Math, The Girl That All the Nerds Want: Exploring the Attitudes and Beliefs of High and Low Math Anxious Students

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Introduction
Examining the attitudes and beliefs students have about mathematics is important to helping educators better understand students’ previous experiences with mathematics and how those experiences have impacted students’ mathematics learning. The interpretation theory suggests math anxiety develops from the ways students (n=173) interpret these math-related experiences. In the current work, I ask students to personify mathematics to explore their attitudes and beliefs. Students may have similar attitudes and beliefs about mathematics, but there may be differences in how students with HMA and LMA relate to mathematics, supporting the interpretation theory. Student responses demonstrated that students with HMA tended to use language with negative emotional valence, while LMA tended to use language with positive or neutral emotional valence. It is important to note that no students with LMA personified mathematics as Daunting, suggesting that personification may provide Math teachers with a quick tool to ask to explore their students’ negative math-related experiences.

Relevant Literature
Like the Draw A Scientist Test, which seeks to understand stereotypical perceptions of scientists[], asking students to personify mathematics provides insight into their implicit attitudes and beliefs about mathematics. People use personification to make sense of the world, aid their efficiency in learning unfamiliar concepts, and satisfy their basic need for social relationships(). Teachers and students use personification to explain the nature of mathematics. The following research questions guide this study:

Qual RQ1: How do undergraduates personify mathematics?
M-M RQ2: Is there a relationship between student personification of mathematics and math anxiety, and how do students with high math anxiety (HMA) and low math anxiety (LMA) personify mathematics?

Methods
Exploratory concurrent-nested mixed methods: female=143; male=29; decline to state=1

Findings
The following diagrams demonstrate the personification themes and examples of how students with HMA and LMA personified math. Findings of ANOVA are found under each personification theme.

Discussion
Students may have similar attitudes and beliefs about mathematics, but there may be differences in how students with HMA and LMA relate to mathematics, supporting the interpretation theory. Student responses demonstrated that students with HMA tended to use language with negative emotional valence, while LMA tended to use language with positive or neutral emotional valence. It is important to note that no students with LMA personified mathematics as Daunting, suggesting that personification may provide Math teachers with a quick tool to ask to explore their students’ negative math-related experiences.

Conclusions & Recommendations
These results may indicate a greater need for a healing-centered approach to teaching mathematics that would allow students to explore their previous math-related experiences. Future studies should interview participants in depth about their word choices in their responses and how their experiences influence those word choices to further examine any important socializers influencing their relationship to mathematics across developmental stages (e.g. adolescents and children). Furthermore, white supremacy and settler colonialism are important socializers influencing students’ relationship to mathematics across developmental stages (e.g. adolescents and children). Furthermore, white supremacy and settler colonialism are important socializers influencing students’ relationship to mathematics across developmental stages (e.g. adolescents and children). Furthermore, white supremacy and settler colonialism are important socializers influencing students’ relationship to mathematics across developmental stages (e.g. adolescents and children). Furthermore, white supremacy and settler colonialism are important socializers influencing students’ relationship to mathematics across developmental stages (e.g. adolescents and children).

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