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The Negative Effects of Controlled Motivation on Mathematics Achievement

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Abstract : The decline in student engagement and motivation through the middle years is well documented and clearly associated with a decline in mathematics achievement that persists through high school. To combat this trend and, very often, to meet high-stakes accountability standards, a growing number of parents, teachers, and schools have implemented various methods to incentivize learning. However, according to Self-Determination Theory, forms of incentivized learning such as public praise, tangible rewards, or threats of punishment tend to undermine intrinsic motivation and learning. By focusing on external forms of motivation that thwart autonomy in children, adults also potentially threaten relatedness measures such as trust and emotional engagement. Furthermore, these controlling motivational techniques tend to promote shallow forms of cognitive engagement at the expense of more effective deep processing strategies. Therefore, any short-term gains in apparent engagement or test scores are overshadowed by long-term diminished motivation, resulting in inauthentic approaches to learning and lower achievement. The current study focuses on the relationships between student trust, engagement, and motivation during these crucial years as students transition from elementary to middle school. In order to test the effects of controlled motivational techniques on achievement in mathematics, this quantitative study was conducted on a convenience sample of 22 elementary and middle schools from a single public charter school district in the south-central United States. The study employed multi-source data from students (N = 1,054), parents (N = 7,166), and teachers (N = 356), along with student achievement data and contextual campus variables. Cross-sectional questionnaires were used to measure the students' self-regulated learning, emotional and cognitive engagement, and trust in teachers. Parents responded to a single item on incentivizing the academic performance of their child, and teachers responded to a series of questions about their acceptance of various incentive strategies. Structural equation modeling (SEM) was used to evaluate model fit and analyze the direct and indirect effects of the predictor variables on achievement. Although a student's trust in teacher positively predicted both emotional and cognitive engagement, none of these three predictors accounted for any variance in achievement in mathematics. The parents' use of incentives, on the other hand, predicted a student's perception of his or her controlled motivation, and these two variables had significant negative effects on achievement. While controlled motivation had the greatest effects on achievement, parental incentives demonstrated both direct and indirect effects on achievement through the students' self-reported controlled motivation. Comparing upper elementary student data with middle-school student data revealed that controlling forms of motivation may be taking their toll on student trust and engagement over time. While parental incentives positively predicted both cognitive and emotional engagement in the younger sub-group, such forms of controlling motivation negatively predicted both trust in teachers and emotional engagement in the middle-school sub-group. These findings support the claims, posited by Self-Determination Theory, about the dangers of incentivizing learning. Short-term gains belie the underlying damage to motivational processes that lead to decreased intrinsic motivation and achievement. Such practices also appear to thwart basic human needs such as relatedness.

Keywords : controlled motivation, student engagement, incentivized learning, mathematics achievement, self-determination theory, student trust
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