

Parental Involvement and Adolescent Mental Health in Taiwan: Gender and Mediation Effects

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Using a nationally representative sample of nearly 14,000 7th grade students from the Taiwan Educational Panel Survey (TEPS), this study examines gender and mediational effects in the link between parental involvement in education and adolescent mental health. Results of multi-group structural equation modeling demonstrate that girls were more likely to have a lower level of mental health status than boys. Mothers were more actively involved than fathers in aspects of their daughters' education; and fathers were more actively involved than mothers in their sons' education. Results support a mediational model in which paternal and maternal involvement were indirectly associated with mental health status of both sons and daughters via the mediator of student self-efficacy. Gender patterns were identified regarding supportive and controlling types of parental involvement practices. With regard to the association of socioeconomic levels with parental involvement, parents of higher socioeconomic status were more actively involved in supportive practices when compared to those of lower socioeconomic status.

Keywords: parental involvement, Taiwanese adolescent mental health, self-efficacy.

Indigenous Education in Taiwan

Recent studies on parental involvement in Taiwanese society indicate that fathers are beginning to become more involved in the everyday lives of their children and assuming roles other than the traditional role of breadwinner (Ho, Chen, Tran, & Ko, 2010; Ho, Yeh, Wu, Tran, & Chen, 2012). While these studies have focused on the positive effect of maternal and paternal involvement on adolescent academic achievement, research on adolescent mental health as the outcome variable is more limited. Adolescence is a critical life stage in which mental disorders commonly begin (Giedd, Keshavan, & Paus, 2008; Yi, 2013). Studies have shown that educational tracking, which begins in adolescence, significantly increases stress in Taiwanese students (Chen & Lu, 2009; Yang, 2005). For example, using national survey of TEPS, Yang (2005) found that Taiwanese adolescents with higher academic

achievement were likely to have a lower mental health status characterized by "excessive achievement pressure." Similarly, Chen and Lu (2009) reported that achievement was negatively associated with Taiwanese adolescent well-being. Excessive achievement pressure is not a unique phenomenon in Taiwan, and has also been reported in studies of adolescents from other Asian nations. For example, Ahn and Baek (2013) reported that academic-related stress was the most crucial determinant for Korean adolescent well-being, followed by parents-related stress, appearance-material-related stress, and friends-related stress. Parental involvement may have a greater impact during adolescence than at any other time of life (e.g., Ornelas, Perreira, & Ayala, 2007; Yi, Wu, Chang, & Chang, 2009). A better understanding of differential parental influences may have important implications to adolescent health and wellbeing and potentially far-reaching consequences for their future adult life. In addition, adolescent daughters' responses to involvement may be unlike those of sons as their need for parental resources could simply be different (Stafford & Bayer, 1993; Ornelas,

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Perreira, & Ayala, 2007). As such, researchers have begun to examine the parent-child dyadic relationships and the research indeed suggests that parents are involved differentially with the education of their adolescent sons and daughters (e.g., Ho et al., 2016; Shek, 2007). How the distinctive roles of fathers and mothers may vary in their influence on the mental health of their adolescent sons and daughters have received scant attention in the literature (Gallarín & Alonso-Arbiol, 2012).

Among the limited existing literature, the primary focus of investigation has been on the direct effects of parenting behaviors on adolescent mental health (Yang, 2005). Researchers have pointed to the importance of examining factors that may mediate the effect of parental involvement. For example, Lokes, Gingras, Philippe, Koestner, and Fang (2010) found that autonomy-supportive parenting was associated with adolescent intrinsic life goals, which in turn significantly enhanced their well-being in both samples from China and North America. In addition, a few international studies have focused on student self-efficacy as mediating the relation between parental involvement and academic performance. For example, by analyzing data from the Korea Education Longitudinal Survey (KELS), Lim and colleagues (2016) tested whether Korean adolescent perceived self-efficacy acts as a mediator in the relation between different types of parental involvement and academic achievement. The results showed that perceived self-efficacy indeed mediated the relation between parental involvement and academic achievement. Specifically, among the three types of parental involvement analyzed (parental participation, supervision, and expectation), parental participation was more strongly related to adolescent educational outcomes when compared to parental supervision and expectation. That is, when parents participated more frequently in school meetings and activities, their children tended to have a higher sense of self-efficacy, which led to higher academic achievement. Another study by Chun and Dickson (2011) also found that the perceived academic self-efficacy of Hispanic adolescents mediated pathways from parental involvement in schooling to academic performance. In a study of Slovene eighth graders, Levpuscek and Zupancic (2009) reported that the negative effect of parental academic pressure on math achievement was mediated through student self-efficacy. These studies

indicate that students' perceived self-efficacy serves as a significant mediator in the association between parental involvement and academic achievement across a number of international settings. However, little is known about the potential impact of parental involvement in education on Taiwanese students' perceived self-efficacy nor whether such effects of parental involvement and mediating processes also hold for other outcomes, such as student mental health. Thus, this study views parental involvement as a complex process that includes both direct and indirect processes of parent-adolescent interactions. Using a nationally representative data set (Taiwan Education Panel Survey, TEPS), the present study extends previous research by examining the direct and indirect effects of paternal and maternal involvement on the mental health of sons and daughters.

This study uses Mowder's (2005) Parent Development Theory (PDT) and Ryan and Deci's (2000) Self-Determination Theory (SDT) as underlying theoretical frameworks to examine the role of self-efficacy in the link between parental involvement and adolescent mental health. Parent development theory focuses on parental roles and how they relate to parenting behaviors from a developmental perspective. According to Mowder, parent roles develop and change over time and are not only affected by parents' own experiences and beliefs, but also by their developing child (2005). In addition, self-determination theory suggests that self-competence is an essential need for psychological growth and well-being regardless of cultural backdrops and values. According to Ryan and Deci (2000), human beings are active organisms with inherent tendencies toward psychological growth and well-being. These inherent tendencies require support from one's social environment that are necessary for psychological growth and well-being. Given that self-efficacy is related to well-being based on SDT, it is vital to understand the social-contextual conditions that promote self-efficacy and well-being (Ryan & Deci, 2000). In addition to peer and media influences, an important factor is the socialization of adolescents by their parents (e.g., Epstein, 1991; Grolnick, 2015; McNeal, 2012). Thus, considering the effect of parental involvement practices from a developmental perspective and the role of self-efficacy in facilitating well-being, we incorporated parent development theory and self-determination theory

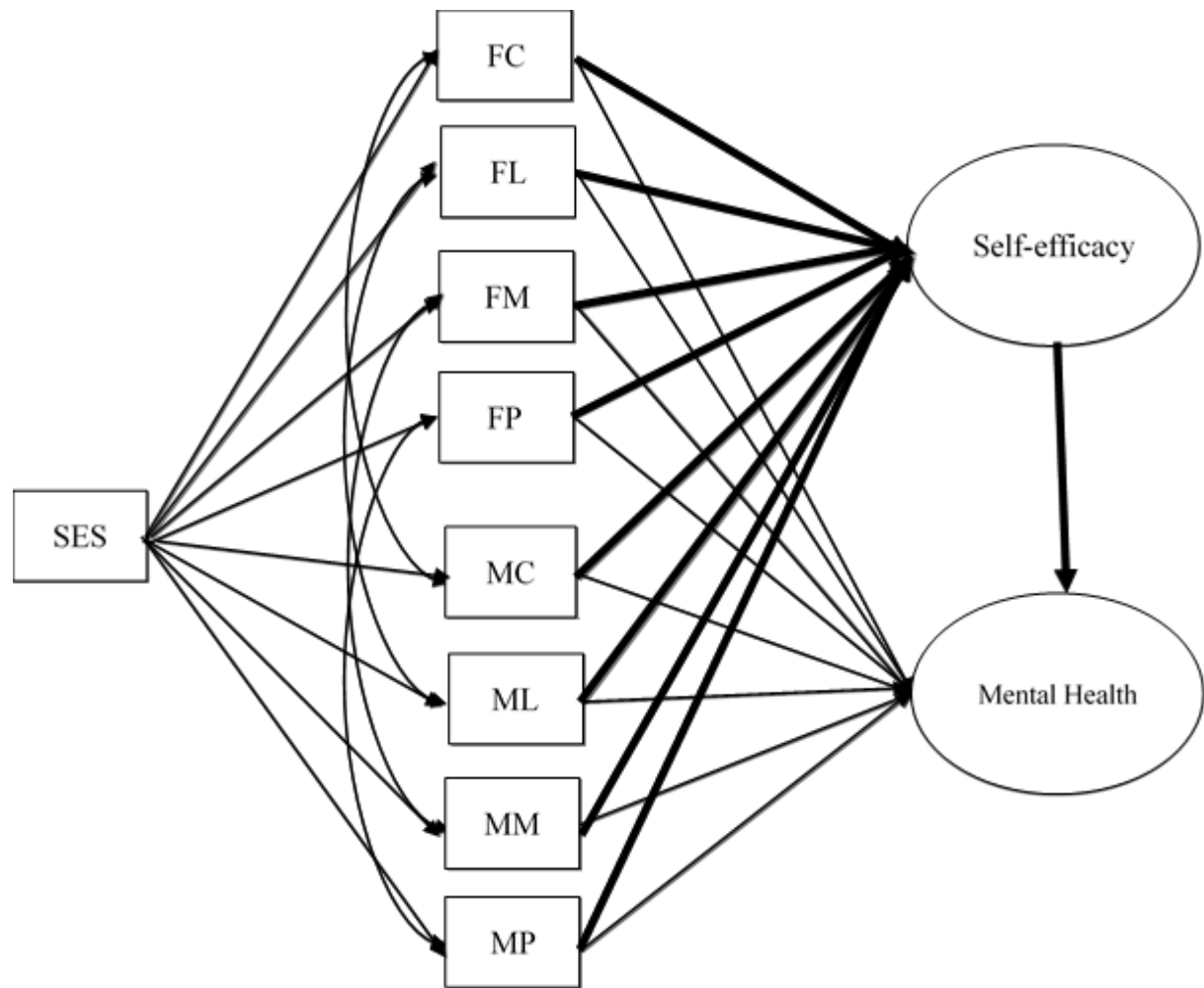


Figure 1.

Theoretical Model of Direct and Indirect Effects on Students' Mental Health

Note. Bolded paths correspond to the indirect effects of parental involvement on adolescent mental health via self-efficacy. FC/MC = Father/Mother career plan discussion, FL/ML = Father/Mother listening to child's thinking, FM/MM = Father/Mother monitoring behavior, FP/MP = Father/Mother participation in school.

as underlying frameworks to guide the development of the theoretical model hypothesized in the present study, as illustrated in Figure 1. This figure depicts a mediational model, which examines whether adolescent self-efficacy mediates relations between parental involvement and adolescent mental health. In addition to testing the mediational (or indirect) paths, it also depicts a direct path from parental involvement to adolescent mental health. For both direct and indirect paths, the model makes distinctions with regard to the gender of both parents and child.

Parental Involvement during Adolescence

The benefits of parental involvement for academic achievement have been well established in the Western literature (Castelli, Pieri, Addimando, & Pepe, 2011; Epstein, 1991; Pieri, Pepe, & Addimando, 2011; Sheldon & Epstein, 2005; Van Voorhis, Maier, Epstein, & Lloyd, 2013) as well as for Taiwanese sample (Chen, Newland, Liang, & Giger, 2016; Chen & Ho, 2012; Ho et al., 2016). However, when the focus of investigation is restricted to within-family processes, little systematic research has focused on the types of parental involvement and the strength of associations with cognitive and social outcomes as

they vary across development. As suggested by Hill and Tyson (2009), the cognitive changes during adolescence, such as sense of autonomy and efficacy, may increase adolescents' ability to make decisions about course selection, and the ability to link schoolwork and extracurricular activities with their future goals and aspirations. Therefore, the type of parental involvement offered during this stage and the relation between parental involvement and achievement may be influenced by social cognitive changes during adolescence (Hong & Ho, 2005; Hill & Tyson, 2009). For example, researchers (e.g., Hill & Tyson, 2009; McNeal, 2012; Wang & Sheikh-Khalil, 2014) have indicated that certain types of involvement in education (e.g., homework checking) may be less effective during adolescence than during childhood because of the differing developmental needs of adolescents. By high school, parents who are more involved (e.g., in communicating parental expectations for achievement to their children, linking schoolwork to fostering academic aspirations, and making preparations and plans for the future), tend to have children who are more likely to obtain a high achievement (Hong & Ho, 2005; Hill & Tyson, 2009).

Although the benefits of parental involvement for academic achievement have been well established, only a few studies have examined the effects of parental involvement on adolescent mental health in Taiwan (Yang, 2005; Yi, Wu, Chang, & Chang, 2009). For example, how different types of involvement may be related to adolescent mental health has received scant attention in the literature. In one study using TEPS dataset, Yang (2005) found parental involvement pertaining to behavioral control to be positively related to adolescent mental health, while parental involvement pertaining to psychological control was found to be negatively related to mental health. However, both types of parental involvement (behavioral control and psychological control) were positively related to academic achievement. According to Yang (2005), behavioral control involves regulating adolescent behavior through rule setting or through monitoring. For example, the behavior of helping with schoolwork, checking homework and test results, supervising after-school activities are considered as behavioral control. On the other hand, psychological control involves control that restricts adolescents' sense of psychological autonomy. Within the cultural context of Taiwan,

the parent-child talk about plans of future schooling/career is usually the time when parents express their expectation for the children's academic achievement or transmit their value of education to children. In such a case, high frequency of parents' discussion of future education/career plans in itself could be viewed a means of psychological control that pushes the adolescent to go for the goal set by the parent. Many other researchers (e.g., Hsu, Zhang, Kwok, Li, & Ju, 2011; Russell, Crockett, & Chao, 2010) have suggested that there are substantial cultural differences in parent-child interaction and the effects of parental interaction on children's outcomes between Western and Chinese contexts. For example, compared to their Western counterparts, Chinese parents tend to emphasize children's respect for and listening to parents (Zhang, Wehmeyer, & Chen, 2005). In a study that compared practices between parents of the United States and Taiwan, Zhang, Wehmeyer, and Chen (2005) found that parents in the United States were much more likely to promote student self-determination compared to parents in Taiwan. Furthermore, studies have shown psychological control to be associated with higher rates of internalizing problems (e.g., depression) while moderate behavioral control may enhance adolescent well-being (Tu, Lee, Chen, & Kao, 2014), though overly strict behavioral control could be detrimental (Yi, Wu, Chang, & Chang, 2009). Although the above studies have examined several dimensions of parental involvement, the potential differential effects of paternal and maternal involvement on Taiwanese adolescent mental health have not yet been explored.

Gender Variations

In recent decades Taiwan's dynamic socioeconomic growth and political transformation have brought changes to a number of Chinese traditions giving rise to a more liberal middle class advocating gender equality in Taiwanese society. Parenting responsibilities are becoming less gender-bound and fathers are becoming more involved in the everyday lives of their children (Ho, Chen, Tran, & Ko, 2010; Ho et al, 2011). For example, Ho and her colleagues (2010) found that parenting role beliefs in urban families are shifting more toward egalitarian beliefs about gender roles and away from traditional patriarchal beliefs.

Previous studies have suggested that parents are differentially involved with the education of their adolescent sons and daughters (LaRossa &

LaRossa, 2015; Shek, 2007). Specific to Taiwan, using large-scale longitudinal data, Ho and her colleagues (2016) found that, for same-gender parent-child dyads (i.e., mother-daughter and father-son dyads), greater parent participation in their children's academic life predicted higher students' educational aspirations, which in turn, predicted better growth in academic achievement. This mediating relationship, however, was not significant in mixed-gender dyads (mother-son and father-daughter dyads). Such findings may reflect gender identification in the process in which Taiwanese parents socialize their children; that is, mothers and fathers may identify more with their same-gender child and, hence, exert greater responsibility in socializing them (Chen, Liu, & Li, 2000; Ho et al., 2016). While a few studies on differential gender effects have focused on the academic achievement of Taiwanese adolescents, there is a dearth of research focusing on gender difference on parent-child dyads and their effects on adolescents' mental health.

Socioeconomic Differences in Parental Involvement

Studies have reported that socioeconomic status (SES) plays a role in their level of involvement in their children's education (Epstein, 1991; Hayes, 2011; Jeter-Twilley, Legum, & Norton, 2007; Wang, Deng, & Yang, 2016). Jeter-Twilley and his colleagues (2007) found that low SES was associated with a lower level of parental involvement in their elementary school-aged children's school-related activities in the United States. In their study on a sample of adolescents from China, Wang, Deng, and Yang (2016) found that parental educational expectations mediated the relationship between family SES and parental involvement. That is, low SES predicted low expectation for children's educational achievement. In turn, low expectation predicted their low involvement. Similar association between low SES and low involvement was reported for African American adolescent sample in the United States (Hayes, 2011). However, less is known about whether socioeconomic levels may vary with various types of parental involvement.

The present study aims to advance the research on parental involvement and mental health by addressing the gender and mediational variations related to this topic. The study utilized state-of-the-art methodologies, including multi-group structural equation modeling (SEM) on the Taiwan Educational Panel Survey (TEPS) data to

adequately address these issues. The TEPS database is ideal for addressing the objectives stated above because: (a) it provides data from a nationally representative sample; (b) it provides items on parental involvement that tap the developmental needs of adolescents, enabling researchers to identify the dimension(s) most influential on adolescent mental health; (c) it includes several useful mediating variables and thus allows for the examination of the indirect effects of parental involvement; (d) it provides a substantial number of items to tap various aspects of adolescent mental health; and (e) the information within this database possesses good reliability and validity. Specifically, our research questions are as follows:

1. Do varying types of paternal/maternal involvement exhibit differential direct and indirect (i.e., via the mediator of student perceived self-efficacy) effects on adolescent mental health?
2. Do these mediating processes vary by parent-child gender dyads (i.e., father-son, father-daughter, mother-son, and mother-daughter)?
3. Do different types of parent involvement practices vary with socioeconomic status?

Method

Data

The present study utilized the data obtained from the first wave of the Taiwan Educational Panel Survey (TEPS), a nationally representative sample of 13,953 Taiwanese students (7,112 males and 6,841 females) surveyed in 2001 as 7th graders. The average age of the 7th graders was 12.40 years old ($SD = 0.56$). This database consists of students' self-reported information, responses from parents as well as teachers. The measurement variables used in this study are from the students' self-report questionnaire.

Measures

Paternal/maternal involvement. Following Hsu, Zhang, Kwok, Li, and Ju (2011) and Ho et al. (2016), four items from the student questionnaire were selected to measure paternal and maternal involvement in education. These items are: (1) How often does your father listen to you discuss your thinking (listening to adolescent thinking)? (2) How often does your father participate in school activities (participation in school activities)?

(3) How often does your father check your homework and tests and know of your achievements (monitoring academic progress)?
 (4) How often does your father discuss with you about obtaining employment or advancing your education (career plan discussion)? These same questions but with "mother" replacing "father" were administered to students to capture students' perception of mother involvement. Consistent with other researchers, the items listening to adolescent thinking and participation in school activities are categorized as a *supportive* type of involvement, whereas parent-child education/career plan discussion and monitoring academic progress are categorized as a *controlling* type of involvement (Rogers, Wiener, Marton, & Tannock, 2009; Yang, 2005). A four-point Likert scale was applied for each question (1 = *never*, 2 = *sometimes*, 3 = *often*, 4 = *always*).

Adolescent perceived self-efficacy. Student self-efficacy was measured by a 14-item Perceived Self-Efficacy Scale utilized in the TEPS. The items within this scale measured adolescent confidence levels as they participated in various activities; for example: *I try to figure out answers whenever I have questions; I always take the initiative to make new friends; I am good at presentations or express my points of view; and I always review what I have learned.* Participants rated items on the basis of their confidence level ranging from 1 = *not confident at all* to 4 = *very confident*. Using Cronbach's alpha, the reliability coefficient for the adolescent perceived self-efficacy scale were 0.90 for males and 0.89 for females, indicating a high level of internal consistency for the measure.

Mental health. For measurement of adolescent mental health, 14 items were utilized from the TEPS students' questionnaire that assessed frequencies of depressive, anxious, aggressive, suicidal ideation, and physical complaints. Some examples include: *troubled, worried, or nervous; don't want to be around people; scream, smash something / argue / fight with someone; feel hopeless, no one can help you; and sleeping disorder, easily wake up at night.* The items were on a 4-point Likert scale (1 = *never*, 2 = *seldom*, 3 = *sometimes*, 4 = *often*). For ease of interpretation, the scale for the 14 items was reversed, with higher value indicating better mental health status. Using Cronbach's alpha, the reliability coefficient for the adolescent mental health scale were 0.89 for males and 0.88 for

females, indicating a high level of internal consistency for the measure.

Covariates. In the present study, SES was measured by household income. For household income index, the family's monthly income (Taiwan Dollars, TWD) was collected for TEPS use. Parents chose responses from six levels ranging from: 1 = *less than 19,999 TWD*; 2 = *20,000 – 49,999 TWD*; and 6 = *more than 200,000 TWD*. The average score was 2.82 ($SD = 1.03$), and the average monthly income for TEPS sample in 2001 was close to 50,000 TWD.

Data Analysis

The present study applied multi-group structure equation modeling (SEM) to model the particular causal trajectory from paternal involvement and maternal involvement through an intervening latent variable (adolescent perceived self-efficacy) to an endogenous latent variable (adolescent mental health). By using a latent variable modeling program, Mplus version 7.0 (Muthén & Muthén, 1998 – 2010), multi-group SEM allows for: (a) testing direct and indirect effects; (b) examining invariance of structural path coefficients across gender groups; (c) evaluating whether the observed items measure the same theoretical construct across gender groups, and; simultaneously estimating the structural model with the measurement model. The comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA) were selected as indices of model fit. According to Brown (2006), CFI and TLI larger than 0.90, and RMSEA less than 0.05 are acceptable fit.

Results

Descriptive Data Analysis

In general, both boys and girls appear to perceive themselves as having good mental health status ($Mean_{Boys} = 3.57, SD = 0.45$; $Mean_{Girls} = 3.44, SD = 0.48$). Additionally, both boys and girls appear to have a good sense of self-efficacy ($Mean_{Boys} = 2.93, SD = 0.54$; $Mean_{Girls} = 2.85, SD = 0.51$). Furthermore, among the four items of parental involvement, monitoring academic progress was rated as most the frequent ($Mean_{Mother} = 3.25, SD = 0.92$; $Mean_{Father} = 2.82, SD = 1.01$), followed by parents' career plan discussion with their children ($Mean_{Mother} = 2.84,$

$SD = 1.01$; $Mean_{Father} = 2.44$, $SD = 0.97$), parents' listening to their children's thinking ($Mean_{Mother} = 2.75$, $SD = 1.09$; $Mean_{Father} = 2.07$, $SD = 1.03$), and parents' participation in school activities ($Mean_{Mother} = 2.14$, $SD = 1.07$; $Mean_{Father} = 1.80$, $SD = 0.95$). Generally, mothers on average were more actively involved than fathers in aspects of their adolescents' education. Items representing paternal involvement and maternal involvement correlated moderately with each other (i.e., listening to adolescent thinking: $r = 0.54$, $p < .01$; participation in school activities: $r = 0.47$, $p < .01$; monitoring academic progress: $r = 0.32$, $p < .01$; career plan discussion: $r = 0.49$, $p < .01$); that is, families in which fathers are highly involved are also those in which mothers are highly involved.

Multi-group Structural Equation Model

Fit statistics indicated an adequate fit (CFI = 0.93; TLI = 0.92; RMSEA = 0.04) of the proposed statistical model. To begin with, comparison of the

latent scores of adolescents' self-efficacy as well as their mental health showed two noteworthy results: (1) girls were more likely to have a lower mental health status than boys (discrepancy = -0.91, SE = 0.09, $p < .01$), and (2) no significant mean differences were found between boys' and girls' self-efficacy (discrepancy = -0.27, SE = 0.02, $p = .14$).

We further compared the four types of paternal/maternal educational involvement among four dyads (i.e., father-son, father-daughter, mother-son, and mother-daughter) in both samples of boys and girls. Table 1 presents the mean and standard deviation of each paternal and maternal involvement variable for the sample of boys and girls, respectively. The results indicated that mothers' involvement for daughters was consistently greater than for sons, whereas the fathers' involvement for sons was consistently greater than for daughters.

Table 1.
Descriptive Statistics for Parent Involvement Measures for Boys and Girls

Variable	MeanBoy	SD	MeanGirl	SD
<i>Paternal Involvement</i>				
1. Listening to adolescent	1.88	1.04	1.79	1.02
2. Participation in school	1.56	0.96	1.49	0.95
3. Monitoring behavior	2.77	1.01	2.72	1.00
4. Career plan discussion	2.48	0.97	2.37	0.97
<i>Maternal Involvement</i>				
1. Listening to adolescent	2.19	1.10	2.66	1.05
2. Participation in school	1.68	1.07	1.72	1.06
3. Monitoring behavior	3.56	0.94	3.62	0.91
4. Career plan discussion	2.65	1.02	2.90	0.95

Note. The sample size for boys was 7,112 and for girls was 6,841.

Table 2.
Standardized Direct Effects of Parental Involvement on Adolescent Self-efficacy and Mental Health

Associations	Adolescent Self-efficacy (Boy/Girl)		Adolescent Mental Health (Boy/Girl)	
	Estimate	Effect Size	Estimate	Effect Size
1. Listening to adolescent	0.14*/0.13*	0.18/0.18	-0.04*/-0.03*	0.04/0.08
2. Participation in school	0.12*/0.11*	0.15/0.15	-0.01*/-0.03*	0.04/0.04
3. Monitoring behavior	0.11*/0.14*	0.15/0.16	-0.06*/-0.03*	0.06/0.07
4. Career plan discussion	0.09*/0.15*	0.14/0.19	-0.05*/-0.08*	0.01/0.01
<i>Maternal Involvement</i>				
1. Listening to adolescent	0.11*/0.12*	0.18/0.20	-0.08*/-0.01	0.01/0.06
2. Participation in school	0.09*/0.10*	0.13/0.14	-0.04*/-0.02	0.01/0.03
3. Monitoring behavior	0.11*/0.13*	0.16/0.18	-0.04*/-0.01	0.02/0.07
4. Career plan discussion	0.12*/0.15*	0.17/0.20	-0.02*/-0.04*	0.03/0.01
<i>Adolescent Self-efficacy</i>	--	--	-0.32*/-0.33*	0.21/0.23

Note. * indicates significant at $p < .01$.

Table 3
Direct and Indirect Effects of Parental Involvement on the Mental Health of Adolescent

<i>Associations</i>	<i>Direct Effect (Boy/Girl)</i>	<i>Indirect Effect (Boy/Girl)</i>	<i>Total Effect (Boy/Girl)</i>
<i>Paternal Involvement</i>			
1. Listening to adolescent	0.04*/ 0.03*	0.05*/0.04*	0.09*/ 0.07*
2. Participation in school	0.01*/ 0.03*	0.04*/0.04*	0.05*/ 0.07*
3. Monitoring behavior	0.06*/ 0.03*	0.04*/0.05*	0.10*/ 0.07*
4. Career plan discussion	-0.05*/-0.08*	0.01*/0.05*	-0.04*/-0.03*
<i>Maternal Involvement</i>			
1. Listening to adolescent	-0.08*/-0.01	0.04*/0.04*	-0.04*/0.03*
2. Participation in school	-0.04*/-0.02	0.03*/0.03*	-0.01*/0.01*
3. Monitoring behavior	-0.04*/-0.01	0.04*/0.04*	0.00*/0.03*
4. Career plan discussion	-0.02*/-0.04*	0.04*/0.05*	0.02*/0.01*

Note. * indicates significant at $p < .01$.

Results with standardized coefficients supported the mediational model that both paternal and maternal involvement were associated with the mental health of both sons and daughters through perceived self-efficacy. Gender patterns were identified regarding supportive and controlling involvement practices. Table 2 presents results that examine the direct effects of paternal and maternal involvement on adolescent self-efficacy and mental health. From this table, one can also extract information about the relationship between student self-efficacy and mental health status. Table 2 also provides effect size for each path coefficient. When examining effects using large samples, significant testing can be misleading because even small effects are likely to produce statistically significant results; hence it is important to discuss statistical significance versus practical significance utilizing effect size estimates. Goodman-Kruskal gamma (γ) is commonly used to estimate the strength of association between ordinal variables. The gamma coefficient is calculated by using the following calculation: $\gamma = \frac{N_c - N_d}{N_c + N_d}$, where N_c is the number of pairs of cases ranked in the same order on both variables and N_d is the number of pairs of cases ranked in reversed order on both variables. In addition, one can use SPSS to calculate the gamma coefficient. Following Rea and Parker's rule of thumb (1992) on the interpretation of effect size in quantitative research, a gamma value of 0.00 and under 0.10 is considered a negligible association, a value of 0.10 and under 0.20 a weak association, 0.20 and under 0.40 a moderate association, 0.40 and under 0.60 a relatively strong association, 0.60 and under 0.80 a strong association, and 0.80 and under 1.00 a very strong association (p. 229). For example, the

estimates of direct effects of parental involvement on adolescent mental health range in magnitude from 0.01 to 0.08 with corresponding effect size values (γ) ranging from 0.01 to 0.08, suggesting that, the strength of association between these types of educational involvement and mental health is negligible. In addition, the estimates of direct effects of parental involvement on adolescent self-efficacy range in magnitude from 0.09 to 0.15 with corresponding effect size values (γ) ranging from 0.13 to 0.20, suggesting a weak strength of association. Further, the estimates of direct effects of adolescent self-efficacy on mental health were 0.32 for male group and 0.33 for female group with corresponding effect sizes of high magnitude (0.21 for male and 0.23 for female) suggesting a moderate association.

Table 3 provides a summary of the direct, indirect, and total effects that correspond to Table 2 and Figure 1. Estimates of an indirect effect was derived by multiplying the estimated path coefficient from parental involvement to adolescent self-efficacy by the path coefficient from self-efficacy and mental health. As can be seen in Table 2, our findings indicated that supportive types of paternal involvement (i.e., listening to adolescent thinking: $\gamma_{\text{Father-Son}} = 0.14$, $\gamma = 0.18$, participation in school activities: $\gamma_{\text{Father-Son}} = 0.12$, $\gamma = 0.15$) were more positively related to self-efficacy of sons, when compared to controlling types of paternal involvement (i.e., discussing career plans: $\gamma_{\text{Father-Son}} = 0.09$, $\gamma = 0.14$, monitoring and checking work: $\gamma_{\text{Father-Son}} = 0.11$, $\gamma = 0.15$). This trend was also significant for mother-son dyads; that is, high levels of supportive types of maternal involvement was shown to be positively associated with self-efficacy of sons. In contrast, controlling types of paternal and maternal involvement (i.e., discussing career

plans: $\gamma_{\text{Father-Daughter}} = 0.15$, $\gamma = 0.19$; $\gamma_{\text{Mother-Daughter}} = 0.15$, $\gamma = 0.20$, monitoring and checking work: $\gamma_{\text{Father-Daughter}} = 0.14$, $\gamma = 0.16$; $\gamma_{\text{Mother-Daughter}} = 0.13$, $\gamma = 0.18$) were more positively related to daughters' self-efficacy than supportive types of paternal and maternal involvement (i.e., listening to adolescent thinking: $\gamma_{\text{Father-Daughter}} = 0.13$, $\gamma = 0.18$; $\gamma_{\text{Mother-Daughter}} = 0.12$, $\gamma = 0.20$, participation in school activities: $\gamma_{\text{Father-Daughter}} = 0.11$, $\gamma = 0.15$; $\gamma_{\text{Mother-Daughter}} = 0.10$, $\gamma = 0.14$).

Finally, results of analysis examining the association between socioeconomic status and types of parental involvement indicated that the relation was highest for parents' participation in school activities, followed by listening to adolescent thinking, monitoring academic progress, and career plan discussion (see Table 4). That is, the higher the SES the greater the supportive parental involvement. Notably, parents from high SES families were more actively involved in school activities.

Table 4.
Standardized Effects of Socioeconomic Status on Parental Involvement

SES	Paternal Involvement (Boy/Girl)		Maternal Involvement (Boy/Girl)	
	Estimate	Effect Size	Estimate	Effect Size
1. Listening to adolescent	0.10*/0.09*	0.12/0.11	0.09*/0.06*	0.11/0.09
2. Participation in school	0.12*/0.16*	0.16/0.21	0.11*/0.15*	0.15/0.18
3. Monitoring behavior	0.07*/0.06*	0.11/0.10	0.08*/0.10*	0.14/0.15
4. Career plan discussion	0.07*/0.08*	0.09/0.11	0.06*/0.07*	0.09/0.10

Note. * indicates significant at $p < .01$.

Discussion

This study contributes to the literature on both parental involvement and adolescent well-being in several ways. First, consistent with results from another study using TEPS data on adolescents' general happiness (Chen & Lu, 2009), this study's findings reveal that both Taiwanese boys and girls perceived themselves overall as having good mental health status. Additionally, the positive association between maternal and paternal involvement may contribute to the understanding of paternal and maternal involvement as part of the co-parenting process and how both parents may jointly influence their adolescents' development (Hsu, Zhang, Kwok, Li, & Ju, 2011). This study uniquely identifies differential patterns of parental involvement with regard to the gender combinations of parent-child dyads. Results suggested that fathers were more involved in son's education, when compared to daughters; whereas mothers, on average, were more involved in daughter's education, when compared to their sons. Furthermore, this study uniquely found that *supportive* types of paternal and maternal involvement, when compared to *controlling* types of involvement, were more positively related to

self-efficacy of sons, whereas *controlling* types of paternal and maternal involvement were more positively related to daughters' self-efficacy than *supportive* types of involvement. This finding suggests that maternal and paternal involvement during adolescence indeed has differential consequences for Taiwanese adolescent outcomes. Future comparative studies are needed to further explore how these gender differences in parent-child dyad interactions may vary across cultural groups.

Consistent with findings of previous studies, our results demonstrate the beneficial direct effects of parental involvement on adolescent self-efficacy of both daughters and sons (Chun & Dickson, 2011; You, Lim, No, & Dang, 2016) as well as the beneficial direct effect of self-efficacy on mental health (Ryan & Deci, 2001). The gender patterns regarding supportive and controlling types of parental involvement support other researchers' call for parenting workshops to develop more effective parental involvement practices, particularly for fathers, (e.g., Hsu, Zhang, Kwok, Li, & Ju, 2011) to help their adolescent students increase both general and academic self-confidence. For example, schools and other organizations may provide training to

help fathers better understand adolescent psychological needs, learn how to effectively discuss career plans and how to listen to and respond to adolescent needs. The better fathers are prepared to engage in these discussions, the more likely they can support adolescents' needs and develop close relationships. These types of support would lead adolescents to experience a higher sense of self-efficacy and greater well-being at a pivotal time in their development.

This study is unique in that indicators of parental involvement in education, adolescent perceived self-efficacy, and adolescent mental health have rarely been included in the same study. To date, no one has examined the extent to which parental involvement and adolescent perceived self-efficacy uniquely contribute to Taiwanese adolescent mental health. While establishing relationships between explanatory variables and outcome variables is important in behavioral research, of greater scientific interest may be the identification of the process by which explanatory variables exert influence on outcome variables through mediator variables (Baron & Kenny, 1986; Hong & Ho, 2005; Preacher & Hayes, 2008). Results of this study demonstrate that adolescent perceived self-efficacy mediated the relation between parental involvement and adolescent mental health. Such findings extend prior work and support Ryan and Deci's self-

determination theory in the Taiwanese context. In addition, by using student report of parental involvement and student report of one's self-efficacy, the current study provides insight into adolescents' perception of the extent of their parents' involvement, and how that perception can influence adolescent self-efficacy, which, in turn, promotes mental health.

There are several limitations to the current study. First, the relationships among parental involvement, adolescent self-efficacy, and mental health were examined via a cross-sectional design and causal conclusions on the direction of the relationships cannot be drawn. For example, it is possible that higher levels of mental health status actually elicit higher sense of self-efficacy and perceptions of greater parental involvement. Longitudinal designs would allow researchers to test the directional effects of these associations. A second limitation is that only parental involvement items related to education were included in the present study. Future studies may expand on other types of parental involvement that may be more strongly associated with adolescent perceived self-efficacy as well as mental health. Additionally, future studies may also want to explore other social cognitive variables as potential mediators as well as the gender differences in parent-child dyad interactions.

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