

Supplementary Online Material for

Insights into Student Gains from Undergraduate Research Using Pre/post Assessments

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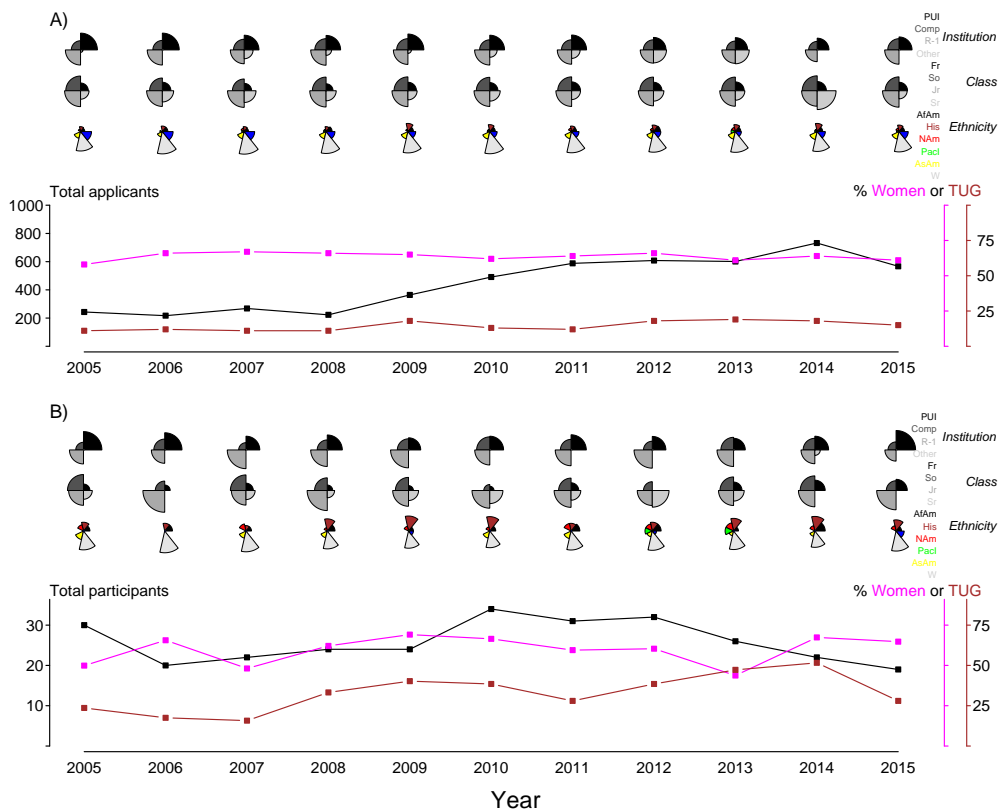


Figure S1. HF-SRPE demographic information for program applicants and participants, 2005 - 2015. **A.** *top row*. Star plots illustrating the proportion of each group of applicants in terms of type of institution (Carnegie classification) (black: Primarily undergraduate institution [PUI], dark grey: comprehensive institution; light grey: Research-1 institution; lightest grey: other [community college or no institution]). *middle row*. Academic class (black: freshmen/women; dark grey: sophomores; light grey: juniors; lightest grey: seniors or graduates). *bottom row*. Self-reported ethnicity (black: African- or African-American; brown: Hispanic/Latin-American; red: Native American; green: Native Pacific Islander; yellow: Asian or Asian-American; light grey: White or Caucasian; blue: did not provide). In all star plots, sections are scaled to the square-root of the percentage of applicants. Note that some applicants reported more than one ethnicity, so totals in that row do not sum to 100%. **B.** Total number of applicants (black symbols and line), percentage of female applicants (magenta symbols and line), and percentage of applicants from groups traditionally underrepresented in science (brown symbols and line). **C.** Star plots illustrating the proportion of each group of participants in terms of type of institution, academic class, and ethnicity. Colors as in (A). **D.** Total number of participants, and percentage of female participants and those from groups traditionally underrepresented in science. Colors and lines as in (B).

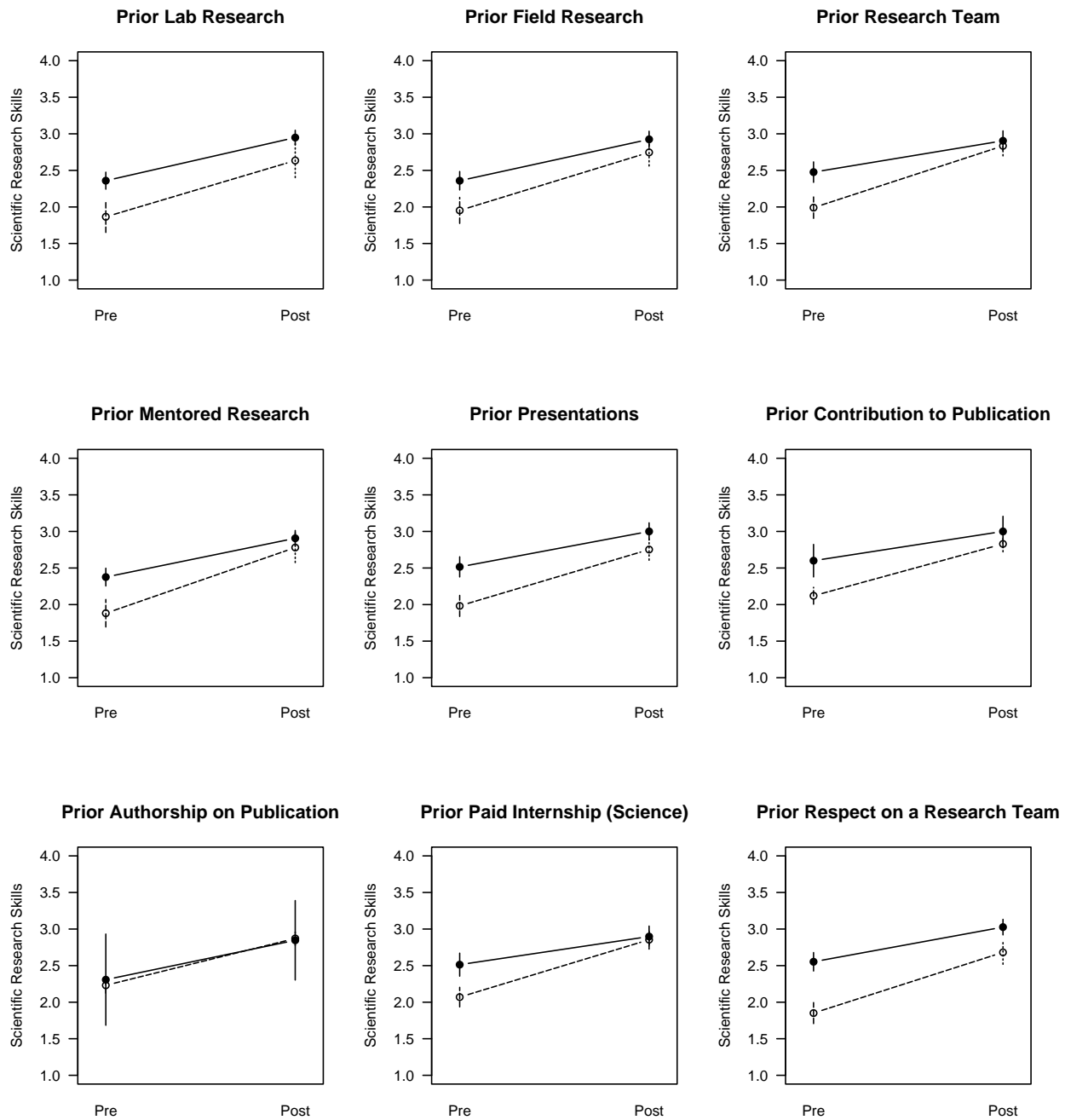


Figure S2. Changes in perception of scientific research skills based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

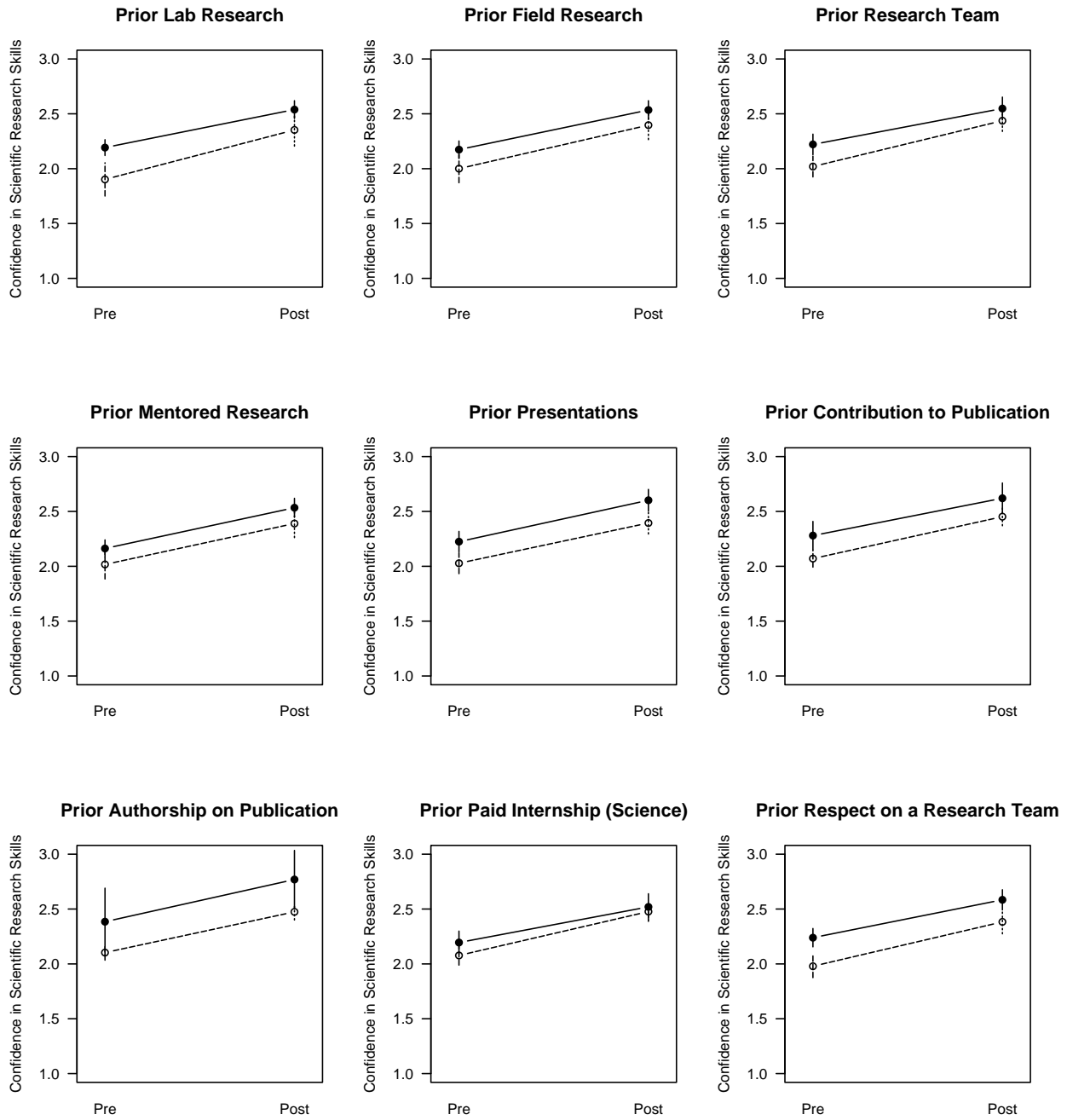


Figure S3. Changes in student's confidence of their scientific research skills based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

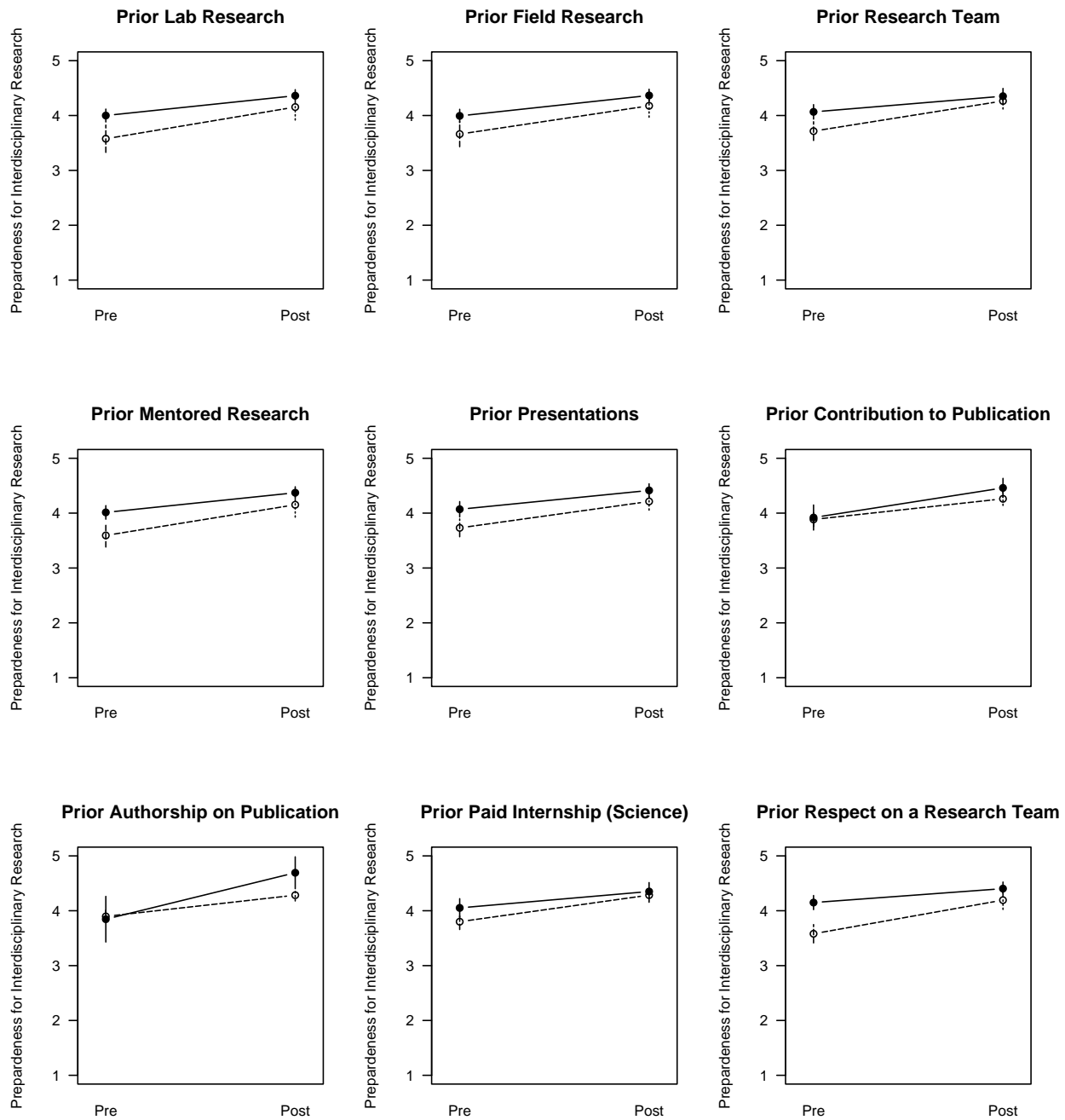


Figure S4. Changes in preparedness for interdisciplinary research based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

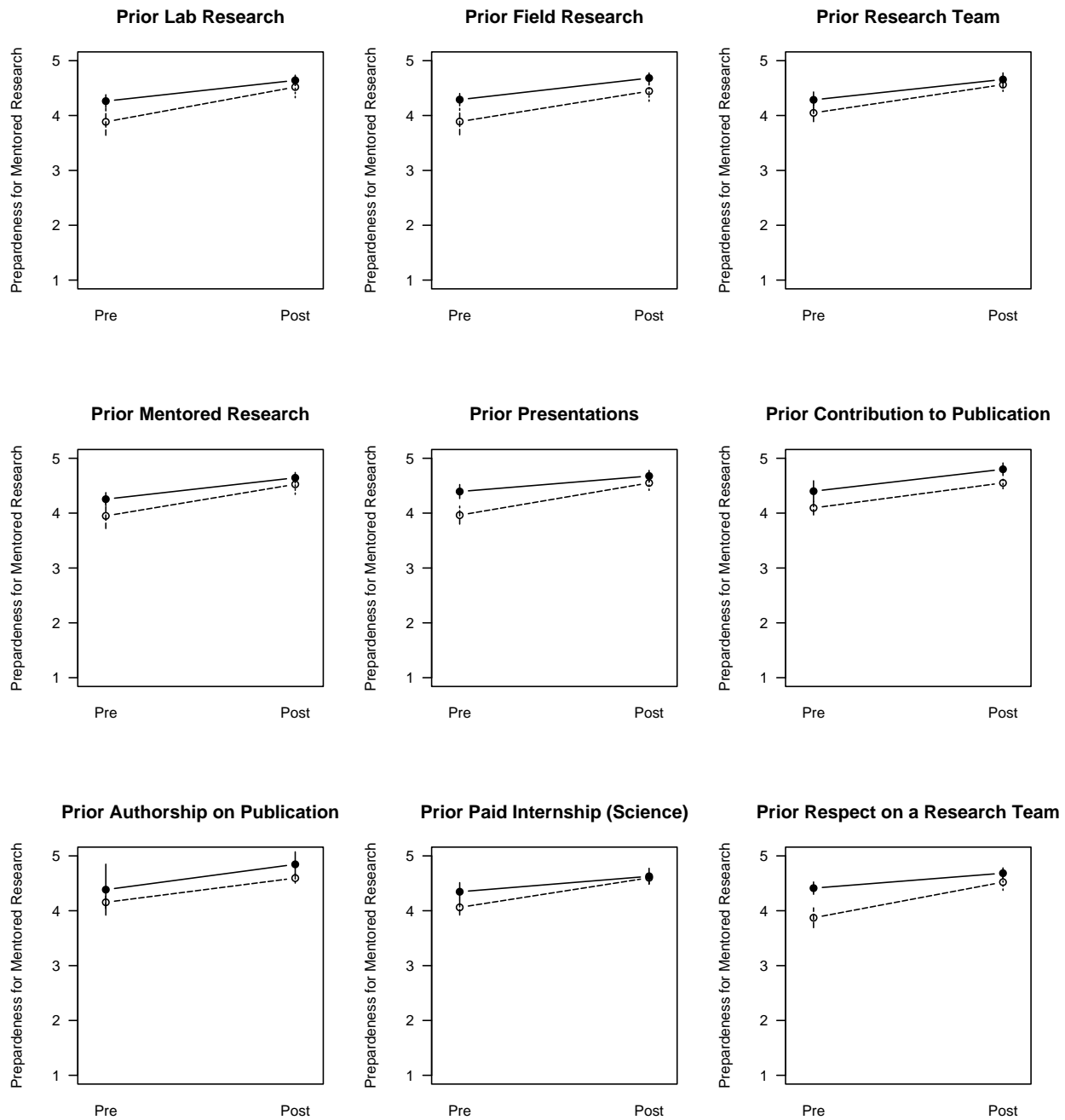


Figure S5. Changes in preparedness for mentored research based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

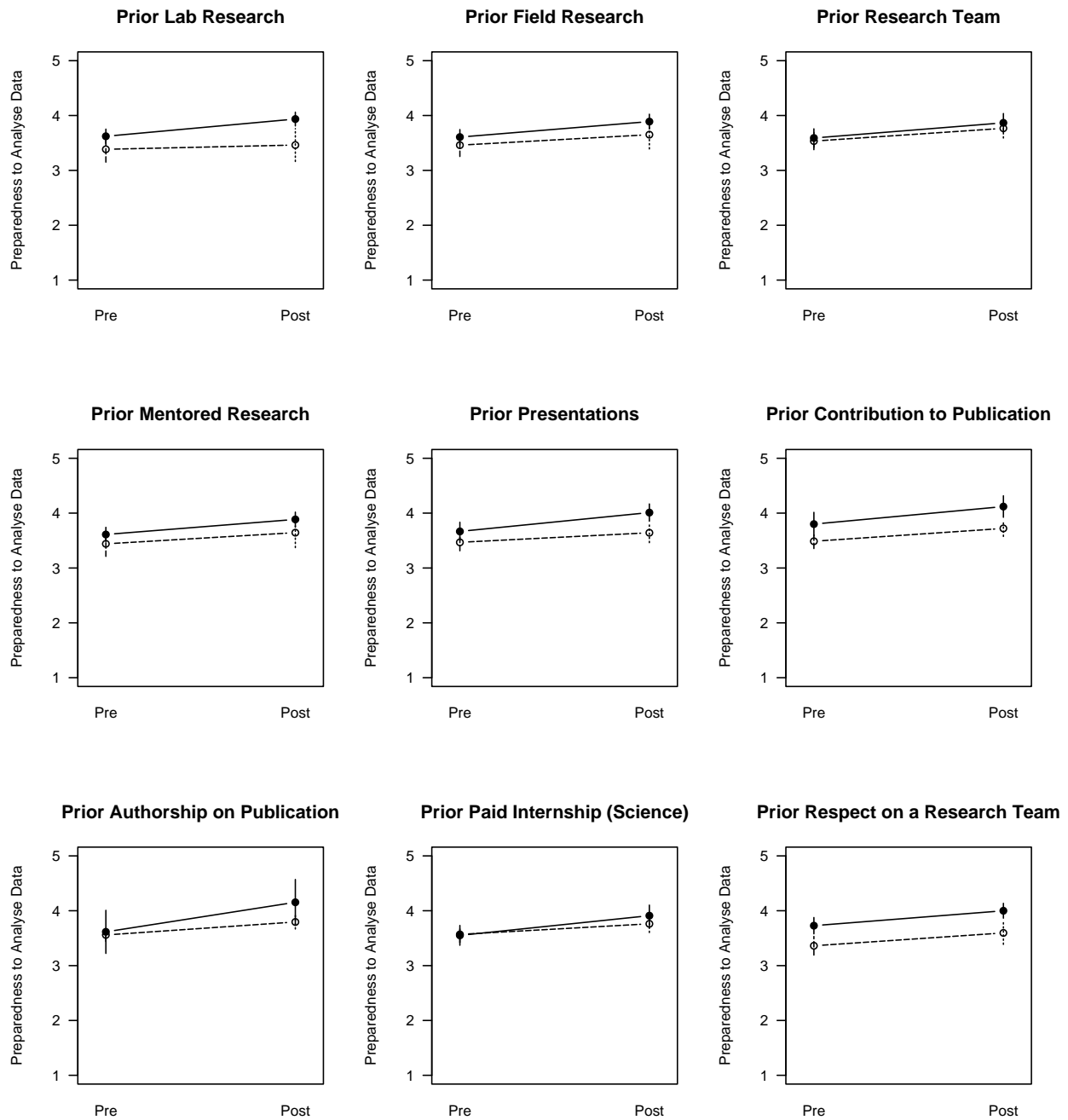


Figure S6. Changes in preparedness to analyze scientific data based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

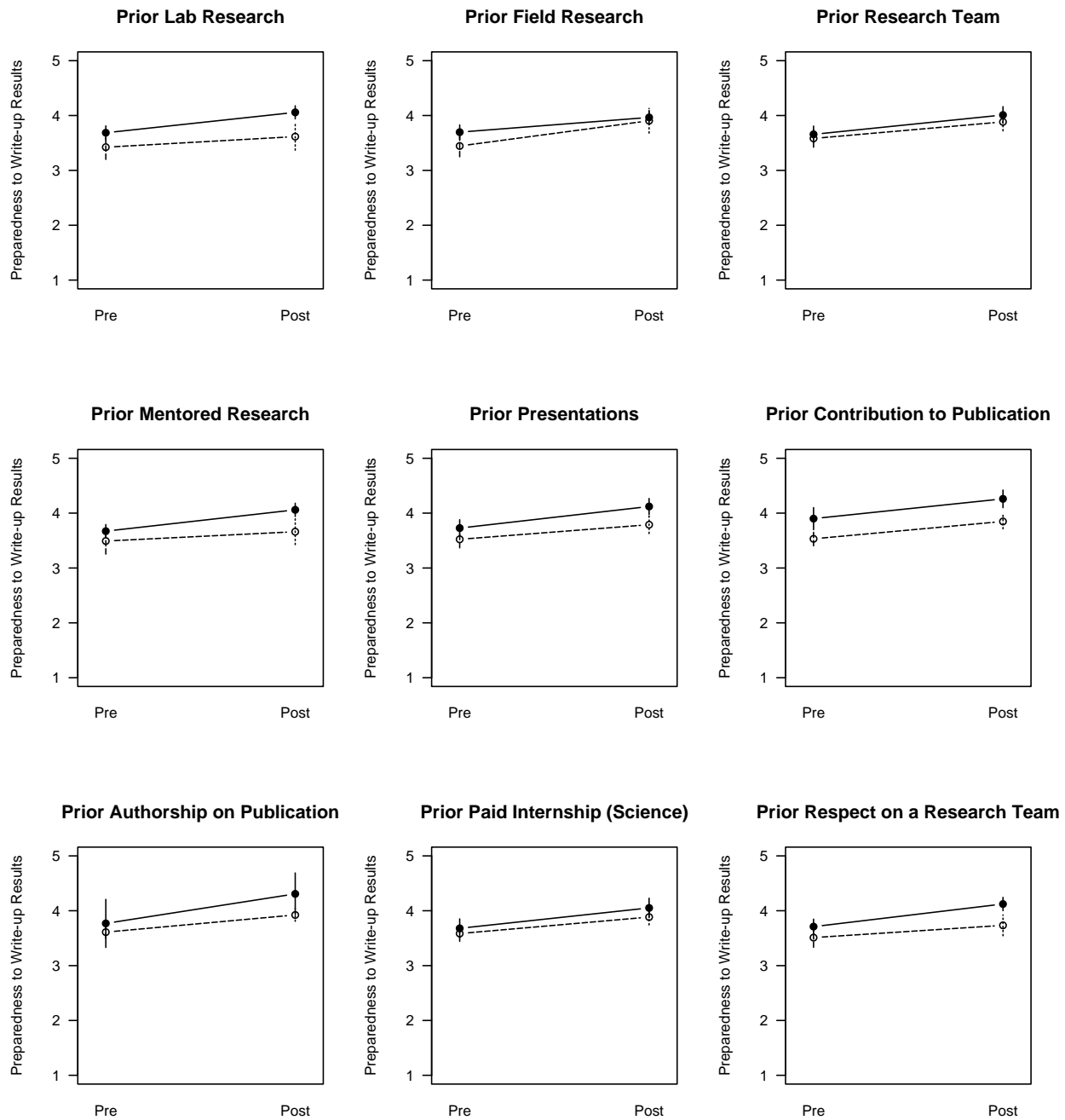


Figure S7. Changes in preparedness write-up scientific results based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

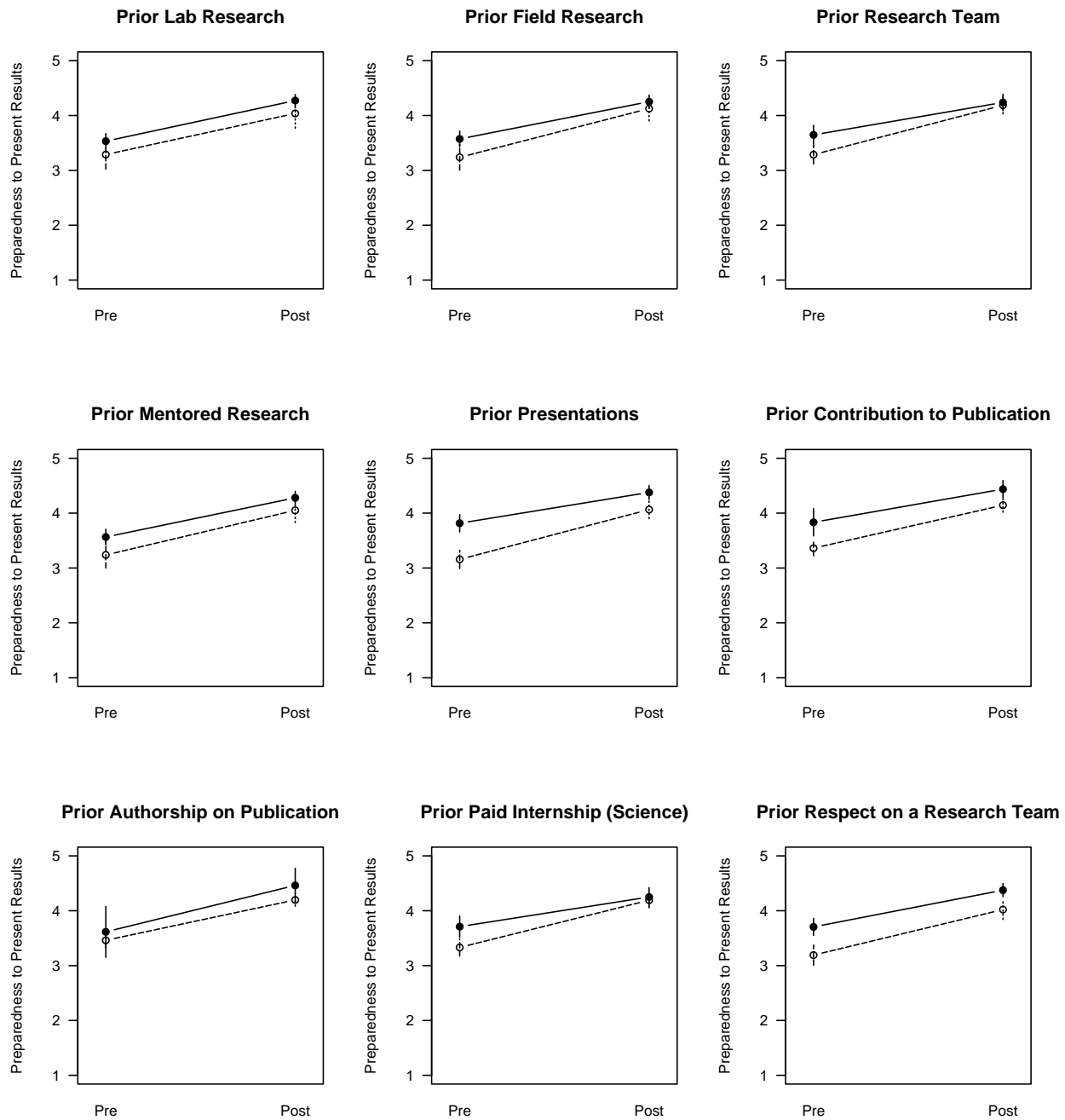


Figure S8. Changes in preparedness to present scientific results based on prior experiences. Each panel indicates presence (closed/solid) or absence (open/dashed) of each corresponding experience. Error bars represent the 95% confidence interval.

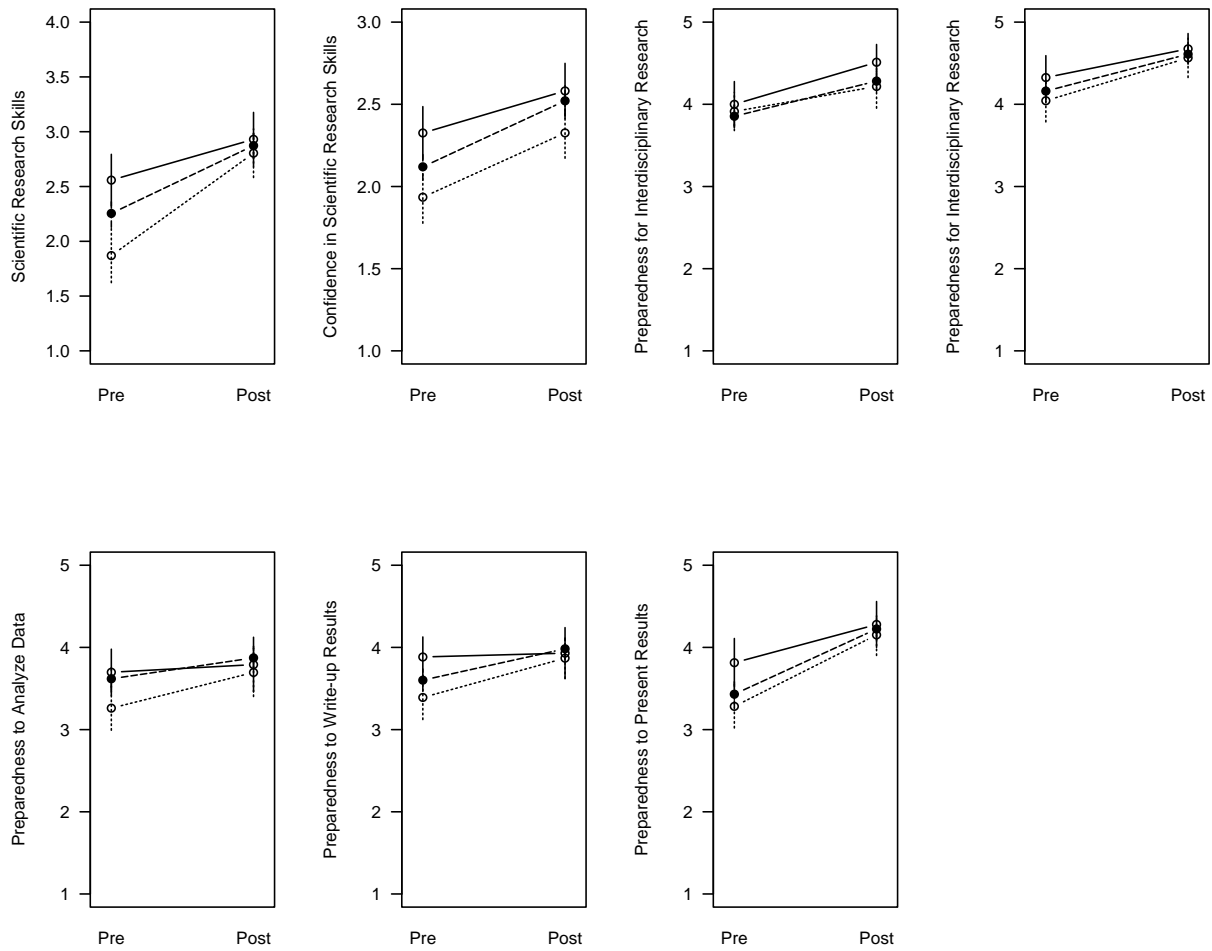


Figure S9. Changes in learning gains based on the clarity of post-graduation plans prior to starting the HF-SRPE. Participants identified clarity as either low (open/dotted), medium (closed/dashed), or high (open/solid). Error bars represent the 95% confidence interval.