彰化縣國中三年級學生在數學態度、自我效能與學習成就之研究

陳彩卿、郎亞琴

E-mail: 9800752@mail.dyu.edu.tw

摘 要

本研究主要目的在探討國三學生之數學態度、數學自我效能與數學成就的關係；其次考驗不同背景變項的國三學生數學態度、數學自我效能與數學成就之差異；探究國三學生數學態度、數學自我效能對數學成就之預測作用。

本研究以台灣地區公立國中三年級的學生為母群體，抽取彰化縣553位國三學生為施測樣本，以隨機取樣施以個人基本資料調查表、數學態度量表與數學自我效能量表，再以SPSS12.0統計軟體進行描述性統計分析、t檢定、皮爾森積差相關與迴歸分析。

本研究結果發現不同性別之國三學生在數學態度上沒有顯著不同；不同性別之國三學生在數學自我效能與數學成就上均有顯著不同；不同家庭社經地位、有無參與數學補習的國三學生在數學態度、數學自我效能與數學成就上均有顯著不同；國三學生之數學態度、數學自我效能與數學成就有顯著相關；數學態度、數學自我效能對數學成就有39.8%的解釋力。

關鍵詞 : 數學態度、數學自我效能、數學學習成就

目錄

參考文獻

一、中文部分王三幸(1993)，影響國小高年級學生數學學業成就的相關因素研究，國立台灣師範大學教育研究所未出版之碩士論文。王文清，?添全(1991)，台南市國民小學?學態?及其相關因素之研究，台南師院學生學刊，13，37-56。古明峰(1997)，孩子為?麼害怕談?學焦慮，國教世紀，175，29-33。田秀蘭(1996)，自我效能預期與女性之生涯發展，諮商與輔導，123，32-33。朱江文(2003)，問題導向學習教學策?改善學童?學態?與教師成長之?動研究，國?台中師範學院?學教育學系未出版之碩士?文。?政院國家科學委員會(2005)，近??我國中、小學生??科表現升？或?？-國際?學與科學教育成就趨勢調查結果。何義清(1987)，國中學生?學態?及其相關因素之研究，政大學報，55，171-214。吳元良(1997)，不同數學課程、性別、社經地位的國小學生在數學態度及成就上比較之研究，國立屏東師範學院國民教育研究所未出版之碩士論文。吳明隆(1997)，國小學生數學學習行為與其電腦焦慮、電腦態度關係之研究，國立高雄師範大學教育學系未出版之博士論文。吳明隆，葛建志(2006)，國民小學學生數學歸因信念、數學態度、數學焦慮與數學成就之相關研究，高雄師大學報，21，1-18。吳明?，蘇耕役(1995)，國民小學學生控制信?、重要他人態?知覺與?學焦慮、?學態?及?學成就關係之研究，初等教育學刊，4，181-210。吳知賢(1996)，國小兒童歸因再訓練之研究，台北市 : 行政院國科會科資中心。吳梅?，曾哲仁(1994)，國小學童?學態?及其相關因素之研究，國?臺南師範學院臺南師院學生學刊，15，19-38。巫有鎰(1999)，影響國小學生學業成就的因果機制--以台北市和台東縣作比較，國立台東師範學院國民教育研究所未出版之碩士論文。李秀貞(2002)，電腦媒體教學與自我效能對國中理化學習成就之相關研究，國立台灣師範大學化學研究所未出版之碩士論文。李旻樺(2003)，高中學生之自我效能、成功期望、學習任務價值與動機調整策略之研究，中華輔導學報，14，117-145。李淑雅(2002)，探討國小學童自然科學習自我效能及其對小組教學中同儕互動的影響，國立臺南師範學院未出版之碩士論文。?名揚(2004)，國二?學科學?生越?越優，?合報(台北)。?默英(1983)，性別、?級、?學學習態?、性別角色與?學成就之關係，國?政治大學教育研究所未出版之碩士?文。周曉虹(1995)，社會學習理論，台北:桂冠圖書。林文正(2002)，國小學生自我調整學習能力、對教師自我調整教學之覺察、動機信念與數學課業表現之相關研究，國立屏東師範學院教育心理與輔導學系未出版之碩士論文。林承德(2003)，台東縣國小四年級學童數學態度、數學焦慮與數學成就之研究，國立屏東師範學院數理教育研究所未出版之碩士論文。林清標(1998)，魏納的歸因理論及教育含意，初等教育集刊，1，177-190。花敬凱(2000)，自我效能理論對資優障礙學生生涯發展的啟示，資優教育季刊，75，19-25。?賢，陳英娥(1994)，台灣地區國一學生?學焦慮及其相關因素之研究，高雄師大學報，5，137-158。洪菁穗(1999)，探討國中生在理化科的學術地位、自我效能與學業成敗歸因之關係，國立台灣大學物理研究所未出版之碩士論文。孫志麟(1991)，自我效能的基本概念及其在教育上的應用，教育研究，22，47-53。孫清山，黃毅志(1996)，補習教育、文化資本與教育取得，台灣社會學刊，19，95-139。秦麗花(1994)，國小數學學習障礙兒童數學解題補救教學實施成效之比較研究，國?台南師範學院初等教育研究所未出版之碩士?文。高石城(1999)，?學新課程對學生?學解題能?與?學態?影響之研究，國?台南師範學院初等教育研究所未出版之碩士?文。張芳全(2006)，影響?學成就因素探討-以台灣在TIMSS2003 ?的樣本為?，課程與教學季刊，9(3)，151-168。張春興(1992)，張氏心理學辭典，台北:東華。張春興(1995)，現代心理學，台北:東華。張景琪(2001)，國小學童數學科學習信念、目標取向、學習策略與數學學業成就之相關研究，國立花蓮師範學院國民教育研究所未出版之碩士論文。教育部(2003)，國民小學九?一貫課程綱要—?學學習?域，台?:教育部。教育部統計處(2002)，台灣地區中等以下各級學校學生學習及生活概況調查報告-九十學??第二學期，台?:教育部。教育資料文摘(1997)，國中小學生最怕上數學課，教育資料文摘，239，29-30。曹宗萍，周文忠(1997)，國小?學態??表的編製，國科會專題研究成果報告(報告編號:-2511-S153-001)。梁茂森(1998)，國中生學習自我效能量表之編製，國立高雄師範大學教育系教育學刊，14，155-192。許綺婷(2001)，探討國三學生對補習班與學校教學的看法及其與基本學測數學科之表現的關係，國立臺灣師範大學科學教育研究所未出版之碩士論文。陳玉玲(1995)，目標設定、目標投入與自我效能對國小學生數學作業表現的影響，國立高雄師範大學教育研究所未出版之碩士論文。陳淑美(1998)，?學焦慮症新解，光華，23(7)，84-92。曾玉玲(1993)，台北市高智商低成就國中學生學習信念與相關因素之探討，國立政治大學教育研究所未出版之碩士論文。曾淑容(1991)，普通班和資優班學生性別、年級、數學歸因和數學態度的相關研究，特殊教育學報，6，373-430。曾琬淑(1995)，三種不同補救教學方式對國小數學科低成就學生實施成效之比較研究，國立台南師範學院國民教育研究所集刊，1，345-383。黃郁文(1994)，自我效能概念及其與學業成就表現之關係，諮商與輔導，106，39-41。黃國清(2004)，台南市九?一貫課程七?級?學?域成就測驗之編製與其相關之研究，國?中山大學教育研究所未出版之碩士?文。黃惠卿(2005)，國中生之數學成就目標相關研究，中等教育，4，124-147。黃德祥(1990)，國中與國小學生數學焦慮與數學態度之分析研究。國立彰化師範大學輔導學報，13，1-52。葉和滿(2002)，不同管道的高中學生的學習動機、學習策略與學業成就之研究，國立彰化師範大學教育研究所未出版之碩士論文。詹敏娟(2003)，國小三年級數學學習困難學生與普通學生學業自我效能之研究，國立彰化師範大學特殊教育研究所未出版之碩士論文。熊同鑫 (2002)，國小高年級學童參加校外數學補習之背後因素與對數學學習影響之研究，國立臺東師範學院教育研究所未出版之碩士論文。趙柏原(1999)，國中學生自我效能、求助態度與課業求助行為之相關研究，國立彰化師範大學教育研究所未出版之碩士論文。劉信雄(1992)，國小學生認知風格、學習策略、自我效能、與學業成就關係之研究，國立政治大學教育研究所未出版之博士論文。蔡文標(2003)，影響國小數學低成就學生數學成就的相關因素之研究，特殊教育學報，17，1-37。蔡水河(2004)，嘉義縣市國小學童校外英語補習經驗、學校英語學習態度及英語學習策略之相關研究，國立中正大學教育研究所未出版之碩士論文。蔡翠華(1996)，國小數學學習障礙學生的學習型態與學習策略之相關研究，國立台灣師範大學特殊教育研究所未出版之碩士論文。鄭建良(2002)，國民小學六年級學童數學科教師期望、成就動機、學業成就與成敗歸因關係之研究，國民教育研究學報，9，47-77

。鄭淵全(1997)，社經地位、能力、學校教育過程與國小學生學業成就之關係--功能典範與衝突典範之探究，國立高雄師範大學教育研究所未出版之碩士論文。鍾思嘉，?青青，蔣治邦(1991)，國小學童?學焦慮之形成與原因，教育與心?研究，14，99-139。鍾聖校(2004)，情意溝通教學??，台?:五南。魏麗敏(1992)，國小兒童家庭因素情緒困擾對成就與適應影響之分析研究，高雄:復文出版社。魏麗敏(1993)，國民中小學生一般焦慮、數學焦慮及數學態度之比較研究，國立台中師院學報，5，129-153。魏?敏(1988)，國小學生?學焦慮、?學態?與?學成就之關係暨?學學習團體諮商之效果研究，國?台灣師範大學教育心?與輔導研究所未出版之碩士?文。魏?敏(1991)，國民中小學生一般焦慮、?學焦慮及?學態?之比較研究，台中師範學院學報，5，129-150。魏?敏(1997)，影響國小兒童?學成就之自我調解學習與情感因素分析之研究，臺中師院學報，11，37-63。譚寧君(1992)，兒童數學態度與解題能力之分析探討，國立台北師範學院學報，5，621-677。二、西文部份Aiken, L. R. Jr. (1970). Attitude toward Mathematics. Reriew of Educational Research, 40(4), 551-596.Aiken, L. R. Jr. (1963). Personality correlates of attitude toward mathematics. Journal of Educational Research, 56, 476-480.Aiken, L. R. Jr. (1976). Update on attitudes and other affective variables in learning mathematics. Review of Educational Research , 46, 239-311.Alkhateeb, H. M. (2001). Genger differences in mathematics achievement among high school students in the united arab emirates, (1991-2000). School Science and Mathematics , 101(1) , 5-9.Bandura, A. (1978). Reflections on Self-efficacy. Advances in Behavior Research and Therapy, l, 237-269.Bandura, A. (1977). Self-efficacy:Toward a unifying theory of behavioral of behavioral hange. Psychological Review, 84, l91-215 . Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.Bandura, A. (1986). Social foundations of thought and action:A social cognitive theory. Englewood Cliffs , NJ:Prentice Hall.Baron, R. A., & Greenbery, J. (1990). Behavior in organizations: understanding and managing the human side of work. Upper Saddle River, N. J. : Prentice Hall.Betz, N. E. (1978). Prevalence, distribution, and correlates of math anxiety in college students. Journal of Counseling Psychology, 25, 441-448.Blitch, J. K. (1991). Development of an instrument to measure mathematics attitude of elementary children. Mich:UMI.Calvert.Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. Educational Researcher, 18, 32-41.Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. Journal of Educational Psychology, 93(1), 55-64.Chism, P. J. (1995). Applied mathematics ’ and algebra students ’ mathematics achievement and attitudes. Dissertation Abstracts International, 55(9), 2654A.Corbo, N. J. (1992). Mathematics attitude and achievement in grades five through seven in a southcentral Pennsylvania district. Mich:UMI.Craig, K. D., & Dobson, K. S. (1995). Anxiety and depression in abults and children. Thousand Oaks : Sage Publications.Dickson, N. S. (1992). Student attitude towards mathematics: a study concerning teacher influence and subject content. Mich:UMI.Dweck, C. S., Davidson, W., Nelson, S., & Enna, B.(1978). Sex differences in learning helplessness: II The contingencies of evaluative feedback in the classroom；III.An experimental analysis.Developmental Psychology, 14, 268-276.Eccles, J., Wigfield, A., Harold, R., & Blumenfeld, P.(1993). Age and gender defferences in children ’ s self-efficacy and task performances during elementary school. Child Development, 64, 847-930.Feldman, R. S. (1998). Social psychology(2nd ed.). New Jersey :Prentice - Hall , Inc.Fennema, E., & Sherman, J. (1976). Fennema-Sherman mathematics attitudes scales. JSAS Catalogue of selected Documents in Psychology, 6, 31.Fennema, E., & Sherman, J. (1978). Sex-related differences in mathematics achievement, spatial visualization, and affective factors. American Educational Research Journal, 14(1), 51-71.Frary, R. B., & Ling, J. L. (1983). A factor-analytic study of mathematics anxiety. Educational and Psychological Measurement, 43, 985-993.Hackett, G., & Betz, N. E. (1989). An exploratory of the mathematics self-efficacy mathematics task performance correspondence. Journal for Research in Mathematics Education, 20(3), 261-273.Hauser, R. M., Tsai S. L., & Sewell, W. H. (1983). A Model of Social Stratification with Response error in Social and Psychological Variables. Socioloy of Education, 56, 20-46.Hendershot, R. L. (2000). Attitude difference between male and femalestudents at Clovis community college and their relationships to math anxiety : A case study. Doctor of Education Dissertation, California Coast University.Hewing, R., Anderson, L., & Tindal, G. (2001). Influence of elementary student gender on teachers ’ perceptions of mathematics achievement. The Journal of Educational Research , 95(2), 93-102.Higgins, K. M. (1997). The effect of year - long instruction in mathematical problem solving on middle - school students ’ attitudes , beliefs , and abilities. The Journal of Experimental Education , 66(1), 5-28.Jinks, J., & Lorsbach, A. (2003). Introduction: Motivation and self-efficacy belief. Reading & Writing Quarterly, 19, 113-118.Leinhardt, G., Seewald, A. M. & Engel, M. (1979). Learning what ’ s taught, sex differences in instruction. Journal of Educational Psychology, 71, 432-439.Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. Journal of Counseling Psychology, 31(3), 356-362.Lent, R. W., Lopez, F. G., & Bieschke, K. J. (1991). Mathematics self-efficacy: sources and relation to science-based career choice. Journal of Educational Psychology, 38(4), 424-430.Linnenbrink, E. A., & Pintrich, P. R. (2002). Motivation as an enabler for academic success. School Psychology Review, 31(3), 313-327.Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. Reading & Writing Quarterly, 19, 119-137.Ma, X., & Willms, J. D. (1999). Dropping out of advanced mathematics : How much do students and schools contribute to the problem ? Educational Evaluation＆Policy Analysis, 21(4), 365-383.Mahurin, M. (2000). Twenty ideas that will rule research in the next twenty years. Discover, 21(10), 88-91.Miriam C. U. & Clayde R. M. (2000). Researching the attitudes towards mathematics in basic education. Educational psychjology, 20, 237-243.Montague, M. (1995). Cognitive Instruction and Mathematics :Implications for students with Learning Disorders. Focus on Learning Problems In Mathematics, 17(2), 39-49.Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. Journal of Counseling Psychology, 38 (1), 30-38.Pajares, F. (1996). Current directions in self- efficacy research. In M. Maehr & P. R. Pintrich (Eds.), Advances in Motivation and Achievement (1-49). Greenwich, CT: JAI Press.Parsons, J. E., Ruble, D. N., Hodges, K. L., & Small, A. W. (1976). Cognitive-developmental factors in emerging sex differences in achievement-related expectancies. The Journal of Social Issues, 32, 47-62.Pastorelli, C., Caprara, G. V., Barbaranelli, C., Rola, J., Rozsa, S., & Bandura, A. (2001). The structure of children ’ s perceived self-efficacy: A cross-national study. European

Journal of Psychological Assessment, 17(2), 87-97.Pintrich, P. R. (2000). Multiple goals, multiple pathway:the role of goal orientation in learning and achievement. Journal of Education Psychology, 92, 544-555.Pintrich, P. R., & De Groot, E. V. (1990). Motivation and self-regulated learning components of classroom academic performance. Journal of Educational Psychology, 82, 33-40.Pintrich, P. R., & Schunk, D. H. (1996). Motivation in education: Theory, research, and applications. Englewood Cliffs, NJ: Prentice-Hall.Rech, J. F., & Stevene, D. J. (1996). Variables related to mathematics achievement among black students. The Journal Educational Research , 89(6), 346-350.Reyes, L. H. (1984). Affective variables and mathematics education. The Elementary School Journal, 84(5), 558-581.Rivera, D. P. (1997). Mathematics education and students with learning disabilities: Introduction to the special series. Journal of Learning Disabilities, 30(1), 2-19.Roth, W. G. (1985). Treatment implications derived from self-efficacy research with children. Doctor of Psychology Research Paper, Biola University, California.Ryan, A. M., & Pintrich, P. R. (1997). Achievement and social motivational influences on help seeking in the classroom. In Karabenick(ED.), Strategic help seeking: Implications for learning and teaching (pp.61-94).Mahwah,NJ:Erlbaum.Samuels, W. D. (1991). Mathematics achievement and attitude in grade six through eight in Lebanon, Dregon. Mich:UMI.Schlossberg, S. M., Morris, J. D., & Lieberman, M. G. (2001). The effects of a counselor - led guidance intervention on student ' s behaviors and attitudes. Professional School Counseling , 4(3), 156-164.Schunk, D. H. (1982). Effects of effort attributional feedback on children ' s perceived self-efficacy and achievement. Journal of Educational, 74(4), 548-556.Schunk, D. H. (1991). Self-efficacy and academic motivation. Educational psychologist , 26, 207-231.Sherman, J. (1980). Mathematics, spatial visualization, and related factors: Changes in girls and boys, grades 8-11. Journal of Educational Psychology, 72(4), 476-482.Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I ' ve got it: A process model of perceived control and children ' s engagement and achievement in school. Journal of Educational Psychology, 82(1), 22-32.Sriampai, P. (1992). Attitude Toward mathematics, mathematics anxiety, and mathematics achievement related to gender and academic program.Mich:UMI.Suinn, R. M., & Edwards, R. (1982). The measurement of mathematics Anxiety: The Mathematics Anxiety Ration Scale for Adolescents-MARS-A. Journal of Clinical Psychology, 38(3), 576-580.Sutton, A., & Soderstrom, I. (1999). Predicting elementary and secondary school achievement with school related and demographic factors. The Journal of Educational Research , 92(6), 330-338.Tartre, L. A., & Fennema, E. (1995). Mathematics achievement and gender : A longitudinal study of selected cognitive and affective variables in grades 6 - 12. Educational Studies in Mathematics, 28, 199-217.Teachman, D. J. (1987). Shadow Education and Allocation in Formal Schooling. American Journal of Sociology, 97(6), 1639-1657.Thomas, J. W., & Rohwer, Jr. W. D. (1986). Academic studying: The role of learning strategies. Educational Psychology, 21(1), 19-41.Tobias, S. (1980). Math Anxiety: What You Can Do about It. Today's Education, 69(3), 26-29.Tocci, C. M., & Engelhard, G. (1991). Achievement, parental support, and gender differences in attitudes toward mathematics. Journal of Educational Research , 84(5), 280-286.Vanayan, M., White, N., Yuen, P., & Teper, M. (1997). Beliefs and attitudes toward mathematics among third - and fifth students : A descriptive study. School Science and Mathematics, 97(7), 345- 351.Vezeau, C., Bouffard, T., & Chouinard, R. (2000). The impact of single – sex versus coeducation school environment on girls general attitude, self-perceptions and performance in mathematics. Journal of Research and Development in Education, 34(1), 49-59.Wallace, P. M., & Goldstein, J. H. (1997). An introduction to psycjology . Chicago : Brown & Benchmark.Wilhite, S. C., (1990). Self-efficacy,locus of control,self-assessment of memory ability ,and study activities as predictors of course achievement. Journal of Educational Psychology, 82, 696-700.Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers ' sense of efficacy and beliefs about control. Journal of Educational Psychology, 82, 81-91.Zimmerman, B. J., & Martinez-Pons Manuel. (1990). Student differences in self-regulated learning: relating grade, sex, and giftedness to self-efficacy and strategy use. Journal of Educational Psychology, 82, 51-59.Zimmerman, B. J. (2000). Self-efficacy:An essential motive to learn. Contemporary Educational Psychology, 25, 82-91.