

# LINKS BETWEEN PERCEIVED UNCERTAINTY AND SCIENCE CONFIDENCE IN HIGH SCHOOL STUDENTS

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The nature of science describes how scientific evidence is generated and validated. A key aspect of validation is that conclusions made with uncertain scientific evidence are inherently tentative. Perceived uncertainty in scientific evidence has been negatively correlated in university students and positively correlated in pre-service science teacher populations with science self-efficacy (Flemming et al., 2015, Gito Gizaw et al., 2024).

In the high school classroom, science self-efficacy refers to “the judgements of students about their abilities to successfully attain educational goals in science subjects” (Alhadabi 2021). Science self-efficacy is a predictor of academic achievement, plays a role in the development of students’ science identity and the likelihood of following science career paths (Hu et al., 2022, Alhadabi 2021). No studies have explored possible links between high school student science self-efficacy and their perceptions of uncertainty in scientific evidence to date.

This study presents the design of a research-informed astrobiology outreach activity to introduce the concept of uncertainty in science to New South Wales metropolitan, regional, and rural high school classrooms. We will explore students’ perception of uncertainty in scientific evidence and their science self-efficacy, utilising quantitative questionnaires and qualitative classroom observations and semi-structured interviews. The differences in perceptions and science self-efficacy between demographic groups (i.e., students from regional and rural locations) will be examined.

The goal of this research is to understand if high school student perceptions (or lack thereof) of uncertainty in scientific evidence are linked to their science self-efficacy beliefs. Outcomes from our project will not only inform educators of potential future impact pathways for outreach programs but also support scientists to more effectively communicate with the public about the nature of science, ultimately improving public understanding of science.

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