

# An Undergraduate Minor in Evolutionary Behavioral Sciences

Andrew C. Gallup

State University of New York Polytechnic Institute

## ABSTRACT

Campus-wide Evolutionary Studies (EvoS) programs have been highly successful in improving evolution education and expanding the reach of evolutionary theory in higher education, yet challenges to initiating such programs remain a barrier for many faculty. When these programs are developed by social scientists, for example, there can be resistance among faculty in the biological sciences. A notable issue has been the perceived ownership over the general instruction of evolution, which has derailed efforts to develop EvoS programs at some institutions. This paper describes an alternative program: a minor in Evolutionary Behavioral Sciences (EBS). While not intended to replace the traditional EvoS model, a program in EBS may provide a viable alternative for faculty in the social sciences that have struggled to obtain interdisciplinary collaboration in biology. With an explicit emphasis on human behavior, this program fits more squarely within the social sciences yet holds many of the same features and goals of traditional EvoS programs.

## KEYWORDS

Curriculum Development, Evolution Education, Evolutionary Psychology, Evolutionary Training, Interdisciplinary Collaboration

## INTRODUCTION

Formal education in evolutionary theory not only increases acceptance of evolution, but it also enhances the perceived relevance of evolution to human affairs and everyday life (Wilson, 2005; O'Brien, Wilson, & Hawley, 2009). With a broader understanding of evolutionary theory and its applications, evolution education offers numerous benefits to society (Wilson, 2020; Wilson & Gowdy, 2013). In addition, recent studies show that the acceptance of evolution, particularly as it relates to humans, is associated with reduced racism and prejudice (Syropoulos, Lifshin, Greenberg, Horner, & Leidner, 2022). Therefore, developing evolution-focused curricula in higher education stands to produce lasting and positive outcomes.

---

AUTHOR NOTE: Correspondence concerning this article should be addressed to Andrew C. Gallup, Ph.D., State University of New York Polytechnic Institute, Donovan Hall 1203, Utica, NY 13502. Contact: [a.c.gallup@gmail.com](mailto:a.c.gallup@gmail.com).

With the goal of expanding the education and applications of evolution beyond the traditional biological sciences, David Sloan Wilson developed the first Evolutionary Studies (EvoS) program at Binghamton University in 2002 (Wilson, 2005; 2007). Initially designed as a certificate program, EvoS-Binghamton now offers an undergraduate minor in addition to maintaining the original graduate certificate. Highly interdisciplinary in nature, with the goal of studying anything and everything from an evolutionary perspective, this program now includes over 75 course offerings from across eleven departments. Shortly after the program at Binghamton was underway, in 2007, Glenn Geher founded a second EvoS program at the State University of New York (SUNY) at New Paltz. Though New Paltz is a considerably smaller university in the SUNY system, this EvoS program has been equally successful and interdisciplinary, currently listing nearly two dozen affiliated faculty and now offering an undergraduate major alongside the original EvoS minor. Joining efforts in 2008, Wilson and Geher then acquired funding from the National Science Institution to create the EvoS Consortium ([evostudies.org](http://evostudies.org)), which currently includes comparable EvoS programs from dozens of institutions across the United States and abroad (Wilson, Geher, Waldo, & Chang, 2011; Wilson, Geher, Mativetsky, & Gallup, 2019).

The basic structure of a campus-wide EvoS program includes a fundamental course on evolutionary theory, an array of interdisciplinary courses that highlight the applications of evolutionary thinking, and a seminar course where guest speakers can discuss their evolution-based research with students and faculty (Wilson, Geher, & Waldo, 2009). While most colleges and universities have the necessary components to develop interdisciplinary EvoS programs, i.e., a range of evolution-based courses already on the books, a number of challenges and roadblocks to doing so have been documented (Spaulding, Burch, & Lynn, 2014). These range from a general resistance to the expansion of evolutionary theory and its applications to human affairs (see Geher & Gambacorta, 2010), to issues of institutional funding and resource scarcity, logistics of running such a program, and insufficient administrative support (Burch, 2018). The size of the institution is also an important factor, as smaller colleges can have more difficulty due to fewer evolutionarily-focused faculty and courses to draw from (Hughes, 2019).

Beyond these issues, one notable obstacle has been the perceived ownership over the teaching of evolution (Geher & Wilson, 2014; Burch, 2018). That is, some faculty in the biological sciences have had resistance towards EvoS because they feel the instruction of evolution and its applications should be contained within their discipline. In fact, such issues of territoriality have completely derailed efforts to establish EvoS programs at some institutions, particularly when efforts were led by faculty in the social sciences (see Geher, Wilson, Gallup, & Holler, 2019). Since EvoS programs are inherently interdisciplinary by design, and intended to advance the education and application of evolution beyond the biological sciences into more human-oriented disciplines, a lack of interdepartmental collaboration can be particularly problematic. In some cases, faculty outside of biology may simply be better suited for running EvoS. Evolutionary psychologists, for example, tend to contribute disproportionately within the EvoS community, and, as a field, evolutionary psychology stands out in terms of its interdisciplinarity and collaboration outside the discipline of psychology (Garcia et al., 2011; Geher, Crosier, Dillon, & Chang, 2011).

Given the various challenges to starting new campus-wide EvoS programs, alternative approaches have been proposed. For example, at institutions where faculty have faced resistance to the development of EvoS programs, these individuals can still create or modify courses to expose students to the applications and reach of evolutionary theory outside of the biological sciences (Burch, 2018). In addition, David Sloan Wilson has made efforts to develop a worldwide EvoS community through the online magazine, *This View of Life* ([thisviewoflife.com](http://thisviewoflife.com)), which features articles on a myriad of topics from an evolutionary perspective. Future efforts in this area could even result in online course offerings similar to a traditional EvoS program, reducing need for local chapters (Wilson, Geher, Gallup, & Mativetsky, 2019). That said, there are yet other ways to develop a structured evolutionarily-focused curriculum that includes face-face instruction and community interactions on campus.

## EVOLUTIONARY BEHAVIORAL SCIENCES: AN ALTERNATIVE

Here, I provide an example of an undergraduate program in Evolutionary Behavioral Sciences (EBS) that was explicitly modeled after EvoS and successfully implemented at SUNY Polytechnic Institute in 2021. SUNY Polytechnic Institute is a public research university with distinct two campuses (Utica and Albany), but has a relatively small student body with a combined undergraduate and graduate enrollment of roughly 3,000 students. In addition, as a technical school, the majority of these students major in STEM fields.

The EBS program came to existence following resistance to an attempt at initiating a traditional EvoS program. As a faculty member in the undergraduate psychology program with expertise in evolutionary psychology, I brought an EvoS proposal up for discussion with administrators and a group of faculty members in the College of Arts and Sciences that I had hoped to be involved. Failing to gain sufficient interdisciplinary support and commitment to participate in an EvoS program, it was proposed that instead of focusing on the study of evolution in general, the emphasis be placed on behavior. This modification eliminated the necessity for contributions from certain disciplines (i.e., biology), and resulted in the EBS program being approved unanimously within institutional channels.

### Curriculum

The newly developed EBS program at SUNY Polytechnic Institute offers undergraduate students the opportunity to obtain a minor in EBS. To reduce to the necessity of wide interdisciplinary collaboration, this program includes a number of required courses already taught regularly within the Psychology major (Table 1). Aligning with the traditional EvoS model (Wilson 2005; Wilson et al., 2009), a course in evolutionary psychology (with an introductory course as a prerequisite) replaces the general evolution course. Given that this course in evolutionary psychology serves as a basis for student knowledge in evolutionary theory, it includes previously demonstrated pedagogical practices for improving evolution education in human-oriented disciplines (O'Brien & Gallup, 2011).

**Table 1.** Description and requirements of the EBS minor

---

## EVOLUTIONARY BEHAVIORAL SCIENCES MINOR

---

The minor in Evolutionary Behavioral Sciences (EBS) is designed for students interested in the biological bases of human behavior and the application of evolution to human affairs. The course requirements for the minor are a minimum of 17 credits, 12 of which have to be completed at SUNY Polytechnic Institute. Students must achieve a minimum “C” grade in the courses applied toward the minor.

---

### *Required Courses:*

- PSY 100: Principles of Psychology (4 credits)
- PSY 280: Evolutionary Psychology (4 credits)
- PSY 480: Seminar in Evolutionary Behavioral Sciences (4 credits)

### *Elective Courses (select two):*

- ANT 101: General Anthropology (4 credits)<sup>+</sup>
  - IDS 204: Understanding Human Nature (4 credits)
  - BIO 225: Biology of the Sexes (4 credits)
  - PSY 355: Behavioral Neuroscience (4 credits)
  - CBH/PSY 381: Evolutionary Medicine (4 credits)
  - EBS 491: Independent Study (1-4 credits)
- 

<sup>+</sup>To be added to the curriculum in Spring 2023.

Next, a selection of interdisciplinary courses is currently offered at the introductory, intermediate and upper levels. These elective courses include a class on human nature from the Interdisciplinary Studies program, a general education course in Biology (open to all students), a behavioral neuroscience class, and a course on evolutionary medicine that is cross-listed within Psychology and the Community and Behavioral Health program. An introductory course in anthropology has also been approved to be added to the curriculum this upcoming year. Moreover, an independent study in EBS was created alongside the minor, which provides students the opportunity to gain hands-on evolutionarily-based research experience as undergraduates. Notably, the first time this course was offered (Spring 2022) resulted in a peer-reviewed publication that was co-authored by a psychology major minoring in EBS (Gallup & Wozny, 2022).

Lastly, an EvoS-inspired seminar course serves as a capstone to the minor. In addition to the potential of hosting evolutionary behavioral scientists on campus to deliver guest lectures, which would be similar to traditional EvoS programs, weekly seminars during the semester can be live streamed remotely and/or be prerecorded

beforehand. Both Binghamton University and SUNY New Paltz host archives of their respective campus-wide EvoS seminars, which provide a great resource and have helped minimize operational costs. Similarly, any live or newly prerecorded lectures for the EBS seminar at SUNY Polytechnic Institute will be archived to the EBS homepage. Therefore, in totality, EBS shares many of the core features, and even some of the same content, as traditional EvoS programs.

## CONCLUSION

The traditional EvoS model is the gold standard, and has been highly successful in improving evolution education and expanding the reach of evolutionary theory across numerous institutions (Wilson et al., 2011; 2019). Yet, with the challenges some social scientists can face when developing new EvoS programs, faculty in higher education may need to consider different approaches (Burch, 2018). With an explicit focus on evolution and human behavior, rather than the study of evolution in general, EBS provides a viable alternative for faculty that have struggled with interest and collaboration in the biological sciences. Notably, similar programs already exist elsewhere, including the Ethology and Evolutionary Psychology minor at the University of Arizona ([psychology.arizona.edu/eep-track-minor](http://psychology.arizona.edu/eep-track-minor)). This program includes courses offered by faculty in Anthropology, Ecology and Evolutionary Biology, Entomology, Family Studies, and Psychology. Therefore, while the current EBS curriculum is provided as an example, clearly the structure and name of the program could take on different forms.

While there is excitement about the recent launch of the new EBS minor at SUNY Polytechnic Institute, this program is still in its infancy and requires further development and expansion to be sustainable in the long-term. As is the case for EvoS programs, the classes in the EBS curriculum are offered regularly (and independently) as part of other majors and minors on campus, so the continuation of the EBS program is not contingent upon enrollment in the minor. That said, most of the coursework within this program is currently being handled by just a few core faculty members, and, as a result, the number of elective courses offered in the EBS curriculum is relatively limited (Table 1). This is particularly true when compared to some of the more interdisciplinary EvoS programs, such as at Binghamton University. However, SUNY Polytechnic Institute is a relatively small and STEM-focused university, which presents its own unique challenges in terms of faculty expertise and existing course offerings. Nonetheless, with increasing awareness of this program across campus it is expected that the EBS curriculum will expand. The 2022-2023 academic year marks the first time the EBS minor has been listed in the Faculty Advising Handbook, which will hopefully spur both further faculty participation and student enrollment in the coming years.

## REFERENCES

- Burch, R. L. (2018). What to do when you don't have an Evolutionary Studies program... yet: Evolutionary Infusion into the Social Sciences and Humanities. *EvoS Journal: The Journal of the Evolutionary Studies Consortium*, NEEPS XI, 30-42.
- Gallup, A.C., & Wozny, S. (2022). Interspecific contagious yawning in humans. *Animals*, 12(15), 1908.
- Garcia, J. R., Geher, G., Crosier, B., Saad, G., Gambacorta, D., Johnsen, L., & Pranckitas, E. (2011). The interdisciplinarity of evolutionary approaches to human behavior: a key to survival in the ivory archipelago. *Futures*, 43(8), 749-761.
- Geher, G., & Gambacorta, D. (2010). Evolution is not relevant to sex differences in humans because I want it that way! Evidence for the politicization of human evolutionary psychology. *EvoS Journal: The Journal of the Evolutionary Studies Consortium*, 2(1), 32-47.
- Geher, G., & Wilson, D.S. (2014). EvoS in a crystal ball: Lessons from the EvoS 2012 Summit. *EvoS Journal: The Journal of the Evolutionary Studies Consortium*, 6(1), 1-3.
- Geher, G., Crosier, B., Dillon, H. M., & Chang, R. S. (2011). Evolutionary psychology's place in evolutionary studies: a tale of promise and challenge. *Evolution: Education and Outreach*, 4(1), 11-16.
- Geher, G., Wilson, D. S., Gallup, A. C., Mativetsky, H., & Holler, R. H. (2019). Darwin-Inspired Curricula: The EvoS Revolution in Higher Education. In D.S Wilson, G. Geher, H. Mativetsky, & A.C. Gallup (Eds.) *Darwin's Roadmap to the Curriculum: Evolutionary Studies in Higher Education* (pp. 3-12), Oxford University Press.
- Hughes, S. M. (2019). Evolutionary studies program at a small liberal arts college. In D.S Wilson, G. Geher, H. Mativetsky, & A.C. Gallup (Eds.) *Darwin's Roadmap to the Curriculum: Evolutionary Studies in Higher Education* (pp. 29-40), Oxford University Press.
- O'Brien, D. T., & Gallup, A. C. (2011). Using Tinbergen's four questions (plus one) to facilitate evolution education for human-oriented disciplines. *Evolution: Education and Outreach*, 4(1), 107-113.
- O'Brien, D. T., Wilson, D. S., & Hawley, P. H. (2009). "Evolution for Everyone": a course that expands evolutionary theory beyond the biological sciences. *Evolution: Education and Outreach*, 2(3), 445-457.
- Spaulding, K. N., Burch, R. L., & Lynn, C. D. (2018). Evolutionary Studies' Reproductive Successes and Failures: Knowing the Institutional Ecology. *EvoS Journal: The Journal of the Evolutionary Studies Consortium*, 6(1), 18-38.
- Syropoulos, S., Lifshin, U., Greenberg, J., Horner, D. E., & Leidner, B. (2022). Bigotry and the human–animal divide:(Dis) belief in human evolution and bigoted attitudes across different cultures. *Journal of Personality and Social Psychology*.
- Wilson, D. S. (2005). Evolution for everyone: how to increase acceptance of, interest in, and knowledge about evolution. *PLoS Biology*, 3(12), e364.

- Wilson, D. S. (2007). *Evolution for everyone: How Darwin's theory can change the way we think about our lives*. Delta.
- Wilson, D. S. (2020). *This view of life: Completing the Darwinian revolution*. Vintage.
- Wilson, D. S., & Gowdy, J. M. (2013). Evolution as a general theoretical framework for economics and public policy. *Journal of Economic Behavior & Organization*, 90, S3-S10.
- Wilson, D. S., Geher, G., Mativetsky, H., & Gallup, A.C. (2019). *Darwin's Roadmap to the Curriculum: Evolutionary Studies in Higher Education*. Oxford University Press.
- Wilson, D. S., Geher, G., Gallup, A.C., & Mativetsky, H. (2019). Teaching Evolution across the curriculum: beyond campus-wide programs. In D.S Wilson, G. Geher, H. Mativetsky, & A.C. Gallup (Eds.) *Darwin's Roadmap to the Curriculum: Evolutionary Studies in Higher Education* (pp 463-468), Oxford University Press.
- Wilson, D. S., Geher, G., & Waldo, J. (2009). EvoS: completing the evolutionary synthesis in higher education. *EvoS Journal: The Journal of the Evolutionary Studies Consortium*, 1(1), 3-10.
- Wilson, D. S., Geher, G., Waldo, J., & Chang, R. S. (2011). The EvoS Consortium: Catalyzing evolutionary training in higher education. *Evolution: Education and Outreach*, 4(1), 8-10.