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The Mathematics Department at the National University of Ireland Maynooth has many supports in place to help students if they experience difficulties. These include small group tutorials, online refresher courses, workshops, and a successful drop-in mathematics support centre. Research has shown that students who take advantage of these services have a greater chance of succeeding in examinations than those who do not, (Mac an Bhaird, Morgan, and O'Shea 2009). However, a small minority of at-risk students do not take advantage of the support available. The aim of our study is to investigate the reasons why some students who are experiencing difficulties do not seek help.

In October 2009, 39 students who were repeating a first year mathematics module in NUI Maynooth were identified. Seven of these students agreed to be interviewed. After checking our records, we determined that these seven students had not actively engaged with mathematics support. The interviews were conducted by the first author. Each interview lasted for approximately 40 minutes. The questions were open-ended and concerned students' mathematical education in school, their impression of mathematics at university, and their views on the mathematics support available to them. The reasons for their non-engagement with mathematics support were also explored. All students were offered a mentoring service as part of the study.

The interviews were transcribed by the first author. Pseudonyms were used to protect the students' identities. The transcriptions were coded using grounded theory procedures outlined by Strauss and Corbin (1998). All three authors labelled points that they considered to be important. These labels were then compared and codes were agreed upon. Codes that were related to a common theme were grouped together to form a concept. These were then compared, and those that concerned a common phenomenon were amalgamated into higher order objects called categories. The codes, concepts and categories were continually compared and revised by repeated examination of the data, question by question and student by student. The main categories that emerged relating to students' non-engagement with mathematics support were: fear; lack of personal motivation; the anonymity of large classes; and to a lesser extent the lack of awareness of support services. Many of these factors were also identified in a study of students at Loughborough University (Symonds, Lawson, and Robinson 2008).

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The fear category resulted from the grouping of four concepts: fear of failure; fear of showing a lack of knowledge or ability; fear of being singled out; and fear of the unknown (stemming from a lack of knowledge of how the university system works). Students often mentioned two or more of these fears in the same sentence. The first three of these concepts seem to involve the fear of exposing one's own inadequacies to oneself, to lecturers or tutors, and to one's peers. The data suggested that fear was the main reason why students did not engage with mathematics support. The fear category was designated the dominant category due to the high frequency of mentions of labels related to fear being present and prominent in the answers to all questions for all but one student (a mature student who, unlike the others, had chosen to study mathematics). Other authors have found that the fear of showing a lack of knowledge or ability impacts negatively on students' willingness to ask questions (for example: Ryan, Pintrich, and Midgley 2001). This was also evident from our study, and in addition students reported that the fear of their own emotional reaction to failure stopped them from seeking help or even from attempting assignments.

We are currently using our results to design an intervention strategy for first year students at risk of failing. We are also interviewing students who did engage with mathematics support and passed their examinations. Initial investigations show that these students had many of the same mathematical problems as those who did not engage, but were willing to seek help either on their own or with a group of friends.

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References

- Mac an Bhaird, C., T. Morgan, and A. O'Shea. 2009. The impact of the mathematics support centre on the grades of first year students at the National University of Ireland, Maynooth. *Teaching Mathematics and its Applications* 28, no. 3: 117–22.
- Ryan, A.M., P.R. Pintrich, and C. Midgley. 2001. Avoiding seeking help in the classroom: Who and why? *Educational Psychological Review* 13, no. 2: 93–114.
- Strauss, A., and J. Corbin, 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. London: Sage Publications.
- Symonds, R., D. Lawson, and C. Robinson. 2008. Promoting student engagement with mathematics support, *Teaching Mathematics and its Applications* 27, no. 3: 140–9.