RESEARCH

Self-Efficacy and Self-Esteem in Third-Year Pharmacy Students

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Objective. To identify the experiential and demographic factors affecting the self-efficacy and self-esteem of third-year pharmacy (P3) students.

Methods. A 25-item survey that included the Rosenberg Self-Esteem Scale and the General Self-Efficacy Scale, as well as types and length of pharmacy practice experiences and demographic information was administered to doctor of pharmacy (PharmD) students from 5 schools of pharmacy in New England at the completion of their P3 year.

Results. The survey response rate was approximately 50% of the total target population (399/820). Students with a grade point average (GPA) ≥ 3.0 demonstrated a higher significant effect from unpaid introductory pharmacy practice experiences (IPPEs) on their self-efficacy scores ($p < 0.05$) compared to students with lower GPAs. Students who had completed more than the required amount of pharmacy experiences had higher levels of self-efficacy and self-esteem ($p < 0.05$). Ethnicity also was related to students' levels of self-efficacy and self-esteem.

Conclusion. Self-efficacy and self-esteem are two important factors in pharmacy practice. Colleges and schools of pharmacy should ensure that students complete enough practice experiences, beyond the minimum of 300 IPPE hours, as one way to improve their self-efficacy and self-esteem.

Keywords: self-efficacy, self-esteem, experiential learning, introductory pharmacy practice experience

INTRODUCTION

The personal transformation that pharmacy students undergo as they complete their academic career and enter their professional lives is arguably one of the most significant and difficult transitions they will experience. Ideally, upon entering practice, a graduate's *self-efficacy* and *self-esteem* should be high, allowing the new pharmacist to perform with great confidence at a high level of competence.¹ Self-efficacy is "an individual's belief in their ability to perform well in a variety of situations."² People with a high level of self-efficacy approach difficult tasks as a challenge to be mastered rather than a threat to be avoided.³ Self-esteem is "a certain attitude and a perception of one's self."⁴ Although self-esteem is an internal perception of one's self, it can be affected by external comparison to peers or role models.

One way for pharmacy students to improve their self-efficacy and self-esteem prior to graduation is to gain experience by working in pharmacy settings. Introductory and advanced pharmacy practice experiences (IPPEs and APPEs) are where important learning about the profession

of pharmacy occurs outside of the classroom.⁵ Experiential learning through IPPEs and APPEs, both unpaid and paid, provide an opportunity for students to receive formal appraisals as well as informal feedback from coworkers, preceptors, and others they interact with during their experiences. The Accreditation Council for Pharmacy Education (ACPE) requires (1) 300 IPPE hours, of which 20% or 60 hours can be earned through completing simulated experiences; and (2) 36 weeks at 40 hours a week of APPEs, as the minimum to be eligible to take the North American Pharmacist Licensure Examination.^{6,7} Nevertheless, this amount may still not be sufficient and students without additional pharmacy work experience outside of the required school-provided experiences may be unprepared to work independently as pharmacists at graduation. Such graduates may require several weeks of additional training on the job in order to function in their new role as a pharmacist (J. Gallagher, personal communication, January 25, 2012; C. Perry, personal communication, January 25, 2012).

A literature review did not yield any pharmacy specific articles on self-efficacy and self-esteem in relation to students' early professional experiences. Several articles addressed the benefit of a cooperative education model where students received extended practical experiences on their self-efficacy and self-esteem.⁸⁻¹¹ A few other

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studies found a relationship between students' ethnicity and level of self-efficacy.¹²⁻¹⁴ This study was conducted to determine whether students who had spent extended time in paid and/or unpaid IPPEs, through summer jobs, part-time jobs, or other work opportunities, had greater self-efficacy and self-esteem than those who spent less time in these work settings. The impact of several demographic factors also was examined.

METHODS

The author developed the Pharmacy Self-efficacy and Self-esteem Study Questionnaire using the General Self-efficacy Scale and Rosenberg Self-esteem Scale. The General Self-efficacy Scale was selected because it measures the most desirable psychometric properties in a wide variety of settings.² The Rosenberg Self-esteem Scale is a 10-item scale and has been used to measure general self-esteem in various populations.¹⁵⁻¹⁷

In addition to the self-efficacy and self-esteem questions, the survey collected the following demographic information: date of birth, ethnicity, school attended, gender, grade point average (GPA), hours of IPPEs completed, and years of paid pharmacy work experience. One of the research objectives was to explore how selected demographic variables related to students' self-efficacy and self-esteem in order to confirm or disprove previously reported findings associating students' gender, ethnicity, GPA, and/or age with their self-efficacy and self-esteem.

The author selected 5 colleges and schools in the New England area as a convenience sample, which provided a mix of educational models, including a 3-year accelerated program, two 6-year private universities, and two 4-year state universities. Students who had completed their third year of pharmacy school were selected to participate in the study. Three institutions opted to use a paper survey instrument, which was distributed by a faculty member during a class and then collected and returned to the author for processing. Two institutions requested the electronic version of the survey instrument, a link to which was e-mailed to P3 students by their dean's office. The author sent a reminder e-mail to the students 14 days after the initial request and closed access to the electronic survey instrument after 60 days.

Students' IPPEs were categorized based on number of hours completed. Paid experiences were categorized based on time worked as none, <1 year, 1-2 years, and >2 years of experience. Paid experience included both part-time and full-time experience. In order to keep the unit of time consistent, the time in years was converted to approximate hours based upon the school a student attended to determine their availability to work in a paid position.

Students from a 0-6 PharmD program may have worked in a paid position from 400-500 hours (10-12 weeks at 40 hrs/wk) during 2 summer periods and another 200 hours (8 hrs/wk for 25 weeks) during the school year. Students from the 2-4 PharmD programs had 2 summer periods to obtain a full-time experience. Only a few could have worked in a paid part-time position on an occasional basis because of the rural location of the schools. Students from the accelerated program had the lowest opportunity to work part-time because they did not have any summer breaks. The cooperative education experience was approximately 600 hours during one 4-month work period, with each student required to complete 2 work periods with a curricular requirement of 1 work period of 600 hours in a community setting and 1 work period of 600 hours in an institutional setting. These students would have more than 1200 hours from the 2 work periods. The majority of the positions were paid. Approval for this project was granted by the Institutional Review Board at Northeastern University, Boston, MA.

The author examined the student responses to the self-efficacy and self-esteem questions, and tested for significant effects from the independent variables, particularly paid and unpaid pharmacy experiences. For the purposes of analyses, students were divided into 2 groups by age, under 25 years and 25 years and over, and 2 groups by GPA, <3.0 and ≥ 3.0 . Analysis of Variance was used to test the hypothesis using SPSS v 21 (IBM). Ethnicity was examined using chi-square testing to determine differences within the variable.

RESULTS

Three hundred ninety-nine students completed the survey instrument, approximately a 50% response rate based on the total estimated student population of 820 students at the end of the P3 year. The reliability of the General Self-efficacy Scale was $\alpha = 0.907$ and the Rosenberg Self-esteem Scale showed a reliability factor $\alpha = 0.888$. Students' gender mirrored that of the national pharmacy student population,¹⁸ ie, 35% male and 65% female. The ethnic distribution was 4% African American/black, 29.4% Asian/Pacific Islanders, 2.2% Spanish/Hispanic, and 59% white/Caucasian, and 4.7% indicated other or no response. Seventy-three percent of students were 25 years of age or under and 27% were over 25 years of age. A correlation was performed on the demographic variables in Table 1. Students' self-esteem scores were significantly correlated with number of IPPE hours and number of paid practice experiences.

Self-Efficacy

Among students with a GPA <3.0, there were no factors associated with higher self-efficacy. Among students

Table 1. Correlation Between Demographic Variables and Experiences

	Gender	Ethnicity	IPPE	Paid Experiences	YOB <25	Self-Esteem Score	GSE Score
Gender							
Pearson Correlation	1	0.007	-0.014	0.147 ^b	-0.037	-0.032	-0.025
N		399	362	360	387	388	391
Ethnicity							
Pearson Correlation		1	0.055	0.164 ^b	0.125 ^a	0.017	0.043
N			360	358	385	386	389
IPPE							
Pearson Correlation			1	0.089	0.074	-0.132 ^a	-0.062
N				345	352	353	354
Paid Experiences							
Pearson Correlation				1	0.168 ^b	0.135 ^a	0.114 ^a
N					350	350	352
YOB by 25							
Pearson Correlation					1	-0.016	-0.032
N						374	378
Self Esteem Score							
Pearson Correlation						1	0.656 ^b
N							380

^a 2 tailed Correlation significant $p < 0.05$ level

^b 2 tailed Correlation significant $p < 0.01$ level.

with a $GPA \geq 3.0$, number of hours of IPPEs was significantly associated with higher self-efficacy ($p < 0.05$).

There was a significant correlation between mean scores on the General Self-efficacy Scale items and a higher number of hours spent in paid or extended pharmacy practice experiences ($r = 0.114$, $p < 0.05$). This correlation did not exist for hours spent in unpaid experiences or IPPE experiences. Ethnicity was examined using a chi-square test with a significant finding ($p < 0.001$) for the Asian/Pacific Islander group. Chi-square testing was also performed with the variables of age, gender, and the school a student attended, but none of the findings were significant.

Self-Esteem

There was a significant correlation between which school a student attended and the student's level of self-esteem, with students attending a 4-year state school in Rhode Island having greater self-esteem ($r = -0.101$, $p < 0.05$). There was also a significant correlation between number of hours of IPPEs a student completed and level of self-esteem ($r = -0.132$, $p \leq 0.05$) with students completing 320 hours having the highest self-esteem. Finally, there was a correlation between students' hours of paid experiences and self-esteem ($r = 0.135$, $p \leq 0.05$) with students who worked for 1 to 2 years in paid positions having the highest levels of self-esteem. No significant correlations were found between gender or age and students' level of self-esteem. Ethnicity was examined using

chi-square testing (Table 2), resulting in a finding of higher self-esteem among African American/black students ($p = .003$) and lower self-esteem among Asian/Pacific Islander students ($p < .001$).

DISCUSSION

This research examined several variables to determine if any had an effect on the self-efficacy and self-esteem of pharmacy students. The finding that students with a $GPA > 3.0$ benefited more from extended work experiences than students with a $GPA < 3.0$ can be explained by the difference between academic self-efficacy and work-based self-efficacy. Students who do well academically may not have as much work or practical experience because they are focused on academics and they may benefit more in terms of self-efficacy from practical experience than the average student. Gender showed no relationship to self-efficacy, although the literature did

Table 2. Self-Esteem Scores by Ethnicity

Ethnicity	No.	Mean (SD)
African-American/Black	16	9.1 (1.3)
Spanish, Hispanic, Latino	8	9.0 (1.4)
Asian/Pacific Islander	114	8.3 (1.6)
White/Caucasian	230	9.0 (1.1)
Other	10	8.1 (2.1)
Prefer not to state	7	7.6 (1.7)
Total	385	8.8 (1.3)

state that female students had lower self-efficacy than male students, possibly as a result of their upbringing. Because much of the literature was published prior to 2000, continued changes in gender roles in the last few decades may have influenced the findings, resulting in no differences in self-efficacy between genders.¹⁹ Age also was not a factor in self-efficacy as students were experiencing the profession at the same time regardless of age.

Levels of self-efficacy and self-esteem were related to ethnicity. Asian/Pacific Islander students reported having lower self-efficacy and self-esteem than the other ethnic groups, while African-American students reported having higher self-esteem than the other ethnic groups. In a study of college students, African-American students reported the highest levels of self-esteem compared with their peer groups, which can be partially attributed to their internalized self-images in the later stages of their educational careers.²⁰ African-American students who achieved a college education had higher levels of self-esteem compared to their peers who did not go to college. There is ample evidence that as an ethnic group, Asians are modest when responding to surveys assessing self-efficacy.²¹ This stems from a cultural tendency to be more moderate in their private beliefs, values, and preferences than typical Western students.²¹ The question the author now faces is whether the Asian students in the current study in fact had low levels of self-efficacy compared to other ethnic groups, or whether their responses understated their actual level of self-efficacy? Choi suggests that responses by Asians on self-assessments should be taken as genuine and not adjusted for any perceived modesty bias.²¹ Although the findings may not indicate a need for Asian students to improve their self-efficacy, they may indicate the need for Asian students in the health professions to better project their self-efficacy, as high levels of self-efficacy and self-esteem are essential to earn the respect and confidence of future employers, colleagues, and patients.^{1,22}

The reason why students from some colleges and schools had better self-esteem could be explained by the attitude promoted by the college or school's faculty members and administration. Also, because the response rates from 2 institutions were low, the results may not accurately represent the self-esteem of all students at the school.

Self-esteem fluctuates over time and in various settings.²³ Graduates may enter the work setting with a high level of self-esteem based on their success as a student in the academic setting, but this may decrease as they begin to compare themselves to other practitioners.²⁴ As students gain more experience, their self-esteem increases

based upon their knowledge and acquired skills. Students may not have enough contact time during an IPPE to increase self-esteem substantially without additional contact hours through paid or unpaid experiences.

There were 2 main limitations in this study. The first was the use of the General Self-efficacy Scale and Rosenberg's Self-esteem Scale. Both scales are valid and reliable, but they need to include more specific questions pertaining to work-based self-efficacy. Joseph Raelin, a researcher on experiential education, suggested the use of academic, career, and work self-efficacy tools to examine a student population (personal communication April 20, 2012). The use of a more specific scale might have yielded different findings and probably would have strengthened the results of the study.

The second limitation was the use of a regional sample of schools from the Northeast United States, which may not have been representative of a national sample, limiting the ability to generalize the findings. The individual response rates from 2 of the schools were less than 25, which made any correlations from these schools unreliable.

Other limitations were that the responses to the survey were self-reported by the students and not corroborated by external validation. Nonresponders, particularly students attending the public universities, may have affected the results by the lack of full representation. There was not a survey item about students' socioeconomic status, which may have potentially affected the results based on the type of students who attend a public university vs a private institution. Students who had a greater financial need may have worked more to earn money for school than did more affluent students. Finally, students who were higher achievers may have been more likely to complete the survey instrument, thus introducing a selection bias to the survey. The researcher did not test for response bias.

CONCLUSION

The objective of this study was to determine if there is a relationship between experiential education/work experience and self-efficacy and self-esteem, based upon the desirability to have new graduates entering the workforce possess these characteristics. Though schools provide 300 hours of practical experience through IPPEs, the author found that additional hours would enable students to achieve higher levels of self-efficacy and self-esteem. Whether IPPEs are expanded or a new requirement is implemented for students to obtain experiences outside of the IPPE program, the additional experience would provide important benefits to a student's development of self-efficacy and self-esteem.

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