

## **ABSTRACT**

Three longitudinal studies involving a total of 220 talented seventh and eighth graders were conducted to test the relationship between mathematical ability (SAT-M scores), motivational orientation (self-reports of flow) and achievement (course grades). Previous studies of youth indicate that their performance can be affected by their ability, their experience of flow, their sense of control and perceived competence. It was hypothesized that intrinsic motivation, measured by the flow construct, would predict achievement independent of ability, and that flow would be a better predictor than extrinsic motivation. Study I found no consistent relationship between math ability and flow in samples of the top 1% of sixth graders in DuPage County during four years ( $n$ 's = 55, 75, 63, 73), but a significant relationship was found when the range was expanded to include the top 5% of gifted students ( $n$  = 820, year 4), indicating the need to adjust analytic procedures for restriction of range. In Study II, regression analyses confirmed that ability and flow predict math achievement independently. Flow was significantly better than extrinsic motivation in predicting higher levels of achievement. Extrinsic motivation was associated negatively with achievement. Self-reports of flow collected at the beginning, middle and end of the fourth year were factor analyzed and found to consist of cognitive ease (perceived competence and ease of doing math) and task enjoyment (intrinsic pleasure while engaged in math). Using path analysis, cognitive ease and achievement were found to depend on task enjoyment, although the latter was unaffected by

achievement, ability or cognitive ease. Achievement was found to depend on ability and task enjoyment but not cognitive ease. Study III analyzed instruction in seven classrooms over the period of one year to explore whether changes in students' experience of flow were associated with interactive, autonomy-supporting tasks, enjoyable learning activities, and higher-level cognitive demands. Students experienced significantly more flow and their achievement improved by half a grade in classes where these more complex opportunities were afforded. The findings can inform decisions about instructional practices for helping students retain flow and achieve more in math.