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ANNE M. WILSON AND ROBERT F. HOLM

The Effects on Outcomes of Financing Undergraduate Thesis Research at Butler University

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ABSTRACT

Financial support of undergraduate thesis work is assumed, both by the administrators who provide it and the faculty members who oversee it, to provide an incentive for undergraduates to complete their theses. At Butler University two different academic units supervise this process: the Honors Program for thesis oversight and the Butler Institute for Research and Scholarship for funding oversight. We have seen that the effect of financial support for undergraduate thesis work can become obscured when two separate programs are involved in the process. Thesis support at our University was examined by and from the perspective of both programs over a period of seven years.

BACKGROUND

There is logic to the presumption that institutional funding support for student theses will provide reinforcement of the thesis preparation process and yield a higher proportion of completed theses. Support can come in the form of summer stipends for full-time work on a project, thesis grants for supplies and/or travel to perform research, and money for scholarly meetings and presentations. We have been fortunate to have support in all three areas at Butler University through the Butler Institute for Research and Scholarship (BIRS). However, until this review, such funding allocations had not been examined to determine if they are actually successful at helping the Honors Program or BIRS achieve their desired goals pertaining to student research and scholarship.

The goal of the Honors Program is to meet the expectations of academically outstanding students in all colleges and majors who wish to develop their talents and potential to the fullest. Through a combination of honors courses, cultural events, independent study, creative activity, and research, the program is designed to foster a diverse and challenging intellectual

THE EFFECTS ON OUTCOMES OF FINANCING

environment for honors students and to enhance our academic community by adding a distinctive variety of innovative thinking and interdisciplinary dialogue.

BIRS has the following goals for funding undergraduate student research: supporting student attraction to and accomplishment in conducting creative and research projects. To that end, Butler University has made funds available to aid such endeavors. Specifically, there are two types of grants available to Butler students: the Travel-to-Present Grant (TTP) and the Undergraduate Thesis Grant. In addition, students can apply to the Butler Summer Institute (BSI). The goals of BSI are to provide an opportunity for selected summer scholars to engage in a research project that is investigative, creative, and experiential, to interact with Butler faculty, and to build a community of learners. BSI students receive a summer stipend for nine weeks of concentrated research and creative activity on our campus.

We believe that the strongest intersection of BIRS and the Honors Program is found in the thesis project—a requirement for completing the Honors Program. Since 1924, completion of the Honors Program (and thus the thesis) has been required, along with the requisite cumulative GPA, for students who wish to graduate from Butler University *magna* or *summa cum laude*. Departmental honors at graduation have also been awarded since 1968. A student may elect to complete the requirements for University/Latin honors, for departmental honors, or for both. An honors thesis is also required for highest departmental honors. Butler has a one-student-one-thesis policy, so students wishing to produce a thesis for departmental honors must make sure that it will be accepted by the faculty of the appropriate discipline. The Honors Program oversees the thesis process for all students at Butler University. For the purposes of this study, a completed thesis for either departmental or University honors (or for both) will be counted as one in the same.

How are we to measure success in financing the undergraduate thesis process? How are we to measure said success? Is success to BIRS the same as success to the Honors Program? Is one form of financial support more “successful” than another in the area of thesis and/or project completion? Has an increase in financial and university support in the form of the Butler Summer Institute resulted in an increase in the number or percentage of completed theses and/or projects? This study is designed to examine these questions using data from 1999 to 2006.

CURRENT STATUS OF STUDENT SUPPORT

Each year, funds are allocated to our Holcomb Undergraduate Grants (HUG) Committee. This group contains a single faculty representative from

three of our professional colleges (College of Business Administration, College of Pharmacy and Health Science, and Jordan College of Fine Arts) and four faculty representatives from the College of Liberal Arts and Sciences with at least one each from the natural sciences, the social sciences, and the humanities. The College of Education does not send a representative to this group as education students rarely participate in these programs, although they are not precluded from doing so. This seven-member group reviews all applications for the summer scholars (Butler Summer Institute, BSI), travel to present (TTP), and undergraduate thesis grants. There are specific application forms and guidelines for each of the awards, and the student must have the signature of his or her faculty sponsor as well as signatures of the department chair and academic dean. In addition, documentation is required for each support category. For BSI, a letter of support from the faculty sponsors is required. For a TTP, official acceptance of the paper or poster from the professional society is required. For the thesis grant, documentation of acceptance by the Honors Program and a complete budget are required. For all grants, compliance with human subject and/or animal care regulations and policies must be documented if appropriate.

Applications to BSI are open to all students at Butler University. Typically, students participate in BSI during the summer after the sophomore or junior year; therefore, the Honors Program strongly encourages honors students to apply for BSI. Applications for TTP's are open to any student at Butler University who is the primary author of a paper or poster for presentation at a professional meeting. Thesis grants are limited to students writing a thesis for departmental or university honors. The Honors Program also supports students in applying for either of these awards. In fact, students applying for a thesis grant must include documentation to show that the student's thesis proposal has been approved by the appropriate College Honors Board. HUG also seeks the signature of the Director of the Honors Program.

The budget allocated for BSI, TTP, and thesis grants is divided between science (natural and social sciences) and non-science budget lines. There is no transfer of monies between these lines since they are endowed by different sources with specific intents. Currently, HUG is able to support 20 science BSI students with an annual allocation of \$4000 for science TTP and \$2000 for science thesis grants. Transfer of money between the TTP and thesis line for science students is allowed. As part of the application procedure, applicants outline the anticipated methodology of the project as either "science" or "non-science" accordingly. For example, most of our psychology and many of our business students perform social science projects, and these are deemed "science."

THE EFFECTS ON OUTCOMES OF FINANCING

For non-science students, HUG is able to support 10 non-science BSI research projects in the form of creative projects, literary critiques, and historical and philosophical investigations. For the TTP and thesis grants for non-science projects, a total of \$1500 (usually \$750 for all TTPs and \$750 for all thesis grants) has been allocated. Some support for non-science students is also available from key departments (theater in particular); examination of departmental support as well as support coming from grants written by faculty mentors is not included in this study. The monetary awards by HUG represent recent increases in the funds available. Additional funds for non-science student support are currently being sought.

Regardless of discipline, TTP grants are currently capped at \$250 per student with a maximum of five proposals for any one conference and a maximum award of \$750 per conference. Prior to the 2002–03 school year, the maximum award was \$500 per student with no maximum award per conference. Often, large groups of students from the same discipline (e.g. chemistry, psychology, pharmacy) would go to the same professional meeting; disproportionate allocations to these groups were of great concern to the HUG committee. In order to distribute awards over all disciplines and serve as many students as possible, the 250/750 maximums were put in place.

Thesis grants are currently capped at \$500. These grants are designed to support miscellaneous costs of conducting research for departmental or University Honors thesis programs, including small equipment (i.e. paper, pencils, batteries); office, museum, or library access fees; postage to mail survey forms or other information; the purchase of rare books; and other necessities. The HUG committee may vote to approve funds for travel if it is integral to the thesis project. Any funds awarded are to be used only for the thesis project and are disbursed via reimbursement to the student.

DATA ANALYSIS

How do we determine whether funds awarded for research and creative activity contribute to “success” in the thesis process? For BSI recipients, a final report is due at the end of the summer and students are required to present at either the Butler Undergraduate Research Conference held on our campus each spring or an off-site conference. While all awardees for thesis grants and TTPs are encouraged to present at the Undergraduate Research Conference (HUG may be moving toward making this a requirement for awardees of TTPs and thesis grants in the future), this is not a universal requirement for all award categories and thus can not be utilized as a measure of success. For the purpose of this study, thesis completion was viewed as the marker of success.

Effectiveness of all student support was analyzed between the years of 1999 and 2006. These data were examined in relation to two perspectives. First, we examined total disbursement of BSI, TTP, and thesis grants for the fiscal years 1999–2000 to 2005–06 in order to determine how the award money was spent. Secondly, when reviewing support of undergraduates who produced a thesis between 2000–2006, we determined whether financial support influenced students to complete the thesis project; in other words, we investigated if students who received financial support were more likely to complete an undergraduate thesis. We examined both how our thesis students were being supported financially and how these students responded to such financial support.

In the time period of the study, 350 undergraduate students completed a thesis: 273 for completion of the honors program and 73 for departmental honors at graduation. Of the 350, 124 students who completed theses were supported by at least one award, with 35 individuals supported by more than one award (a BSI and a TTP, for example). In the same time period, 182 total grant awards were made to students who went on to complete a thesis for either departmental or University/Latin honors. These numbers—182 grants going to 124 students—clearly illustrate that a large number of the thesis students garnered multiple awards. The breakdown of the support was as follows:

- 57 TTPs (44 science, 13 non-science)
- 76 BSI (62 science, 14 non-science),¹
- 49 thesis grants (26 science, 23 non-science)

(see Figure 1 for awardees by year)

As the determinant for successful outcome is the completion of a thesis, our study shows that our success rate is greatest for the thesis grants with 49 of 53 awards resulting in a thesis (a rate of 92%), followed by BSI with 76 of 125 awards resulting in a thesis (a rate of 61%), and lastly TTP with 57 of 149 awards resulting in a thesis (a rate of 38%) (Figure 2). The thesis grant success remains consistently high over the seven years while the BSI success trend seems to be increasing with time (see Figure 3). The TTP is inconsistent over the study period and may not be the best indicator for thesis success.

Matching the number of theses produced to the number of funding awards indicates that an increase in the number of awards yielded an increase in the number of completed theses (Figure 4). In 2001, for example, 16 of the 45 thesis students had some kind of support. When the number of supported

¹ Ten participants of the 2005–06 BSI (summer of 2005) are current seniors who may yet complete an honors thesis.

THE EFFECTS ON OUTCOMES OF FINANCING

students rose to 30 in 2003, 61 students completed a thesis. When the TTP's were excluded from the data, the link between increase of awards and

Figure 1: Thesis Grantees by Year

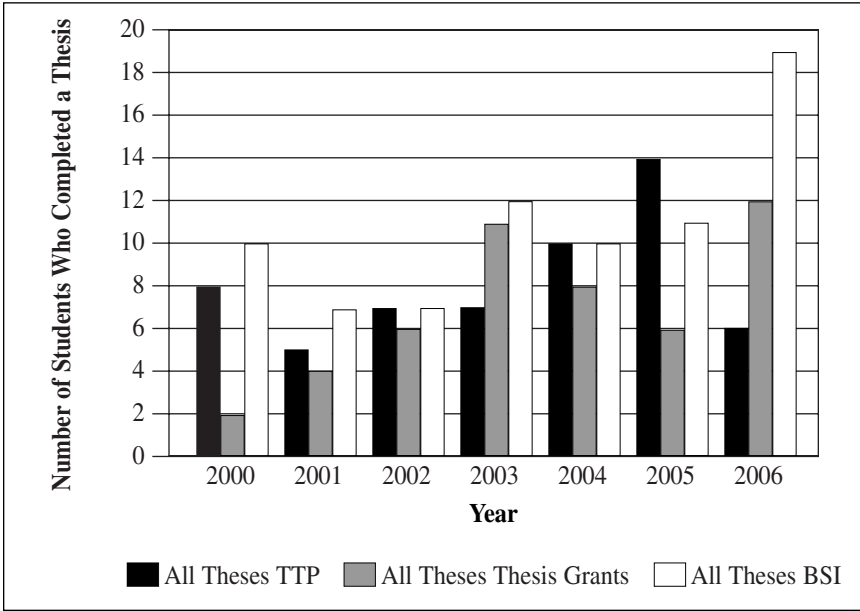
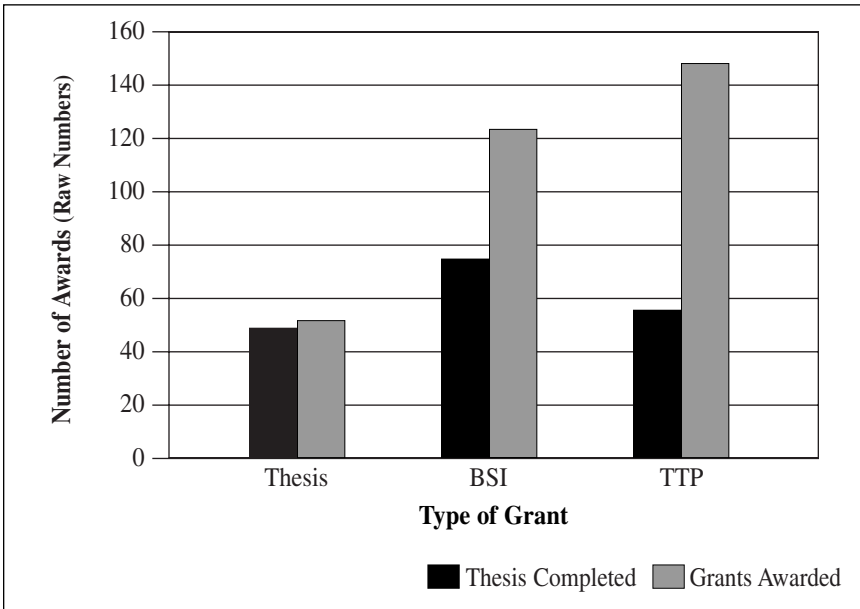


Figure 2: Overall Award Distribution



increase of completed theses became even more evident. Upon an evaluation of our thesis process, it became clear to us that the monies that were most supportive of *thesis preparation* were BSI funds and the thesis grants (Figure 5). In 2000, 12 of the 49 thesis students were supported through BSI or thesis grants, or 24.5%. In 2003, 23 of the 61 students were supported, 37.7%.

Figure 3: Award Distribution by Year

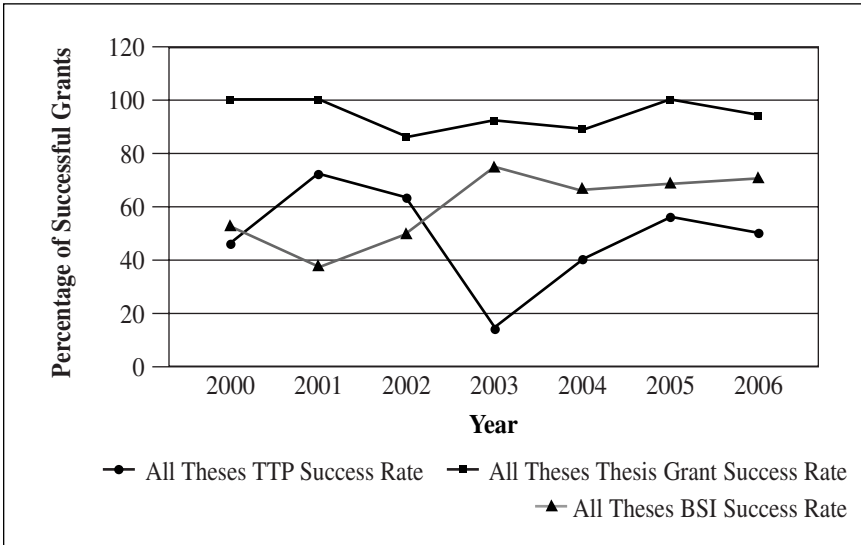
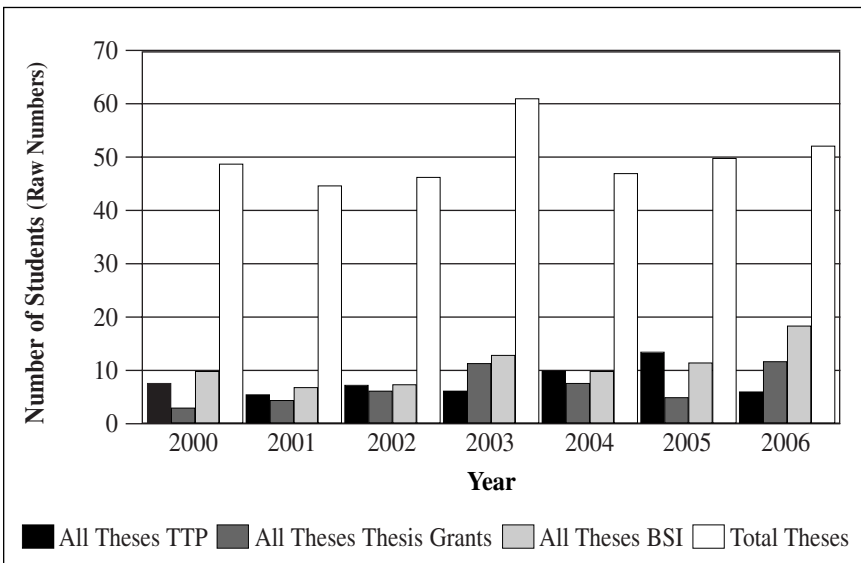


Figure 4: Support with Total Theses



THE EFFECTS ON OUTCOMES OF FINANCING

By 2006, thesis support had become the norm with 31 of the 52 thesis students (59.6%) supported in the thesis preparation process.

When awards for science and non-science projects are analyzed separately, the link between support dollars and student performance becomes stronger for the sciences while for the non-sciences there seems to be little correlation between support and completion of the thesis (Figures 6 & 7). The

Figure 5: Thesis Preparation Support with Total Theses

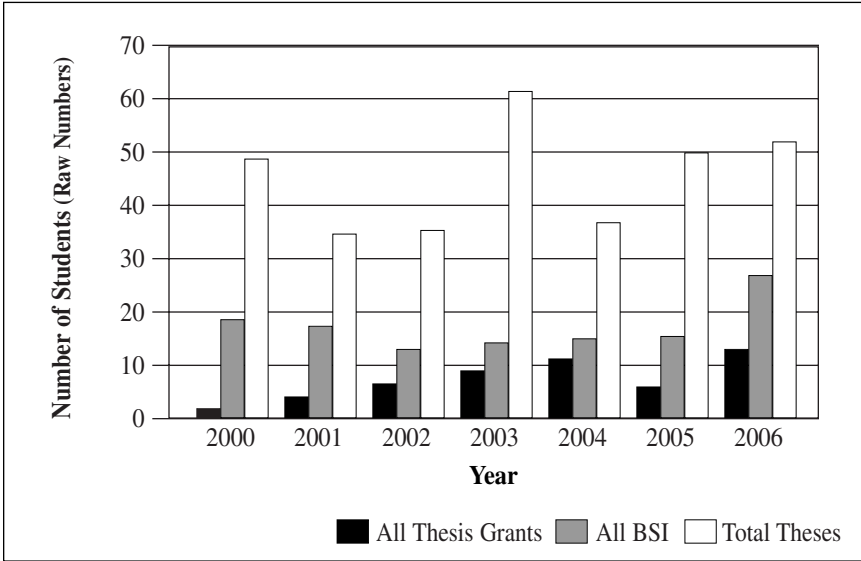
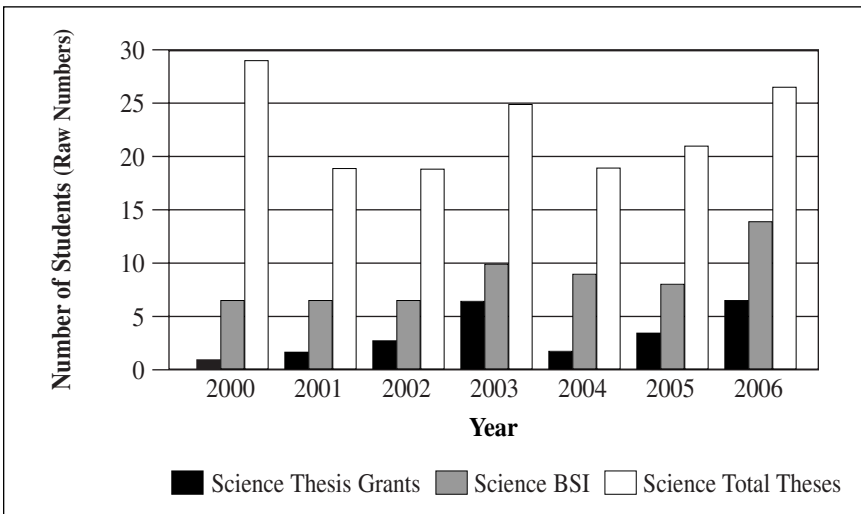


Figure 6: Science Thesis Support and Theses



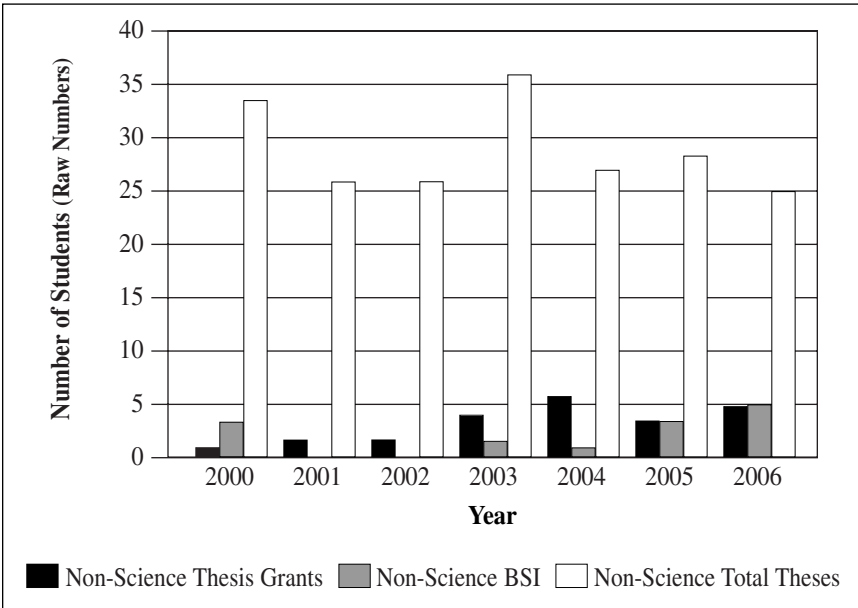
science students have enjoyed a support rate between 47.4% and 77.8%. In the academic year when eight students received support, science students produced the fewest theses (16). In the year of the greatest support, 21 science grant awards, 27 science theses were produced. The non-science students varied from 7.7% to 40% grant support of the thesis process. However, the data sample size for grants awarded to non-science students may be too small since, until recently, financial support for undergraduate thesis work has not been as strong.

OBSERVATIONS AND RECOMMENDATIONS

The Honors Program does not itself provide money for student support, nor are we recommending that it do so. The Honors Program has no desire to become more involved in the dispersal of university funds for student support, not even for thesis grants. However, opportunities may arise where funds for thesis grants come available through fundraising by Honors, and Honors will gladly allow BIRS to supervise the dispersal of the funds. This has worked well for our university, and our students are aware that all student research grants are housed in one location.

The Honors Program measures success by the completion of the thesis while the HUG committee measures success by the full dispersal of available funds. These two yardsticks are divergent in nature. In an era when funds are limited and support of undergraduate research becomes increasingly

Figure 7: Non-Science Thesis Support and Theses



THE EFFECTS ON OUTCOMES OF FINANCING

important for recruiting motivated students, concrete and measurable outcomes of financial support of undergraduate research may become an expectation. It is clear that financial support of student research can lead to an increase in—although it is not a guarantee of—thesis completion.

Some departments on our campus have become very adept at utilizing resources for the support of their undergraduate students. Many of these students do not write a thesis yet have obtained BSI funds and presented results at up to four national meetings. One might presume that any work extensive enough to merit presentation at a national professional meeting should be able to qualify for “thesis” status, and collaboration is needed among all parties to insure that those students capable of producing a completed thesis are encouraged to do so.

The lack of a coherent relationship between support of non-science students and thesis production is troubling. Until 2006, the number of completed theses had always been greater in non-science than in science areas. Financial support of non-science student work has recently increased, and we anticipate that the trend seen in the sciences will also be seen in the non-science areas.

There may be other benefits to supporting student research through BSI and TTP that are beyond the scope of this study to illuminate. Perhaps other measures of success (presentation at our undergraduate conference, production of a project report or reflection) could be implemented for those students not interested in the thesis process. It may be appropriate to explore these other options and seek student perspectives on financial support and expectations from the university. Measurable outcomes are likely to become the expectation for student grants, and agreement from all constituencies will increase the success rate for all involved parties at the university—including the students engaged in undergraduate research/creative activities and writing undergraduate theses.

CONCLUSIONS

This study has verified that there has been a positive link between financial support and thesis production on our campus since 1999. This trend was most strongly verified for science students who received thesis grants and BSI support. Thesis grants and BSI both provide support for the work of the thesis itself. The thesis grant provides funds for materials for the actual research where BSI provides paid time for research activities as well as a community of student scholars for moral support.

There was not a strong connection between TTP grants and thesis production. In fact, in years where there were more TTPs awarded, there were actually fewer theses completed by those awardees. Perhaps the TTP grants

are more a reward for completion of a project than support for the research activity. Neither was there a strong correlation between support and thesis production in the case of non-science thesis students, but again we must consider that the amount of support for these students has been relatively small until recently. Data on the support of non-science students should continue to be gathered; a positive trend may develop as numbers increase.

It seems very likely to us that, if more money were available for student researchers, the result would be more completed undergraduate honors theses. Data from the past seven years support this trend most strongly in the sciences. From the perspective of the Honors Program, production of high-quality thesis work is a priority. From the perspective of BIRS, support of undergraduate research and/or student projects is a priority. Our example shows that coordination between honors programs and offices of undergraduate research (in our case BIRS) is essential for tracking and analyzing such information and for ensuring that both parties' goals are being met.

This study only examined financial support of the undergraduate thesis process. The authors acknowledge that there are other than financial means by which thesis work, student research, and creative projects can be supported. Faculty mentor involvement, departmental support, and institutional support (libraries, research space, performance space, etc.) are all important factors for student success; these, in conjunction with financial support, are critical pieces in the creation of a welcoming environment for undergraduate research/creative projects and honors theses.

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