# THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

# Using Gender Patterns to Explore University Students' Differences of Self-Concept, Social Support, and Academic Achievement

**Dr. Chin-Tsu Chen**
Assistant Professor, Department of Commercial Design and Management,
National Taipei University of Business, Taiwan
**Dr. Chun-Fu Chen**
Associate Professor, Department of Commercial Design and Management,
National Taipei University of Business, Taiwan

*Abstract:*
*This study aims to probe into the gender differences of university students in terms of self-concept, social support, and academic achievement, as well as the relationships among the three. Finally, it attempts to determine whether gender is a moderating variable. According to the research findings, the hypothesis that gender has a significant difference on self-concept is partially supported. The hypothesis that gender has a significant difference on social support is partially supported. The hypothesis that gender has a significant difference on academic achievement is supported. Moreover, self-concept and social support directly influence academic achievements. According to multi-group analysis, gender does not have a moderating effect between self-concept and academic achievement. Gender does not have a moderating effect between social support and academic achievement. The analytical results of this study can serve as a reference for higher education institutions to enhance the objectives of university education and gender education planning.*

*Keywords: Gender, self-concept, social support, academic achievement, moderating effect*

## 1. Introduction

Gender is a general term referring to male and female. There are many differences between male and female, one of which is academic performance. In the educational systems of different countries, many female students have superior academic achievements or performances in international competitions to male students. This global phenomenon has been both valued and a concern for governments of different countries. Many variables are associated with academic achievements (Ning& Downing, 2010). Educational statistics and reports of media suggest a gap of academic achievement between male and female students (Clark et al. 2008; Rinn et al.2008; Ismail, 2009; Gibb et al. 2008). Difference in gender on academic achievement has always been a topic discussed by psychologists, educators, and researchers. According to the research of Feingold (1998), training and experience in childhood, attitudes of different gender, parents' and teachers' expectations regarding behavior, and physical differences can result in varied performances and achievements. Many past studies have discussed gender differences in terms of academic achievement, and found that model differences are influenced by subjects, ages, education, language, etc. (Wong et al. 2002; Tinklin 2003). Bargad and Hyde (1991) and Bryant et al. (2003) indicated that schools, students' ages, cognition of gender roles, students' gender, students' educational level or courses, classmates' interactions, and teachers' expectations all influence students' cognition of gender. Other studies have proposed that in modern time, the gap between male and female students in academic achievement is insignificant, and even nonexistent. Moreover, university students, in comparison to those who have never studied in universities, have better concept in gender equality (Funk & Willits, 1987). However, a longitudinal research suggested that university students' concept of gender equality has not improved over time (Corbett, Rudoni, &Frankland, 1981). Therefore, are genders different in academic achievement? Previous studies have inconsistent findings.

University students are the elites of future society; thus, they should have significant capabilities and characteristics in order to match the demand of the future workplace. During the study years, students should have specific understanding and cognition to cultivate personal specialties and enhance professional knowledge and capabilities. By interacting with families, relatives, friends, teachers and peers, they reinforce self-concept and have academic achievement to prepare for their future career. Eisenberger et al. (1986) suggested that according to the social support theory, when individuals are supported in social processes, trust in organizations will be enhanced, which will improve the relationship quality between individuals and

system related groups. Therefore, when individuals believe that the system cares, supports them, and it is reliable, they will have positive behavioral performance, and be more willing to actively share knowledge with others.

Thus, when encountering peer competition, teachers' and parents' expectations, and pressure of employment, university students will naturally look forward to their academic study and future development. Students' academic achievements in schools represent their learning results and educational effectiveness of schools. Therefore, this study treats gender as an indicator and moderating variable and explores the gender influence of university students on their self-concepts, social supports, and academic achievements. Research findings can serve as references for future instruction and research in academia.

## 2. Literature Review

### 2.1. Self-Concept

Shavelson et al. (1976) suggested that self-concept is the individuals' subjective views or personal images upon experience within an environment, others' evaluation, personal explanation, and attribution; it is the way that they treat and describe themselves. Pintrich and Schunk (2002) found that a person's self-concept is significantly related to behavioral motive. People with a high self-concept usually have a higher motivation for achievement and are more willing to learn; those with a low self-concept have a lower learning motivation and ambition. According to Zhang and Li (2010), the self-concept of university students develops into a relatively stable level during the college period. If they can clearly recognize and understand themselves, their learning and career planning can be significantly enhanced.

Many recent studies have explored the role of self-concept in the academic domain (Linnenbrink 2006; Marsh, Craven, &McInerney, 2003), due to the demonstrated importance with respect to self-regulated learning, achievement motivation, course enrollment, and career-related decision-making (Schutz&Pekrun, 2007; Skaalvik&Skaalvik, 2008; Goetz, Cronjaeger, Frenzel, Ludtke, & Hall, 2010). According to Pintrich and Schunk (2002), individuals' self-concept is significantly related to behavioral motive. People with a high self-concept usually have a higher motivation of achievement and are more willing to learn; those with a low self-concept tend to have a lower learning motivation and ambition. Self-concept reflects the outcomes of individuals' behavior and performance. Positive self-concept is a critical measure leading to behaviors expected by society. The main reason is that positive self-perception can increase individuals' behavioral performance; hence, students' self-concept will strongly influence learning motivation. Thus, cultivation of students' positive and active self-concept can enhance their learning motivation, and indirectly influence their academic achievements.

### 2.2. Social Support

Hobfoll (2002) defined social support as to assist individuals through social relationships, emphasize individuals' sense of belonging through important social groups, and reinforce the belief that they are loved and cared for. Cohen and Lakey (2006) suggested that the function of social support means individuals' response to pressure is enhanced by others' support, as it lowers the negative effect of pressure on individuals. People can acquire such assistance from an interpersonal network or other social support (Colvin, Cullen, & Thomas, 2002). Sarason, Levine, Basham, and Sarason (1983) found that teachers' support of students directly influences students' satisfaction with schools. In fact, individuals' achievements are influenced by social support. Based on the research of Swindle (1983), when individuals have more social support, the physical and mental factors affecting their lives are lessened. Thus, social support is treated as a moderator.

The sources of social support are broad, such as family members, teachers, elders, friends, and classmates; such sources of support lower strong reactions to pressure, allowing individuals to deal with life incidents with more flexible measures, while maintain positive physical and mental adjustment (Swindle, 1983). Social support is the base to acquiring assistance and enhancing relation quality (Leavy, 1983). When individuals encounter difficulties in a new environment, through others' assistance, they can adapt to the new environment (Tsang, 2001). Henderson et al. (1994) found that for parents who maintain frequent contact with schools, their children usually perform better in school. Parental time spent on children's education significantly influences children's attitude toward learning, thus affecting their academic performance. Based on the above, sources of social support, in a broad sense, can be social networks; and in a narrow sense, can be an important other source. By different levels of social support, individuals are supported differently. Social support of primary groups includes family members, relatives, and friends, and such sources are considered as critical for individuals. Social support can lead to physical demands and energy resources for individuals, and thus, are treated as key resources in stressful situations (Hobfoll&Shirom, 2000). This study aims to probe into the effects of social support on university students' academic achievement. Thus, university students' main sources of social support, namely, family members, relatives, teachers, classmates, and friends, are explored.

### 2.3. Academic Achievement

In modern society, due to increased competitiveness, social trends and effects of education are a concern for the public. Thus, academic achievement is highly valued. Academic achievement means to accomplish a certain degree of knowledge or skills through learning. Brown, Campione, and Day (1981) defined academic achievement as knowledge, comprehension, and skills, which are acquired by educational experience in formal courses, instructional design, or messages, as well as skills

obtained by individuals through special instruction. Academic achievement means that individuals obtain messages, knowledge, or skills through learning, and it is usually measured by scores, teachers' rating, or both. According to previous research, intellectual factors and normalized test scores have been used to explore the correlation between the factors and students' academic achievement (Cokley, Bernard, Cunningham, &Motoike, 2001). At present, many teachers evaluate students' learning results through various types of achievement tests, such as written tests, practices, evaluations, file tests, and dynamic tests, in order to know their learning effectiveness. Among those methods, academic achievement is the most representative indicator.

According to literature, there are many factors affecting students' academic achievement, such as gender, order of birth, socioeconomic status of the family (Powell 1990; Santrock 1988), personality traits, self-concept, motivation, emotion, learning attitude, interest, value experience, expectation and intelligence, social skills, family environment, social status, and encountered experiences (Henderson &Berla, 1994). Sewell and Hauser (1980) proposed a social and psychological model of educational achievement, which suggests that individuals' educational achievement is directly influenced by the socioeconomic status of the family, or indirectly influenced by important others' expectations. Individuals' educational achievements can be affected by many direct or indirect factors, such as socioeconomic status of the family, material conditions, nurturing, language, learning environment, parents' care, and expectations for children, which can influence individuals' educational opportunities.

## 2.4. Gender Differences

The gender gap in academic achievement has been the subject of extensive research. Most gender-gap research in academic achievement focuses on primary and secondary education (Else-Quest et al., 2010; Fryer & Levitt, 2010). Surprisingly, this research hardly refers to the traits of higher educational systems. Gender difference is an extremely important issue. First, males' and females' physical differences and interests are the basis for the research motive in order to determine gender differences in learning and achievement. Thus, gender equality is an important study of individual development, education, and social behavior (Nie&Liem, 2013). Wigfield et al. (2002) found that gender differences in learning and achievement may be due to gender differences in motivation and social expectations, which could also provide understanding for the gender differences in achievement motivation. Those research findings can lead to proper directions for parenting, teaching, and policy makers. Many countries around the world are implementing educational reform, and students' academic achievement reflects a global trend. The academic performances of female students are superior to those of male students, including language, mathematics and natural science, whereas the latter two were used to be the dominant subjects of male students. This reflects a global trend of "male crisis". Although females' performances are not second to males' in science circles, in higher academic ranking, the female participation is low, which is the so-called leaky pipeline phenomenon. In the educational field, the teaching materials, teacher-student interaction, evaluation, and science learning are all closely associated with gender image. Scientific educational circles are not favorable for female-friendly learning environments (Liu, 2012).

According to research, females tend to have stronger motives to avoid success than males (Meece, Glienke, & Burg, 2006). Some goal researchers have demonstrated gender differences in achievement goals. The study of Thorkildsen and Nicholls (1998) found that males scored higher on ego orientation, while females scored higher on task orientation. Recent research also found that females were more focused on learning than males (Ingles et al. 2011; Yeung, Lau, &Nie, 2011). Thus, literature on gender difference mostly focused on behavior and motive. This study aims to probe into the relationship between gender differences on university students' self-concept, social support, and academic achievement.

## 2.5. Self-Concept and Academic Achievement

According to Chien, Jen, and Chang (2008), relationships between self-concept and academic achievements include three perspectives: 1. skill development model: students' academic or subject performance influences their self-concept; 2. self-enhancement model: the self-concept influences academic achievement; 3. reciprocal effects model: there is a causal relation between self-concept and academic achievement. Self-concept is affected by performance of capacity and is also an important variable of learning achievement.

Marsh and Köller (2004) proposed the Unification Model to examine the reciprocal causality between academic achievement and self-concept. They found that in the same field, self-concept enhances academic achievement, while in different fields, self-concept slightly restrains academic achievement. Goldberg and Cornell (1998) found that students' internal motivation and self-concept have significant correlations with academic achievement. Moreover, there is a feedback model among students' academic achievement, self-concept, and motivation. When students have an active attitude toward personal capacity, they will have higher achievement, thus enhancing their self-concept and motivation. Those variables form a feedback loop. Purkey (1970) indicated that for students, overall self-concept significantly influences academic achievement. There is a causal relation between academic achievement and self-concept. Successful academic learning can enhance students' self-esteem and confidence, while feedback leads to better performance in different dimensions. Marsh and Yeung (1997) found that students' academic self-concept influences their future academic achievement, in turn affecting their academic self-concept. Thus, there is a close relationship between self-concept and academic achievement.

*2.6. Social Support and Academic Achievement*

      Social support is a critical variable in related studies and has many positive benefits. Widoff (1999) probed into the learning experiences of 397 university and graduate school students, and found that peers, friends, and family members were the sources of support for adult students. Among others, peers and friends provided encouragement, specific assistance, and helped with the emotional release. Many studies have indicated that social support is related to academic achievement among college students. The research of Roman, Cuestas, and Fenollar (2008) represents an initial step into the analysis of the effect of self-esteem, peers and teacher's expectations, and family support, on academic achievement through learning approaches. Data were gathered from 553 university students from different faculties of a Spanish university. Analyses, through structural equation modeling, provided support for the positive effects of self-esteem and family support in university students' learning and achievement. Peers and teacher's expectations increased both surface learning and effort. Hymel et al. (1996) also provided evidence that peer support may contribute to children's achievement, as it has a profound influence on their day-to-day behavior in school. Frentz et al. (1991) proposed that students who were rejected by their peers had lower academic achievement scores than more popular students. Other studies have suggested that the perceptions of supportive relations with teachers are related to greater academic achievement, higher levels of student engagement, less problem behaviors, and more positive peer relations (Hamre and Pianta 2001; Skinner et al. 2008).

## 3. Methods

      By literature review, this study proposes a correlation model of self-concept, social support, academic achievement, and gender. The research framework is as shown in Figure 1.
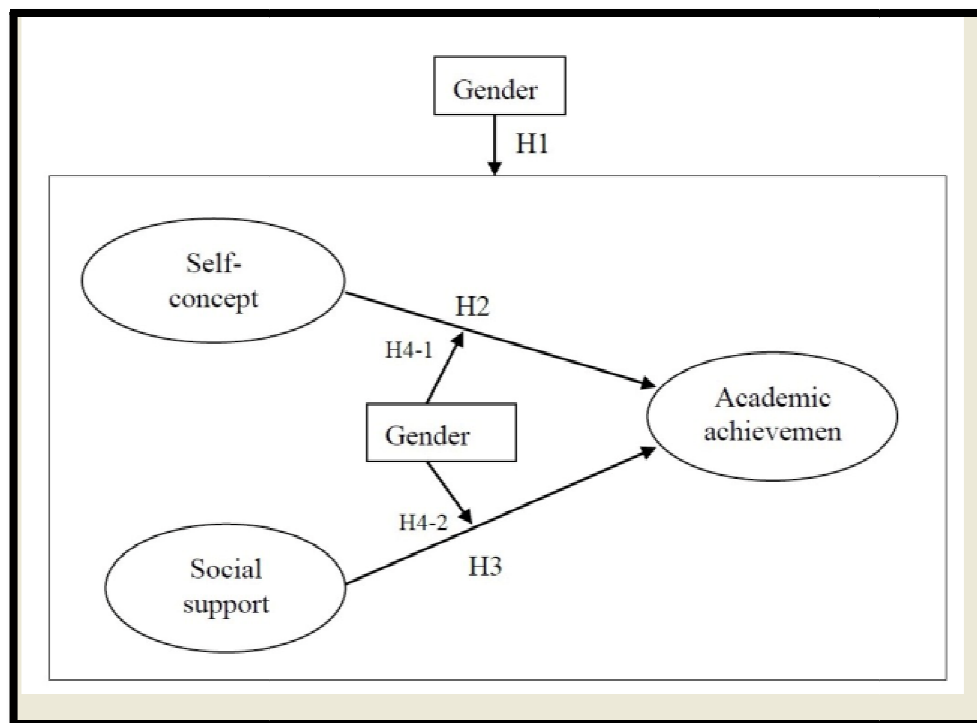


*Figure 1: Research Structure*

*3.1. Hypotheses*

      According to the research purposes, literature review, and research framework, this study proposed the following hypotheses regarding the relationship, and conducted an empirical study.

- H1: Gender has a significant difference on self-concept, social support, and academic achievement.
- H1-1: Gender has a significant difference on self-concept.
- H1-2: Gender has a significant difference social support.
- H1-3: Gender has a significant difference on academic achievement.
- H2: Self-concept significantly influences academic achievement.
- H3: Social support significantly influences academic achievement.

    In order to find out whether relationships between gender and self-concept, and social support and academic achievement, can be applied to students in higher education institutions, this study explored whether gender is a moderating variable. The following hypotheses are constructed:

- H4-1: Regarding the effect of self-concept on academic achievement, gender has a moderating effect.

- H4-2: Regarding the effect of social support on academic achievement, gender has a moderating effect.

### 3.2. Procedure and Participants

This study conducted several tests to validate the directional effects of variables within the research framework, and the significance of these effects. Structural Equation Models (SEM) was used to examine the causal relationship among self-concept, social support, and academic achievement. Finally, by multi-group analysis, this study determined whether gender has a moderating effect in the relation models of self-concept, social support, and academic achievement.

In order to explore self-concept, social support, and academic achievement from the perspective of gender, a questionnaire survey was conducted with limited samples for statistical inference. Full-time university students from 15 universities in Taiwan were treated as the population, and 1500 questionnaires were distributed. A total of 1440 samples were retrieved, and there were 1406 valid questionnaires, for a valid return rate of 94%. Among the valid samples, 621 are male (44.2%) and 785 are female (55.8%), most students are studying in private universities or colleges (41.7%) and are juniors (70.9%).

## 4. Results

### 4.1. Differential Analysis of Gender on Self-Concept, Social Support, and Academic Achievement

Independent t test was conducted to analyze the constructs and sub-constructs. The results are as shown in Table 1. In the construct of self-concept, gender has reached a level of significance in the subconstruct of pressure resistance ($t$ = 2.25, $p<0.05$), meaning that gender has a significant difference in pressure resistance, and that of females is lower than that of males (female= 3.55, male = 3.63). Moreover, gender has reached a level of significance in the subconstruct of physical capacity ($t$ = 8.27, $p<0.01$), suggesting that gender has a significant difference in physical capacity, and that of females is lower than that of males (female= 3.26, male = 3.62). In addition, gender has reached a level of significance in the subconstruct of relationship with parents ($t$ = -4.48, $p<0.01$), indicating that gender has a significant difference in relationships with parents, and that of females is higher than that of males (female = 3.77, male = 3.60). For subconstructs of specialized subjects, friends, and career planning, gender has not reached a level of significance. Thus, H1-1 is partially supported.

In the construct of social support, gender has reached a level of significance in the subconstruct of parental support ($t$ = -4.30, $p<0.01$), meaning that gender has a significant difference in parental support, and that of females is higher than that of males (female = 3.93, male = 3.78). Moreover, gender has reached a level of significance in the subconstruct of peer support ($t$ = -8.55, $p<0.01$), suggesting that gender has a significant difference in peer support, and that of females is higher than that of males (female= 4.04, male = 3.76). For the subconstruct of teachers' support, gender has not reached a level of significance. Thus, H1-2 is partially supported.

Gender has reached a level of significance in academic achievement ($t$ = -12.17, $p<0.01$), indicating that gender has a significant difference in academic achievement, and that of females is higher than that of males (female= 3.52, male = 2.99). Thus, H1-3 is supported.

| Construct | Factor | Average | | F-value | T-value | P-value |
|---|---|---|---|---|---|---|
| | | Male N=621 | Female N=785 | | | |
| Self-concept | Specialized subjects | 3.52 | 3.45 | 0.22 | 1.88 | 0.06 |
| | Pressure resistance | 3.63 | 3.55 | 1.57 | 2.25 | 0.02* |
| | Physical capacity | 3.62 | 3.26 | 4.57 | 8.27 | 0.00** |
| | Friends | 3.52 | 3.45 | 0.00 | 1.67 | 0.10 |
| | Relationship with parents | 3.60 | 3.77 | 1.67 | -4.48 | 0.00** |
| | Career planning | 3.23 | 3.24 | 6.30 | -0.31 | 0.76 |
| Social support | Families support | 3.78 | 3.93 | 3.47 | -4.30 | 0.00** |
| | Teachers support | 3.39 | 3.39 | 0.67 | -0.06 | 0.96 |
| | Peers support | 3.76 | 4.04 | 19.06 | -8.55 | 0.00** |
| Academic achievement | | 2.99 | 3.52 | 23.08 | -12.17 | 0.00** |

Table 1: T-Test of on Gender Difference for Different Dimensions
*P＜0.05；**P＜0.01*

### 4.2. Structural Equation Modeling

4.2.1. Analysis of Measurement Model

AMOS was applied for data analysis. According to the Two-step Approach of Williams and Hazer (1986), Anderson, and Gerbing (1988), CFA was conducted to evaluate the reliability and validity of the measurement model. Then, SEM was conducted. Table 2 shows the reliability and convergent validity of the scale of self-concept. The reliability of the self-concept scale is 0.50~0.85, the construct validity of factors is 0.73~0.85, and the extracted variance of factors is 0.54 ~0.66, thus, the scale has good reliability. Factor loading of the items in the self-concept scale is 0.71~0.92, the construct validity of the factors is 0.73~0.85, and the extracted variance of factors is 0.54 ~0.66, thus, the scale has good convergent validity.

| Latent Variables | Observation Variables | Factor Loading | Individual Reliability | Construct Reliability | Variance Extracted |
|---|---|---|---|---|---|
| Specialized subjects | | | | 0.85 | 0.66 |
| | I am interested in specialized subjects. | 0.77 | 0.59 | | |
| | I can demonstrate my talents in specialized subjects. | 0.92 | 0.84 | | |
| | I am willing to work hard on specialized subjects. | 0.74 | 0.54 | | |
| Pressure resistance | | | | 0.78 | 0.54 |
| | I am happy most of the time. | 0.75 | 0.56 | | |
| | When I encounter frustration, I can deal with it calmly. | 0.75 | 0.56 | | |
| | I am usually calm and relaxed. | 0.71 | 0.50 | | |
| Physical capacity | | | | 0.79 | 0.66 |
| | In most activities of physical capacity, I perform well. | 0.92 | 0.85 | | |
| | I enjoy activities of physical capacity. | 0.71 | 0.50 | | |
| Friends | | | | 0.73 | 0.58 |
| | I can easily make friends. | 0.75 | 0.56 | | |
| | I am extremely satisfied with my interpersonal relationships. | 0.77 | 0.59 | | |
| Relationship with parents | | | | 0.78 | 0.55 |
| | I have an intimate relationship with my parents. | 0.71 | 0.51 | | |
| | I like my parents and I often actively care about my parents. | 0.73 | 0.54 | | |
| | My parents understand and respect me. | 0.78 | 0.61 | | |
| Career planning | | | | 0.74 | 0.56 |
| | I am satisfied with my current career planning. | 0.77 | 0.59 | | |
| | I actively make plans for my career. | 0.76 | 0.58 | | |

*Table 2: Reliability and Convergent Validity of Self-Concept Scale*

Table 3 shows the discriminate validity of the self-concept scale. As seen, the square roots of the average variance extracted from latent variables in the model are higher than the correlation coefficients between constructs. Thus, there is discriminate validity in 6 latent variables.

| Latent Variables | Specialized Subjects | Pressure Resistance | Physical Capacity | Friends | Relationship With Parents | Career Planning |
|---|---|---|---|---|---|---|
| Specialized subjects | 0.81 | | | | | |
| Pressure resistance | 0.34 | 0.74 | | | | |
| Physical capacity | 0.26 | 0.42 | 0.81 | | | |
| Friends | 0.26 | 0.62 | 0.38 | 0.76 | | |
| Relationship with parents | 0.25 | 0.42 | 0.26 | 0.46 | 0.74 | |
| Career planning | 0.39 | 0.43 | 0.27 | 0.37 | 0.38 | 0.75 |

*Table 3: Correlation Coefficient Matrix and AVE Square Roots for Scale of Self-Concept.*
*Note: Correlation Coefficients Are Listed At the Bottom of the Matrix; Square Roots of*
*AVE Are on the Diagonal Line*

Table 4 shows the reliability and convergent validity of the social support scale. As seen, individual reliability of the social support scale is 0.50~0.78, the construct validity of factors is 0.84~0.90, and the variance extracted from factors is 0.64~0.70, thus, the scale has good reliability. The factor loading of items in the social support scale is 0.70 ~0.88, the construct reliability of factors is 0.84~0.90, and the variance extracted from factors is 0.64~0.70, thus, the scale has good convergent validity.

| Latent Variables | Observation Variables | Factor Loading | Individual Reliability | Construct Validity | Variance Extracted |
|---|---|---|---|---|---|
| Family members | | | | 0.89 | 0.68 |
| | Family members encourage and respect my decisions. | 0.86 | 0.74 | | |
| | Family members are willing to listen to my joys and frustrations in learning. | 0.88 | 0.77 | | |
| | Family members believe that I have the ability to solve problems. | 0.71 | 0.50 | | |
| | Family members mentally support me. | 0.76 | 0.58 | | |
| Teachers | | | | 0.84 | 0.64 |
| | Teachers understand my feelings. | 0.70 | 0.49 | | |
| | Teachers respect my thoughts | 0.83 | 0.68 | | |
| | Teachers support my efforts and performance. | 0.80 | 0.65 | | |
| Peers | | | | 0.90 | 0.70 |
| | Classmates/friends comfort and support me. | 0.83 | 0.68 | | |
| | Classmates/friends are willing to listen to me and share experience with me. | 0.88 | 0.78 | | |
| | Classmates/friends help me analyze problems and provide the methods of adjustment. | 0.79 | 0.62 | | |
| | Classmates/friends encourage each other. | 0.76 | 0.58 | | |

*Table 4: Reliability and Convergent Validity of Scale of Social Support*

Table 5 shows the discriminate validity of the social support scale. As seen, the square roots of average variance extracted of latent variables are higher than correlation coefficients between constructs, thus, there is discriminate validity in the three latent variables.

| | Family Members | Teachers | Peers |
|---|---|---|---|
| Family members | 0.82 | | |
| Teachers | 0.36 | 0.80 | |
| Peers | 0.44 | 0.42 | 0.84 |

*Table 5: Correlation Coefficient Matrix and AVE Square Roots of Scale for Social Support*

4.2.2. Test of Structural Model and Hypothesis Validation

Based on the constructed SEM model framework, a relationship model path is drawn, as shown in Figure 2, for analysis of data to test model fit and examine the hypotheses. AMOS was used to establish SEM for structural model analysis. The test included two stages. The first stage examined the research framework model to measure the appropriateness of the overall theoretical model; the second stage validated the effects of latent variables, causal relations in the latent variables of the structural model, and hypotheses.
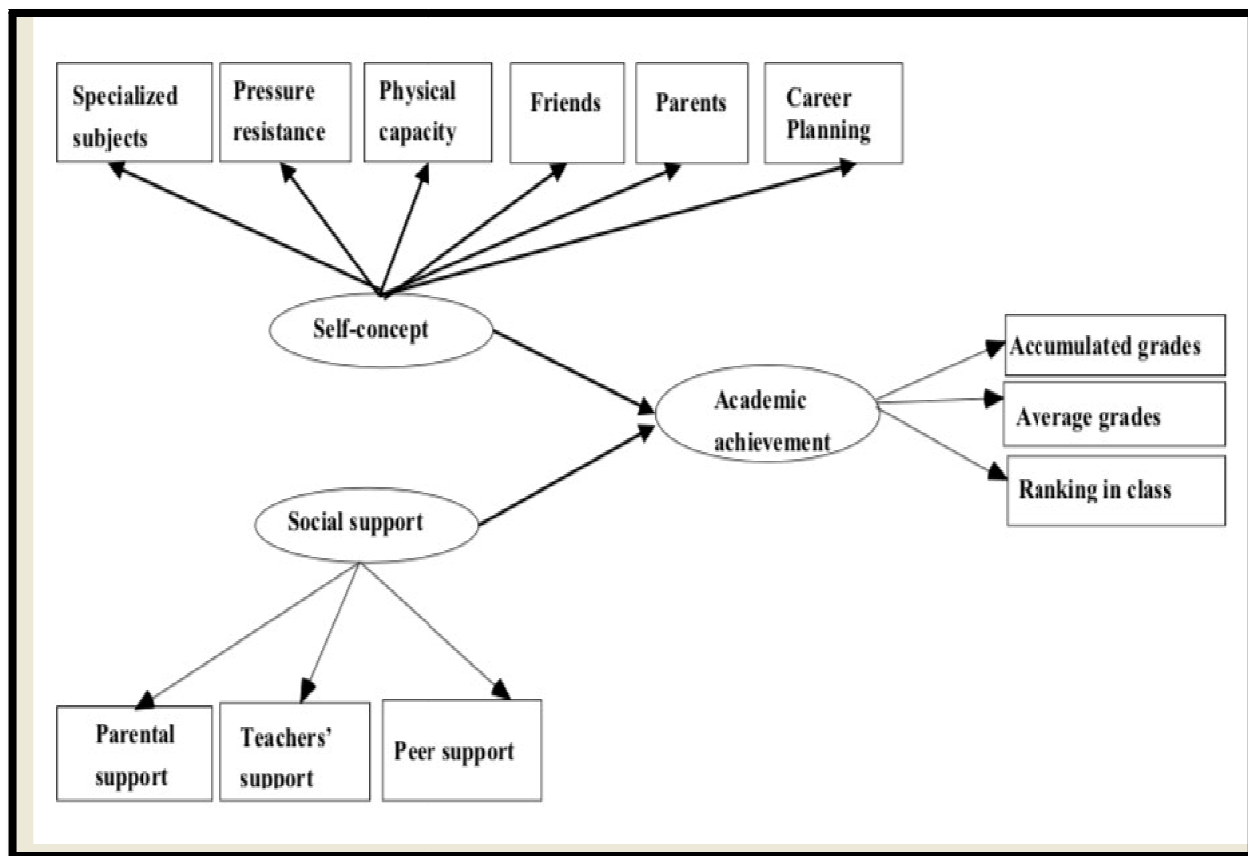


*Figure 2: Path of SEM*

4.2.3. Test of Structural Model

The overall model fit measurement is to determine whether the theoretical measured model can explain the observed data or whether the theoretical models fit the observed data (Anderson and Gerbing 1988). Therefore, this study referred to the items suggested by Bagozzi and Yi (1988), including $\chi^2$, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), incremental fit index (IFI), comparative fit index (CFI), root mean square residual (RMR), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) to evaluate the model fit.

Table 6 shows the measures of the overall model fit. As seen GFI is 0.92 and AGFI is 0.90. Based on the experiential rule, model fit measures are at least 0.9, thus, that the overall model fit of this study is good. RMR is 0.03, SRMR is 0.04, and RMSEA is 0.08. The above three measures should be lower than (<0.05), thus, the overall model is good (Bagozzi and Yi, 1988).

| Fit Measures | Test Result | Judgment of Model Fit |
|---|---|---|
| $\chi^2$ | 831.22（P=.000） | No |
| $\chi^2 / df$ | 9.90 | No |
| GFI | 0.92 | Yes |
| RMR | 0.03 | Yes |
| RMSEA | 0.08 | Yes |
| AGFI | 0.90 | Yes |
| SRMR | 0.04 | Yes |

*Table 6: Measures of Overall Model Fit*

### 4.2.4. Validation of Hypotheses

MLE was used to estimate path values and determine whether the hypotheses are significant. The hypotheses are as shown in Table 6. T tests of path coefficients suggested significant difference, thus, the hypotheses of the two paths are supported, as shown in Figure 3.
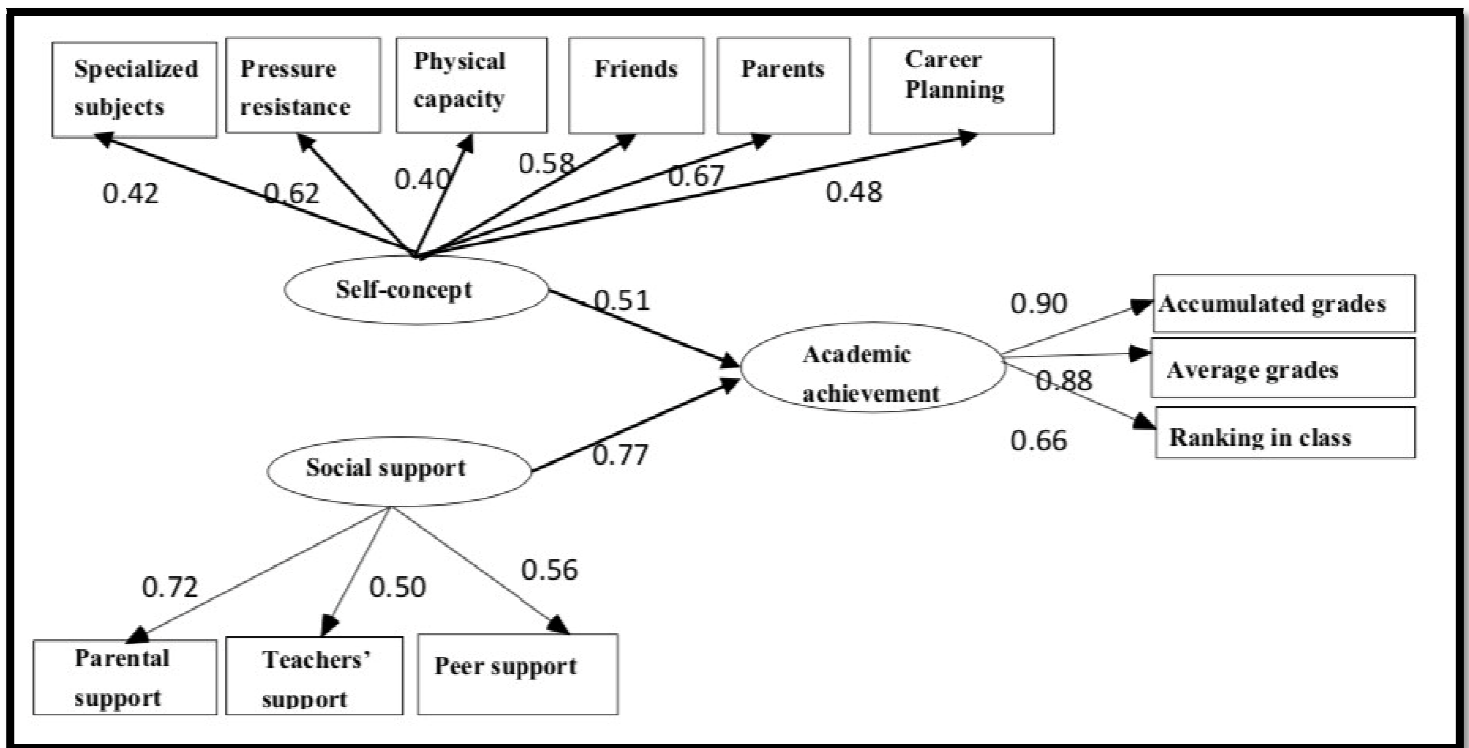


*Figure 3: Result of SEM validation*

According to the result of Table 7, the hypothesis path between self-concept and academic achievement is -0.47, which is significant, indicating that self-concept significantly and negatively influences academic achievement. In other words, self-concept will lower the relationship with academic achievement. Thus, H2 is supported.

Regarding social support and academic achievement, the hypothesis path is 0.73, which is significant, indicating that social support significantly and positively influences academic achievement. In other words, social support will enhance the relationship with academic achievement. Thus, H3 is supported.

| Path Of Hypotheses | Hypothesis Relationship | Path Values | Corresponding Hypotheses | Hypothesis Results |
|---|---|---|---|---|
| Self-concept ->academic achievement | Negative | -0.51*** | H2 | Supported |
| Social support ->academic achievement | Positive | 0.77*** | H3 | Supported |

*Table 7: Validation Result of Hypotheses*
*Note: *Denotes P<0.05, ** Denotes P<0.01, *** Denotes P<0.001*

Regarding the moderating effect of gender, as based on multigroup analysis and according to moderating variables, there are two sub-groups, and homogeneity in sub-groups and between sub-groups is high. A Baseline Model, which is an equity model of path coefficient, was constructed to validate the differences of the path coefficients of different groups, as well as the moderating effect. An analytical technique of sub-groups can validate the moderating effects (Kang 2004). In this study, the samples were divided into male and female sub-samples, and there are 785 females and 621 males. Validation results are as shown in Table 8. The effect of self-concept on academic achievement statistics of chi-square difference is insignificant, suggesting that gender does not have a significant moderating effect. Thus, H4-1 is not supported. Regarding the effect of social support on academic achievement, statistics of chi-square difference is insignificant, indicating that gender does not have a significant moderating effect. Thus, H4-2 is not supported.

| | Normalized Path Coefficients | | Statistics of Chi-Square Difference | Corresponding Hypotheses | Results of Hypotheses |
|---|---|---|---|---|---|
| | Female | Male | | | |
| Self-concept ->academic achievement | -0.18 | -0.19 | 0.05 | H4-1 | Not supported |
| Social support ->academic achievement | 0.44* | 0.42* | 0.05 | H4-2 | Not supported |

*Table 8: Significance Test of Moderating Effect of Gender on Path Coefficients*
*Note: *Denotes P<0.05, ** Denotes P<0.01, *** Denotes P<0.001*

## 5. Discussion

According to the statistical analysis of the findings, gender has a significant difference in pressure resistance, physical capacity, and relationships with parents, in the construct of self-concept. There is no significant difference in specialized subjects, friends, or career planning. Females have lower pressure resistance and physical capacity than males do but have better relationships with parents. This study infers that regarding pressure resistance, male university students are usually calmer than females do, thus, when they encounter frustration; they can deal with it properly, and are happy most of the time in life. Regarding relationships with parents, female university students have better relationships, which match the gender stereotype that females are more tender, obedient, dependent, and emotional. Therefore, females actively care about and are intimate with their parents, and the significance of relationships with parents is higher than male university students.

Females have higher social support, parental support, and peer support than males do, while there is no significant difference with teachers' support. In other words, family members encourage and respect the individuals' decision, listen to individuals' joys and frustrations in learning, and support them mentally. In addition, university students suggest that friends comfort and support them, and they have the intention to share feelings and experiences. They encourage each other and analyze the problems of difficulties. This study found that teachers can understand male and female university students' feelings, respect their thoughts, and support their efforts and performance. There is no significant difference between males and females, which is consistent with past research findings (Cho 2010). Therefore, this study suggests that in universities, in addition to positive interactions between students and peers, students should be encouraged to participate in learning activities and have opportunities to approach teachers. After all, it is teachers who plan courses, offer instruction, and interact with students. Thus, teachers should help students enhancing their capabilities in different dimensions, and properly and effectively increasing students' abilities in formal education (Liu, Chiu, and Hu 2006), which can enhance students' learning of knowledge and skills, and help their career planning. Finally, gender has a significant difference in academic achievement, namely females have better academic achievement than males do. This finding is consistent with Hunley et al. (2005), who suggested that female students can obtain higher grades than male students, which may be due to the fact that female students spend more time completing homework. Kyong et al. (2005) surveyed 675 graduate students and found that female students hold higher academic achievement.

## 6. Conclusion

After statistical analysis of the overall model, this study found that there is a significant and negative correlation between self-concept and academic achievement. In literature, some scholars suggested that when students have stronger self-concept and self-esteem, their academic achievement is better (Melnick, 1992). Students' self-concept is a factor of academic performance. However, this study found that there is a negative and significant correlation between students' self-concept and academic achievement. It is inferred that the students now are no longer concerned academic performance. Some university students suggested that self-concept is not associated with academic grades, which can be a reason that self-concept significantly and negatively influences academic achievement. Social support positively influences university students' academic achievement. According to William and Kristan (2006), peers are an important social support, and the social capital of a peer network is related to the construction of the members' habits and mutual effects. Brooks (2007) suggested that university students are significantly influenced by peer relationships, including academic grades and recreational activities, and peers' friendships can provide emotional support for each other. Academic and non-academic experiences influence students' university education, hence, it is necessary to properly encourage and support university students. Finally, this study

treated gender as a moderating variable, and found that gender does not have a moderating effect in relationships between self-concept and academic achievement, or between social support and academic achievement. Thus, gender does not influence the paths between self-concept and academic achievement, or between social support and academic achievement. Regarding managerial implications, the moderating effects of gender can thus be neglected.

## 7. **References**

i. Anderson, J. C. & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bullet in 103(3), 411-423.

ii. Bagozzi, R. P., & *Yi, Y. (1988). On the evaluation of structural equation models. Journal of the Academy of Marketing Science, 16(1), 74-94.

iii. Bargad, A., & Hyde, J. S. (1991). Women's studies: A study of feminist identitydevelopment in women. Psychology of Women Quarterly, 15, 181-201.

iv. Brooks, R. (2007). Friends, peers and higher education. British Journal of Sociology of Education, 28(6), 693-707.

v. Brown, A. L., Campione, J. C., & Day, J. D. (1981). Learning to learn: On training students to learn from texts. Educational Researcher, 23(1), 14-21.

vi. Bryant, A. N. (2003). Changes in attitudes toward women's roles: Predicting gender-roletraditionalism among college students. Sex Roles,48, 131-142.

vii. Chien, C. T., Jen, T. H., & Chang, S. T. (2008). Academic Self-Concept and Achievement Within and Between Math and Science: An Examination on Marsh and Köller's Unification Model. Bulletion of Education Psychology, 40(1), 107-126.

viii. Cho, C. R. (2010). A study of the influence on competence of employability among extracurricular activities, social relationship and academic achievement in college students. Bulletin of Educational Entrepreneurship and Management, 6, 1-26.

ix. Clark, M. A., Sang, M. L., Goodman, W., & Yacco, S. (2008). Examining male underachievement in public education: Action research at a district level. NASSP Bulletin, 92(2), 111-132.

x. Cohen, S., &Lakey, B. (200). Social support theory and measurement. In M. Marmont& R. G. Wikinson (Eds.), Social determinants of health. (2ⁿᵈ ed., 29-119). NY: Oxford University.

xi. Cokley, K., Bernard, O., Cunningham, N.D., &Motoike, J. (2001). A psychometric investigation of the academic motivation scale: Using a United States sample. Measurement and Evaluation in Counseling and Development, 34, 109-130.

xii. Colvin, M. F., Cullen, T., & Thomas, V. V. (2002). Coercion, social support, and crime: An emerging theoretical consensus. Criminology, 40, 19-42。

xiii. Corbett, M.,Rudoni, D.,&Frankland, E. G.(1981).Change and stability among college students: A three-year panel study. Sex Roles, 7, 233-246.

xiv. Eisenberger, R., Huntington, R.,Hutchison,S., &Sowa, D.(1986).Perceived organizational support.Journal of Applied Psychology, 71, 500-507.

xv. Else-Quest, N.M., Hyde, J.S., &Linn, M.C.(2010). Cross-national patterns of gender differences in mathematics: a meta-analysis. Psychological Bulletin 136,102–127.

xvi. Frentz, C., Gresham,F.M., &Elliot, S.N. (1991). Popular, controversial, neglected, and rejected adolescents: contrasts of social competence and achievement differences. Journal of School Psychology, 20, 257–274.

xvii. Fryer Jr., R.G., &Levitt, S.D.(2010).An empirical analysis of the gender gap in mathematics. American Economics Journal: Applied Economics 2, 210–240.

xviii. Funk, R. B.,&Willits,F. K. (1987).College attendance and attitude change: A panel study.Sociology of Education, 60, 224-231.

xix. Gibb, S. J., Fergusson,D. M., &Horwood, L. J. (2008).Gender differences in educational achievement to age 25.Australia Journal of Education, 52(1), 63-80.

xx. Goetz, T., Cronjaeger,H.Frenzel,A. C. Ludtke,O., &Hall,N. C. (2010). Academic self-concept and emotion relations: Domain specificity and age effects. Contemporary Educational Psychology,35, 44–58.

xxi. Goldberg, M. D., &Cornell, D.(1998).The influence of intrinsic motivational and self-concept on academic achievement in second and third-grade students.Journal for the Education of Gift, 21,179-205.

xxii. Hamre, B. K., &Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. Child Development,72, 625–638.

xxiii. Henderson, A.,&Berla, N. (1994).A new generation of evidence：The family is critical to student achievement. National Committee for Citizens in Education, Washionton, DC.(ERIC Document Reproduction. ED 375968).

xxiv. Hobfoll, S. E. (2002). Social and psychological resources and adaptation.Review of General Psychology, 6(4), 307-324.

xxv. Hobfoll, S. E., &Shirom, A. (2000). Conservation of resources theory: Applications to stress and management in the workplace. In R.T. Golembiewski (Ed.), Handbook of organization behavior (2ⁿᵈ Revision Edition, 57-81). New York: Marcel Dekker.

xxvi. Hymel, S., Comfort,C., Schonert-Reichl, K., &McDougall, P. (1996). Academic failure and school dropout: the influence of peers. Social Motivation: Understanding Children's School Adjustment, Cambridge University Press, New York, 313–

345.

xxvii.    Ingles, C. J.,Marzo, J. C., Castejon, J. L.,Nuñez,J. C.,Valle,A.,&Garcia-Fernandez, J.          M. (2011). Factorial invariance and latent mean differences of scores on the          achievementgoal tendencies questionnaire across gender and age in a sample of     Spanishstudents. Learning and Individual Differences, 21, 138–143.

xxviii.   Kang, J. H. (2004). The role of self-esteem in initiating physical activity in consumption situations.Journal of Sport Management, 18: 255-273.

xxix.    Kyong, H. C., Pino,N. W., &Smith, W. L.(2005).Gender differences in the academic          ethic          and          academic achievement.College Student Journal, 39(3), 604-618.

xxx.    Leavy, R. L. (1983). Social support and psychological disorder: A review. Journal of

xxxi.    Community Psychology, 11, 3-21.

xxxii.   Linnenbrink, E. A. (2006). Emotion research in education: Theoretical and methodological perspectives on the integration of affect, motivation, and cognition [Special issue]. Educational Psychology Review, 18(4), 307–314.

xxxiii.   Lio, M. C., Chiou, J. R., &Hu, J. L.(2006). To Improve Employability in Formal Education- Report on College Graduates' Employability. Issued by National Youth Commission, Executive Yuan.

xxxiv.   Liu, R.Y. (2012). Gender Difference in Global Education.The Journal of Educational     Science, 11(1), 79-104.

xxxv.    Marsh, H. W., Craven, R. G., &McInerney, D. M.(2003). International Advances in Self Research. Greenwich, CT: Information Age Publishing.

xxxvi.   Marsh, H. W., &Köller, O.(2004). Unification of theoretical models of academic self-concept/achievement relations: Reunification of east and West German school systems after the fall of the Berlin Wall. Contemporary Educational Psychology, 29, 264-282.

xxxvii.  Marsh, H. W.,&Yeung, A. S. (1997). Causal effects of academic self-concept on academic achievement: structural equation models of longitudinal data.

xxxviii. Journal of Educational Psychology, 89(1), 41-54.

xxxix.   Meece, J. L., Glienke,B. B., &Burg, S. (2006). Gender and motivation. Journal of  School Psychology, 44, 351–373.

xl.    Melnick, D. H. (1992).Adjustment to transitions in early adolescence (junior high school).Unpublished doctoral dissertation, Long Island University, Brooklyn, NY.

xli.    Nie, Y., &Liem, G. A.(2013).Extending antecedents of achievement goals: The          double-edged     sword     effect     of social-oriented achievement motive and gender     differences. Learning and Individual Differences, 23, 249–255.

xlii.    Ning, H. K., &Downing, K.(2010).Connections between learning experience, study     behavior     and     academic performance: a longitudinal study. Educational Research52 (4), 457–468.

xliii.   Pintrich, P. R., &Schunk, D. H.(2002).Motivation in Education : Theory, Research, and Applications. Upper Saddle River, N.J. : Merrill.

xliv.    Powell, D. R. (1990).Parents as the child's a first teacher：Opportunities and Constrains. (ERIC Document Reproduction. ED 325231).

xlv.    Purkey, W. W. (1970). Self-concept and School Achievement. Englewood Cliffs. New Jersey: Prentice-Hall.

xlvi.    Rinn, A. N., McQueen,K. S.,Clark,G. L., &Rumsey,J. L.(2008). Gender   differences in gifted adolescents Math/verbal self-concepts and Math/verbal achievement: Implications for the STEM Fields. Journal for the Education of the Gifted, 32(1), 34-53.

xlvii.   Roman, S., Cuestas, P. J.,&Fenollar,P. (2008). An examination of the interrelationships between self-esteem, others' expectations, family support, learning approaches and academic achievement. Students in Higher Education, 33(2), 127-138.

xlviii.  Santrock, J. W. (1998). Adolescence (7th ed.). New York：McGraw-Hill.

xlix.    Sarason, I. G., Levine, H. M.,Basham,R. B.,&Sarason, B. R.(1983). Assessing social support: The social support questionnaire.Journal of Personality and Social Psychology, 44(1), 127-139.

l.    Schutz, P. A., &Pekrun,R. (2007). Emotions in Education. San Diego, CA: Elsevier.

li.    Sewell, W. H., &Hauser, R. M.(1980). The Wisconsin longitudinal study of social and psychological factors in aspirations and achievements. In Kerckhoff A. C.(Ed.), Research in sociology of education and socialization, 1, 59-99. Greenwich, CT: JAI.

lii.    Shavelson, R. J., Hubner, J., &Stanton, G. C.(1976). Self-concept: Validation of construct interpretation. Review of Education Research, 46, 407-441.

liii.    Skaalvik, E. M., &Skaalvik, S. (2008). Self-concept and self-efficacy in mathematics:

liv.    Relation with mathematics motivation and achievement. In F. M. Olsson (Ed.),

lv.    New developments in the psychology of motivation (pp. 105–128). Hauppauge,

lvi.    NY, US: Nova Science Publishers.

lvii.   Skinner, E., Furrer, C.,Marchand,G., &Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic. Journal of Educational Psychology100, 765–781.

lviii.  Swindle, R. W. (1983). Social networks, perceived social support and coping with stress. In R. D. Felner (Ed.), Preventive psychology: Theory, research and practice in community intervention, 87-103. New York: Pergamon.

lix.    Thorkildsen, T. A., & Nicholls, J. G.(1998). Fifth graders' achievement orientations and beliefs: Individual and classroom

difference. Journal of Educational Psychology, 90, 179–201.

lx.   Tsang, E. W. K. (2001). Adjustment of Mainland Chinese Academics and Students to

lxi.  Singapore. International Journal of Intercultural Relations, 25, 347-372.

lxii. Widoff, J. C. (1999). The adult male undergraduate student experience: Real man does return school. The Journal of Higher Continuing Education, 47(2), 15-24.

lxiii. Wigfield, A., Battle, A., Keller,L., &Eccles, J. S. (2002). Sex differences in motivation, self-concept, career aspirations, and career choice: Implications for cognitive    development.In A. McGillicuddy-DelLisi, & R. DeLisi (Eds.), Biology, society, and behavior: Thedevelopment of sex differences in cognition (pp. 93–124). Greenwich,       CT: Ablex.

lxiv. Williams, L. J., &Hazer, J. T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods. Journal of Applied Psychology, 71: 219-231.

lxv.  William, G. T., &Kristan, M. V. (2006). Fictive kin and social capital: The role of peer groups in applying and paying for college. The American Behavioral Scientist, 49(12), 1687-1702.

lxvi. Wong, K. C., Lam, Y. R., &Ho, L. M.(2002).The effects of schooling on gender    differences.British  Educational  Research Journal 28(6), 827-843.

lxvii. Yeung, A. S., Lau,S.,&Nie, Y.(2011). Primary and secondary students' motivation in learning English: Grade and gender differences. Contemporary Educational      Psychology,36, 246–256.

lxviii. Zhang, X., &Li, C.(2010).The study of university students' self-concept.International Educational Studies, 3(1), 83-87.