Logical reasoning process for high school and college students

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Abstract: Logical reasoning is at the heart of math courses. Wason's selection task has been widely investigated to examine students' reasoning; however, previous studies found that few participants could correctly solve Wason's tasks. This study adopted a modified format of the selection task, context-embedded problems, as well as the standard selection tasks to look into high school and college students' reasoning process using eye tracking technology. Results showed that neither the high school nor the college students correctly solved the standard selection tasks, while about half of these participants correctly solve the context-embedded problems. Typically, these participants were only trying to prove the rule true rather than proving the rule false and these two groups did not differ in either accuracy or RT. Additionally, while looking at how participants examined the choices for each question, we found that longer inspection times were more related to selected choices than to rejected choices.