College Students’ Religious Beliefs, Knowledge of Evolution, and Science Literacy: Comparisons by Sex, Discipline, and Point of College Career

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Background

In scientific circles, evolutionary theory makes relatively rare appearance in its caller as a theoretical notion varying on its level (Dewdney, 2009). However, in international comparisons, the U.S. ranks amongst the bottom in acceptance of evolutionary theory. In fact, U.S. citizen score based on knowledge and acceptance of evolution from the citizens of 32 European countries and Japan (Scott, A., et al., 2008).

Most of the science literacy in America are also relatively low by absolute standard, hovering between 25-30%. However, American scores in Science literacy from do citizens in many other countries (Hoeben, 2008) including the same countries that outperform in science and knowledge are increasing. Evolution. Scientists have suggested that increasing exposure to science coursework in American college is responsible for the inflation in science literacy (Hoeben, 2008). At the same time, other scientists have argued that strong religious belief in America may mislead to the U.S. deficiency in understanding evolutionary theory (Dewdney, 2008).

Recent understanding of evolutionary principles and the collective attitude toward evolution are tied to deeply engrained educational mechanisms (Miller, 2009). Typical example is the creationist-eclectic curriculum where the country advantage are disconnecting because knowledge in the fields of theology and science is expected to be on a high level of understanding of genetics and biological processes is increasingly relevant for understanding current technologies, making informed decisions (Mason, 2008) and granting appropriate use of genetic information (Haga, 2006). Scientific literacy is also important for understanding nutritional information and distinguishing between correlation and causation (for instance, in the use of the purported link between minimized in and diabetes).

If being in college promotes science literacy and critical, evidence-based intellect; then college students should determine highest level in scientific literacy and lower level of religious belief than should freshmen. Among these, men in Math & Science disciplines showed higher in scientific literacy than those in other disciplines. This study was designed to test these predictions.

Over view

With help from faculty and staff across campus (see Acknowledgments), we obtained responses from a representative sample of undergraduate students (495 freshmen, 71 seniors) representing more than 35 unique majors and 265 total campus. Of these, 245 were in freshmen year, 110 were sophomores and juniors, and 54 were graduating seniors (men and women). Participants completed anonymous surveys, including a measure of religiosity, supplemental biology and mathematics coursework, and religious beliefs and attitudes. In total, 436 students were included in the analysis.

Religious Beliefs and Knowledge

Two subscales evaluated religious beliefs and knowledge. One valued emotional or personal implications of religious beliefs (1 item, r = .39, p < .05). The other evaluated religious beliefs and knowledge (5 items, r = .53, p < .05). Table for religious beliefs and knowledge are shown in the table. All attitude items were combined with an 11-point response scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Results

Most scored significantly higher than women on total science literacy (F(1, 437) = 41.94, p < .05). Among the differences, religious belief and critical, evidence-based intellect were significantly higher than religious belief and critical, evidence-based intellect for women. Among these differences, male students scored higher in religious belief and critical, evidence-based intellect for women.

Among male students, 265 were in their freshman year, 142 were sophomores and juniors, and 354 were approaching graduation (seniors). Of these, 245 were in their first year, 110 were sophomores and juniors, and 54 were graduating seniors (men and women). Participants completed anonymous surveys, including a measure of religious belief and critical, evidence-based intellect, plus a scale ranging from 1 (strongly disagree) to 5 (strongly agree).

There were no significant differences between disciplines in percent of respondents reporting a strong belief in a strong belief in god, F(2, 430) = 0.01, p = .99; or, F(2, 430) = 0.01, p = .99. In each of the four disciplines, 30% of students reported a strong belief in an important role of God. However, when asked how strongly religious belief makes a difference, men reported a stronger belief in God, F(2, 430) = 12.66, p < .05. Among female students, 265 were in their freshman year, 142 were sophomores and juniors, and 354 were approaching graduation (seniors). Among these disciplines, 265 were in their first year, 110 were sophomores and juniors, and 54 were graduating seniors (men and women). Participants completed anonymous surveys, including a measure of religious belief and critical, evidence-based intellect, plus a scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Performance on Science Literacy Subscores by Point of College Career

Performance on each of the science literacy (sub)score was associated with point in college career (all r < .15, p > .3), with gender generally improving, religious belief and critical, evidence-based intellect decreasing. The differences in religious belief and critical, evidence-based intellect relative to the other scales. Although students did perform well, there were differences in performance as a function of religiosity. However, when controlling for the variance in religious belief and critical, evidence-based intellect, no statistically significant differences were observed. A follow-up analysis was performed to examine the relationship between religiosity and science literacy. The relationship was examined and the gender difference was not significant. Possible reasons for this lack of significance were that the sample size was relatively small in overall. Our analysis did not show a main effect of gender on science literacy scores.

Discussion

Overall, our findings suggest that science literacy levels in our college student sample, as a composite and in various domains, are still above the U.S. population average of 25.5%. That said, they showed room for improvement. A general trend in our data was for science literacy scores to be significantly higher among senior students than among the freshmen. Perhaps the biggest finding of this study is that religious belief and critical, evidence-based intellect were relatively weak and small in overall. This finding is consistent with previous studies, indicating that religious belief and critical, evidence-based intellect may not be as strong in everyday life as they are in the classroom. Future studies will help elucidate the relationship between religiosity and science literacy.

References


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