

1 TROUBLED TRANSITIONS INTO COLLEGE AND THE EFFECTS OF A SMALL INTERVENTION COURSE

2

3 **Abstract**

4 We examined the causes of poor academic performance in students' first semester
5 through interviews and questionnaires, and administered a small intervention course to freshmen
6 on academic probation the following semester. This intervention had a modest positive effect on
7 retention and academic self-efficacy, but not on locus of control or GPA.

8

9 **Keywords**

10 locus of control; retention; self-efficacy

11

12 **Introduction**

13 Student attrition from colleges in the United States is a widespread phenomenon, where
14 21.3% of adults over 25 have attained some college-level education, but not yet received a
15 degree (U.S. Census Bureau, 2009). Attrition poses real stresses to students, their families, and to
16 universities. The financial cost to universities is the easiest to quantify, whereas costs to
17 individuals can only be estimated by comparing the income of individuals with different
18 academic histories. Between 2003 and 2008, federal and state governments spent about \$9.1
19 billion on university appropriations and direct grants to students who did not return for a second
20 year (AIR 2010). Though this sum does not take into account money that universities received in
21 tuition from these students over that time, such funds should be added to the total amount of
22 unnecessary funds that society spends on college-level education that does not result in a college
23 degree. Median annual income of adults with only some college experience is around \$15,000

24 less than the income of adults who do have a degree from a four-year institution (U.S. Census
25 Bureau, 2009).

26 At the institution where the following study was conducted, a four-year, public university
27 in the Northeast United States with over 30,000 undergraduate students, between 16 and 22% of
28 first year students at one of the university's primary colleges are routinely asked to leave the
29 university because of low academic achievement.

30 Given that students who start college educations have academic skills sufficiently strong
31 to get into post-secondary institutions and the efforts that universities put into attracting and
32 retaining students, it is reasonable to work to help these individuals succeed in their attempts to
33 complete a degree. Furthermore, it is imprudent to disregard struggling students who could be
34 helped with minimal effort. Therefore, given the mutual self-interest of colleges and students,
35 responsibility for finishing a college degree can and should be shared between these stakeholders.

36 Because of these issues, considerable effort has gone into studying the causes of student
37 attrition, predicting those students who will struggle in their first semester at college, and
38 minimizing the rate of attrition. Following is an overview of some of those efforts and techniques,
39 as well as their effectiveness.

40

41 *Causes of student attrition*

42 A wide variety of factors have been identified that affect student retention. Known causes
43 fall into roughly two categories: those that relate to an institution's climate, and those that stem
44 from an individual's personal, cognitive or demographic background.

45 *Institutional factors*

46 Institutional variables include the college social environment and the degree to which a
47 student feels integrated in it. Both the attitude towards the social environment and integration
48 into that atmosphere are known predictors of attrition (Tinto, 1992; Allen *et al.*, 2008). Likewise,
49 in a study that measured students' perceptions towards their institutions, Bean (1980) found that
50 commitment to one's school accounted for the greatest amount of variation in the rate of attrition
51 for both males and females. Surprisingly, perceived quality of institution was positively
52 correlated with retention for females, but not for males (Bean, 1980). Likewise, the feelings that
53 student have regarding being incorporated into the academic life of an institution have a
54 moderately strong effect on persistence, at least for adult, non-traditional students (Sandler,
55 2000). The degree to which students enjoy the physical university environment, feel like they
56 belong in the student community, and feel like university faculty and staff are sensitive to student
57 needs are highly predictive of students' intentions to remain enrolled in their institution
58 (Willcoxson, 2010).

59 *Personal factors*

60 Regarding variables that reflect an individual's own attributes, grade point average after
61 students' first semester is, unsurprisingly, positively correlated with retention (Murtaugh *et al.*,
62 1999). Social factors are also known to affect decisions to remain enrolled in a four year
63 academic program, especially loneliness and social support (Nicpon *et al.*, 2006). Monetary,
64 familial obligations, and personal motivation to achieve are additional personal factors known to
65 affect retention (Christie *et al.*, 2004). Furthermore, academic self-efficacy (ASE), which refers
66 to "beliefs in one's capabilities to organize and execute the courses of action required to produce
67 given attainments..." (Bandura, 1977), is known to be malleable in academic settings as students
68 receive feedback on tasks (Bong & Skaalvik, 2003) and was found to be correlated with retention

69 (Zimmerman *et al.*, 1992; Chemers *et al.*, 2001). Because it is both malleable and may directly
70 affect retention, ASE will be a focus of the following study.

71 Perhaps the broadest set of internal variables that have been shown to affect retention in a
72 particular field of study is one's ability to form coping strategies in the face of academic
73 challenges, such as confidence in acquiring content knowledge, persistence to stick with
74 challenging material, assertiveness, and the establishment of foreseeable long-term goals
75 (Seymour & Hewitt., 1997).

76 One final personal factor affecting the likelihood of attrition is one's locus of control
77 (LOC), the extent to which one believes that causal actions reside in personal (internal) or
78 external forces. A student's locus of control has long been known to correlate to academic
79 success (McGhee & Crandall, 1968; Findley & Cooper, 1983). Students who weigh outside
80 influences as having a relatively stronger effect on their lives tend to have modestly lower
81 academic achievement than do students who more heavily weigh internal forces, such as
82 motivation, effort, or ability.

83

84 *Past efforts to minimize attrition*

85 A wide variety of techniques have been employed to mitigate student attrition in
86 undergraduate institutions. As expected, most of the interventions designed by institutions focus
87 on institutional factors that affect retention, rather than internal student factors.

88 Supplemental instruction attached to difficult, entry-level science courses have, in some
89 cases, been shown to increase retention by 10% (67.3% to 77.4% reenrollment) (Blanc *et al.*,
90 1983). Likewise, faculty-undergraduate research partnerships have been shown to have a similar
91 effect on retention rates decreasing attrition from 9.8% to 3.2%, although in a self-selected group

92 of students (Nagda *et al.*, 1998). Randomized trials show more equivocal results, where attrition
93 was only significantly lower among African American students (10.1% versus 18.3%).

94 Other factors shown to affect undergraduate attrition include the quality of undergraduate
95 advising by faculty members (Metzner, 1989) and orientation sessions (Pascarella *et al.*, 1986),
96 which are thought to increase retention indirectly through increasing social integration within the
97 undergraduate population and by increasing commitment to an institution.

98

99 *Efforts to predict student attrition*

100 A variety of commercially and academically produced instruments have been developed
101 either to predict which first year students are likely to encounter academic challenges or to
102 intervene in students likely to face difficulties with academic success. Two such instruments are
103 the Test of Reactions and Adaptation in College (TRAC, prediction) (Larose & Roy, 1995) and
104 the MAP-Works[®] (Making Achievement Possible, intervention) system offered by Educational
105 Benchmarking, Inc.

106 The TRAC instrument was developed to measure “affective, cognitive, and behavioral
107 dispositions” correlated with early college success in order to identify students likely to require
108 intervention in order to succeed in obtaining a degree (Larose & Roy, 1995). Though TRAC was
109 shown to add some predictive power beyond that which is offered by a suite of variables most
110 often used to predict student success (high school GPA and SAT scores) for some aspects of
111 student success, such as hours studied per week and frequency of being late for class, it was less
112 able to account for much more variation than high school GPA and SAT scores in measures of
113 actual success, such as GPA after the first semester (Lacrose *et al.*, 1998). Two subscales of the

114 TRAC instrument were highly correlated to academic performance: Examination Preparation and
115 the Giving Priority to Studies subscales (Lacrose *et al.*, 1998).

116 The MAP-Works[®] program is billed by it's developer to "[identify] students early in the
117 term allowing for immediate support and intervention. MAP-Works[®] then serves as the
118 infrastructure to manage those critical outreach efforts on your campus." One major limitation in
119 testing this product beyond the data provided by the manufacturer is that it is designed as a
120 predictor and intervention tool in one package. Students who complete the web-based survey are
121 immediately presented with a summary of their results and provided with strategies with
122 improving weaknesses. The transition survey is designed to measure the following areas:
123 academic skills and ability, learning, quality of course instruction, interference with class
124 attendance, basic study skills, [advanced] study skills, self-management, self-efficacy, self-
125 evaluation, encouragement and support, commitment to first year and to college, student interest
126 [in campus activities], sense of belonging, on-campus living, homesickness, high school
127 involvement, and an overall evaluation of adjustment to college life. Upon completion, students
128 are categorized as being at high, medium, or low risk of attrition. Students at high and medium
129 risk of attrition are immediately offered coping strategies geared towards the student's areas of
130 weakness.

131

132 *Purpose of the studies*

133 Two studies are described below. Part I is a multi-faceted attempt to describe the causes
134 of academic probation and to predict probationary status amongst students who had not been
135 previously identified as "at-risk" through traditional means (primarily SAT scores and high
136 school GPA). The second part uses the information gleaned from Part I to inform the creation of

137 a small intervention course targeted to students who were on academic probation (GPA under
138 1.8) after their first semester.

139

140 **Methods: Part I**

141 *Interviews*

142 In order to categorize students' self-perceived causes of academic probation, interviews
143 were conducted with students who were on probation (n = 16) as well as students who were in
144 good academic standing (GPA > 1.8, n = 21). The additional population of students in good
145 academic standing was interviewed in order to compare differences in the perceptions of
146 academic life and the perceived causes of academic difficulties between students who had
147 achieved high (>1.8) and low (<1.8) GPAs. Interview questions (see Appendix A) were
148 developed by CC, RCJ, SAG and DTM. Interviews occurred during April 2009.

149

150 *MAP-Works[®]*

151 The MAP-Works[®] program was administered by university officials during the Fall of
152 2009 to all incoming undergraduate students. Response rates were over 90%, as resident
153 assistants and orientation facilitators encouraged student participation.

154

155 **Results: Part I**

156 *Interviews*

157 Interviews with students revealed a wide variety of issues facing incoming first year
158 students. There were, however, few discernable patterns between students who were on
159 academic probation and those who were in good academic standing. For example, the initial

160 response when asked: “What do you think has had the most negative influence on how you are
161 doing in your classes at [this university]?” was roughly similar between groups in regards to
162 blaming an external agent (high GPA: 54%; low GPA: 64%). Similar numbers of students had at
163 least a preliminary decision concerning declaring a major (high GPA: 95%; low GPA: 89%).

164 Though both groups of students reported meeting with an academic advisor during their
165 first semester at roughly equal rates (high GPA: 73%; low GPA: 83%), students on academic
166 probation were marginally more likely to report negative reactions regarding their academic
167 advising during their first semester than were students who were in good academic standing (low
168 GPA: 13%; high GPA: 35%). Examples of negative interactions recounted by students on
169 academic probation include inaccessibility and lack of interest in students.

170 When asked how they would change their university given complete control, both groups
171 responded in a similar manner. Roughly equal proportions mentioned making classes easier
172 (high GPA: 18%; low GPA: 12%), making substantive changes to the way courses are taught to
173 encourage student engagement (high GPA: 23%; low GPA: 24%), making classes smaller (high
174 GPA: 18%; low GPA: 24%), or making a recommendation unrelated to academics (high GPA:
175 32%; low GPA: 35%) as their first response.

176 Despite the lack of discernable patterns between populations on academic probation and
177 in good standing, the interviews did reveal some notable insights. Most striking was a sense of
178 “being lost” mentioned spontaneously by students on academic probation. This sentiment was
179 not mentioned by any students in good academic standing, and hints at the psychological toll that
180 poor academic performance can have on students, most of whom have done well up until their
181 first semester at college.

182

183 *MAP-Works*[®]

184 There was no significant difference in GPA between students that were identified by
185 *MAP-Works*[®] as being at high, medium or low risk (ANOVA: N = 670, df = 2, F = 2.11, p
186 = .122) (Figure 1).

187

188 **Methods: Part II**

189 *PASS course*

190 Based on information gathered during a literature review of issues surrounding attrition
191 caused by poor academic standing, experiences specific to students the enrolled at the institution
192 in which the study occurred that were obtained through the interview process, and the goals of a
193 collaborating group similarly charged with increasing student retention, the Portals to Academic
194 Student Success (PASS) course was developed by SS, CC, RCJ, SAG and DTM. The syllabus
195 was primarily developed by SS and focused on practical academic skills, notably: note-taking,
196 effective study techniques, stress management, short term (semester), medium term (less than
197 five years) and long term (greater than five years) goal setting and a four-year academic plan. In
198 addition to assignments directly related to the previous topics, students wrote essays reflecting on
199 the causes of their probationary status and, at the end of the course, the changes necessary in
200 order to maintain a GPA over 1.8.

201 Because of the information gathered from interview data concerning the methods of
202 instruction in undergraduate classrooms (see Results, Part I), it was necessary to address topics
203 beyond academic skill sets. Specifically, the desire to make substantive changes to classes
204 designed to increase student engagement suggested that there was a need the course was
205 designed to accommodate the promotion of metacognitive reflection, self-assessment, and

206 community strengthening, as proposed by Bransford, *et al.* (1999). In addition, the negative
207 interactions with academic advisors mentioned by students on academic probation suggested the
208 need for small class sizes where informal advising could occur with knowledgeable instructors
209 and where students could be assisted in the development of a four year academic plan.

210 Furthermore, in order to enhance the transfer of concepts from the PASS course to other
211 situations, the goals of every lesson and the nature of the problems identified during each class
212 were made explicit to the students (Halpern, 1998). Transferring ideas refers to applying ideas
213 and knowledge from one instructional environment to another environment outside of the initial
214 context (Barnett & Ceci, 2002). The role of the college community's identity in which this study
215 was conducted as an historically land-grant institution creates a unique, agricultural-themed
216 college environment in a densely-populated urban and suburban area. This has created an
217 institutional identity that appears conducive to community-based education, which can result in
218 strong motivational gains for educational opportunities (Colby *et al.*, 2003).

219 Forty-eight students of the 127 who earned GPAs below 1.8 in the Fall of 2009 were
220 randomly assigned one of the six instructors. Before the first day of class, five students were
221 removed from the class because of unresolvable scheduling conflicts, leaving 43 students
222 enrolled. Classes met for 80 minutes, once per week for ten consecutive weeks during the
223 students' second semester in college, except for one week during the mid-semester break.

224 Peer and self-assessment was used to measure the effectiveness of academic skills and
225 self-reflective essays. The rubrics used for assessment were created during student-faculty
226 discussion, but guided towards assessments created for scientific content knowledge described in
227 Etkina *et al.* (2006) and those developed for inquiry-based units (Diamond, 1998; Schunn *et al.*,
228 2004). The use of student-generated formative assessment has been shown to increase scientific

229 content knowledge and transfer (Etkina *et al.*, 2006), and it was expected that this would true for
230 other realms of knowledge. The ability for students to become better, more self-regulated
231 learners through explicit emphasis on metacognition will be measured.

232 A goal of creating this course was to generate a single learning environment that merges
233 academic, civic, and social endeavors. While social theorists have long argued that learning is a
234 social enterprise, the university classroom is not structured to engage students in multiple
235 cognitive realms. Indeed educational discussions at scientific meetings (██████, *pers. comm.*)
236 reveal that many scientists are reluctant to engage their students socially and civically because of
237 lack of expertise and loss of rigor in the science classroom.

238

239 *Locus of Control*

240 The degree to which students possessed an internal or external locus of control (LOC)
241 was measured in the Spring of 2010 and 2011 using the Internal Control Index (Dutweiler, 2002),
242 which employed a five-point ranking scale for each of 28 questions. The instrument was utilized
243 both at the beginning and end of the semester, as pre- and post-tests during class time for all
244 students enrolled in the PASS course. Additionally, LOC was measured in two other populations
245 of students that were not enrolled in the PASS course: students with a GPA from their first
246 semester of less than 1.8 and students with a GPA from their first semester that was greater than
247 1.8. These students were recruited via email and given \$15 to come in and complete the same
248 instrument as the PASS students a single time. Two analyses were conducted on each year's
249 LOC data.

250 First, we employed a paired analysis of each PASS student's aggregate scores on pre- and
251 post-tests with a Wilcoxon Signed Ranks Test in PASW Statistics GradPack 17.0.2 (2009) to see

252 how PASS intervention may have affected individual's LOC. Only students who completed both
253 pre- and post-tests, and only those questions which were answered by all of those students, were
254 retained in the analysis. We created aggregate scores by summing the rank scores of each
255 student's responses to all retained questions. In 2010, 30 PASS students' responses to 22
256 questions were retained in the analysis, while in 2011, 19 PASS students' responses to 27
257 questions were retained.

258 Second, we compared the aggregate LOC scores of each of our three student populations
259 (PASS students, Non-PASS students with GPAs below 1.8 (Non-PASS -), and Non-PASS
260 students with GPAs above 1.8 (Non-PASS +)) with a Kruskal-Wallis ANOVA in PASW
261 Statistics GradPack 17.0.2 (2009). We used the post-test scores for the PASS students in this
262 analysis. Only students who answered >90% of questions, and only those questions which were
263 answered by all of those students were retained for the analysis. Once again, we created student
264 aggregate scores by summing the rank scores of each student's responses to all retained
265 questions. In 2010, 13 'Non-PASS -', 36 'Non-PASS +', and 39 'PASS' students' responses to
266 22 questions were retained in the analysis. In 2011, 12 'Non-PASS -', 50 'Non-PASS +', and 31
267 'PASS' students' responses to 26 questions were retained. Post-hoc Mann-Whitney U tests were
268 used to elucidate significant differences amongst student populations if we detected an overall
269 significant difference with that year's Kruskal-Wallis ANOVA.

270

271 *Academic Self-Efficacy*

272 Students' academic self-efficacy (ASE) in regards to academic aptitude was measured
273 with an instrument developed by Owen and Froman (1988). The instrument, comprised of 33
274 questions with a five-point ranking scale for each, was given at the same time as the locus of

275 control questionnaire and to the same populations (see above). As with LOC measurements, a
276 Kruskal-Wallis ANOVA was used to compare populations with Mann-Whitney U test for post-
277 hoc comparison. ASE rank scores were analyzed exactly as described for LOC scores. For our
278 paired analysis of PASS student's pre-to-post change in their aggregate ASE scores, 30 student's
279 responses to 32 questions were retained for analysis in 2010, and 19 student's responses to 27
280 questions were retained in 2011. Meanwhile, for our comparison of ASE aggregate scores across
281 surveyed student populations, 13 'Non-PASS -', 34 'Non-PASS +', and 39 'PASS' student's
282 responses to 31 questions were retained for analysis in 2010, while 12 'Non-Pass -', 50 'Non-
283 PASS +', and 31 'PASS' student's responses to 28 questions were retained in 2011.

284

285 *GPA and Retention*

286 Data from the study institution were used to compare the GPAs of students who earned a
287 GPA of less than 1.8 who were enrolled in the PASS class and those who had not been enrolled
288 in the PASS class at the end of their second semester at college (the semester that included their
289 enrollment in the PASS course) and after their third semester. Retention was likewise compared
290 at the end of students' second and third semesters after initial enrollment at college. The absolute
291 number of students remaining enrolled into their third semester was compared between the PASS
292 and non-PASS populations, whereas a Mann-Whitney U test was used to compare the GPAs of
293 those students who remained enrolled.

294

295 **Results: Part II**

296 *Locus of Control*

297 There were significant differences in the locus of control scores between the four
298 comparison groups (students in good standing, probation students pre-PASS, post-PASS, and
299 non-PASS) (Kruskal-Wallis ANOVA; $N = 120$; $H = 9.41$; $df = 3$; $p = 0.024$). Post-hoc analysis
300 reveals that the locus of control of students who were in good academic standing was
301 significantly more internal than the combined population of students who earned low GPAs (the
302 non-PASS students and the pre-PASS students who were enrolled) (Mann-Whitney U Test; $N =$
303 $36, 45$; $Z = 2.30$, $p = 0.022$) (Figure 2). Surprisingly, once enrolled in the PASS course, students'
304 LOC did not change significantly, and the trend was in the unexpected direction (i.e. more
305 external) (Mann-Whitney U Test; $N = 32, 13$; $Z = 1.83$, $p = 0.068$) (Figure 3).

306

307 *Academic Self-Efficacy*

308 There was a significant difference in students' academic self-efficacy among the four
309 comparison groups (students in good standing, probation students pre-PASS, post-PASS, and
310 non-PASS) (Kruskal-Wallis ANOVA; $N = 120$; $H = 10.19$; $df = 3$; $p = 0.017$). Post-hoc analysis
311 revealed that students after participating in the PASS course reported a higher academic self-
312 efficacy than students with a GPA less than 1.8 not enrolled in the PASS course (Mann-Whitney
313 U Test; $N = 39, 13$; $Z = 2.64$, $p = 0.008$). Furthermore, the combined scores of students with a
314 low GPA but not enrolled in PASS and the students enrolled in PASS before taking the course
315 were significantly lower than students with a high GPA (Mann-Whitney U Test; $N = 45, 36$; $Z =$
316 2.43 ; $p = 0.015$) (Figure 4). After participating in the PASS course, students reported a higher,
317 but not significantly so, academic self-efficacy (Mann-Whitney U Test; $N = 32, 39$; $Z = 1.77$; p
318 0.077). No other significant differences were found (Figure 5).

319

320 *GPA and Retention*

321 By the end of the students' first full semester after taking part in the PASS course, their
322 third semester at college, there was no significant difference in cumulative or term GPA among
323 students who had been enrolled in the PASS course and those students who earned less than a 1.8
324 GPA in their first semester but had not been enrolled in the PASS course (Mann-Whitney U: 3rd
325 term GPA: $N = 54, 32, Z = .78, p = .43$; cumulative GPA: $N = 54, 32, Z = .83, p = .41$).

326 Of the 84 students who earned below a 1.8 GPA in their first semester at college but who
327 were not enrolled in the PASS course, 54 were still enrolled by the end of their third semester.
328 This translates to a 35.7% rate of attrition with no intervention. Of the 43 students who
329 participated in the PASS course, 32 were still enrolled by the end of their third semester (25.6%
330 attrition rate) (Figure 6).

331

332 **Discussion**

333 The single most striking result from this small class intervention is the effect it has had on
334 the rate of retention. The 10% lower attrition rate among the students in the PASS course
335 suggests that small-scale interventions can mitigate attrition amongst students who later prove an
336 ability to continue matriculating.

337 Curiously, after completing the PASS course, students' self-perceived sense of academic
338 self-efficacy was significantly higher than students who were on academic probation but not
339 enrolled in PASS, despite the fact that there was no difference in GPA between these two groups.
340 One possible explanation for this phenomenon is a boost in self-esteem that does not coincide
341 with an actual increase in academic ability, yet is sufficient to affect the retention rate among
342 students who are not forced to withdraw because of GPA requirements. The disconnect between

343 individuals' perceived and actual aptitude has been described previously as the Dunning-Kruger
344 effect, in which an individual is unable to accurately assess his own abilities because of the
345 knowledge required to actually possess mastery of a subject or ability (Kruger & Dunning, 1999).

346 The likely reason that MAP-Works[®] did not accurately predict student achievement was
347 because it was designed as an intervention tool. If at-risk students are told early on that they are
348 likely to perform poorly in the coming semester, it is likely that this information alone can
349 prompt them to better self-regulate. In other words, the warning may spur metacognitive
350 awareness that leads to an increase in self-regulated learning activities. Boekaerts and Corno
351 (2005), reviewed the use of interventions in the classroom designed to increase self-regulation,
352 though, to our knowledge, the use of a self-regulation assessment tool itself as an intervention
353 has not been studied in first-year university settings. Alternatively, it is possible that a warning of
354 low academic aptitude early on in a student's college career could have the opposite effect and
355 become a negative self-fulfilling prophecy. Such a phenomenon occurs when students'
356 achievements are affected in either direction by positive or negative predictions of success
357 (Jussim *et al.*, 1996).

358 In regards to the lack of change in students' locus of control, which remained more
359 external than students in good academic standing, a review of the literature suggests that this
360 result is not surprising. There is evidence that locus of control can change in individuals over
361 decades in regards to some specific domains (Lachman, 1986), short term change has typically
362 required intense, in-patient psychiatric treatment (Roberts *et al.*, 1992). Therefore, it is not
363 surprising that students' locus of control did not change over the course of a one credit, semester-
364 long course.

365 Though students on academic probation reported more negative interactions with
366 advisors than students in good standing, it is possible that students who end up on academic
367 probation are more demanding of advisors' attention, which leads to increased negative feelings
368 between the advisor and advisee. Alternatively, students who note negative interactions between
369 themselves and their advisors could be negatively influenced by their perception of negative
370 interactions, which in turn could affect academic performance.

371

372 *Future Directions*

373 Though successful in affecting the rate of retention among students on academic
374 probation, other goals remain elusive. Given the difficulties in affecting student achievement in a
375 small-scale, short-term intervention, it is perhaps wise to broaden the scope of the intervention.
376 Because of the legacy that the focus school has in the natural sciences, it may benefit from using
377 a program that others have successfully implemented, the Environment as an Integrating Context
378 (EIC). In this model, multiple courses are taught around a unifying, local environmental question.
379 Courses are typically multidisciplinary, team-taught, and demand problem-based learning goals
380 (Lieberman & Hoody, 1998). Furthermore, by focusing on local environmental issues, EIC can
381 increase students' sense of community, known to positively affect retention (Tinto, 1992).

382

383

384

385

386

387

388 **References**

- 389 American Institute of Research (AIR) (2010). 4-Year College Data Tool. Available at:
390 <http://collegemeasures.org>
- 391 Allen, J., Robbins, S. B., Casillas, A. & Oh, I.-S. (2008). Third-year College Retention and
392 Transfer: Effects of Academic Performance, Motivation, and Social Connectedness.
393 *Research in Higher Education* 49, 19-40.
- 394 Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs: Prentice-Hall.
- 395 Barnett, S. & Ceci, S. (2002). When and where we apply what we learn? A taxonomy for far
396 transfer. *Psychological Bulletin* 128, 612-637.
- 397 Bean, J. P. (1980). Dropouts and turnover: The synthesis and test of a causal model of student
398 attrition. *Research in Higher Education* 12, 155-187.
- 399 Blanc, R. A., DeBuhr, L. E. & Martin, D. C. (1983). Breaking the Attrition Cycle. *Journal of*
400 *Higher Education* 54, 80-90.
- 401 Boekaerts, M. & Corno, L. (2005). Self-Regulation in the Classroom: A Perspective on
402 Assessment and Intervention. *Applied Psychology: An International Review* 54, 199-231.
- 403 Bong, M. & Skaalvik, E. M. (2003). Academic Self-Concept and Self-Efficacy: How Different
404 Are They Really? *Educational Psychology Review* 15, 1-40.
- 405 Bransford, J. D., Donovan, M. S. & Pellegrino, J. W. (1999). *How People Learn: Bridging*
406 *Research and Practice*. Washington, D.C.: National Academy Press.
- 407 Bureau, U. S. C. (2009). *American Community Survey*. (Attainment, E., ed.).
- 408 Chemers, M. M., Hu, L.-t. & Garcia, B. F. (2001). Academic Self-Efficacy and First-Year
409 College Student Performance and Adjustment. *Journal of Educational Psychology* 93,
410 55-64.

411 Christie, H., Munro, M. & Fisher, T. (2004). Leaving university early: exploring the differences
412 between continuing and non-continuing students. *Studies in Higher Education* 29,
413 617-636.

414 Colby, A., Ehrlich, T., Beaumont, E. & Stephens, J. (2003). *Educating Citizens: Preparing*
415 *America's undergraduates for lives of moral and civic responsibility*. San Francisco:
416 Jossey-Bass.

417 Diamond, R. (1998). *Designing and Assessing Course and Curricula*. San Francisco: Jossey-Boss.

418 Dutteiler, P. (2002). *Mastering Human Relations*, 3rd Edition: Pearson Education.

419 Etkina, E., Heuvelen, A. V., White-Brahmia, S., Brookes, D. T., Gentile, M., Murthy, S.,
420 Rosengrant, D. & Warren, A. (2006). Scientific abilities and their assessment. *Physical*
421 *Review Special Topics - Physics Education Research* 2, 1-15.

422 Findley, M. J. & Cooper, H. M. (1983). Locus of Control and Academic Achievement: A
423 Literature Review. *Journal of Personality and Social Psychology* 44, 419-427.

424 Halpern, D. (1998). Teaching critical thinking for transfer across domains. *American*
425 *Psychologist* 53, 449-455.

426 Jussim, L., J. Eccles, S. Madon. (1996) Perception, Social Stereotypes, and Teacher
427 Expectations: Accuracy and the Quest for the Powerful Self-Fulfilling Prophecy.
428 *Advances in Experimental Social Psychology* 28, 281-388.

429 Kruger, J. & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing
430 one's incompetence lead to inflated self-assessments. *Journal of Personality and Social*
431 *Psychology* 77, 1121-1134.

432 Lachman, M. E. (1986). Locus of Control in Aging Research: A Case for Multidimensional and
433 Domain-Specific Assessment. *Journal of Psychology and Aging* 1, 34-40.

434 Lacrose, S., Roberston, D. U., Roy, R. & Legault, F. (1998). Nonintellectual Learning Factors As
435 Determinants for Success in College. *Research in Higher Education* 39, 275-297.

436 Larose, S. & Roy, R. (1995). Test of Reactions and Adaptation in College (TRAC): A New
437 Measure of Learning Propensity for College Students. *Journal of Educational Psychology*
438 87, 293-306.

439 Lieberman, G. A. & Hoody, L. L. (1998). Closing the Achievement Gap: Using the Environment
440 as an Integrating Context. *State Education and Environment Roundtable*.

441 McGhee, P. E. & Crandall, V. C. (1968). Beliefs in Internal-External Control of Reinforcements
442 and Academic Performance. *Child Development* 39, 91-102.

443 Metzner, B. (1989). Perceived Quality of Academic Advising: The Effect on Freshman Attrition.
444 *American Educational Research Journal* 26, 422-442.

445 Murtaugh, P. A., Burns, L. D. & Schuster, J. (1999). Predicting the Retention of University
446 Students. *Research in Higher Education* 40, 355-371.

447 Nagda, B. A., Gregerman, S. R., Jonides, J., von Hippel, W. & Lerner, J. S. (1998).
448 Undergraduate student-faculty partnerships affect student retention. *Reviews in Higher*
449 *Education* 22, 55-72.

450 Nicpon, M. F., Huser, L., Blanks, E. H., Sollenberger, S., Befort, C. & Kurpius, S. E. R. (2006).
451 The Relationship of Loneliness and Social Support with College Freshmen's Academic
452 Performance and Persistence. *Journal of College Student Retention: Research, Theory*
453 *and Practice* 8, 345-358.

454 Owen, S. V. & Froman, R. D. (1988). Development of a College Academic Self-Efficacy Scale.
455 In Annual Meeting of the National Council on Measurement in Education. New Orleans,
456 LA.

457 Pascarella, E. T., Terenzini, P. T. & Wolfe, L. M. (1986). Orientation to College and Freshman
458 Year Persistence/Withdrawal. *The Journal of Higher Education* 57, 155-175.

459 PASW Statistics GradPack 17.0.2 (2009). SPSS, Inc., Chicago

460 Roberts, J., Zachorchemny, C. & Cohen, J. (1992). Change in Locus of Control Following
461 Admission in Adolescent In-patients. *British Journal of Psychiatry* 161, 809-815.

462 Sandler, M. E. (2000). Career Decision-Making Self-Efficacy, Perceived Stress, and an
463 Integrated Model of Student Persistence: A Structural Model of Finances, Attitudes,
464 Behavior, and Career Development. *Research in Higher Education* 41, 537-580.

465 Schunn, C., Millar, D. & Lauffer, T. (2004). Immersing all K-12 students in extended inquiry
466 science and design. Madison: Wisconsin Center for Education Research.

467 Seymour, E. & Hewitt., N. M. (1997). Talking about leaving: Why undergraduates leave the
468 sciences. Boulder: Westview Press.

469 Tinto, V. (1992). Student Attrition and Retention. Chicago: University of Chicago Press.

470 Willcoxson, L. (2010). Factors affecting intention to leave in the first, second and third year of
471 university studies: a semester-by-semester investigation. *Higher Education Research &*
472 *Development* 29, 623-639.

473 Zimmerman, B. J., Bandura, A. & Martinez-Pons, M. (1992). Self-Motivation for Academic
474 Attainment: The Role of Self-Efficacy Beliefs and Personal Goal Setting. *American*
475 *Education Research Journal* 29, 663-676.

476

477

478

479

480 **Figure Legends**

481 **Figure 1.** GPA of students categorized by MAP-Works risk group.

482

483 **Figure 2.** Students' locus of control by academic performance and PASS enrollment. For
484 students enrolled in PASS, LOC was measured at the beginning and end of the course. Lower
485 scores indicate more external LOC, while higher scores indicate more internal LOC. Letters
486 above bars designate significant group differences.

487

488 **Figure 3.** Locus of control by academic performance. Academic probation scores include those
489 of students before PASS intervention and those of students who were not in the PASS course.
490 Lower scores indicate more external LOC, while higher scores indicate more internal LOC.

491

492 **Figure 4.** Academic self-efficacy by academic performance and PASS enrollment. For students
493 enrolled in PASS, LOC was measured at the beginning and end of the course. Higher scores
494 indicate increased self-confidence. Letters above bars designate significant group differences.

495

496 **Figure 5.** Academic self-efficacy by academic performance. Academic probation scores include
497 those of students before PASS intervention and those of students who were not in the PASS
498 course. Higher scores indicate increased self-confidence.

499

500 **Figure 6.** Comparison of student retention of students in poor academic standing at the end of
501 their first semester who, in their second semester, were enrolled in the PASS course vs. those not
502 enrolled.

503

504

505

506

507

508 **Appendix A**

509 (1) What is your major?

510 (2) What are some things you like about [this university]?

511 [follow up] What class have you taken that you have enjoyed at [this university]?

512 (3) What are some things you don't like about [this university]?

513 [follow up] What class have you taken that you have not enjoyed at [this university]?

514 (4) Are there certain courses that are giving you particular trouble?

515 (5) About how many hours per day do spend studying outside of class? 0, 1-2, 3-5, 6 or more?

516 (6) Have you ever taken, or heard about, a class that was designed to "weed out" students?

517 [follow up] What class was it?

518 [follow up] What made it a 'weeding out' class?

519 (7) Do you have to take "weed-out" classes like that in the future? Do you think you will do

520 well?

521 [follow up] Why do you think you will do well (or) not well?

522 [follow up] Do you think these classes should be changed? If so, how?

523 (8) What do you think has had the most positive influence on how you are doing in your classes

524 at [this university]?

525 [follow up] Why do you think that these things affect your grades?

526 (9) What do you think has had the most negative influence on how you are doing in your classes
527 at [this university]?

528 [follow up] Why do you think that these things affect your grade?

529 (10) Is [this university] more or less like what you thought it was going to be before you came
530 here?

531 [prompt] If no – what is different?

532 [prompt] If yes- what were your expectations?

533 (11) Do you feel that your high school experiences prepared you for your first year at [college]?

534 Please explain. We are trying figure out how well or not well, some students transition from high
535 school to [this university].

536 [prompt] How about socially?

537 [prompt] How about academically?

538 (12) What advice would you give your high school about preparing students to do well at [this
539 university]?

540 (13) If a friend of yours was coming to [this university], what advice would you give them about
541 student life and acclimating to [this university]?

542 [follow up] What about advice regarding doing well in classes?

543 *(14) When you think about students other than yourself who find themselves on academic
544 probation, why do you think that happens?

545 *(15) What would you recommend the university do to help those students succeed?

546 *(16) Why do you think you are on academic probation?

547 *(17)What happened when you learned you were on academic probation? Did you talk to
548 anyone about your academic status? How did they react? Who would you talk to? Explain: E.g.
549 Are your parents or anyone else concerned about your grades at [this university]?

550 *(18)Are you worried about your academic status? Do you think you will improve and why?
551 *(19) How important is it for you to get off of AP?

552 (20) Do you feel that your instructors (like professors or TAs) or any other employees of [this
553 university] are concerned about your grades?[follow up] Why or why not?

554 (21) Have you been in contact with your academic advisor?
555 [follow up] If no .. why not?
556 [follow up] If yes ..
557 [follow up] A. What are some good things about your advisor?
558 [follow up] B. What are some bad things about your advisor

559 (22) What do you think would help you improve your GPA?

560 (23) If a friend were coming to RU, what advice would you give? What about advice about
561 staying off probation?

562 (24) If you had complete control and could change anything about [this college or university],
563 what would you change?

564 (25) Did anything about student life surprise you when you got here?

565 (26) Other than being in class or studying what do you spend the rest of your time doing on a
566 typical day?

567 (27) [this university] has a reputation as a party school. How often do you see people getting
568 carried away with that and losing track of their coursework?
569 [follow up] What about you? How do you try to balance that?

570 [follow up] Is that working for you?

571 (28) Are you parents concerned about your academic performance.

572 [follow up] Why or why not?

573 (29) Where do you live?

574 [follow up] On campus? Where?

575 [follow up] Off campus? Where?

576 (30) In what types of extra curricular activities are you involved? Are you involved in any

577 student clubs? What do you do for fun? Have you found it easy to make new friends at [this

578 university]?

579 (31) Do you have a job? If so, where and how often?

580 (32) Do you have anything else you would like to share about things we have discussed?

Figure 1

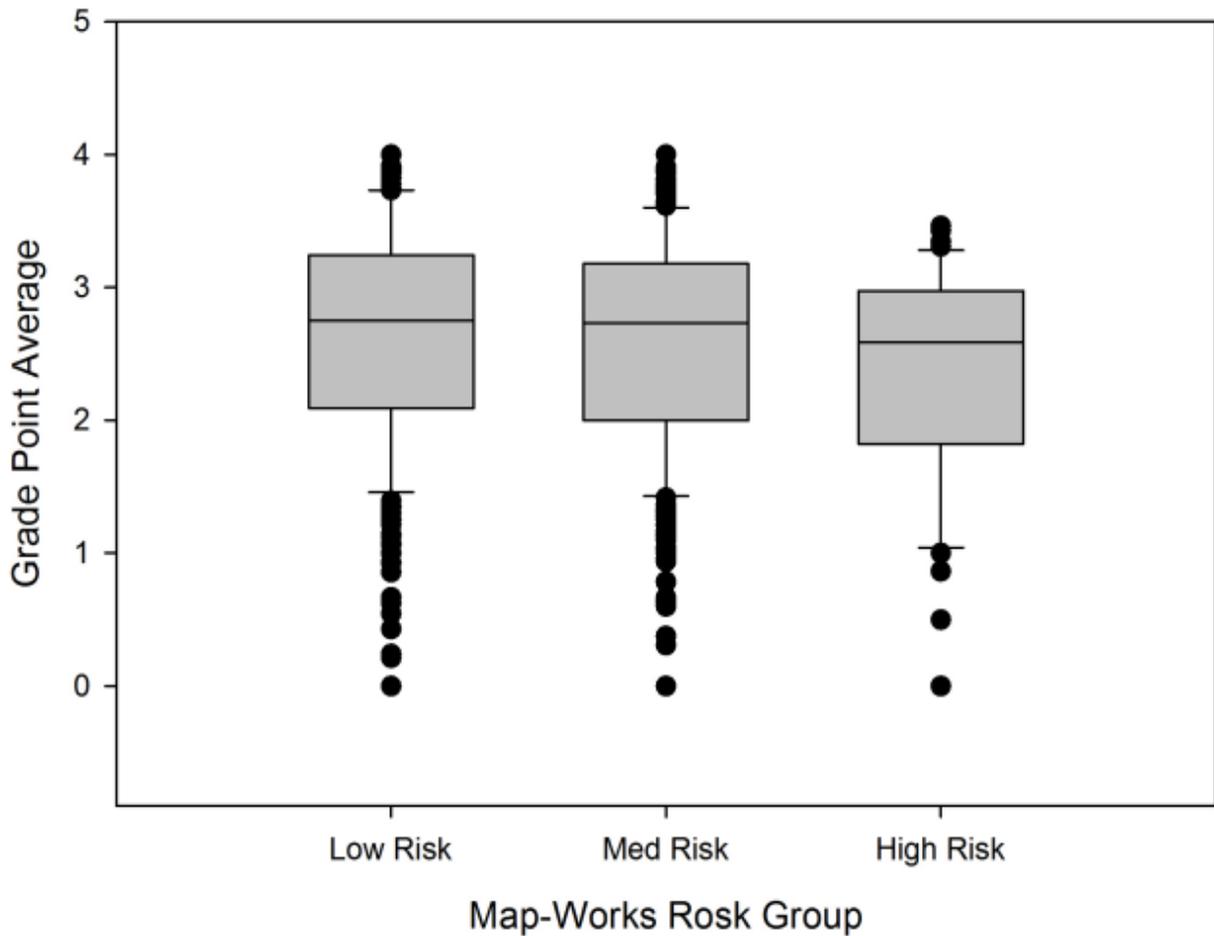


Figure 2

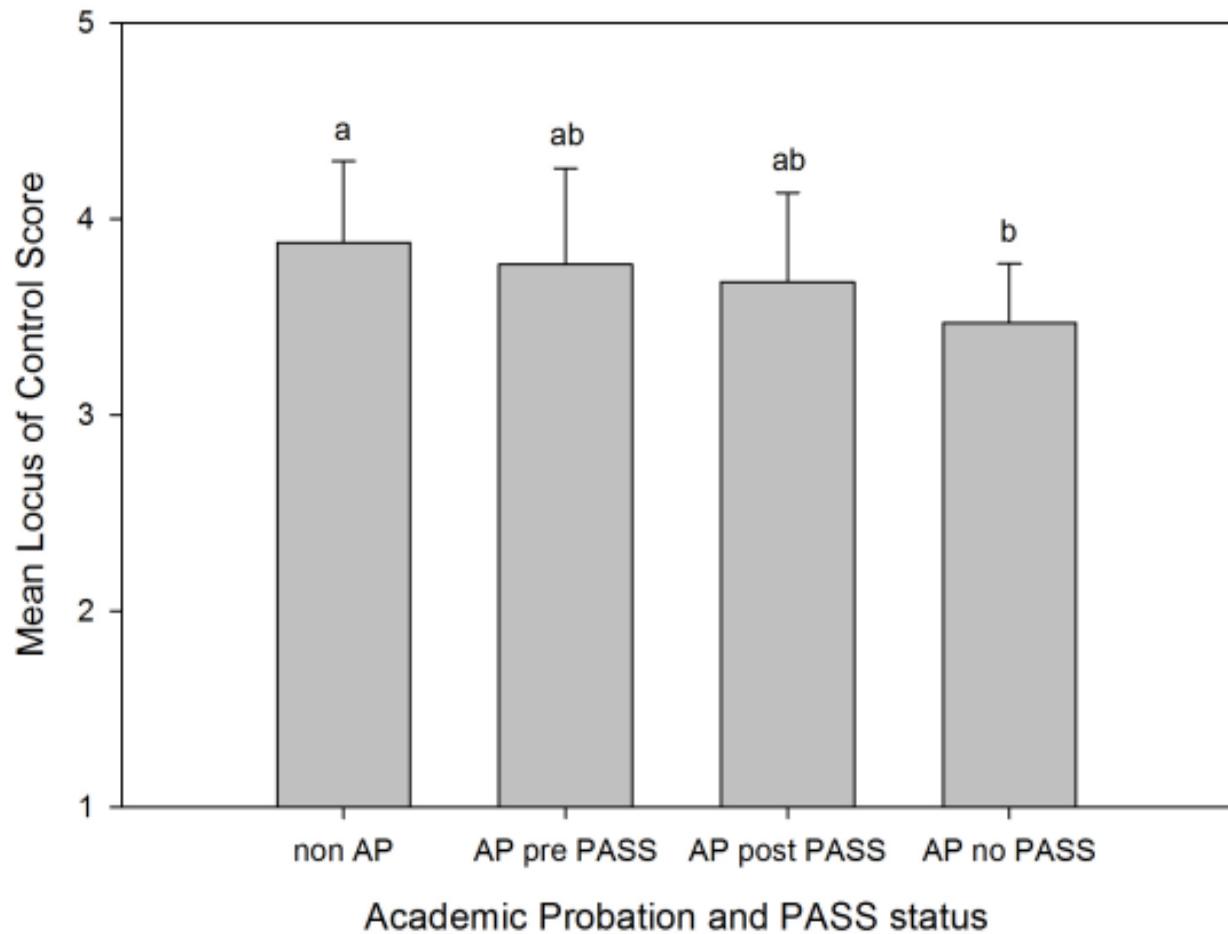


Figure 3

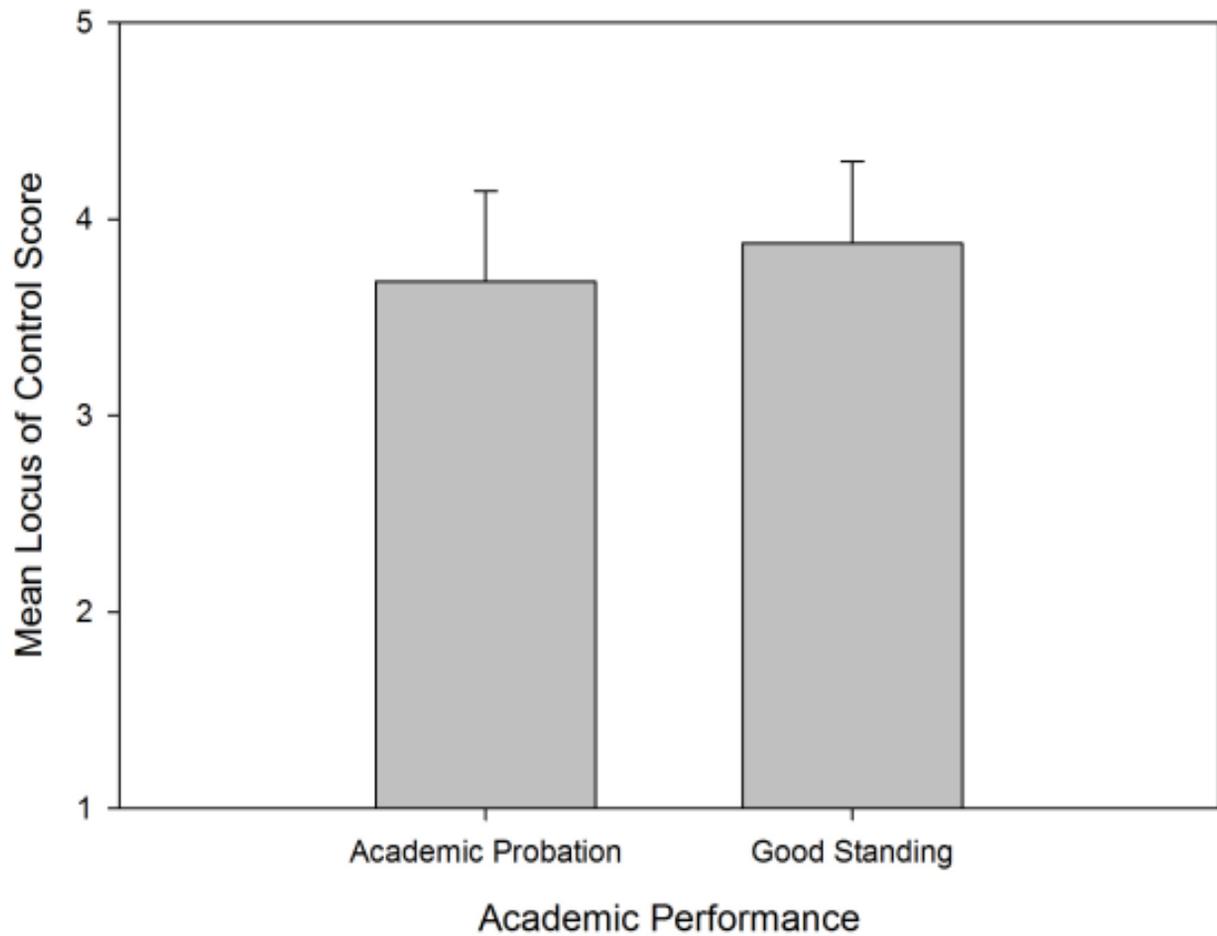


Figure 4

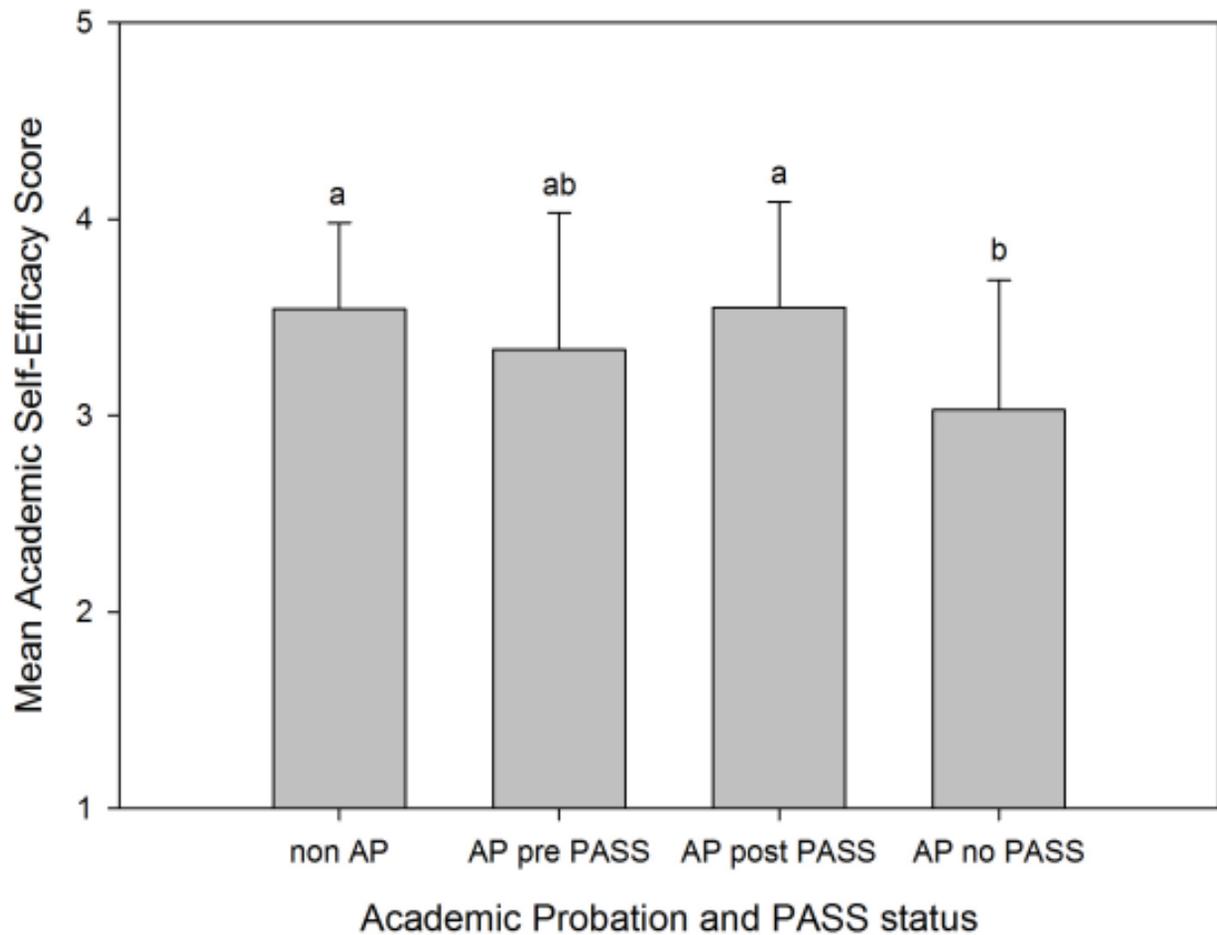


Figure 5

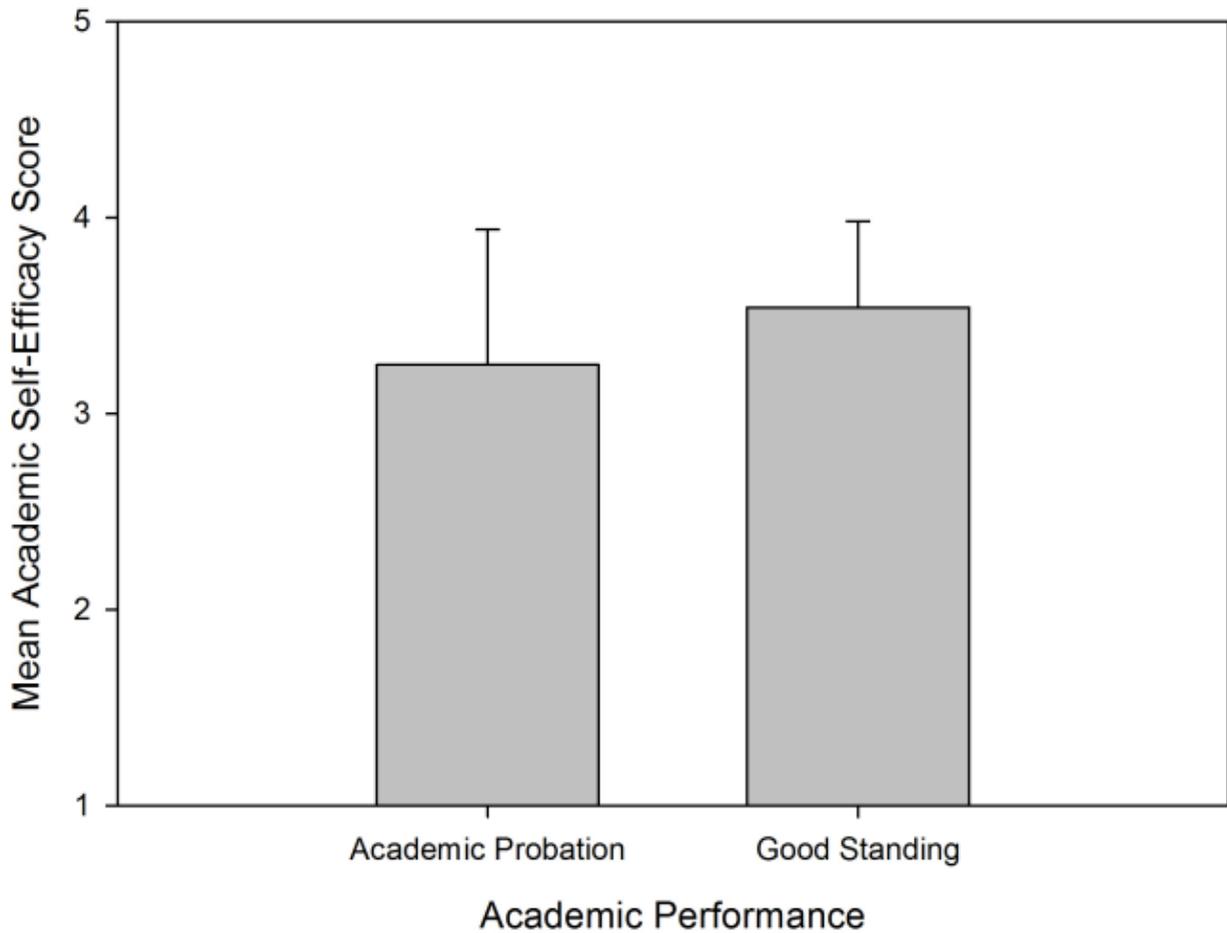


Figure 6

