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# Reciprocal Influences among Marital Relationship, Parent-Adolescent Relationship, and Youth Depressive Symptoms

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## Abstract

**Objective:** Drawing on family systems framework, this study investigated the reciprocal prospective associations between marital relationship quality, parent-adolescent closeness and conflict, and adolescent depressive symptoms among families in Taiwan.

**Background:** The family systems theory posits reciprocity between family subsystems. However, the direction of influences between marital relationship quality, parent-adolescent relationship quality and adolescent well-being may be more unidirectional in Chinese societies due to hierarchical family values.

**Method:** Data were from a longitudinal survey of 2,292 parent-youth dyads in the Taiwan Youth Project. Cross-lagged path models were used to test the bidirectional associations between marital relationship quality, parent-adolescent closeness and conflict, and adolescent depressive symptoms from ages 12 to 18.

**Results:** Our primary hypothesis that marital relationship quality predicts parent-adolescent relationship quality, which then predicts adolescent depressive symptoms in a unidirectional manner was partially substantiated. Moreover, marital relationship quality directly predicted fewer depressive symptoms from middle to late adolescence and indirectly from early to late adolescence via parent-adolescent relationship quality in middle adolescence. We also found that child depressive symptoms predicted less parent-adolescent closeness, and more conflicts which predicted poorer marital relationship quality, particularly in early adolescence.

**Conclusion:** Extending the family systems theory, findings suggest that marital relationship quality plays a dominant role in the health and well-being of Taiwanese families, especially as adolescents mature. Results highlight the importance of testing theories in families from diverse cultures.

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**Keywords**

adolescence; marital quality; parent-child relationships; depression; developmental psychology; family systems

## Background

Adolescence is a period of developmental change characterized by increased vulnerability to family conflict and depressive symptoms. The negative sequelae of family conflict and depressive symptoms include impulsivity, alcohol use, and suicide, the second leading cause of death among adolescents in Taiwan and the US (Minister of Health and Welfare, 2019; Center for Disease Control, 2018; Heron, 2019). Adolescent depressive symptoms are closely linked to their family environment. Characteristics of their family environment predict the onset, maintenance, and severity of adolescent depressive symptoms in Chinese societies (Chiang et al., 2020; Huang, 2014). At the same time, family conflict can be a byproduct of depressive symptoms, likely due to the cognitive and behavioral patterns that individuals with depressive symptoms are more vulnerable to negative cognitive styles, impaired family communications, and personality and interpersonal vulnerabilities (Cole et al., 2006; Hammen, 2006; Liu & Alloy, 2010). Past research has primarily explored how marital and parent-adolescent interactions interweave with adolescent depressive symptoms in Western families. However, we know little about how adolescent depressive symptoms shape family interactions in the context of Chinese societies, where family values, parenting practices, and parent-adolescent interactions differ from those of Western societies (Chuang et al., 2021; Li et al., 2019). To advance our understanding of family relationships and adolescent development, this study examined how the marital relationship, parent-adolescent relationship, and youth depressive symptoms are reciprocally and prospectively associated across adolescence in Taiwanese families, one of three major Chinese societies (Li, 2020).

Family systems theory posits that individuals within a family are interdependent and organized into reciprocally connected subsystems, such as the marital and parent-child subsystems (Minuchin, 1974; Cox & Paley, 2003). Each subsystem bidirectionally influences one another. Moreover, a child's behaviors are shaped by parents; in turn, a child's behaviors can also shape the parent-child and marital relationships (Grych et al., 2004; Simpson et al., 2018; Steeger & Gondoli, 2013). Indeed, research has shown that the marital and parent-adolescent relationships are interdependent and closely associated with adolescent psychological functioning. Studies conducted with Western families further indicate that these associations are reciprocal (Boutelle et al., 2009; Cui et al., 2007; Hale et al., 2020; Hughes & Gullone, 2008). However, only a few have explored these links in Chinese societies.

Reciprocity between family subsystems may be culture-bound, like many other aspects of the family (Kalyanpur & Harry, 1997). In fact, most studies conducted with Chinese families have only focused on the unidirectional effects of higher-order family systems (i.e., marital relationship, parent-adolescent relationship) on adolescent well-being (Cheung, 2020; Bush, 2000; Fuligni, 1998; Kim & Ge, 2000; Shek, 2005; Xin et al., 2009). Limited

research has examined how adolescents' psychological functioning may influence their relationships with parents as well as their parents' marital relationships over time. To examine the generalizability of the family systems theory to Chinese families, the present study examined the reciprocal influences between the marital relationship, parent-adolescent relationship, and adolescent depressive symptoms in Taiwanese families.

## Reciprocal Associations among the Marital Relationship, the Parent-Adolescent Relationship, and Adolescent Depressive Symptoms

Reciprocal influences between the qualities of the marital and parent-adolescent relationships (e.g., closeness and conflict) as well as adolescent mental health (e.g., depressive symptoms) in Western families are well documented in past research (Choi et al., 2019; Cox & Paley, 1997; Cummings et al., 1994; Hipwell et al., 2008; Jarnecke et al., 2017; Pardini, 2008; Pu & Rodriguez, 2021). Current studies have consistently found reciprocal associations among marital relationship, parent-adolescent relationship, and adolescent psychopathology. These studies showed that marital conflict has a debilitating effect on parent-adolescent relationship and child mental health, including depression, anxiety, and aggression (Harold & Sellers, 2018). Exposure to poor quality marital relationships (e.g., interparental conflict, marital discord) puts children and adolescents at risk for mental health problems through several processes, including parental emotional withdrawal, hostile parenting, and child negative appraisals and attributions (Cummings & Davies, 2002; Fosco & Bray, 2016; Sherrill et al., 2017). These research suggests that parent-adolescent relationship is a bridging mechanism between marital relationship and child outcomes (Erel & Burman, 1995). Furthermore, parents in a distressed and hostile marriage are more aggressive toward their children and less responsive to children's needs (Harold & Sellers, 2018). Strains in the marital relationship may influence to parent-adolescent relationship, and contribute to lower closeness and heightened conflicts between parents and their children (Harold et al., 2012). However, these reciprocal family interactions have not been tested in an integrated developmental framework that evaluates family systems theory across adolescence when dynamic biological, cognitive and social changes unfold (Laursen & DeLay, 2011). Therefore, we examined the associations between family subsystems and youth mental health from early to late adolescence.

Children are also active agents who affect their parents' marital relationship and their own interactions with their parent. Supported by family systems framework, research on interdependent family subsystems has shown that poor child adjustment would exacerbate marital conflict and parent-child arguments (Jenkins et al., 2005; Simpson, 2020). In a clinical sample, adolescent depressive symptoms after treatment were found a risk factor for poor family functioning, specifically elevated marital and parent-adolescent conflicts (Howard et al., 2019). Adolescent depressive symptoms may also undermine parent-adolescent closeness or connectedness by increasing the frequency of marital and parent-adolescent conflicts (Cui et al., 2007; Gerard et al., 2006; Sturge-Apple et al., 2008). These child-to-parent effects may be driven by emotional and social difficulties in the children, such as negative attribution biases, self-blaming cognition, and poor social competence (Hammen, 2009; Sheeber et al., 2001). Furthermore, positive and negative aspects of parent-child relationships contribute to different family and youth well-being

(Li et al., 2018). Parent-child closeness reflects greater intimacy, emotional security, and social support, and is an important protective factor that promotes adolescent well-being. Conflict, a risk factor for poor adolescent outcomes, represents negative interactions such as disagreement and discord between parents and children (Laursen & Collins, 2009). Their associations with the quality of the marital relationship are likely driven by spillover, wherein negativity in one family subsystem is transmitted to another family subsystem (El-Sheikh & Elmore–Staton, 2004; Erel & Burman, 1995). Thus, parent-adolescent conflict may be more strongly associated with martial relationship quality than lack of closeness, and closeness and conflict may differently bridge marital relationship quality to youth mental health. Together, we examined both parent-adolescent closeness and conflict to understand how family subsystems are connected from early to late adolescence.

## Family Systems in Chinese Cultures

Previous studies suggest that marital relationship, parent-adolescent relationship, and adolescent depressive symptoms are reciprocally linked in Western families. However, it is possible that these reciprocal associations are less replicated in Chinese societies, where have a more rigid, hierarchal structure in comparison to families in the U.S. In Taiwan specifically, families are hierarchically structured, such that parents have “top down” influence over their offspring. Taiwanese families are culturally conservative and follow Confucian values of hierarchy and parental authority (Chuang et al., 2021). Parents have high levels of authority, power, and dominance over children, despite gradually shifting cultural attitudes due to urbanization, economic advancement, and family re-composition (i.e., low birth rates) (Li, 2020; Zhang & Fuligni, 2006). Children seldomly engage in conversations and open confrontation with their parents (Cheung et al., 2020), and tend to suppress their feelings more often than those in Western families (Zhao & Zhao, 2015; Yeh et al., 2017), in part to maintain harmony in hierarchical relationships (Tsai & Levenson, 1997). As a result, parents are less aware of their adolescents’ psychological problems, and Taiwanese families may be impervious to the reciprocal influences observed between parents and adolescents in Western families.

Cultural values, such as filial piety, may also promote unidirectional, top-down effects in Taiwanese families. Filial piety, defined as a set of family values that emphasize the importance of offspring showing goodness to their parents (Bedford & Yeh, 2021; Kim & Fong, 2013), may further inhibit adolescents from having a “bottom-up” effect on the quality of the parent-adolescent and marital relationships. Children are taught to obey their parents, fulfill familial and parental expectations, and later in adulthood, take care of their parents in Chinese culture (Yeh et al., 2013). Parents maintain their status as powerful figures throughout their offspring’s lifespan by limiting emotional bonding (Ho, 1996). Such a cultural value might strengthen the effect of marital relationship and parent-adolescent relationship on adolescent depressive symptoms in the families, while preventing youth from outwardly expressing discontentment. Studies indicated that adolescents in Taiwan tended to suppress their emotional needs in their interactions with parents as burdening their parents with their emotional needs may be at odds with filial piety (Chen & You, 2001). Indeed, emotion suppression was found to be culture-specific in the U.S.; emotion suppression was used more frequently by women holding bicultural Asian and European values in

comparison to those only holding European dominant values (Butler et al., 2007). Thus, the “bottom-up”, child effects may be suppressed and have minimal impact on marital and parent-adolescent relationships. Given the family dynamics in the context of these cultural values, we expect a unidirectional association wherein the quality of the marital relationship, prospectively predicts that of the parent-adolescent relationship, which in turn, may predict adolescent depressive symptoms.

## Current Study

Family systems theory posits that subsystems and individuals within a family are reciprocally linked, such that marital relationship quality, parent-adolescent relationship quality and adolescent depressive symptoms bidirectionally affect each other (Cox & Paley, 1997; Minuchin, 1974). The study of these reciprocal associations informs our understanding of how families re-establish equilibrium during a time of reorganization and change, and help to understand the onset and maintenance of adolescent depressive symptoms. Although supported by research conducted with Western families, the generalizability of this theory to Chinese societies remains unclear. The current study tested the prospective bidirectional associations among marital relationship quality, parent-adolescent relationship quality (i.e., closeness and conflict) and adolescent depressive symptoms in a six-year study conducted with a longitudinal sample of 2,292 youth and their parents living in Taiwan. As shown in Figure 1, we hypothesized that Taiwanese families would exhibit a series of top-down effects wherein the quality of the marital relationship predicts that of the parent-adolescent relationship, and the quality of the marital and parent-adolescent relationships predicts adolescent depressive symptoms. Given the distinctive roles of parent-adolescent closeness and conflict in family functioning, we examined closeness and conflict in separate models to better specify the reciprocal associations between family subsystems. We further hypothesized that adolescent depressive symptoms and parent-adolescent relationship would have minimal impact on marital relationship, and adolescent depressive symptoms would have minimal impact on parent-adolescent relationship. Next, we hypothesized that the quality of the marital relationship impacts adolescent depressive symptoms via parent-adolescent closeness or conflict. Based on potential top-down effects, this indirect effect may follow the same hierarchical structure of Taiwanese families. Thus, parent-adolescent closeness or conflict may mediate the association between marital relationship quality and adolescent depressive symptoms. Last, we explored the moderation by youth and parent genders given past literature suggesting that wives and husbands experience different levels of marital satisfaction and their closeness with children (Jackson et al., 2014; Wolf, 1972), and that boys and girls differ in their reports of their relationships with their parents and levels of depressive symptoms (Branje et al., 2010; Meadows et al., 2006). Thus, we tested youth and parent genders as moderators in the longitudinal associations among marital relationship quality, parent-adolescent relationship, and adolescent depressive symptoms.

# Method

## Participants and Procedures

The sample was drawn from the Taiwan Youth Project (TYP), a large-scale, longitudinal study that enrolled two cohorts of adolescents in the 7th and 9th grades in 2000. TYP applied multi-stage stratified cluster random sampling in three regions with different urbanization levels in Northern Taiwan: Taipei City (the largest metropolitan city), Taipei County (industry and manufacturing), and Yi-Lan County (agricultural area) (Yi et al., 2009). Despite TYP data collection starting in the early 2000s, the data are still relevant to current adolescents and families in Taiwan. Family dynamics have been found to be stable and less systematically shifted across time due to the continued prominence of traditional family-related values even in the current society (Farrell & Yi, 2019; Kung, 2019; Liu & Chiang, 2020); thus, the interpretations are not seriously compromised. Given the interests on the bidirectional associations between family subsystems across adolescence, including parent-reported marital relationship and youth-reported parent-adolescent relationship and depressive symptoms, data from subsequent waves when parents did not participate or youth were in college (i.e., after 2006) were not examined. Therefore, the current study focused on data provided by the 2,292 youth in the 7th grade cohort and their parents, who both completed assessments in 2000 ("Wave 1", $M_{age}$=12 years), 2002 ("Wave 2", $M_{age}$=15 years), and 2005 ("Wave 3", $M_{age}$=18 years). All youth lived with two parents in the same household. Ninety-eight percent of adolescents lived with two biological parents and 2% lived with one biological parent and a step-parent. Of the 2,292 7th graders, 48.6% of adolescents were female. The mean age of parents at Wave 1 was 42.4 years ($SD_{age}$=4.87). Sixty-eight percent of all assessments were completed by mothers, and 32%, by fathers. Parental ethnicity included 84% domestic Taiwanese, 10% Mainland Chinese immigrants, and 4% Taiwanese indigenous peoples. Parental education level included: 42.9% completed junior high school or less, 35.7% completed high school, and 21.4% attended college or above. The mean household monthly income was $2175.91 USD ($SD$=$1529.84).

The TYP applied the multi-stage random sampling to recruit youth from three cities in northern Taiwan (Yi, Wu, Chang, & Chang, 2009). The 7th grade cohort of adolescents completed paper-and-pencil questionnaires in their homeroom classes with a research assistant in 2000 and 2002 and in-person interviews at home in 2005. Parents completed take-home questionnaires in 2000 and in-person interviews at home in 2002 and 2005. TYP followed ethical procedures and was approved by the Institute of Sociology, Academic Sinica; adolescent and parent participants as well as principals of target schools provided informed consent and assent (Wang et al., 2018). The public surveys were anonymous and did not contain any identifiable information that could be linked to individuals. The current study and our access to the data were approved by Academia Sinica.

Of the 2,292 youth who enrolled in the study and completed assessments in 2000, 2,171 completed the Wave 2 assessments, and 1,534 completed the Wave 3 assessments. Likewise, 2,292 parents provided data at Wave 1. In-home interviews were completed by 1,699 and 1,523 parents in 2002 and 2005, respectively. Our data were not missing completely at random, according to the Little's test (Little, 1988). Adolescents' retention status did not

differ by gender, household income, parental ethnicity, Wave 1 age, marital relationship quality, and parent-adolescent closeness and conflict. However, adolescents with higher depressive symptoms were more likely to dropout ($F = 2.55$, $p < .05$). Parent participation did not differ by gender, parental ethnicity, baseline age, marital relationship quality, and parent-adolescent closeness and conflict. Lower household income predicted greater likelihoods of study dropout ($F = 10.95$, $p < .001$). Thus, we included household income in the models as an auxiliary variable to reduce attrition bias and improve accurate estimation (Enders, 2008; Graham, 2003).

## Youth-Reported Measures

**Depressive Symptoms—**At each wave, adolescent depressive symptoms were measured by sixteen questions drawn from the short version of the Symptom-Checklist-90-Revised (SCL-90-R) (Derogatis, 1977; Derogatis, 2017). The Chinese version of the SCL-90R has great psychometric properties, such as internal reliability, composite reliability, construct validity, and criterion validity (Chiang & Chen, 2018; Wang & Wu, 2003). Adolescents indicated the level of depressive symptoms they experienced in the past week, such as loneliness, depressed mood, insomnia, excessive anxiety, and suicidal thoughts. Items were rated on a five-point scale from 1 (*never*) to 5 (*always*) and averaged. Cronbach alphas were .88, .88, and .87 in Waves 1, 2 and 3, respectively.

**Parent-Adolescent Closeness—**Parent-adolescent closeness was measured using a two-item Parent-Child Relationship Satisfaction Scale (Chiang et al., 2020; Lin & Hsiao, 2017), one for each parent: how do you feel about your relationship with your father/mother? Item scores ranged from 1 (*very unsatisfied*) to 4 (*very satisfied*) and were averaged to create a scale score. Cronbach alphas were ranged from .75 to .77.

## Parent-Reported Measures

**Marital Relationship Quality—**Marital relationship quality was assessed by three questions modified from the Chinese version of ENRICH (Shen, 2001), which was based on Fower and Olson's (1993) ENRICH Marital Satisfaction Scale. Parents were asked about the extent to which their partners (1) showed support and care, (2) listened carefully to your ideas and thoughts, and (3) asked you important things, during the past month when together. Items rated on a 7-point scale from 1 (*never*) to 7 (*always*) were averaged. Cronbach alphas were .93, .90, and .92 at Waves 1 to 3.

**Parent-Adolescent Conflict—**Parent-adolescent conflict was measured by a 3-item Parent-Child Conflict Scale validated in a prior study (Jou et al., 2010). Parents rated how often they experienced (1) arguments about disagreements, (2) being angrily shouted at by their adolescents, and (3) negative attitudes in their interactions with their adolescents, on a 5-point scale ranging from 1 (*never*) to 5 (*always*) in the past six months. Items scores were averaged. Cronbach alphas were .83, .80, and .85 at Waves 1, 2 and 3, respectively.

## Analytical Strategy

Cross-lagged path models (CLPM) were specified to test the longitudinal associations among marital relationship quality, parent-adolescent relationship and adolescent

depressive symptoms using AMOS 21 (Arbuckle, 2014). CLPM parsimoniously estimates autoregressive effects for each variable, covariance of same-wave variables, and the cross-lagged effects of variables across time. Thus, CLPM is well-suited to test for bidirectional effects between several time-varying variables. Youth-reported parent-adolescent closeness and parent-reported parent-adolescent conflict were examined in separate CLPMs. Each model tested the cross-lagged effects between marital relationship quality, parent-adolescent closeness or conflict, and adolescent depressive symptoms, as well as the autoregressive effects of each variable over the three waves. Specifically, our models examined the prospective associations between marital relationship quality at Wave t, and parent-adolescent relationship quality (i.e., closeness or conflict), as well as depressive symptoms, at Wave t+1. The prospective association between parent-adolescent relationship at Wave t and depressive symptoms at Wave t + 1 was also included in the model. The CLPM simultaneously tested paths in the opposite direction: depressive symptoms at Wave t predicting parent-adolescent relationship and marital relationship quality at Wave t + 1; and parent-adolescent relationship at Wave t predicting marital relationship quality at Wave t + 1. Furthermore, the CLPMs included autoregressive paths from Wave 1 to 2, from 2 to 3, and from Wave 1 to 3 for each of the three key variables. Lastly, we controlled for parent and youth genders, and included household income as an auxiliary variable. Missing values were estimated using full information maximum likelihood (FIML) (Schlomer et al., 2010; Enders & Bandalos, 2001), a robust estimation frequently used in longitudinal studies to reach unbiased estimates and reduce the effect of attrition (Graham, 2012; Little et al., 2014).

We considered two goodness-of-fit indicators, root mean square error of approximation (RMSEA) and comparative fit index (CFI), to evaluate how well the theoretical models fit the data (Bentler, 1990; Hu & Bentler, 1999). Lastly, multi-group analyses were conducted to evaluate whether the model fits the overall sample differed as a function of parent and youth genders. Group comparisons were performed by testing model invariance between unconstrained and constrained models setting the cross-lagged paths as equal. We tested model invariance by examining changes in CFI; ΔCFI of 0.01 or larger indicated significant group differences (Chen, 2007; Cheung & Rensvold, 2002).

## Results

### Descriptive Statistics

Table 1 showed descriptive statistics and correlations between key variables at each wave. Cross-sectional and prospective correlations between depressive symptoms and parent-adolescent relationship closeness were all significant (range = −.14 to −.31). Likewise, eight out of nine correlation tests between depressive symptoms and parent-adolescent conflict were significant (ranged = .03 to .13). Depressive symptoms and marital relationship quality were less consistently correlated across the three waves.

### Parent-Adolescent Closeness Model

We fitted a CLPM examining the bidirectional lagged effects between marital relationship quality, parent-adolescent closeness and adolescent depressive symptoms, as shown in

Figure 2. The model showed a reasonable fit to the data: $\chi^2(24) = 99.49$, CFI = .97, NFI = .96, RMSEA = 0.04. First, we described the cross-lagged effects between parent-reported marital relationship quality and youth reported parent-adolescent closeness. As shown in Table 2, marital relationship quality at age 12 predicted parent-adolescent closeness at age 15 ($\beta = .07$, $p < .01$), and marital relationship quality at age 15 predicted parent-adolescent closeness at age 18 ($\beta = .07$, $p < .01$), suggesting that marital relationship quality at one age predicts higher parent-adolescent closeness two to three years later. In contrast, parent-adolescent closeness did not predict the marital relationship quality across adolescence.

Next, we described the cross-lagged effects between youth-reported parent-adolescent closeness and adolescent depressive symptoms. Greater levels of parent-adolescent closeness at age 12 predicted fewer depressive symptoms at age 15 ($\beta = -.08$, $p < .001$), and greater levels of parent-adolescent closeness at age 15 predicted fewer depressive symptoms at age 18 ($\beta = -.05$, $p < .05$). Greater depressive symptoms at age 12 also predicted lower levels of parent-adolescent closeness at age 15 ($\beta = -.07$, $p < .01$). Furthermore, we described the cross-lagged effects between marital relationship quality and depressive symptoms. Only one out of four associations was significant. Higher marital relationship quality at age 15 predicted fewer depressive symptoms at age 18 ($\beta = -.05$, $p < .01$). Adolescent depressive symptoms did not predict the marital relationship quality. Consistent with the results of the bivariate correlations, all autoregressive coefficients were significant.

Given that marital relationship quality at age 12 predicted parent-adolescent closeness at age 15, which in turn predicted depressive symptoms at age 18, we conducted a post-hoc test of the indirect effect in longitudinal mediation (Maxwell et al., 2011). We utilized bootstrapping methods for estimating 95% bias-corrected confidence intervals with 5,000 bootstrap samples to calculate the statistical significance of the indirect effect (Cheung & Lau, 2008). Marital relationship quality at age 12 was negatively associated with depressive symptoms at age 18 through parent-adolescent closeness at age 15 ($\beta = -.05$, $p < .05$, 95% CI = [−0.10, −0.02]). The direct path between marital relationship quality at age 12 and depressive symptoms at age 18 was not significant ($\beta = -.01$, $p > .05$), and the inclusion of this path did not significantly change the fit of the model in Figure 2. Next, two separate multi-group analyses were conducted to examine the moderating effects of youth and parent genders. Youth and parent genders did not moderate the associations among marital relationship quality, parent-adolescent closeness, and depressive symptoms.

## Parent-Adolescent Conflict Model

Next, we examined the cross-lagged effects between marital relationship quality, parent-adolescent conflict and depressive symptoms, as shown in Figure 3. The model fit the data well: $\chi^2$ (24) = 119.46, CFI = .96, NFI = .95, RMSEA = 0.04. We first described the associations between parent-reported marital relationship quality and parent-adolescent conflict. Next, we described the associations between parent-reported parent-adolescent conflict and youth-reported depressive symptoms. Lastly, we described the linkages between marital relationship quality and youth depressive symptoms. As shown in Table 3, higher marital relationship quality at age 12 predicted lower levels of parent-adolescent conflict at age 15 ($\beta = -.07$, $p < .01$) and lower levels of parent-adolescent conflict at age 12 predicted

greater levels of marital relationship quality at age 15 (β = −.09, $p < .01$). We did not detect any association between marital relationship quality and parent-adolescent conflict from age 15 to 18.

Parent-adolescent conflict at ages 15 predicted higher levels of adolescent depressive symptoms at ages 18 (β = .05, $p < .05$). Consistent with the mediating role of parent-adolescent closeness, marital relationship quality at age 12 was negatively associated with depressive symptoms at age 18 through parent-adolescent conflict at age 15 (β = −.04, $p < .05$, 95% CI = [−0.06, −0.02]). The direct path between marital relationship quality at age 12 and depressive symptoms at age 18 was not significant (β = −.01, $p > .05$), and the inclusion of this path did not significantly change the fit of the model in Figure 3.

Conversely, depressive symptoms at ages 12 and 15 predicted higher levels of parent-adolescent conflict at ages 15 and 18 (β = .06, $p < .01$; β = .07, $p < .01$, respectively). Last, higher marital relationship quality at age 15 predicted fewer depressive symptoms at age 18 (β = −.05, $p < .01$). Adolescent depressive symptoms did not predict marital relationship quality. Multi-group analyses did not indicate moderation by youth or parent genders.

## Discussion

The current study advances the extant literature on the reciprocal associations among marital relationship quality, parent-adolescent closeness and conflict, and depressive symptoms across adolescence by testing their prospective associations in a sample of Taiwanese adolescents and their parents over six years. The findings from this study revealed a hierarchical pattern of prospective associations that provide novel insights on the cultural specificity of the family systems theory in non-Western families. Our primary hypothesis that marital relationship quality predicts parent-adolescent relationship, which then predicts adolescent depressive symptoms in a unidirectional manner was substantiated through both youth-reported closeness and parent-reported conflict. Moreover, in both models, marital relationship quality directly predicted fewer depressive symptoms from middle to late adolescence and indirectly from early to late adolescence via parent-adolescent relationship in middle adolescence. The prospective associations between youth depressive symptoms on parent-adolescent relationship, and that of parent-adolescent relationship on marital relationship quality were less evident and primarily observed in the model testing youth-reported conflict. In contrast, marital relationship quality directly predicted fewer depressive symptoms in middle to late adolescence. Parent-adolescent conflict had no effect on depressive symptoms in early adolescence, but such effect emerged in middle to late adolescence. The results demonstrate how directions of influences between family subsystems change across adolescence. Furthermore, the study underscores the importance of testing theoretical assumptions about family systems from diverse cultures to shed light on the specific cultural mechanism that could lead to different family processes and outcomes.

We found that marital relationship quality has hierarchical, prospective effects on parent-adolescent closeness and adolescent depressive symptoms. Likewise, parent-adolescent closeness prospectively predicted improvements in depressive symptoms. Specifically,

parent-adolescent closeness at age 15 mediated the indirect association between marital relationship quality at age 12 and depressive symptoms at age 18. There was less evidence of adolescent depressive symptoms predicting parent-adolescent closeness or marital relationship quality, and parent-adolescent closeness predicting marital relationship quality. Adolescent depressive symptoms predicted reductions in parent-adolescent closeness from age 12 to 15 only. These findings deviate from past studies of bidirectional influences between subsystems in the family (Brière et al., 2013; Cui et al., 2007; Cummings et al., 1994; Jarnecke et al., 2017). Rather, these results support our hypotheses that the quality of the marital relationship has a primarily unidirectional influence on the parent-adolescent relationship and adolescent depressive symptoms in Taiwanese families.

An analysis of family-related values prominent in the Chinese societies aids the interpretation of these results. Taiwanese families prioritize interdependence, filial piety, and family cohesion (Chuang et al., 2021; Ho, 1996). Moreover, these parents tend to exert dominance over children's moods and behaviors (Tsai & Levenson, 1997). Family members may strive to uphold these values, even when experiencing tensions and depressive symptoms. Adolescent depressive symptoms reduced parent-adolescent closeness, only in early adolescence, a period of significant biological, cognitive, and social changes that contribute to heightened emotional sensitivity (Steinberg, 2018). In contrast, adolescent depressive symptoms in middle adolescence had no significant effect on parent-adolescent closeness in late adolescence. The attenuation of the association between depressive symptoms and parent-adolescent closeness in late adolescence may reflect adolescents' increasing levels of emotional autonomy (Keijsers et al., 2016). In late adolescence, youth may be less likely to disclose their symptoms or negative emotions to their parents, reducing the impact of youth depressive symptoms on parent-youth closeness.

Prospective associations between marital relationship quality, parent-adolescent conflict, and adolescent depressive symptoms were more bidirectional, consistent with studies conducted in Western samples (Branje et al., 2008; Steeger & Gondoli, 2013). Parent-adolescent conflict and marital relationship quality reciprocally predicted each other from youth ages 12 to 15, parent-adolescent conflict and adolescent depressive symptoms reciprocally predicted each other from ages 15 to 18, and depressive symptoms predicted parent-adolescent conflict from ages 12 to 15. Although the cultural emphasis on interdependence and cohesion generally promotes harmony, parent-adolescent conflict is impossible to avoid. When conflicts occur, they may be construed as highly problematic for Taiwanese families and negatively impact the quality of the marital relationship (Juang et al., 2012). In addition, adolescents with elevated symptoms of depression may experience more conflicts with their parents due to maladaptive interpersonal skills and traits such as pessimism and irritability (Hammen, 2006; Hammen & Shih, 2008). Specifically, depressed youth experience negative emotions more intensely and acutely (Nyquist & Luebbe, 2020), which are contagious during parent-adolescent interactions and have the potential to trigger more conflicts even if they attempt to suppress negative emotions. Thwarted attempts to suppress emotions and seek autonomy may also elicit greater conflicts between parents and adolescents (Collins & Steinberg, 2006; Mastrotheodoros et al., 2020).

These findings strengthen the family systems theory, and indicate that marital relationship quality plays an important role in Taiwanese families. Taiwanese adolescents also have "bottom-up" effects in family systems. Supporting our hypotheses, top-down effects were observed from marital relationship quality to parent-adolescent closeness and conflict, as well as adolescent depressive symptoms. It is noteworthy that only marital relationship quality had significant effects on depressive symptoms, but that youth depression symptoms did not impact marital relationship quality. We also found bidirectional associations between the marital relationship and parent-adolescent relationship, and parent-adolescent relationship and adolescent depressive symptoms. These findings emphasize the complexity of family systems in that youth mental health is interdependently linked to the quality of the subsystems that youth are part of (i.e., the parent-adolescent relationship), but less so, to subsystems in which youth do not take part (i.e., marital relationship).

The current study also points to the importance of examining family systems over time and from multiple perspectives. That is, some family processes may be more prominent at specific developmental stages in adolescence. For instance, the direct negative association between marital relationship quality and adolescent depressive symptoms was not significant during early to middle adolescence, but manifested during middle to late adolescence. Similarly, the "bottom-up" effects of adolescent depressive symptoms (on parent-adolescent closeness) and parent-adolescent conflict (on marital relationship quality) elapsed during middle to late adolescence. These results may suggest that family hierarchy remains robust or even solidify in Taiwanese families as adolescents become more aware of sociocultural values such as family harmony, parental dominance (i.e., respect for seniority), and filial responsibility (Cheng et al., 2021; Chuang et al., 2018). These unique parent-adolescent dynamics are contrary to findings in Western families, where parent-adolescent relationship transforms from being hierarchical to more egalitarian in adolescence (Branje, 2018; Lougheed, 2020). Developmentally, these findings further support that family relationship remains a strong predictor of well-being even in adulthood observed among Chinese societies (Lin & Chen, 2018; Wang et al., 2020). Families may shift from being child-centered to parent-centered as parents age, increasingly need support from their offspring (Zhang, 2004), or fortify the importance of family hierarchy and cultural beliefs (Tsai et al., 2013). Overall, the current research extends family systems theory and developmental implications for promoting family functioning and adolescent mental health in non-Western, Taiwanese families.

To our best knowledge, the current study is the first to examine the bidirectional associations of family systems in a non-Western, large-scale sample. However, some limitations should be noted. First, we use longitudinal epidemiological data to test our research questions. However, family processes of interest may unfold within a shorter time frame, such as a day. A more fine-grained, intensive longitudinal study may expand our understanding of daily bidirectional effects between parents and adolescents (Fuligni & Masten, 2010; Granic et al., 2003; Larson & Almeida, 1999 Sears et al., 2016). Second, despite including both parent- and youth reports, self-reported measures are susceptible to social desirability and response bias (Furnham, 1986; Tanaka-Matsumi & Kameoka, 1986). Future studies could benefit from the use of more observational approaches, such as parent-child interaction tasks. Moreover, because this study was conducted in Taiwan, findings may not be generalizable

to other East Asian or Chinese cultures. For instance, the one-child policy leads to unique family dynamics such as child-centered parenting and weaken patrilineality in Mainland China (Deutsch, 2006; Fong, 2004; Xu & Xia, 2014), where family values and interactions may differ from the Taiwanese families. In addition, the data collected in three regions in Northern Taiwan is not a nationwide representation, although they reflect important regional heterogeneity in Taiwan in terms of urbanization levels, economic activities, and population composition. It would be beneficial to replicate the current study in samples representing other cultures and directly measure family values to assess its impact on the directionality of the linkages between family subsystems. Adolescents in TYP are now adults, which may limit the generalizability of our findings to today's youth. Nonetheless, the results provide important and relevant insights into the nature of family relationships and adolescent development in Taiwan. Modern families in Taiwan persistently espouse traditional family values regarding family rules, composition, and interactions, as Taiwan is one of the most traditional and homogeneous Chinese societies (Chuang et al., 2021; Farrell & Yi, 2019; Kung, 2019). Thus, the findings are still generalizable to modern Taiwanese families. Additionally, it is important to note that the present study focused on adolescents and their families from ages 12 to 18, although TYP is still collecting follow-up data (the most recent 12$^{th}$ wave was in 2017), allowing researchers to explore the developmental processes into adulthood. More importantly, the current study provides support for family systems theory in non-Western families and a further glimpse into family dynamics in a key Chinese society. Different informants may be both a strength and limitation. Depressive symptoms and parent-adolescent closeness were reported by youth whereas marital relationship quality and parent-adolescent conflict were reported by parents, because youth reports of parent-adolescent conflict were not consistently available in the TYP dataset. Cognitive biases often observed in youth with depressive symptoms may further contribute to greater levels of parent-child conflict (Hammen & Shih, 2008); thus, parent-report is a more salient measure of the parent-adolescent conflict. However, the difference in informants limits our ability to draw specific comparisons between the roles of parent-adolescent closeness and parent-adolescent conflict. Future explorations of the difference between parent and youth reports may provide a more nuanced understanding of informant agreement and discrepancy (De Los Reyes et al., 2012). Finally, it is possible that adolescents' externalizing problems, rather than internalizing problems such as depressive symptoms, might significantly predict the quality of family relationships. Including externalizing problems in subsequent studies may better evaluate how adolescent behaviors are related to parent-adolescent and marital relationships.

Despite these limitations, the current study constitutes a significant contribution to our understanding of family systems theory of relations between marital relationship quality, parent-adolescent relationship, and adolescent depressive symptoms in non-Western families. In our sample of Taiwanese families, we found that marital relationship quality in early to middle adolescence predicted greater parent-adolescent closeness, lower parent-adolescent conflict and lower depressive symptoms in middle to late adolescence. Further, marital relationship quality during early adolescence has hierarchical, indirect effects on late adolescent depressive symptoms through impacting parent-adolescent closeness and conflict during middle adolescence. Despite greater levels of depressive symptoms predicting greater

parent-adolescent conflict, and from early to middle adolescence, lower parent-adolescent closeness, adolescent depressive symptoms have no effect on marital relationship quality. Together, findings provide additional insight on the generalizability of the family systems framework in Taiwanese families, and highlight the importance of considering the role of culture in family science and clinical practice.

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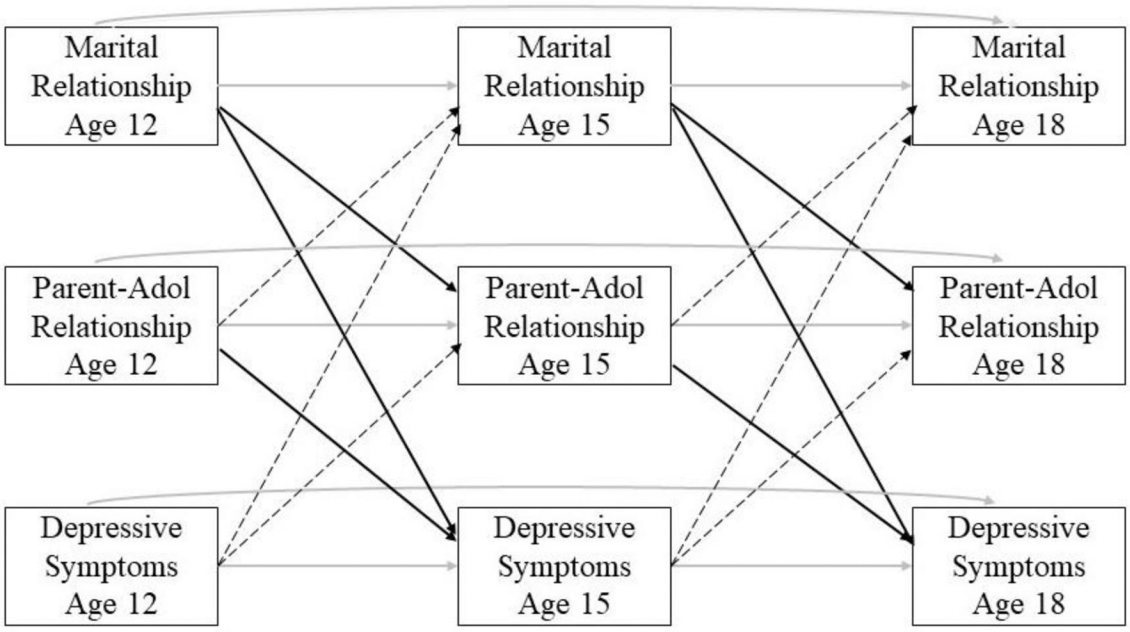


**Figure 1.**

Conceptual Model From Age 12 To Age 18.

*Note.* Solid lines indicate top-down effects, dashed lines indicate bottom-up effects, and grey lines indicate autoregressive effects.

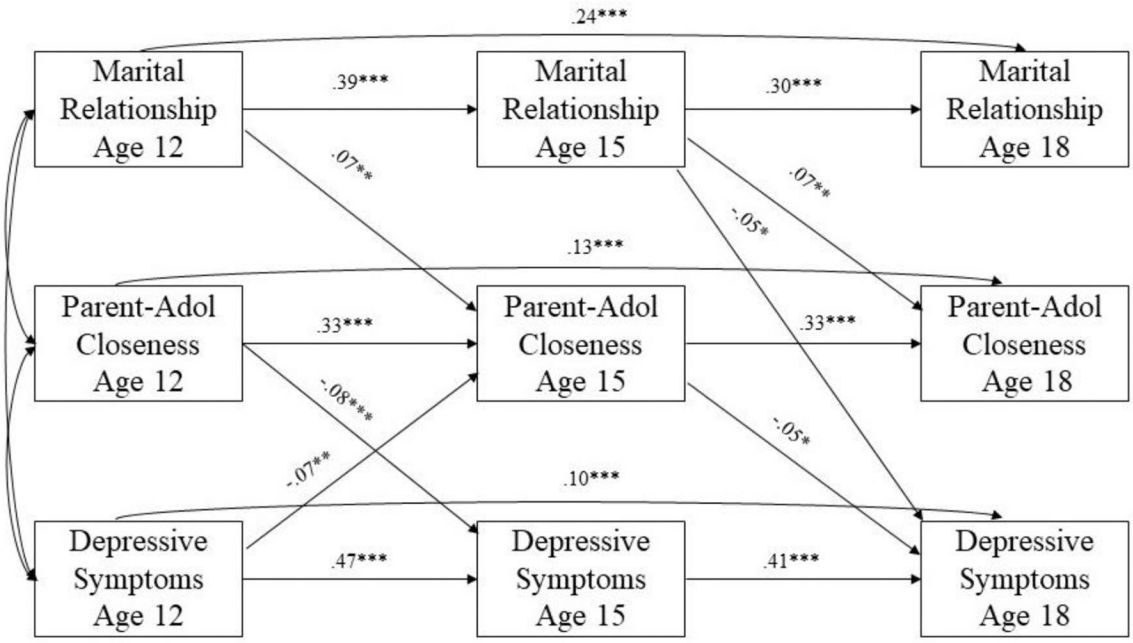


**Figure 2.**

Cross-lagged Closeness Model From Age 12 To Age 18.

*Note.* Only significant paths are indicated. Parent and youth genders were controlled at baseline, and household income was included as an auxiliary variable.

*$p < .05$, **$p < .01$, ***$p < .001$

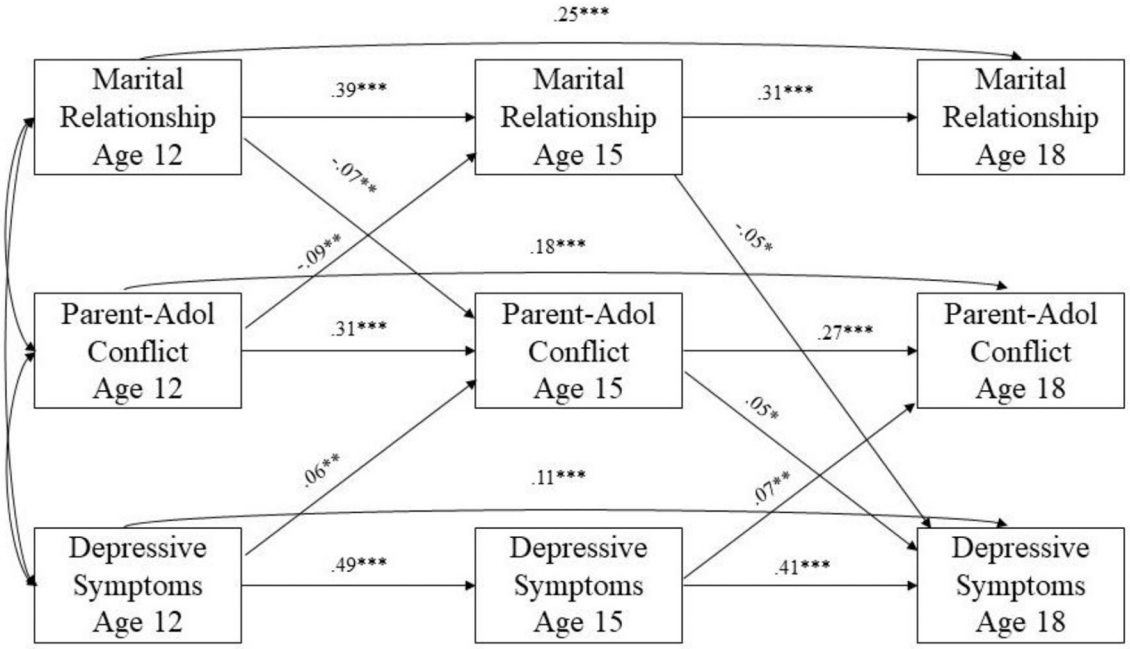


**Figure 3.**

Cross-lagged Conflict Model From Age 12 To Age 18.

*Note.* Only significant paths are indicated. Parent and youth genders were controlled at baseline, and household income was included as an auxiliary variable.

*$p < .05$, **$p < .01$, ***$p < .001$

**Table 1.**

Descriptive Statistics and correlations across Waves 1, 2 and 3

| Variables | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depressive Symptoms | | | | | | | | | | | | | |
| 1. | Wave 1 | 1. | | | | | | | | | | | |
| 2. | Wave 2 | .49*** | 1 | | | | | | | | | | |
| 3. | Wave 3 | .30*** | .46*** | 1 | | | | | | | | | |
| Marital Relationship Quality | | | | | | | | | | | | | |
| 4. | Wave 1 | −.09** | −.05* | −.05* | 1 | | | | | | | | |
| 5. | Wave 2 | −.04 | −.03 | −.07** | .40*** | 1 | | | | | | | |
| 6. | Wave 3 | −.05 | −.03 | −.07** | .36*** | .41*** | 1 | | | | | | |
| Parent-Adolescent Closeness | | | | | | | | | | | | | |
| 7. | Wave 1 | −.31*** | −.22*** | −.14*** | .15*** | .09** | .09** | 1 | | | | | |
| 8. | Wave 2 | −.18*** | −.23*** | −.15*** | .12*** | .12*** | .09** | .36*** | 1 | | | | |
| 9. | Wave 3 | −.12*** | −.13*** | −.19*** | .15*** | .12*** | .15*** | .25*** | .38*** | 1 | | | |
| Parent-Adolescent Conflict | | | | | | | | | | | | | |
| 10. | Wave 1 | .07** | .03 | .05* | −.11*** | −.13*** | −.07** | −.13*** | −.05* | −.06* | 1 | | |
| 11. | Wave 2 | .07** | .06* | .07** | −.11*** | −.14*** | −.02 | −.11*** | −.09** | −.06* | .32*** | 1 | |
| 12. | Wave 3 | .13*** | .09*** | .11*** | −.07** | −.11*** | −.12*** | −.14*** | −.17*** | −.18*** | .27*** | .33*** | 1 |
| | Range | 1–5 | 1–5 | 1–5 | 1–7 | 1–7 | 1–7 | 1–4 | 1–4 | 1–4 | 1–5 | 1–5 | 1–5 |
| | n | 2,253 | 2,150 | 1,532 | 2,135 | 1,667 | 1,515 | 2,287 | 2,167 | 1,515 | 2,200 | 1,696 | 1,522 |
| | *M* | 1.43 | 1.57 | 1.50 | 5.17 | 5.38 | 5.23 | 3.29 | 3.04 | 3.00 | 1.82 | 1.79 | 1.84 |
| | *SD* | .46 | .51 | .46 | 1.67 | 1.66 | 1.53 | .68 | .65 | .57 | 1.05 | 1.00 | .78 |

*$p < .05$,

**$p < .01$,

***$p < .001$

**Table 2.**

Cross-lagged and Autoregressive Coefficients of Closeness Model.

| | β | SE |
|---|---|---|
| *Cross-lagged coefficients* | | |
| Marital relationship$_{12}$ → Parent-adolescent closeness$_{15}$ | .07** | 0.01 |
| Marital relationship$_{12}$ → Depressive symptoms$_{15}$ | .01 | 0.03 |
| Parent-adolescent closeness$_{12}$ → Marital relationship$_{15}$ | .04 | 0.09 |
| Parent-adolescent closeness$_{12}$ → Depressive symptoms$_{15}$ | −.08** | 0.12 |
| Depressive symptom$_{12}$ → Parent-adolescent closeness$_{15}$ | −.07** | 0.02 |
| Depressive symptom$_{12}$ →Marital relationship$_{15}$ | .01 | 0.01 |
| Marital relationship$_{15}$ →Parent-adolescent closeness$_{18}$ | .07** | 0.01 |
| Marital relationship$_{15}$ → Depressive symptoms$_{18}$ | −.05* | 0.04 |
| Parent-adolescent closeness$_{15}$ → Marital relationship$_{18}$ | .01 | 0.09 |
| Parent-adolescent closeness$_{15}$ → Depressive symptoms$_{18}$ | −.05* | 0.13 |
| Depressive symptoms$_{15}$ →Parent-adolescent closeness$_{18}$ | −.03 | 0.01 |
| Depressive symptoms$_{15}$ → Marital relationship$_{18}$ | .01 | 0.01 |
| *Autoregressive coefficients* | | |
| Marital relationship$_{12}$ →Marital relationship$_{15}$ | .39*** | 0.02 |
| Marital relationship$_{15}$ →Marital relationship$_{18}$ | .30*** | 0.03 |
| Marital relationship$_{12}$ →Marital relationship$_{18}$ | .24*** | 0.02 |
| Parent-adolescent closeness$_{12}$ →Parent-adolescent closeness$_{15}$ | .33*** | 0.02 |
| Parent-adolescent closeness$_{15}$ → Parent-adolescent closeness$_{18}$ | .33*** | 0.03 |
| Parent-adolescent closeness$_{12}$ →Parent-adolescent closeness$_{18}$ | .13*** | 0.03 |
| Depressive symptoms$_{12}$ →Depressive symptoms$_{15}$ | .47*** | 0.02 |
| Depressive symptoms$_{15}$ →Depressive symptoms$_{18}$ | .41*** | 0.02 |
| Depressive symptoms$_{12}$ →Depressive symptoms$_{18}$ | .10*** | 0.03 |

*Note.* The subscripts refer to the assessment age point. $\beta$ = standardized coefficient; *SE* = standard error.

**Table 3.**

Cross-lagged and Autoregressive Coefficients of Conflict Model.

| | β | SE |
|---|---|---|
| *Cross-lagged coefficients* | | |
| Marital relationship$_{12}$ → Parent-adolescent conflict$_{15}$ | −.07** | 0.01 |
| Marital relationship$_{12}$ → Depressive symptoms$_{15}$ | −.01 | 0.03 |
| Parent-adolescent conflict$_{12}$ → Marital relationship$_{15}$ | −.09*** | 0.11 |
| Parent-adolescent conflict$_{12}$ → Depressive symptoms$_{15}$ | .01 | 0.15 |
| Depressive symptoms$_{12}$ → Parent-adolescent conflict$_{15}$ | .06** | 0.01 |
| Depressive symptoms$_{12}$ →Marital relationship$_{15}$ | .00 | 0.02 |
| Marital relationship$_{15}$ →Parent-adolescent conflict$_{18}$ | −.04 | 0.00 |
| Marital relationship$_{15}$ → Depressive symptoms$_{18}$ | −.05* | 0.04 |
| Parent-adolescent conflict$_{15}$ → Marital relationship$_{18}$ | .01 | 0.09 |
| Parent-adolescent conflict$_{15}$ → Depressive symptoms$_{18}$ | .05* | 0.05 |
| Depressive symptoms$_{15}$ →Parent-adolescent conflict$_{18}$ | .07** | 0.01 |
| Depressive symptoms$_{15}$ → Marital relationship$_{18}$ | −.01 | 0.01 |
| *Autoregressive coefficients* | | |
| Marital relationship$_{12}$ →Marital relationship$_{15}$ | .39*** | 0.02 |
| Marital relationship$_{15}$ →Marital relationship$_{18}$ | .31*** | 0.03 |
| Marital relationship$_{12}$ →Marital relationship$_{18}$ | .25*** | 0.02 |
| Parent-adolescent conflict$_{12}$ →Parent-adolescent conflict$_{15}$ | .31*** | 0.02 |
| Parent-adolescent conflict$_{15}$ → Parent-adolescent conflict$_{18}$ | .27*** | 0.02 |
| Parent-adolescent conflict$_{12}$ →Parent-adolescent conflict$_{18}$ | .18*** | 0.02 |
| Depressive symptoms$_{12}$ →Depressive symptoms$_{15}$ | .49*** | 0.02 |
| Depressive symptoms$_{15}$ →Depressive symptoms$_{18}$ | .41*** | 0.02 |
| Depressive symptoms$_{12}$ →Depressive symptoms$_{18}$ | .11*** | 0.03 |

*Note.* The subscripts refer to the assessment age point. $\beta$ = standardized coefficient; *SE* = standard error.