Can Research on Conspiracy Theory Inoculation Motivate Mathematics Instruction?

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Unwarranted beliefs—those not based on valid reasoning or credible data and which persist despite countervailing evidence—are a societal problem (Mihailidis & Viotty, 2017). Literacy and social studies are actively working on this problem, but mathematics, the purported site of careful reasoning, could do more to reduce susceptibility to unwarranted beliefs. Unfortunately, mathematical reasoning often fails to extend beyond school (Herbst & Brach, 2006). How might we teach mathematical reasoning in a way that *does* travel with students beyond the classroom? One possible answer to this question draws upon (A) boundary crossing theory and (B) social psychology research on inoculations against unwarranted belief. Boundary crossing (Akkerman & Bakker, 2011) is a way to build knowledge and skills that extend beyond the classroom, more bidirectional and accepting of the diversity of different domains than "transfer". Boundaries are lines of separation between domains of action and interaction, such as between interactions at school and at home, but boundaries also entail proximity, such as the same people being present in the two domains. Boundaries of interest are those between school mathematics situations and social situations in which arguments are made about political or civics-related events. One central notion in boundary crossing theory is a boundary object, which is a tool or artifact that can carry meaning or spur interaction in both domains. In the present work, boundary objects can be inspired by research on conspiracy theory inoculation (e.g., Dyer & Hall, 2019), such as the inoculating power of pausing to ask the questions "How do you/I know this claim is true?" and "Could this claim possibly be false?" This *set of critical questions* could be a boundary object that spurs mathematical justifications but also builds a habit of careful thinking outside school (Otten et al., 2023). Another boundary object could be *diagramming an argument* (Krummheuer, 1995) to better ponder and diagnose the backing (or lack thereof) behind claims and inferences. A third could be a *confidence rating*, which makes explicit how confident someone is about a claim (PDPD, 2024). Exposing even small levels of doubt about unwarranted beliefs can lead to productive discourse, in class and beyond alike. The aim is to consider whether they can carry meaning in the mathematics classroom and also help students develop skills and identities that make them less susceptible to unwarranted beliefs in society.

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