

COLLEGE STUDENTS' VIEWS OF MATHEMATICS AND BEHAVIOR

Po-Hung Liu

National Chin-Yi Institute of Technology, Taiwan, ROC

Following Schoenfeld's study in the 1980s, researchers reported a consistent pattern between college students' mathematical views and behavior. Kloosterman & Stage (1991) cited low college achievers' poor conception about the nature of mathematics. Carlson (1999) reported that mathematics graduate students usually hold more expert views than their undergraduate peers and are more likely to attempt problem-solving approaches. Cifarelli & Goodson-Espy (2001) also found college students' mathematical beliefs may exert an impact on their performance. However, the case of their Asian counterparts has remained rarely if ever explored.

This study investigates those relationships between Taiwanese college students' views of mathematics and their mathematical behavior. Nine students randomly selected from 44 in a calculus class firstly answered an open-ended questionnaire developed to probe their views of mathematical thinking and knowledge and were invited to participate in follow-up interviews to examine their inner thinking about the issues. During the following 18 weeks, the nine participants' learning behavior in class and performance on the ill-structured problems were observed and analyzed.

Results generally demonstrate outcomes consistent with previous studies, yet several phenomena are worth noting. Interrelations between participants' mathematical beliefs and behavior were far from linear and straightforward. Participants in the present study expressing similar notions may exhibit diverse performance. To explain such a seemingly complicated consequence, this study raises several issues for future research along this line.

References

- Carlson, M. P. (1999). The mathematical behavior of six successful mathematics graduate students: Influences leading to mathematical success. *Educational Studies in Mathematics*, 40, 237-258.
- Cifarelli, V. & Goodson-Espy, T. (2002). The role of mathematical beliefs in the problem solving actions of college algebra students, *Proceedings of the 25th Conference on The International Group for The Psychology of Mathematics Education*, Vol. 2, p. 265.
- Kloosterman, P. & Stage, F. K. (1991). Relationships between ability, belief and achievement in remedial college mathematics classrooms. *Research and Teaching in Developmental Education*, 8(1), 27-36.