# EXPLORING SCIENCE PERCEPTIONS AND CAREER SELF-IDENTITY IN LATE PRIMARY STUDENTS TO BETTER UNDERSTAND HOW TO IMPROVE THE TERTIARY STEM PIPELINE

Michael M. Kasumovic [a], Pietro Pollo [a], Angela Gilmour[b], Ahmed A. Moustafa[b], Merryn McKinnon[c],

Presenting Author: Michael M. Kasumovic (m.kasumovic@unsw.edu.au)
[a]School of BEES, UNSW Sydney, Kensington, NSW, 2052, Australia
[b]School of Psychology, Bond University, Gold Coast, Queensland, 4229, Australia
[c]Australian National Centre for the Public Awareness of Science, ANU, ACT, 0200, Australia

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Despite the enormous investment in programs to fix the diversity and representation of students within the STEM pipeline, universities still have an underrepresentation of diversity in many of their programs. Given the evidence that students decide whether they like science and self-select themselves away from STEM fields as early as year four, research needs to understand the social and educational factors that may be limiting the progression of certain students into STEM fields. Only then will we be able to find solutions to improve the STEM pipeline. In this study, we use a unique data from a National Game Design Challenge where students worked in groups to design a science game. Once they created a team, each student was asked to select one of seven different roles they could have in the team: Team Captain, Project Manager, Art Lead, Mechanics Lead, Communications Lead, Narrative Designer, Head Scientist. A total of 800 teams of 3-6 students participated in the challenge. We used the first name of each student to assign a gender with 90% accuracy to all the individuals in 492 teams; 308 teams had at least one member where gender could not be assigned with at least 90% accuracy. We then classified the 492 teams into three groups: Boys Only, Girls Only, and Mixed. Using a randomization approach, we explored the roles that each of the students selected in each of the teams. Of all the roles, Head Scientist was chosen the least often by students; only 86% of the teams had the role filled. This was driven by students from Girl Only teams as they were 8% less likely to select the Head Scientist role than students from Boys Only or Mixed teams. In contrast, the Mechanics Lead (an engineering role) was selected in 95% of teams. Students from Girl Only teams were 5% less likely to select the Mechanics Lead role compared to Mixed team, while Boy Only teams were 8% more likely to select the Mechanics Lead role. As our group varied in size and gender composition, we next used a randomization approach to explore the likelihood of each role being selected by a girl as the proportion of girls in the group increased. We found that the likelihood of a girl filling a particular role in a group increased as a function of the number of girls in the group. This was true for all roles except for the Head Scientist role where girls were less likely to select the role as the number of girls in the group increased. Our results suggest that it is the social environment that affects how young girls view particular career pathways: primary-aged girls may be reinforcing negative stereotypes surrounding science to make science less appealing to other girls. Our results can inform how universities approach their outreach to improve the STEM pipeline in the long term.

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