

# **RUME- and Non-RUME-track students' motivations of enrolling in a RUME graduate course**

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The purpose of this ongoing study is to investigate students' motivations in taking a graduate-level RUME course. Seven individual semi-structured interviews were conducted with graduate students enrolled in a RUME course at a large Midwestern university that has a RUME Ph.D. option in the mathematics department. Our analysis of those interviews utilized two theoretical frameworks: Self-Determination Theory (Ryan & Deci, 2000) and Hannula's (2006) needs and goals structure. Preliminary analysis of the interviews indicates that non-RUME-track students are extrinsically, need-motivated, while RUME-track students are intrinsically, goal-motivated when taking a RUME course. The researchers conjecture that knowing what influences non-RUME-track students may aid in closing the gap between the mathematical and RUME communities.

## **Introduction**

There is a limited amount of research with regard to motivation in mathematics education (Wæge, 2009). Particularly, in our search, there appears to be little research regarding motivation of future mathematics educators at the tertiary level (e.g., Herzig, 2002). Hannula (2004) defined motivation to be "a potential to direct behaviour that is built into the system that controls emotion. This potential may be manifested in cognition, emotion and/or behaviour." According to Wæge (2009), motivation can be influenced by teachers: "students' motivation for learning mathematics, although it is considered relatively stable, can be influenced by changes in the teaching approach" (p. 90).

Pedagogy courses are sometimes offered within mathematics departments to help shape and educate graduate students who will go on to teach at the college level. These courses are sometimes referred to as Introduction to RUME courses. The purpose of this ongoing study is to investigate students' motivations in taking a graduate-level RUME course. In particular, our research goals for the current study are (a) to classify students' motivations for enrolling in and participating in the course, and (b) to investigate what the students took away from the course with respect to their academic goals, their career goals, their future course selections, and/or their current teaching practices. We are especially interested in the similarities and differences between RUME- and non-RUME-track students with respect to these questions.

## **Theoretical Perspective**

Self-Determination Theory (SDT) is a general motivation theory that focuses on psychological needs (Ryan & Deci, 2000). They distinguish between psychological needs by looking at intrinsic and extrinsic motivation. Intrinsic motivation is defined as "doing an activity for the inherent satisfaction of the activity itself" while extrinsic motivation is "the performance of an activity in order to attain some separable outcome" (Ryan & Deci, 2000, p. 71). From their studies, Ryan & Deci developed the Self-Determination Continuum (see Figure 1).

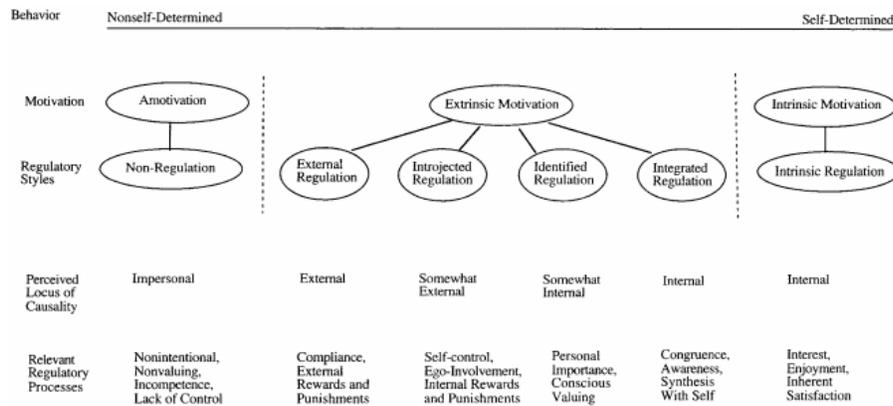


Figure 1; The Self-Determination Continuum (Ryan & Deci, 2000, p. 72)

Hannula (2006) says that “as a potential, motivation cannot be directly observed. It is observable only as it manifests itself in affect, cognition, and behaviour” (p. 175). He gives the examples of motivation being observable through beliefs, values, and emotional reactions. Needs (e.g., “autonomy, competency, and social belonging” (Hannula, 2006, p. 167)) which may transfer to goals, are used to structure this potential. Hannula’s (2006) needs and goals structure, combined with Ryan & Deci’s (2000) intrinsic and extrinsic framework, together will inform our analysis of the data.

### Methodology

Seven individual semi-structured interviews up to 30 minutes in length were conducted. The individuals were students from a large Midwestern university who were enrolled in an Introductory to Math Pedagogy Research course. Four participants were interested in a RUME-track Ph.D. in mathematics. The class met for fifty-minute class periods three days a week. A research team member who was not enrolled in or teaching the course recruited the participants and conducted the interviews. In these interviews, students were asked about their motivations for taking the course, how those motivations have changed over time, how mathematics and RUME are related, and what they expect to leave the course with.

### Preliminary Results

“I will admit that one primary reason is for the RUME teaching certificate that you get when you get your Ph.D. However, I am interested in the way that students learn math.” –Student G (Non-RUME-track)

“My real passion is in teaching and in not so much teaching but in researching ways to create better teachers.” – Student C (RUME-track)

Student G is expressing intrinsic motivation with the potential being rooted in needs while Student C is expressing extrinsic motivation with the potential being rooted in goals. A preliminary conjecture is that the non-RUME-track students’ motivations are extrinsic, while the RUME-tracked students are more intrinsic. The potential motivators between the RUME-track students might tend toward goals, while the non-RUME-track students might tend toward competence, i.e. needs. Through this study, the researchers hope to gain a better understanding of why students take RUME courses and what they get out of them. Specifically, knowing the influences of non-RUME-track students can aid in closing the gap between the mathematical and RUME communities. Future research should include why non-RUME track students *do not* take RUME or pedagogy courses when given the opportunity.

## References

- Hannula, M. S. (2004). Regulating motivation in mathematics. *A paper presented at the Topic Study Group*, 24.
- Hannula, M. S. (2006). Motivation in mathematics: Goals reflected in emotions. *Educational Studies in Mathematics*, 63(2), 165-178.
- Herzig, A. H. (2002). Where have all the students gone? Participation of doctoral students in authentic mathematical activity as a necessary condition for persistence toward the PH.D. *Educational Studies in Mathematics*, 50(2), 177-212.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68.
- Wæge, K. (2009). Motivation for learning mathematics in terms of needs and goals. *CERME 6-WORKING GROUP*, 84.