tr>
<tr>
<td>Participation rate per class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51(84)</td>
<td>41(63)</td>
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</tr>
</tbody>
</table>
specific aspects of student motivation relevant to this study: intrinsic motivation (four items), extrinsic motivation (four items), and task value (six items). Response options range from one (not at all true of me) to seven (very true of me). Subscales of the MSLQ have been used independently in numerous studies and evidence of reliability, as well as content and construct validity, are reported in Pintrich et al.(12).

Procedures

Students’ were invited to participate on a voluntary basis in the study by the course instructors during the spring (first year students) and fall (third year students) semesters of 2001. In both semesters, the questionnaires were administered to students after midterm so that students would have sufficient knowledge of the learning environment to comment on their learning strategies. First year students completed the survey online while third year students completed a hard-copy of the questionnaire in class.

Statistics

Data were analyzed using version 8.1 of the SAS software developed by SAS Institute Inc., Cary, NC. A priori significance levels for all analyses were set at $P < 0.05$. Descriptive statistics were used to characterize demographics and group means and standard deviations of subscale scores(13). Inferential statistics were used to examine group differences on the dependent variables(14).

RESULTS

Demographic characteristics and admissions data for the two groups — first year and third year professional students—were compared using Chi-Square, the General Linear Model, and MANOVA and are reported in Table II. No statistically significant differences between groups were revealed by the analyses. Group means and standard deviations for the SESRL and MSLQ subscales are presented in Table III.

Initially, the rank ordering of the SESRL subscales for the two groups was examined. Interestingly, the groups differed in their ranking of the top three strategies for self-regulated learning. First-year students reported greatest competence with General Organization/Planning Strategies followed by Recall Ability and Environmental Restructuring. Likewise, third year students reported greatest competence with General Organization/Planning strategies. However, with this group, Environmental Restructuring took precedence over Recall Ability.

To further examine differences in self-regulated learning between groups, the data were analyzed using a one-way MANOVA, between groups design. A significant multivariate effect was found for External Regulation and Recall Ability, Wilk’s lambda = 0.80, F (5, 86) = 4.22; $P <0.0018$.

Next, we examined the rank ordering for the motivation subscales, which also showed variation between classes. Although both first and third year students reported high Task Value, the classes differed in ratings for motivational orientation. First year students reported higher Extrinsic Motivation than Intrinsic Motivation, while the reverse was true for third year students. A significant multivariate effect was found for Intrinsic Motivation and Task Value, Wilk’s lambda = 0.67, F (3, 88) = 14.15; $P <0.0001$.

DISCUSSION

Prior to comparing the two groups on the dependent variables, we ensured that the groups were statistically equivalent on aptitude and achievement admission criteria. Our results differed from the findings of prior research in several ways. First, students in the third year reported greater Intrinsic Motivation than students in the first year, indicating that Intrinsic Motivation may increase as students’ progress through the program. Second, group means for students in the first year were slightly higher for Extrinsic Motivation than for students in the third year. However, the differences were not statistically significant. In addition, we found that students in the third year reported greater value for learning tasks than students in the first year, which appears to contradict earlier findings(10).

With regard to student control of learning, our results indicated that students in both years reported using self-regulated learning strategies well and frequently. Further, reliance on external regulation of learning was low for both groups. However, first-year students reported relying on external regulators to a greater degree than third-year students. This finding may represent a decrease in reliance on others over time. Interestingly, first year students reported greater recall ability than third year students. This finding may reflect a change in perceptions related to changes in the complexity of the subject matter over time.

Based on the findings of our research and others, future longitudinal investigation of learning strategies and motivation is warranted. Future research hypotheses may include investigating the value of these variables for predicting academic achievement and the relationship among use of self-regulated learning strategies, motivation, and student achievement.
CONCLUSIONS

As an exploratory study, this research was successful in uncovering differences in reported use of self-regulated learning strategies and levels of motivation for two groups of students at different points in the professional curriculum. Because of the limitations of the study and nature of the sample, the results should be regarded as preliminary. The study does not clearly ascertain whether the differences found were a function of the classes themselves or developmental issues related to program matriculation. Our intent was to increase faculty awareness of students’ perceptions of: (i) how well and frequently students utilize learning strategies, and (ii) what is motivating their academic activities. Second, we sought to provide preliminary data with respect to self-regulated learning strategies and motivation to examine whether differences in these factors exist across students at different points in the curriculum. Finally, given our research and the findings of others, we sought to provide clarity in the gaps in the current body of knowledge and, therefore, set a foundation for future investigation into changes in affective variables over time as students’ progress through the professional degree program.

References


APPENDIX

SESRL Subscales

General Organizing and Planning Strategies
- How well can you finish assignments by deadlines?
- How well can you prepare for courses when there are other interesting things to do?
- How well can you concentrate on school subjects?
- How well can you use appropriate resources to get information for class assignments?
- How well can you plan your class work?
- How well can you organize your class work?
- How well can you motivate yourself to do your assignments?
- How well can you set and honor priorities?
- How well can you prioritize your time to complete your work for your classes?
- How often do you re-read the textbook when preparing for a test?
- How often do you fail to plan what you are going to do before beginning a class project?

External Regulation
- How often do you consider the instructor’s introductions, objectives, and instructions as essential for your studies?
- How often do you decide you have a command of the subject matter based on completion of all course assignments?
- How often do you study all the subject matter in the same order as addressed in class?
- How often do you study according to the instructor’s instructions?
- How often do you rely on the learning goals set by instructors?

Typical Study Strategies
- How well can you summarize course content in your own words?
- How often do you reread your summaries of course material when preparing for a test?
- How often do you reread the notes you took in class when preparing for a test?

Environmental Restructuring
- How often can you arrange a place to study without distractions?
- How often do you fail to turn off the TV/Radio so you can concentrate on what you are doing?
- How often do you fail to isolate yourself from anything that distracts you?
- How often do you study for your courses in a quiet room or area?

Recall Ability
- How well can you remember information presented in class?
- How well can you remember information presented in textbooks?
- How often do you remember the facts and ideas presented in your courses?
- How often do you remember the facts and ideas presented in your courses after the course is completed?

MSLQ Subscales

Intrinsic Motivation
- In a class like this, I prefer course material that really challenges me so I can learn new things.
- In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.
- The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.
- When I have the opportunity in this class, I choose course assignments that I can learn from even if they don’t guarantee a good grade.

Extrinsic Motivation
- Getting a good grade in this class is the most satisfying thing for me right now.
- The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.
- If I can, I want to get better grades in this class than most of the
other students.

• I want to do well in this class because it is important to show my ability to my family, friends, employer, or other.

Task Value

• I think I will be able to use what I learn in this course in other courses.

• It is important for me to learn the course material in this class.

• I am very interested in the content area of this course.

• I think the course material in this class is useful for me to learn.

• I like the subject matter of this course.

• Understanding the subject matter of this course is very important to me.