

Tracing the roots of mathematics anxiety through in-depth interviews with preservice elementary teachers

TEACHERS

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Main content

Article Preview :

Through administration of the Revised Mathematics Anxiety Rating Scale (R-MARS) to 50 preservice elementary teachers, the five most mathematically anxious were identified. Each of the five identified participants was interviewed with regard to her mathematics experiences in elementary school, high school, college, and family setting. Their perceptions as to the causes of their specific anxieties about mathematics were expressed. Their future plans to deal with their anxieties about teaching mathematics when they join the teaching profession were also voiced. Negative school experiences, lack of family support, and general test anxiety were trends found within the backgrounds of the participants. Despite their current apprehensions regarding the study and teaching of mathematics, most of the subjects were very confident and optimistic as to the possibility of setting aside their fears in order to develop into effective teachers of mathematics themselves.

Over the past 25 years, mathematics anxiety has become a very popular research topic for both mathematics educators and educational psychologists. Mathematics anxiety has been defined as a state of discomfort which occurs in response to situations involving mathematical tasks which are perceived as threatening to self esteem (Cemen, 1987). In turn, these feelings of anxiety can lead to panic, tension, helplessness, fear, distress, shame, inability to cope, sweaty palms, nervous stomach, difficulty breathing, and loss of ability to concentrate (Cemen, 1987; Posamentier & Stepelman, 1990, p. 210). Although only a small proportion of persons suffer from a propensity to experience this condition, it is important to recognize how it can lead to a very debilitating state of mind. Those persons with severe cases of mathematics anxiety are limited in college majors and career choices. There is a particular concern in the case of elementary teachers, because it has been reported that a disproportionately large percentage experience significant levels of mathematics anxiety (Buhlman & Young, 1982; Levine, 1996). This leads to doubts as to their potential effectiveness in teaching mathematics to young children (Trice & Ogden, 1986).

According to Hadfield and McNeil (1994) the causes of mathematics anxiety can be divided into three areas: environmental, intellectual, and personality factors. Environmental factors include negative experiences in the classroom, parental pressure, insensitive teachers, mathematics presented as rigid sets of rules, and nonparticipatory classrooms (Dossel, 1993; Tobias, 1990). Intellectual factors include being taught with mismatched learning styles, student attitude and lack of persistence, self-doubt, lack of confidence in mathematical ability, and lack of perceived usefulness of mathematics (Cemen, 1987; Miller & Mitchell, 1994). Personality factors include reluctance to ask questions due to shyness, low self esteem, and viewing mathematics as a male domain (Cemen, 1987; Gutbezahl, 1995; Levine, 1995; Miller et al., 1994).

Many researchers attempt to trace the evolution of mathematics anxiety among high school and college students back to their elementary school classroom experiences. When early school experiences get the blame for mathematics anxiety, the elementary teacher is usually labeled as the responsible party. Mathematically anxious teachers are said to pass their anxieties on to their students (Buhlman & Young, 1982). They...

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Keywords: Mathematics anxiety; Pre-service elementary school teachers; Teacher education. 1. Introduction. In addition to being one of the most investigated concepts; mathematics anxiety (MA) has been affected all aspects of mathematics education directly or indirectly. He found that the following variables; "ability, school grade level, and undergraduate fields of study, with pre-service arithmetic teachers especially prone to mathematics anxiety" demonstrate differential MA levels (p. 33). Malinsky, Ross, Pannells, & McJunkin (2006) claimed that "math anxiety is an extremely common phenomenon among college and university students today" (p. 274). Recommended Citation Adeyemi, Atinuke, "Investigating and Overcoming Mathematics Anxiety in In-service Elementary School Teachers" (2015). Electronic Theses and Dissertations. Data were collected through an online survey completed by 111 elementary in-service teachers and follow up face-to-face interviews with four of them. Findings from the survey indicated that: 17.1% of them had low level of mathematics anxiety, 64% experienced a moderate level, and 18.9% had a high level of mathematics anxiety; female participants experienced higher mathematics anxiety than males; and there were no significant differences in the mathematics anxiety for White and non-White participants, by participants' mothers' educational level, and socioeconomic status. Mathematics anxiety and mathematics teacher efficacy: What is the relationship in elementary preservice teachers? *School Science and Mathematics*, 106(7), 306–315. doi: 10.1111/j.1949-8594-2006.tb17921.x Swars, S. L., Smith, S. Z., Smith, M. E., & Hart, L. C. (2009). A longitudinal study of the effects of a developmental teacher preparation program on elementary prospective teachers' mathematics beliefs. *Journal of Mathematics Teacher Education* 12(1), 47–66. Trujillo, K. M., & Hadfield, O. D. (1999). Tracing the roots of mathematics anxiety through in-depth interviews with preservice e...