

The effect of interpersonal relationships on psychosomatic symptoms: Moderating role of gender

WANG Su-hsing, LUH Wei-ming

(Institute of Education, College of Social Science, National Cheng Kung University, Tainan 701, Taiwan)

Abstract: The purposes of this study were twofold: (1) to verify whether or not gender and interpersonal relationships influence the variance of psychosomatic symptoms in Taiwanese adolescents; and (2) to examine the moderating role of gender between interpersonal relationships and psychosomatic symptoms in Taiwanese adolescents. The present study adopted data from the Taiwan Education Panel Survey (TEPS) using a stratified-random methodology. Results indicated that: (1) gender accounts for a significant amount of variance of psychosomatic symptoms; (2) interpersonal relationships account for a significant amount of variance in psychosomatic symptoms over and above gender; and (3) gender moderates the associations of mother-adolescent and teacher-student relationships and psychosomatic symptoms, whereas it does not moderate the associations between father-adolescent, sibling, or peer relationships or psychosomatic symptoms.

Key words: TEPS; moderating effect; relationships; psychosomatic symptoms; Taiwan

1. Introduction

Psychosomatic symptoms are defined as subjective physical complaints such as headache, stomachache, backache, and dizziness as well as psychological complaints such as feeling low, irritable, or nervous or having difficulty sleeping (Natvig & Albrektsen, 1999). Adolescents may be under the pressure from family and/or school when physical and cognitive changes related to puberty occur (Miller, Alberts, Hecht, Trost & Krizek, 2000). In western society, a number of research findings have shown psychosomatic symptoms are common in adolescents (Choquet & Menke, 1987; Greene & Walker, 1997; Okulicz-Kozaryn & Borucka, 2004; Piko & Noemi, 2006). In eastern society, Tanaka, Mollborg, Terashima, and Borres (2005) found that Japanese children have significantly more physical symptoms and psychiatric complaints, when compared to Swedish children. In Taiwan, research findings have also shown that psychosomatic symptoms are a problem (LI, 1999; LI & ZHANG, 1999). Moreover, girls tend to have more serious symptoms than boys (Directorate-General of Budget Accounting and Statistics, 2001).

Some researchers have found that getting on well with others is one of the protective factors that helps in dealing with psychosomatic problems in adolescents (Bailey, 1989; Piko & Fitzpatrick, 2003). Several studies have revealed that supportive family relationships, including parent-adolescent and sibling relationships, are protective factors for both girls and boys (Rubin, et al., 1992; Piko & Fitzpatrick, 2003). In addition, parent-adolescent relationships are more important than any other relationships (Stenberg & Silk, 2002).

WANG Su-hsing, Ph.D. candidate, Institute of Education, College of Social Science, National Cheng Kung University; research fields: educational psychology, educational statistics.

LUH Wei-ming, professor, Institute of Education, College of Social Science, National Cheng Kung University; research fields: educational statistics, educational psychology.

Parents can meet some adolescents' needs directly through food, clothing, spending money, family recreation, affection and enforcement of family and societies rules for their safety and welfare. Parents are perhaps even more important in helping the adolescents adjust to their peer group, school, and social community (Binger, 1994). Although some adolescents have serious interpersonal problems with their parents, the majority of adolescents feel close to their parents, respect their parents' judgment, feel that their parents love and care about them, and have a great deal of respect for their parents (Stenberg & Silk, 2002). Supportive parent-adolescent relationships provide a valuable source of support for adolescents dealing with life problems (Bishop & Inderbitzen, 1995; Harper, 1996; Lansford, 2000). The father-adolescent relationship is quite different from the mother-adolescent relationship (Fisher, 1991). There are even claims that blame mothers, but not fathers, for their roles in shaping adolescent psychological problems (Caplan, 1986; Caplan & Hall-McCoquodale, 1985). It has been suggested that fathers are more concerned with matters external to family group and mothers are more internally oriented (Booth & Edwards, 1985). LIU and CHAO (2005) suggested that the unavailability of the "father" compared to the "mother" might bestow a particular psychological salience on them and their relationship with adolescent. Parsons (1955) suggested that the husband-father plays more instrumental roles, while wife-mother assumes those more expressive roles in nature. Based on these discourses, an adolescent's experiences in each relationship may be important in facilitating health outcomes through different mechanisms. Compared to studies of mothers, relatively few studies have been carried out to examine the role of fathers (Shek, 2005). As such, there is a need to separate father-adolescent and mother-adolescent relationship.

The sibling relationship is nested within family relationships. Research findings have shown that better relationships between brothers and sisters lead to better adjustment during adolescence (Sander, 2004; Stocker, Burwell & Briggs, 2002; Branje, et al., 2004). Some researchers contend that the relationship between brothers and sisters is an important source of companionship, affection, and intimacy (Buhrmster & Furman, 1987; Lempers & Clark-Lempers, 1992). Even after controlling for parent-adolescents, supportive sibling relationships have been associated longitudinally with lower levels of problem internalizing for boys and girls. However, Collins and Laursen (2004) argued that early adolescents have more conflicts with siblings than anyone else except for mothers. The effect of the sibling relationship on psychosomatic symptoms remains unknown in Taiwan.

Teachers are also another salient factor in early adolescent development. Within any classroom, students have social interactions and build relationships with their teachers. Teachers affect students directly through their interactions, and indirectly through the structure of the classroom environment (McCallum & Bracken, 1993). The teacher plays a major role in determining whether students feel that they are cared for in class (Osterman, 2000). Findings have suggested that adolescents benefit when they experience supportive relationships with their teachers socially and psychologically (Resnick, et al., 1997). Perceptions that teachers are supportive and caring might simply be a proxy for students' psychological wellbeing (Wentzel, 1997). Thus, relationships with teachers can be particularly important to early adolescents who are undergoing profound shifts in their sense of self and are struggling to negotiate changing relationships with their parents and peers (Resnick, et al., 1997). Davis (2003) documented that supportive and positive teacher-student relationships continue to be important and predict positive behavior outcomes even for middle school students. Students describe teachers who do not care as those who do not provide extra help or advice and encouragement. Wentzel (1994) stated that being liked by teachers has been positively linked to students' school-related adjustment. Adolescents often rate teachers as providing aid and advice, but only as a secondary source after parents and peers (Furman & Buhrmester, 1992), even though teachers are rarely mentioned by adolescents as having a significant or important influence in their lives (Wentzel,

1997). The effect of teacher-adolescent relationship on psychosomatic symptoms is still an open question.

Peer relationships also serve as an important protective factor (Dekovic, 1999; Piko & Fitzpatrick, 2003). Success in managing evolving peer relationship is linked to critical adolescent behaviors and mental health (Buhrmester, 1992). They need relationships with peers who can serve a variety of functions, including providing guidance, companionship, and intimacy (Furman & Buhrmester, 1985). For adolescents' social development, peer relationships have shown its importance in the literature and in practice (Miller, et al., 2000). Peer relationships have been found to be positively related to many indicators of psychological and social adjustment (Bishop & Inderbitzen, 1995). Being neglected or rejected by peers during adolescence is linked to serious problems such as delinquency, and depression (Merten, 1996). Stanton-Salazar and Spina (2005) investigated adolescents and found that the support from friends is necessary to withstand emotionally challenging circumstances (e.g., school-related problems) and to cope effectively. Family relationships have been found to be important for the quality of peer relationship (Kerns, Klepac & Cole, 1996). However, its effect after controlling for the family relationship and the teacher-student relationship still remains unknown.

With regard to gender, adolescent girls tend to rate higher in interpersonal relationship than boys. This is because girls have a greater tendency to value close relationships, to rely on relationships as a resource, and to be concerned about maintaining harmonious relationships (Rudolph, 2002; Benenson, 1990; Maccoby, 1990). Steinberg and Silk (2002) argued that boys and girls might report similar degrees of closeness to their parents and a similar amount of conflict. On the one hand, Collins and Russell (1991) stated that girls and boys have very different relationships with their fathers and mothers. The father-daughter relationship is particularly and their relationship is characterized by emotional blandness and minimal interaction (Youniss & Smollar, 1985). Boys, on the other hand, turn to their fathers for support more than girls do. However, there are no gender differences in overall mother-adolescent relationships. With respect to sibling relationship, girls tend to perceive more sibling conflict and experience more withdrawal problems than boys (LIU & CHAO, 2005). Gender differences have also been found in teacher-student relationships (Wentzel, 1997) and peer relationships (Palmqvist & Santavirta, 2006). Girls engaged in more discussion with friends than the boys concerning both intimate and general matters. Miller, et al (2000) argued that stress due to difficulties with peers at school is more closely correlated with psychosomatic symptoms among boys than girls. On the contrary, research findings also have shown that adaptive aspects of peer relationships, such as perceived peer relationships and positive friendship qualities, protect girls more than boys against emotional difficulties such as depression and loneliness (Oldenburg & Kerns, 1997; Rudolph, 2002). These conclusions may differ from each other, but they indicate that gender could be a moderator between interpersonal relationships and psychosomatic symptoms.

The purpose of the study was twofold. One was to examine whether or not the effects of gender and interpersonal relationships can decrease psychosomatic symptoms in adolescents. The other one was to clarify whether or not gender plays a moderating role between interpersonal relationships and psychosomatic symptoms.

2. Method

2.1 Participants and data collection

This study applied a dataset provided by the TEPS that was conducted in 2001 to test these research hypotheses. TEPS is a national project for longitudinal survey designed by Academic Sinica, The Ministry of Education, and The National Science Council. The dataset contains a sample of 7th graders. TEPS used a stratified

sampling. Students were selected from 333 junior high schools. Then, to avoid uncompleted class data resulting from some personal omissions, the research team sampled three classes from each school. Moreover, considering the samples lost in the longitudinal trace, 15 students were selected in each class during the first wave of the survey (CHANG, 2003). The sample size used in this study was 10,026 after eliminating missing cases, including 4,968 females and 5,058 males. Missing values were dealt with listwise.

2.2 Materials

2.2.1 Psychosomatic symptoms

The dependent variable for analysis was psychosomatic symptoms measured using 14 questionnaire items. These 14 items assess the self-reported frequency of psychosomatic symptoms experienced over the semester on a four-point Likert scale: never (assigned=1), sometimes (assigned=2), frequently (assigned=3), very frequently (assigned=4). The higher score indicates severer psychosomatic symptoms. Participants were asked, “in this semester, did these following happen to you?” Examples of situations examined include, “loss of concentration in class”, “don’t feel like interacting with others”, “feel depressed”, “feel anxious and worried” to measure psychosomatic symptoms in adolescents.

2.2.2 The mother-adolescent relationship

Two items were used to measure mother-adolescent relationship (“Has your mother listened to your true feelings since you became a 7th grader?” and “How have you gotten along with your mother since you became a 7th grader? She always accepts me.”). Students were required to response on a 4-point Likert scale: never (assigned=4), sometime (assigned=3), frequently (assigned=2), very frequently (assigned=1). The author eliminated missing data from the data first and reversed the items if necessary. The higher scores indicate better mother-adolescent relationship.

2.2.3 The father-adolescent relationship

Two items were used to measure father-adolescent relationship (“Has your father listened to your true feelings since you became a 7th grader?” and “How did you get along with your father since you were a 7th grader? He always accepts me.”). Students were required to response on a 4-point Likert scale: Never (assigned=4), sometime (assigned=3), frequently (assigned=2), very frequently (assigned=1). Missing data was eliminated first and the items were reversed if necessary. Higher scores indicated better father-adolescent relationship.

2.2.4 The sibling relationship

There were four items for the sibling relationship (“I usually quarrel with them and give them the cold shoulder.” and “I talk to them about my true feelings.”). The author eliminated the subjects without siblings and those that had missing data. Students were required to respond on a 4-point Likert scale: never (assigned=4), sometime (assigned=3), frequently (assigned=2), very frequently (assigned=1). The author recoded the items when necessary. The higher scores indicated better sibling relationships.

2.2.5 The teacher-student relationship

There were two items to measure the teacher-student relationship (“The teacher often blames or punishes the students.” and “The teacher encourages students when they study hard.”). Students were required to respond on a 4-point Likert scale: strongly agree (assigned=4), agree (assigned=3), disagree (assigned=2), strongly disagree (assigned=1). The author recoded the items when necessary. Higher scores indicated better teacher-student relationships.

2.2.6 The peer relationship

There were four items to measure the peer relationship (“Your classmates often discuss homework or study together.” and “There’s great competition for academic performance in my class.”). Students were required to response on a 4-point Likert scale: strongly agree (assigned=4), agree (assigned=3), disagree (assigned=2), strongly disagree (assigned=1). The author recoded the items if necessary. Higher scores indicated better peer relationships.

2.2.7 Gender

Gender was coded 1 for male, 0 for female.

3. Data analysis

Hierarchical regression was used to examine the effect of each independent variable. Independent variables were entered into the model step by step to see their unique contributions from each step. First, gender was entered into the model. Second, interpersonal relationships were entered into the model. Finally, interaction terms of gender and interpersonal relationships were entered into the model to try and clarify whether gender can moderate interpersonal relationships and psychosomatic symptoms. Controlling for the main effects of interpersonal relationships and gender, hierarchical regression analyses allowed for an examination of possible moderating effects between interpersonal relationships and psychosomatic symptoms. Unstandardized coefficients were reported in the study. Changes in R^2 were also computed by entering predictor variables into the analyses at different steps to learn the unique contribution of each step of predictors.

4. Results

The descriptive statistics and hierarchical regression results were reported by setting $\alpha=0.05$. The 14-item scale of psychosomatic symptoms was found to have high internal consistency ($\alpha=0.89$).

Table 1 showed the mean and standard deviations, skewness and kurtosis of variables studied. The skewness and the kurtosis of psychosomatic symptoms were 1.36 and 2.337 respectively. Therefore, a transformation was needed to achieve normality. The \log_{10} transformation was used to provide the maximum amount of correction. After transformation, the skewness and kurtosis were much closer to normal. Table 2 and Table 3 showed the descriptive statistics for female and male, respectively.

Table 1 Mean and standard deviations for measures of major variables

	Mean(SD)	Skewness (S.E)	Kurtosis (S.E)
Psychosomatic symptom	1.49(4.68)	1.36(0.024)	2.337(0.049)
Log psychosomatic symptom	0.155(0.124)	0.617(0.024)	-0.195(0.049)
Mother-adolescent relationship	3.06(0.733)	-0.416(0.024)	-0.581(0.049)
Father-adolescent relationship	2.66(0.721)	0.146(0.024)	-0.493(0.049)
Sibling relationship	2.49(0.612)	0.029(0.024)	-0.220(0.049)
Teacher-student relationship	3.20(0.667)	-0.766(0.024)	0.316(0.049)
Peer relationship	2.25(0.471)	-0.023(0.024)	0.393(0.049)

Note: n=10,026.

Table 2 Descriptive statistics for female

	Mean (SD)	Skewness (S.E)	Kurtosis (S.E)
Psychosomatic symptom	1.49(4.68)	1.36(0.024)	2.337(0.049)
Log psychosomatic symptom	0.16(0.12)	0.617(0.024)	-0.195(0.049)
Mother-adolescent relationship	3.06(0.73)	-0.416(0.024)	-0.581(0.049)
Father-adolescent relationship	2.66(0.72)	0.146(0.024)	-0.493(0.049)
Sibling relationship	2.49(0.61)	0.029(0.024)	-0.220(0.049)
Teacher-student relationship	3.20(0.67)	-0.766(0.024)	0.316(0.049)
Peer relationship	2.25(0.47)	-0.023(0.024)	0.393(0.049)

Note: n=4,968.

Table 3 Descriptive statistics for male

	Mean (SD)	Skewness (S.E)	Kurtosis (S.E)
Psychosomatic symptom	1.56(0.476)	1.18(0.035)	1.66(0.069)
Log psychosomatic symptom	0.174(0.123)	0.463(0.035)	-0.351(0.069)
Mother-adolescent relationship	3.13(0.720)	-0.509(0.035)	-0.537(0.069)
Father-adolescent relationship	2.65(0.715)	0.201(0.035)	-0.511(0.069)
Sibling relationship	2.54(0.627)	-0.021(0.035)	-0.374(0.069)
Teacher-student relationship	3.22(0.653)	-0.783(0.035)	0.386(0.069)
Peer relationship	2.24(0.467)	0.077(0.035)	0.567(0.069)

Note: n=5,058.

Table 4 displayed the zero-order correlations for the major variables in the present study. Normalized psychosomatic symptoms are related negatively to mother-adolescent, father-adolescent, sibling, teacher-student, and peer relationships. The directions of independent variables were as the author had expected, except for the teacher-student and peer relationships. However, they were not significant. Several associations in this table were worth noticing. The correlation between mother-adolescent relationships and father-adolescent relationships were quite strong for both males and females. The correlations between sibling relationships and mother-adolescent relationships for both genders, and between sibling relationships and father-adolescent relationship relationships for both genders were moderate.

Table 4 Zero-order correlations for major variables

	1	2	3	4	5	6	7
1. Psychosomatic symptom	1	0.983**	-0.052**	-0.115**	-0.097**	-0.099**	-0.064**
2. Log (psychosomatic symptom)	0.984**	1	-0.052**	-0.116**	-0.096**	-0.091**	-0.069**
3. Mother-adolescent relationship	-0.107**	-0.106**	1	0.509**	0.214**	0.100**	0.021
4. Father-adolescent relationship	-0.114**	-0.117**	0.474**	1	0.224**	0.091**	0.088**
5. Sibling relationship	-0.124**	-0.123**	0.234**	0.270**	1	0.080**	0.045**
6. Teacher-student relationship	-0.139**	-0.139**	0.093**	0.104**	0.080**	1	-0.002
7. Peer relationship	-0.069**	-0.074**	0.031*	0.038**	0.059**	0.049**	1

Notes: (1) Correlations for females appear below the diagonal, whereas correlations for males appear above the diagonal. (2)* p<0.05; ** p<0.01.

The results of the hierarchical regression analysis are presented in Table 5. Gender was entered in the first step and explained 0.022 of variance on psychosomatic symptoms. The unstandardized coefficient is significant

($b=-0.093$, $t=-4.702$, $p<0.001$) indicating that girls' psychosomatic symptom are more serious than that of boys.

Table 5 Hierarchical regression of interpersonal relationships on psychosomatic symptoms

Predictors	b (n=10,026)	S.E	Adj R ²	Δ R ²
Step 1			0.022	0.022
gender (female=0)	-0.093 ^{***}	0.020		
Step 2			0.055	0.033
Mother-adolescent	-0.008 ^{**}	0.003		
Father-adolescent	-0.010 ^{***}	0.003		
Sibling	-0.016 ^{***}	0.003		
Teacher-student	-0.023 ^{***}	0.003		
Peer	-0.016 ^{***}	0.004		
Step 3			0.056	0.002
Gender × Mother-adolescent	0.012 ^{**}	0.004		
Gender × Father-adolescent	-0.007	0.004		
Gender × Sibling	0.002	0.004		
Gender × Teacher-student	0.008 [*]	0.004		
Gender × Peer	0.001	0.005		

Notes: (1) Unstandardized coefficients were reported. (2) * $p<0.05$; ** $p<0.01$; *** $p<0.001$.

In the second step, the interpersonal relationship was entered into the regression model after controlling for gender. It explained an additional 0.033 of variance on psychosomatic symptoms. Interpersonal relationships including mother-adolescent ($b=-0.008$, $t=-2.929$, $p<0.01$), father-adolescent ($b=-0.010$, $t=-3.621$, $p<0.001$), sibling ($b=-0.016$, $t=-5.773$, $p<0.001$), teacher-student ($b=-0.023$, $t=-8.563$, $p<0.001$) and peer ($b=-0.016$, $t=-4.305$, $p<0.001$) relationships can significantly predict psychosomatic symptoms in adolescents after controlling for gender.

In the third step, the interaction terms of gender and interpersonal relationships were entered into the regression model after controlling for main effect from gender and interpersonal relationships. The incremental R² was .002 and it was significant ($F=3.351$, $p<0.01$). However, there were different results for these relationships. First of all, the interaction term for gender and the mother-adolescent relationship was significant ($b=0.102$, $t=3.086$, $p<0.01$) indicating that gender moderates the association between the mother-adolescent relationship and psychosomatic symptoms. The interaction term for gender and the teacher-student relationship was significant ($b=0.008$, $t=2.306$, $p<0.05$) as well. On the other hand, gender failed to moderate the associations between the father-adolescent ($b=-0.007$, $t=-1.713$, n.s), sibling ($b=0.002$, $t=0.514$, n.s), and peer ($b=0.001$, $t=0.276$, n.s) relationships and psychosomatic symptoms.

5. Discussion and conclusion

The first purpose of this study was to assess the effect of gender and interpersonal relationships including the mother-adolescent, father-adolescent, sibling, teacher-student and peer relationships on psychosomatic symptoms in junior high school adolescents in Taiwan. Moreover, prior research findings already confirm gender differences in interpersonal relationships. Thus, the author employed interaction terms in the hierarchical regression analyses to examine whether or not the effect of interpersonal relationships on psychosomatic symptoms varies according to gender.

Gender differences may be caused by a combination of biological and social factors. This study examined the social factors. This study confirmed that girls experience more psychosomatic symptoms than boys according to the descriptive statistics. This finding is consistent with most previous research on psychosomatic symptoms and with other non-clinical population studies of psychosomatic symptoms among adolescents (Piko & Noemi, 2006; Murberg & Bru, 2004; Piko & Fitzpatrick, 2003).

Interpersonal relationships have a significant incremental effect on psychosomatic symptoms over and above gender. All five relationships have important effects on psychosomatic symptoms. Subjects with better mother-adolescent, father-adolescent, sibling, teacher-student and peer relationships demonstrated less psychosomatic symptoms. Conversely, when adolescents perceive their mothers, fathers and sibling, teacher and peer relationships as not good, psychosomatic symptoms are more likely to be demonstrated.

The teacher-student relationship is the most powerful predictor among the five. In other words, the teacher-student relationship can protect adolescents from psychosomatic symptoms. Furman and Buhrmester (1992) stated that adolescents often rate teachers as providing aid and advice, but only as secondary sources after parents and peers. In contrast, the findings in this study show that perceptions of supportive teachers are related to students' outcomes in important ways, such as a decrease in psychosomatic symptoms. According to the Directorate-General of Budget Accounting and Statistics (2001), school itself and schoolwork were the most significant causes of life disturbance in adolescents. In addition, the teacher plays a major role in determining whether students feel that they are cared for and a supportive teacher can also predict school performance (Goodenow, 1993; Wentzel & Asher, 1995). Thus, we may say that a supportive teacher can decrease the pressure from schoolwork and school itself. Once the pressure from school is released, psychosomatic symptoms may decrease.

Whether or not junior high school adolescents recognized their families as a safety net affected their psychosomatic symptoms. The mother-adolescent and father-adolescent relationships contributed differentially to their psychological situation. Fathers can serve certain functions, such as providing financial support, whereas mothers contribute through an emotional connection (Youniss & Ketterlinus, 1987).

It is noteworthy that the relatively more positive father-adolescent relationship could be due to the higher involvement of the mothers in daily life (Shek, 2005). In Chinese culture mothers, compared to fathers, take more responsibility for raising children. Chinese mothers are charged with the basic socialization care-giving tasks as the Chinese old saying, "Men take care of things outside of the family, whereas women take care of things inside the family" (Shek, 2005). Mothers should take more responsibility for parenting children than fathers. Fathers are viewed as an instrument of support and provide financial support more than emotional support. Adolescents may take the emotional support provided by their mothers for granted. In a word, a not so bad relationship with their mother may be minimal require. On the other hand, if a father is viewed as providing financial function can provide much more than financial support may make adolescents feel being cared for. This cultural context may explain why the father plays a more important role in decreasing psychosomatic symptoms in junior high adolescents than mother in terms of the regression coefficient.

The sibling system is nested within the family system (LIU & CHAO, 2005) and contributes another function to their siblings. The sibling relationship is highly salient to adolescents (Collins & Laursen, 2004). According to Graham-Bermann and Cutler (1992), sibling conflicts can be destructive and result in some problems such as anxiety and depression. On the other hand, a supportive sibling relationship is crucial in daily adolescent life. Acceptance in sibling relationships is associated with less loneliness and fewer behavioral problems, whereas pressure from sibling conflicts will increase psychosomatic symptoms. Consistent with all of these discourses,

findings from this study show that sibling relationships' ability to decrease psychosomatic symptoms in adolescents is second only to that of the teacher-student relationship.

This study found that peer relationships can decrease psychosomatic symptoms significantly, which is consistent with prior findings. Junior high school adolescents desire a close and caring relationship that involves sharing affection and problems (Bishop & Inderbitzen, 1995). Successfully dealing with peer relationships can avoid exposure to psychosomatic symptoms.

The second purpose in this study was to verify the moderating role of gender between interpersonal relationships and psychosomatic symptoms. The results show that gender can play a moderating role between psychosomatic symptoms and the mother-adolescent relationship, and between psychosomatic symptoms and the teacher-student relationship. Previous reports indicate that mothers who are caregivers interact in qualitatively different ways with highly reactive sons versus daughters (LIU & CHAO, 2005). The results show that adolescent girls report better relationships with mothers than boys do. A strong bond between mother and daughter during adolescence is crucial. Once girl adolescents perceive a supportive mother-adolescent relationship, their psychosomatic symptoms decrease more than that of boys. On the other hand, the effect of gender between psychosomatic symptoms and father-adolescent relationships is insignificant, indicating that boys and girls perceive the father-adolescent relationship similarly and that it had similar effects on psychosomatic symptoms for both. As the author noted before, the father provides instrumental support and financial support normally in Chinese culture. Once both male and female adolescents perceive that their father pays more attention and provides more affection to them, they gain an additional supportive resource.

Another significant interaction is between the teacher-student relationship and gender. The results show that adolescent girls reported better relationships with teachers than boys did. Consistent with Wentzel's (1997) findings, this study found gender differences for respondents' perceived relationship with their teacher. According to Wentzel and Caldwell (1997), boys are less likely to experience a sense of belongingness in school than girls are.

The present study found among junior high school adolescents, gender did not interfere significantly with sibling relationships. Since all respondents in the sample are early adolescents, one possible explanation may be that junior high school adolescents in Taiwan spent a lot of time in school and cram school, no matter whether they are girls or boys. They are in a period in which family influence is still very important, but they spend more time in school.

Oldenburg and Kerns (1997) concluded that the impact of peer relationship might be particularly salient in girls. In the present study, we did not find significant interaction between gender and peer relationship. Junior high school adolescents face the both physical and psychological transitions. The grade (age) of our respondents may provide an explanation for lack of significant of gender moderating effect between peer relationship and psychosomatic symptoms. To obtain supportive peer relationship means a lot for both early adolescent girls and boys. That may be the reason why the moderating effect of gender disappears at this point.

The findings of this study had two implications. Being aware of adolescents' psychosomatic symptoms could help to determine if the adolescents are at risk for more serious psychological problems such as anxiety and depression. Moreover, this study provided convertible factors protecting adolescents from psychosomatic symptoms. In sum, our results indicate that interpersonal relationships are related to decreasing psychosomatic symptoms in adolescents and break new ground by examining mothers and fathers separately, taking the teacher-student relationship into account along with interactions between gender and interpersonal relationships by using a large-scale data set from a study conducted by officials in Taiwan.

References:

- Bailey, S. (1989). Serious antisocial behavior. In: P. Aggleton, J. Hurry & I. Warwick. (Eds.). *Young people and mental health*. NY: Wiley.
- Benenson, J. F. (1990). Gender differences in social network. *Journal of Early Adolescence*, 10, 472-495.
- Binger, J. J. (1994). *Parent-child relations: An introduction to parenting (4th ed.)*. New York: Macmillan College.
- Bishop, J. A. & Inderbitzen, H. M. (1995). Peer acceptance of friendship: An investigation of the relation to self-esteem. *Journal of Early Adolescence*, 15, 476-489.
- Booth, A. & Edwards, J. N. (1985). Age at marriage and family instability. *Journal of Marriage and Family*, 47, 67-75.
- Branje, S. T. J., van Lieshout, C. F. M., van Aken, M. A. G. & Haselager, G. J. T. (2004). Perceived support in sibling relationships and adolescent adjustment. *Journal of Child Psychology and Psychiatry*, 45, 1385-1396.
- Buhrmester, D. (1992). The developmental course of sibling and peer relationships. In: F. Boer & J. Dunn. (Eds.). *Children's sibling relationships: Development and clinical issues*. Hillsdale, NJ: Erlbaum.
- Buhrmester, D. & Furman, W. (1987). The development of companionship and intimacy. *Child Development*, 58, 1101-1113.
- Caplan, P. J. (1986). Take the blame off mother. *Psychology Today*, 70-71.
- Caplan, P. J. & Hall-McCoquodale, I. (1985). Mother-blaming in major clinical journals. *American Journal of Orthopsychiatry*, 55, 345-353.
- CHANG L. Y. (2003). *Taiwan education panel survey: Base year (2001) student data (public release computer file)*. Center for Survey Research, Academia Sinica (producer, distributor).
- Choquet, M. & Menke, H. (1987). Development of self-perceived risk behavior and psychosomatic symptoms in adolescents: A longitudinal approach. *Journal of Adolescence*, 10, 291-308.
- Collins, W. A. & Laursen, B. (2004). Parent-adolescent relationships and influences. In: R. Lerner & L. Steinberg. (Eds.). *Handbook of adolescent psychology (2nd ed.)*. New York: Wiley.
- Collins, W. A. & Russell, G. (1991). Mother-child and father-child relationships in middle childhood and adolescence: A developmental review. *Developmental Review*, 11, 99-136.
- Davis, H. A. (2003). Conceptualizing the role and influence of student-teacher relationships on children's social cognitive development. *Educational Psychologist*, 28, 207-234.
- Deković, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence*, 25, 667-685.
- Directorate-General of Budget, Accounting and Statistics. (2001). *Report on the Youths' Status Survey in Taiwan Area, The Republic of China, General Report*. Taipei: Directorate-General of Budget, Accounting and Statistics.
- Fisher, P. A. (1991, Apr. 18-20). Prediction negative discipline in traditional families: A multi-dimensional stress model. Paper presented at the *Biennial Meeting of the Social for Research in Child Development Seattle, WA*. (ERIC Document Reproduction Service No. ED 333 990)
- Furman, W. & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Development Psychology*, 21, 1016-1024.
- Furman, W. & Buhrmester, D. (1992). Age and sex differences of perceptions of networks of personal relationships. *Child Development*, 63, 103-115.
- Geene, J. W. & Walker, L. S. (1997). Psychosomatic problems and stress in adolescence. *Pediatric Clinics of North America*, 44, 1557-1572.
- Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescent*, 13, 21-43.
- Graham-bermann, S. A. & Cutler, S. E. (1992). The brother-sister questionnaire: Psychometric assessment and discrimination of well-functioning from dysfunctional relationships. *Journal of Family Psychology*, 8, 224-238.
- Harper, D. J. P. (1996). A study of adolescent depression, suicide, self-esteem and family strengths in special education female students compared with regular education female students. *Dissertation Abstracts International*, 59(7). (UMI No.9840083)
- Jones, D. C. & Costin, S. E. (1995). Friendship quality during preadolescence and adolescence. *Merrill Palmer Quarterly*, 41, 517-535.
- Kerns, K. A., Klepac, L. & Cole, A. (1996). Peer relationships and preadolescents' perceptions of security in the child-mother relationship. *Developmental Psychology*, 32, 457-466.
- Lansford, J. E. (2000). Family relationships, friendships, and well-being in the United States and Japan. *Dissertation Abstracts International*, 61(3). (UMI No.9963831)
- Lempers, J. D. & Clark-Lempers, D. S. (1992). Young, middle, and late adolescents' comparisons of functional importance of five significant relationships. *Journal of Adolescent Research*, 21, 53-96.
- LI Y. M. (1999). Family function and self-rated psychiatric symptoms among high school students in Hualien. *Tzu Chi Medicine Journal*, 11, 147-154. (in Chinese)
- LI Y. M. & ZHANG T. K. (1999). The differences in psychiatric symptoms and unhealthy lifestyle between aboriginal and Chinese adolescents. *Tzu Chi Medicine Journal*, 11, 237-245. (in Chinese)
- LIU T. L. & CHAO H. L. (2005). The relationships between perceived systemic family violence and children's problematic behaviors. *Bulletin of Educational Psychology*, 37, 197-214.

- Maccoby, E. (1990). Gender and relationships: A developmental account. *American Psychologist*, 45, 513-520.
- McCallum, R. S. & Bracken, B. A. (1993). Interpersonal relations between school children and their peers, parents, and teachers. *Educational Psychology Review*, 5, 155-176.
- Merten, D. E. (1996). Visibility and vulnerability: Response to rejection by nonaggressive junior high school boys. *Journal of Early Adolescence*, 16, 5-26.
- Miller, M. A., Alberts, J. K., Hecht, M. L., Trost, M. R. & Krizek, R. L. (2000). *Adolescent relationships and drug use*. NJ: Lawrence Erlbaum.
- Murberg, T. A. & Bru, E. (2004). School-related stress and psychosomatic symptoms among Norwegian adolescents. *School Psychology International*, 25, 317-332.
- Natvig, G. K. & Albrektsen, G. (1999). School-related stress and psychosomatic symptoms among school adolescents. *Journal of School Health*, 69, 362-368.
- Okulicz-Kozaryn K. & Borucka, A. (2004). Diagnosing mental health of adolescents on the basis of their subjective assessments. *Medycyna Wieku Rozwojowego*, 8, 499-512.
- Oldenburg, C. M. & Kerns, K. A. (1997). Associations between peer relationships and depressive symptoms: Testing moderate effects of gender and age. *Journal of Early Adolescence*, 17, 319-337.
- Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research*, 70, 323-367.
- Palmqvist, R. & Santavirta, N. (2006). What friends are for: The relationships between body image, substance use, and peer influence among Finnish adolescents. *Journal of Youth and Adolescence*, 35, 192-206.
- Parsons, T. (1955). *Family structure and the socialization of child*. In T. Parsons III & R. F. Bales, *family, socialization and interaction process*. Glencoe: Free Press.
- Piko, B. F. & Fitzpatrick, K. M. (2003). Depressive symptomatology among Hungarian youth: A risk and protective factors approach. *American Journal of Orthopsychiatry*, 73, 44-54.
- Piko, B. & Noemi, K. (2006). Psychosomatic symptom formation as a health status indicator in early adolescence: Behavioral epidemiologic analysis. *Orvosi Hetilap*, 7, 819-825.
- Resnick, M., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., et al. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association*, 278, 823-832.
- Rubin, C., Rubenstein, J. L., Stechler, G., Heeren, T., Halton, A., Housman, D. & Kasten, L. (1992). Depressive affect in "normal" adolescents: Relationship to life stress, family, and friends. *American Journal of Orthopsychiatry*, 62, 430-441.
- Rudolph, K. D. (2002). Gender difference in emotional response to interpersonal stress during adolescence. *Journal of Adolescent Health*, 30, 3-13.
- Sander, R. (2004). *Sibling relationships: Theory and issues for practice*. NY: Palgrave Macmillan.
- Shek, D. T. L. (2005). Perceived parental control and parent-child relational qualities in Chinese adolescents in Hong Kong. *Sex Role*, 53, 635-646.
- Stanton-Salazar, R. D. & Spina, S. U. (2005). Adolescent peer networks as a context for social and emotional support. *Youth and Society*, 36, 379-417.
- Steinberg, L. & Silk, J. (2002). Parenting adolescents. In: M. H. Bornstein. (Ed.). *Handbook of parenting (2nd ed.)*. New Jersey: Erlbaum.
- Stocker, C., Burwell, R. A. & Briggs, M. L. (2002). Sibling conflict in middle childhood predicts children's adjustment in early adolescence. *Journal of Family Psychology*, 16, 50-57.
- Tanaka, H., Mollborg, P., Terashima, S. & Borres, M. P. (2005). Comparison between Japanese and Swedish schoolchildren in regards to physical symptoms and psychiatric complaints. *Acta Paediatrica*, 94, 1661-1666.
- Wentzel, K. R. (1994). Relations of social goal pursuit to social acceptance, classroom behavior and perceived social support. *Journal of Early Adolescence*, 13, 4-20.
- Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, 90, 202-209.
- Wentzel, K. R. & Asher, S. R. (1995). Academic lives of neglected, rejected, popular, and controversial children. *Child Development*, 66, 754-763.
- Wentzel, K. R. & Caldwell, K. (1997). Friendships, peer acceptance, and group membership: Relations to academic achievement in middle school. *Child Development*, 68, 1198-1209.
- Youniss, J. & Ketterlinus, R. D. (1987). Communication and connectedness in mother- and father-adolescent relationships. *Journal of Youth and Adolescence*, 16, 265-280.
- Youniss, J. & Smollar, J. (1985). *Adolescent relationships with mothers, fathers and friends*. Chicago: University of Chicago Press.

(Edited by Max and Jean)