

Attitudes towards the scientific search for extra-terrestrial life among Swedish high school and university students

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Abstract

The aim of the study was to increase our understanding of the attitudes towards the scientific search for extraterrestrial life among high school and university students in Sweden. The most important results of the analysis were that: (a) the great majority of students believe that extraterrestrial life exists; (b) most students regard searching for extraterrestrial life to be quite important or very important; (c) very few students think that we should actively avoid searching for extraterrestrial life; (d) the most common motive for assigning a high priority to search for extraterrestrial life is that it is interesting, the most common motive for assigning a low priority is that such knowledge would not be practically useful, or that the money would be better spent elsewhere; (e) most students do not think they are very well informed regarding the search for extraterrestrial life. A higher percentage of the students who judge themselves to be well informed also believe that extraterrestrial life exists. We have also found some differences between subgroups (men/women, high school students/university students and different fields of study), but the differences are with few exceptions small in comparison.

1. Introduction

The Washington charter for communicating astronomy with the public, formulated at the Conference on communicating astronomy with the public in 2003 states the importance of outreach and education efforts. It also urges the scientific community to actively participate in, and universities and other research institutions to provide institutional support for such efforts [1]. In order for education and outreach to be effective, whether we talk about astronomy, or as in this case astrobiology, it is important to have an understanding, not just of the level of knowledge of a given group but also of their general attitudes towards the discipline in question, its research questions and its basic concepts. This has

implications for several areas such as funding allocation, the educational and professional recruitment base and science communication. In this study, we aim to present an indication of the attitudes among high school and university students in Sweden, towards what seems to be the most popular and inspiring part of the wider subject astrobiology, and even of modern space research in general, namely the scientific search for extraterrestrial life. To understand the attitudes towards a scientific field among students is important for several reasons. Firstly, it brings insights into how students perceive the field, its research questions, and the subject area in general. Secondly, it enables us to assess the level of interest in the discipline; and finally, it helps us understand how scientific enquiries shape public opinion and attitudes towards a given branch of knowledge. These are all aspects that affect, for example, the recruitment of future students. This, in turn, has a direct effect on university funding, either in the form of student tuitions, as is the case in many countries (including Sweden when it comes to non-EU students), or in the form of government money, which is partly based on the number of students. This type of knowledge is also important for research funding per se, since it indicates how researchers can justify their work to a wider audience. Finally, it can provide useful information for making decisions about how to design course components of school's science curriculum, as well as effective science communication and dissemination strategies

Summary and Conclusions

A key finding of this study is that the majority (90%) of the 492 students responding to the question regarding belief in extraterrestrial life outside our planet believe that it exists. Another key finding is that a large proportion of respondents consider the search for extraterrestrial life to be quite important, and only very few students think it is something we should actively avoid. The most common reason for why students think we should search for extraterrestrial life is that it is interesting. The most

important reasons for why students think we should not search for extraterrestrial life is that such knowledge would not be practically useful or that the money would be better spent elsewhere. We have also found that most students do not see themselves as very well informed regarding the search for extraterrestrial life and those students who judge themselves to be well informed more often believe in the existence of extraterrestrial life. For further analysis, the students have been divided into subgroups according to their level of study, gender and major field of study. Some differences between subgroups (men/women, high school students/university students and different fields of study) are identified, but the differences are typically small in comparison with the overall trends, and typically matters of degree rather than direction. One tendency that could still be detected was that differences we did find between fields of study were typically not so much between STEM and humanities/social sciences but more between the interest-driven artes disciplines (science and humanities) and the more applied disciplines (e.g. engineering and social sciences). The existence of a large gap between the positive interest among the students and how well informed they see themselves to be indicated that there is room for more science education programs and outreach activities aimed at students concerning questions related to the search for life beyond our planet. Some important conclusions were also reached regarding future research. We found a need to look more deeply into what kind of life students think of when asked about extraterrestrial life. We also found a need to follow up on why students believe in the existence of life outside our planet and to motivate their assessment of how long it will take before we find life outside our planet. In addition, we found a need to further investigate why different groups (men/women, high school/university students and majors of different fields) differ when it comes to how well informed they judge themselves to be regarding the scientific search for extraterrestrial life. A natural progression of this work, in addition to taking on the questions mentioned above, is to also target students in different countries and other groups than students. The insights about the students' perceptions of the importance of the search for extraterrestrial life gained from the study could be particularly useful in designing strategies for educating and recruiting students. In general, the results indicate that interest, usefulness and economy are areas that play a key role in students' attitudes regarding the importance of searching for

extraterrestrial life. The focus on economy indicates that it might be important to explain how relatively little money is actually used in the search for extraterrestrial life. It has been shown that most Americans tend to overestimate NASA's share of the US national budget [2], [3]. We have no numbers regarding our respondents' estimation of how much money is spent on the search for extraterrestrial life, but it might be a reasonable assumption that it is skewed in the same direction. However, if the aim is to increase the funding, a better strategy has to be to produce good reasons for why money used for searching for extraterrestrial life is actually money well spent, which brings us back to the previous point about it being interesting and/or useful.

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