Chronic Family Economic Hardship, Family Processes and Progression of Physical and Mental Health Problems in Adolescent Years

by

TAE KYOUNG LEE

(Under the Direction of K. A. S. Wickrama)

ABSTRACT

The purpose of the present study are to address the unique effects of chronic family economic hardship as they influence marital conflict, supportive parenting, and adolescents’ anxiety, depressive symptoms, and physical complaints. To find unique pathways, the current study also added the direct and indirect influence by using an SEM framework. The current study analyzed data from a longitudinal sample of mothers, fathers, and target adolescents (N= 404-451) to assess theoretical pathways. Findings generally supported the hypothesized model. Chronic family economic hardship contributed to mental and physical health of adolescents. This influence was largely mediated through supportive parenting. Moreover, supportive parenting buffered marital conflict on depressive symptoms of adolescents. Adolescent females are more vulnerable to health problems such as anxiety, depressive symptoms, and physical complaints in several time points. The study demonstrates key mediating pathways based on family stress model and also highlights the importance of improving health resources for adolescents.

INDEX WORDS: Chronic family economic hardships, Marital conflicts, Supportive parenting, Adolescents, Anxiety, Depressive Symptoms, Physical Complaints and Longitudinal data.
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DEDICATION

This is dedicated to my wife who always pushed me to do my best. I am so thankful to have had such a strong and loving my wife supporting me along the way.
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CHAPTER 1
INTRODUCTION

Poverty creates enormous challenges for families and living in poverty is associated with adverse outcomes for adolescents. Living in poverty produces a “conglomeration of stressful conditions and events” (McLoyd, 1990, p. 314) causing chronic financial hardship. Numerous studies have been identified that explain the negative effects of economic hardship on children and adolescents. For example, Adolescents who grow up poor are at heightened risk for a wide range of psychological problems (e.g., McLoyd, 1998), physical health problems (Wickrama, Conger, & Abraham, 2005), academic problems (Conger & Donnellan, 2007), alcohol use (Conger, Lorenz, Elder, Melby, Simons, & Conger, 1991), and vandalism (Moffitt, 1993; Patterson et al., 1989).

Previous psychological research suggests that anxiety, depression, and physical complaints are serious health problems among youth (Jacques & Mash, 2004; Simeonsson, McMillen, & Huntington, 2002; Wittchen, Kessler, Pfister, & Lieb, 2000). In the case of adolescents’ psychological problems, Beck and Steer (1987) advance depression is associated with ‘perceived loss’; whereas, anxiety is associated with ‘perceived threat’. However, such mediating psychological constructs have rarely been used to characterize adolescents’ adverse family experiences, or to link such experiences specifically with depression and anxiety. Therefore, this study proposes that adolescents may perceive family economic problems as a loss in terms of access to material needs, and an ability to develop friendships and close relationships, which may result in feelings of depression. Also, adolescents may perceive family economic
problems as a threat anxiety to successfully transition to adulthood, due to excessive working hours to earn money, and the possibility of truncating their education. Also, adolescents may experience threatening family and community events, and circumstances associated with their family’s adverse economic conditions. Thus, this study suspects that family economic hardship may directly generate feelings of threat, independent of feelings of depression.

In addition, family economic hardship influences adolescent physical health through a lack of accessibility and availability of health resources, such as health insurance, medication, food, and clothing. Also, poor families often live in sub-standard housing and hazardous environments (Miech, Caspi, Moffit, Wright, & Silva, 1999). In addition, family economic hardship as a chronic stressor disrupts physiological functions (Lynch, Kaplan, & Shema, 1997). Thus, consistent with these findings, this study will examine the direct influence of chronic family economic hardships on adolescents’ health problems (i.e., anxiety, depression, and physical complaints).

**Indirect Influence of Chronic Family Economic Hardships on Adolescents’ Mental Health through Marital Conflict**

Some investigators suggest that socioeconomic factors may impact marital quality (Piotrkowski, Rapoport, & Rapoport, 1987). For example, Atkinson, Liem, and Liem (1986) found a significant inverse association between duration of unemployment and marital quality. Larson (1984) found mean differences between groups of employed and unemployed spouses for total dyadic adjustment, but not for the satisfaction, affection, or cohesion subscales of the dyadic adjustment scale. Consistent with these ideas, research evidence continues to accumulate, suggesting that economic hardship has an adverse influence on the quality of marital relationships (Brody, Stoneman, Flor, McCrary, Hastings, & Conyers, 1994; Conger et al., 1990).
Furthermore, earlier studies have provided evidence for the association between parents’ marital problems and adolescent maladjustment. Exposure to high levels of marital conflict of parents is associated with the development of a wide variety of difficulties for adolescents’ mental problems, such as anxiety and depressive symptoms (e.g., Cummings & Davies, 1994; Gottman & Notarius, 2000). Many studies have demonstrated that adolescents’ mental problems are most likely to occur when a marital relationship is intense and openly hostile (Buehler, Krishnakumar, Stone, Anthony, Pemberton, & Gerard, 1998; Jenkins, 2000). With these ideas in mind, the current study examines whether economic hardship influences adolescents’ depressive symptoms and anxiety indirectly through their parents’ marital conflicts.

**Indirect Influence of Chronic Family Economic Hardship on Adolescents’ Mental Health Problems through Supportive Parenting**

Previous research has shown that family economic hardship has a consistent impact on parenting practices (Conger, Ge, Elder, Lorenz, & Simons, 1994; McLoyd, 1990; Simons, Lorenz, Conger, & Wu, 1992). In particular, the frustration produced by economic hardship fosters an irritable, aggressive psychological state in parents that operates to decrease warmth displayed toward others, including their children (Simon et al., 1990). Also, research reports that a low level of supportive parenting was judged by their adolescents to be more authoritarian in their exercise of authority within the home (Buri, Cooper, Ricktsmeier, & Komer, 1991; Simons et al., 1992).

Several studies have shown that retrospectively reported adverse threatening events and circumstances associated with family adversity, such as family disruptions, were related to anxiety disorders (Schwarts, Snidman, & Kagan, 1999; Rapee & Heimberg, 1997). However, less has been written about the family precursors of anxiety than depression in mental health
problems. Specifically, there is a paucity of research on anxiety associated with family adversity. In addition, most adolescent research on anxiety is also limited by either clinical or cross-sectional samples. Therefore, this study will examine chronic economic hardship influences adolescents’ depressive symptoms, as well as anxiety through supportive parenting.

**Indirect Influence of Marital Conflict on Adolescents’ Mental Health Problems through Supportive Parenting**

Many studies suggest marital conflict influences adolescent mental problem through parenting (Conger et al., 1992, 1993; Conger, Ge, Elder, Lorenz, & Simons, 1994; Kitzmann, 2000). For example, Caspi and Elder (1988) found that marital conflict influenced adolescent mental problems indirectly through its effect on parenting practices. In addition, evidence for the mediating role of parenting has also been provided by Conger and his colleagues (Conger, Ge, Elder, Lorenz, & Simons, 1994). In particular, Harold and Conger (1997) found that marital conflict indirectly predicted increases in adolescents’ internalizing problems through a low level of supportive parenting.

Most of these previous studies are consistent with the “disrupted discipline hypothesis” (Emery, 1982), which proposes that conflict and distress in the marital relationship lead to negative behaviors in parenting, such as inconsistency, rejection, hostility, and harsh discipline. However, these studies have primarily focused on the negative dimensions of parenting and did not examine the positive dimensions of parenting behavior. The “loss of love” hypothesis (Emery & O’Leary, 1982) proposes that parents’ marital problems reduce their warm and supportive parenting behavior, which, in turn, leads to adjustment problems for children and adolescents. Therefore, the present study will examine marital conflict influences adolescents’ mental problems through supportive parenting.
Indirect Influence of Chronic Family Economic Hardship on Adolescents’ Physical Complaints through Marital Conflict

Previous studies showed that adolescents who live in families characterized by high levels of inter-parental conflict have been found at increased risk of adolescents’ negative adjustment outcomes (see Cummings & Davies, 1994) and physical problems (Nicolotti, El-Sheikh, & Whitson, 2003). There is evidence that children’s physical health is negatively affected by marital conflict (Campbell & Lewandowski, 1997; Wadsworth, 1997). Children exposed to parental problems, such as marital conflict, have more health problems, including mild ailments and more serious conditions, than children from intact homes (Mauldon, 1990).

Stressful family circumstances, such as parents’ marital conflicts, can contribute to the physical complaints of adolescents through physiological mechanisms (Bradley & Corwyn, 2002). In detail, Dowd and Goldman (2006) reported that chronic stressors disrupt the body’s physiological functions because they involve an allostatic load, defined as the cumulative wear and tear on the body’s systems owing to repeated adaptations to stressors, such as family economic hardship. This stress-ill health physiological connection may be attributed to hormonal responses resulting in adverse health outcomes, including high blood pressure, high heart rate, glucose intolerance, abdominal obesity, elevated low-density lipoprotein (LDL) cholesterol, and lowered high-density lipoprotein (HDL) cholesterol. These health problems may underlie adolescents’ physical complaints.

By identifying an association between family economic hardship and physical health problems, the research focus has shifted to consider the processes underlying this relationship with particular attention to possible mediating role of parents’ marital conflicts (Frosch &
Mangelsdorf, 2001). Thus, this study will examine whether family economic hardship can influence adolescents’ physical complaints indirectly through marital conflict.

**Indirect Influence of Chronic Family Economic Hardship on Adolescents’ Physical Complaints through Supportive Parenting**

Physical complaints are influenced by parenting style (e.g., Eiser & Havermans, 1992; Hamlett, Pellegrini, & Katz, 1992). In fact, one of the most reliable predictors of adolescents’ adjustment to physical complaints is parenting behaviors (Elliott & Mullins, 2004). Furthermore, parenting behaviors have been hypothesized to influence physical complaints by the adverse effects of stressful family events (Wickrama, Conger, & Lorez, 1995).

Although previous developmental studies imply associations among adolescents’ physical complaints, parenting, and family economic hardships, there is very little empirical research on these associations, including supportive parenting as social support (Vilhjalmsson, 1994). With these ideas in mind, this study examines family economic hardship can influence adolescents’ physical complaints through supportive parenting.

**Indirect Influence of Marital Conflict on Adolescents’ Physical Complaints through Supportive Parenting**

Mechanisms identified as mediating the effects of marital conflict on adolescents’ adjustment include adolescents’ appraisals for parenting (e.g., Harold, & Conger, 1997). Especially, in the context of marital conflict, previous research found a significant association between parental support and adolescent reports of physical complaints or well-being. In particular, parental support reduced physical health problems during adolescence (Wickrama, Lorenz, Conger, & Elder, 1997; Rogers & Holmbeck, 1997). Moreover, Radovanovic (1993)
suggested that positive social support, such as parental support, was negatively related to adolescent health problems in conflicted families.

Although previous studies imply associations among marital conflict, supportive parenting, and adolescent’s physical complaints, most of these studies have empirically tended towards the influence on mental health outcomes (Conger, & Elder, 1994). Although mental health outcomes may be associated with physical health status (Vilhjalmsson, & Thorlindsson, 1998), there are few empirical studies that focus on physical health over the adolescent years. Hence, this study examines whether marital conflict influences adolescents’ physical complaints through supportive parenting.

**Associations among Adolescents’ Anxiety, Depression, and Physical Complaints over Time**

According to the National Comorbidity Survey (Kessler & Walters, 1998), the lifetime prevalence rate of depression in adolescents aged 15 to 18 years is 14%, and an estimated 20% of these adolescents will have had a depressive disorder by the time they are 18 years old. Anxiety disorders have a lifetime prevalence rate of approximately 20% and exhibit a significant degree of stability across a lifespan (Costello, Edelbrock, & Costello, 2005). Adolescents with either major depression or anxiety symptoms are at risk for a variety of negative outcomes, including academic achievement (Boivin, Hymel, & Hodges 2001; Juvonen, Nishina, & Graham, 2000), self-esteem (Muris, Schmidt, Lambrichs, & Meesters, 2001), substance abuse (O'Neil, Conner, & Kendall, 2011), and relationship problems (Cole & Carpentieri, 1993).

Furthermore, adolescent depression and anxiety disorders highly co-occur as well as with other psychiatric disorders (Angold, Costello, Farmer, Burns, & Erkanli, 1999). Research has shown the odds ratio of co-occurring anxiety given a depressive disorder are as high as 30.0. Also, depression and anxiety disorders are more likely to co-occur rather than with other
psychiatric disorders, such as attention-deficit hyperactivity disorder, disruptive behavior disorders, or substance use disorders (Messer, Angold, Costello, & Burns, 2003).

One of the most important issues in the psychological development of adolescents is associated with physical health problems (Simeonsson et al., 2002). Conversely, poor physical health can also involve an array of psychological problems (Lewinsohn, Rohde, Seeley, & Fisher, 1993). Studies conducted over the last few decades have consistently shown that children and youth with physical health problems are at an increased risk for developing psychological problems (McDougall, King, de Wit, Miller, Hong, Offord, Laporta, & Meyer, 2004; Newacheck, McManus, & Fox, 1991). A meta-analytic review of 87 studies revealed that youth with physical health problems are significantly more likely to exhibit symptoms of psychological problems, such as depression and anxiety. (Boekaerts & Roeder, 1999).

Given the significantly high prevalence, recurrence, and co-occurrence of depressive symptoms, as well as anxiety and physical health problems during adolescence, it is important to understand the inter-related health processes involving the three different health domains in adolescents over this period. However, most research has focused on a single health domain of adolescents—depression, physical health problems, but rarely anxiety. Therefore, this study focuses on how depression, anxiety, and physical complaints mutually influence one another over time, as an inter-related health process.

**Moderating Influence of Chronic Family Economic Hardship on Adolescents’ Health Problems through Supportive Parenting**

The influence of economic hardship on adolescents’ health problems may vary, depending on the level of supportive parenting. Consistent with the risk-resource perspective, family economic hardships can be considered a factor that places adolescents at risk for mental
and physical health problems, while supportive parenting can be considered a resource factor which protects and moderates the risk of family economic hardships. Rogers and White (1998) reported that effective parenting is a buffer for children’s maladjustments, since attentive parents take the time to reason and help their children develop effective problem-solving skills. Such moderating effects are deemed important in the developmental literature on adolescents’ health problems. However, they are still understudied and are infrequently found in the literature on adolescents’ health problems (Luthar, Cicchetti, & Becker, 2000; Masten, 2001). To address this need, the moderating effect of supportive parenting on the association between family economic hardships and adolescents’ health problems (i.e., anxiety, depressive symptom, and physical complaints) will be examined in this study.

**Moderating Influence of Supportive Parenting on the Association between Marital Conflict and Adolescent’s Health Problems**

Prior studies suggest parenting behavior might moderate the association between marital conflict and adolescents’ health problems. Gordis, Margolin, and John (1997) reported the interaction between marital problems and parental behavior toward a child accounted for a significant variance in adolescent’s maladjustment. Frosch and Mangelsdorf (2001) also found that a mother’s supportive parenting moderated the association between marital conflict and children’s problems. However, they did not find this moderating effect for adolescent health problems, such as depressive symptoms, anxiety, and physical complaints. Given these findings in the literature regarding the moderating effects of supportive parenting, the present study examines whether the association between marital problems and adolescent health problems is moderated by supportive parenting.
Gender Differences

In addition, Phillips and Diaz (1997) reported that gender difference is an important marker to understand adolescents’ mental health problems, such as depressive symptoms and anxiety. In their study, female’s comorbidity of depressive symptoms and anxiety was usually higher than male’s comorbidity of these mental health problems. Moreover, Silverstein and Lynch (1998) found evidence the high prevalence of clinical and subclinical depression that arises among females is of the anxious somatic depression type, involving depression coupled with anxiety and physical complaints (e.g. coughs, headaches, and fatigue). Therefore, this study will examine potential gender differences on the association among depressive symptoms, anxiety, and physical complaints.

Moreover, previous research suggests that economic stress may affect males and females differently (Bolger, Patterson, & Kupersmidt, 1995; Conger et al., 1993; Elder & Caspi, 1988). In general, prior work indicates that young males may be more vulnerable to family economic stress than females (Bolger, Patterson, & Kupersmidt, 1995; Patterson, Vaden, Griesler, & Kupersmidt, 1991). Therefore, the present study will also examine how gender moderates the association among family economic hardship, supportive parenting, marital conflict, and adolescents’ health problems (i.e., depressive symptoms, anxiety, and physical complaints).

Control Variables

Additionally, many previous studies support the view that the parental level of education can significantly predict adolescents’ mental problems, such as anxiety and depressive symptoms, as well as physical health problems, such as physical complaints (Donohue, Romero, & Hill, 2006; Wickrama, Conger, Lorenz, & Elder, 1998). Moreover, the research has shown that parental depression can negatively influence their children’s health problems (Mustillo et al.,
2009). Therefore, this study will use parental education and parental depression as a control variable to assess the uniqueness of the association among depressive symptoms, anxiety, physical complaints, family economic hardship, and supportive parenting.

**Study Objectives**

The current study’s objectives are as follows:

1. To investigate the direct influence of family economic hardships on each—depression, anxiety, and physical complaints.
2. To investigate the indirect influence of chronic family economic hardships on depression, anxiety, and physical complaints through supportive parenting.
3. To investigate the indirect influence of chronic family economic hardships on depression, anxiety, and physical complaints through marital conflicts.
4. To investigate the indirect influence of marital conflicts on depression, anxiety, and physical complaints through supportive parenting.
5. To investigate the longitudinal mutual influences among depression, anxiety, and physical complaints over the adolescent years.
6. To investigate the moderating effect of supportive parenting on the associations among family economic hardships and adolescents’ health problems.
7. To investigate the moderating effect of supportive parenting on the associations among marital conflicts and adolescents’ health problems.
8. To investigate the gender difference in associations among adolescents’ health problems.
9. To investigate the gender difference in pathways among family economic hardship, marital conflicts, supportive parenting, and adolescents’ health problems.
CHAPTER 2
LITERATURE REVIEW

The Theoretical Model

Figure 1 shows the theoretical model for the current study. The theoretical model depicts family economic hardships directly and indirectly influences adolescents’ anxiety, the levels of depressive symptoms, and physical health problems through marital conflicts and supportive parenting. Anxiety, depression, and physical complaints are contemporaneously associated with each other. Cross-lagged paths depict the influence of early health problems in one domain on change in health problems in another domain over time. The paragraphs that follow will discuss all of the constructs and hypothesized associations for this model.

The Association between Chronic Family Economic Hardship and Adolescents’ Health Problems

Socioeconomic health disparities appear to have increased in recent decades, due to widening socioeconomic inequalities (Kahn & Fazio, 2005; Pappas, Queen, Hadden, & Fisher, 1993). Hence, the relationship between family-of-origin adversity and youth mental health is vital to understand the progression of mental and physical health across a lifespan (Repetti, Taylor, & Seeman, 2002; Wickrama et al., 2008b). Existing research suggests that family socioeconomic adversity contributes to many domains associated with adolescent’s mental health problems, such as anxiety and depressive symptoms (Conger et al., 1993). Adolescents become more susceptible to family disadvantages during adolescence, due to dramatic increases in the salience of family economic resources (Halpern-Felsher et al., 1997). In addition, adolescents
experience normative stressful circumstances during this period, including physical changes (e.g., puberty) and changes in social-family relationships (Conger & Ge, 1999). Therefore, a family’s stressful circumstances may contribute to diminished psychological resources, an increased sense of continuing entrapment, feelings of anger, hopelessness, frustration, and other negative emotions among youth. In addition, parents with low-incomes are more likely to experience mental health problems and chaotic lifestyles, which may transmit directly to their children (Wickrama, Conger, Wallace, & Elder, 1999; Lempers, Clark-Lempers, & Simons, 1989).

Moreover, Pless and Nolan (1991), in their review of maladjustment for children and youth with chronic physical health problems, suggest that socioeconomic status may play an important role in their physical health problems. McDougall et al. (2004) also reported that children and youth with chronic physical health problems are at increased risk of living in families that receive welfare income or who are below the poverty level and, at the same time, are also shown to be at increased risk for emotional problems.

Pless and Nolan (1991), in their review of maladjustment for children and youth with chronic physical health problems, suggest that socioeconomic status may play an important role in their physical health problems. Moreover, as I discussed previously in case of marital conflict, chronic family economic hardship may also disrupt the body’s physiological functions and results in negative physical health outcomes because it involve allostatic load. McDougall et al. (2004) also reported that children and youth with chronic physical health problems are at increased risk of living in families that receive welfare income or who are below the poverty level and, at the same time, are also shown to be at increased risk for emotional problems.

Therefore, this study proposes that economic hardship would also have a direct effect on adolescents’ mental and physical complaints.
The Associations among Chronic Family Economic Hardship, Marital Conflicts, and Adolescents’ Health Problems

Although there is some evidence that chronic economic stress has a direct impact on adolescents’ health problems (McLoyd, 1990), adverse financial circumstances could affect adolescents’ health problems through the quality of family interactions primarily through emotions and cognitions that reflect their awareness of and responses to economic difficulties. Considerable research notes that economic factors play an important role in the dynamics of parents’ marital relationships, and children’s mental and physical problems (Conger & Conger, 2002; Conger et al., 1994, 2002). For example, research suggests the marital dyad is a critical point of entry for adverse economic influences that eventually affect physical complaints (El-Sheikh, Harger, & Whitson, 2001) and mental problems (Elder & Caspi, 1988). However, there is very little empirical research on the relationships among these variables for adolescents. Therefore, this study proposes that family economic hardships indirectly influence adolescents’ health problems through parents’ marital conflict.

The Associations among Chronic Family Economic Hardship, Supportive Parenting, and Adolescents’ Health Problems

Previous research suggests that economic pressure is linked to adolescent adjustment through parental behavior. For example, Patterson et al. (1989) argued that stressful family circumstances have their greatest impact on children and adolescents through disruptions in parent-child relations and effective parenting behaviors. Supportive parenting can have positive effects on various aspects of adolescents’ health (Amlund, Hagen, Myers, & Mackintosh, 2005; Leinonen, Solantaus, & Punamaki, 2003). For example, supportive parenting can reduce adolescents’ mental health (Petersen, Sarigiani, & Kennedy, 1991) and physical health problems
(Wicrama, Lorenz, & Conger, 1997). Piko (2000) also reported that a low level of parental support increased the risk of children’s maladjustment. Moreover, according to Robila and Krishnakumar (2005), financial strain is associated with lowered social support. Financial problems, as stated by Ge, Conger, Lorenz, and Simons (1994), are related to disruptive parenting practices. Parental unemployment, as a possible source of stress and financial strain, can thus negatively influence the amount of support provided to adolescents by their parents. Taken together, previous studies provide support for the pathway from family economic hardships, through supportive parenting to adolescents’ health problems. Thus, this study proposes that chronic family economic hardships influence adolescents’ health problems through supportive parenting.

The Associations among Marital Conflicts, Supportive Parenting, and Adolescents’ Health Problems

Several researchers have suggested the relationship between marital conflict and youth maladjustment may be mediated by parenting behaviors (Bray & Hetherington, 1993; Gable, Belsky, & Crnic, 1992). Research has documented a significant association between parents and selected parenting behaviors. Parenting behaviors and youth maladjustment are also related (Gable et al., 1992). Specifically, marital conflict is associated negatively with parental support (Conger et al., 1993; Fauber et al., 1990). In turn, parental support and responsiveness are associated with psychological problems (Melby, Conger, Conger, & Lorenz, 1993) and physical complaints (Katz & Gottman, 1997).

Although there has been some conflicting evidence on this association (Peterson & Zill, 1986), most studies have found that much of the relationship between marital conflict and youth maladjustment is mediated by parenting behaviors (Bray & Hetherington, 1993; Cole &
McPherson, 1993). Therefore, the current study proposes the association between marital conflict and adolescents’ health problems can be mediated by supportive parenting.

The Associations among Anxiety, Depressive Symptom, and Physical Complaints over Time

Recently, the existing base of empirical evidence has established that depressive symptom (Gutman & Sameroff, 2004; Lewinsohn et al., 1993), anxiety (Barnow, Lucht, & Freyherger, 2005; Moffitt, 1993), and physical complaints (Ajdacic-Gross et al., 2006) show a significant increase in both prevalence and incidence during adolescence. The time-related developmental patterning raises questions about the relationships among anxiety, depressive symptoms, and physical complaints during adolescence (Katon, Elizabeth, Lin, & Kroenke, 2007). Previous research focused on late childhood and adolescence suggests that constructs for child anxiety and depressive symptoms are distinguishable and covary at dimensional and categorical levels (Lonigan, Phillips, & Hooe, 2003). Additionally, many studies have reported heterotypic continuity of psychiatric problems in childhood and adolescence. For example, Lewinsohn, Klein, and Seeley (1995) found that anxiety symptoms precede and predict subsequent depressive symptoms. Moreover, other research in the Christchurch Health and Development Study shows that levels of ‘anxious and withdrawn’ behaviors at age 8 predicted risk for major depression in late adolescence and early adulthood (Goodwin et al., 2004).

Reinherz et al. (1989) also found that self-reported symptoms of anxiety at age 9 predicted self-reported symptoms of depression at age 15. Indeed, early symptoms of anxiety more than doubled the likelihood of later depressive symptoms. Similar results emerged between ages 15 and 18 at a later stage of the same study (Reinherz et al., 1993). Snyder et al. (2009) indicated that earlier anxiety symptoms facilitate subsequent depressive symptoms. However, other studies have shown that early depressive symptoms predict changes in anxiety. In a study of consecutive
adolescent referrals to psychiatric clinics, Sanford et al. (1995) noted that depression at outcome (1 year later) was significantly predicted by prior symptoms of anxiety. Conversely, almost half of the teenagers with major depressive disorder at Time 1 manifested an anxiety disorder 1 year later. In a review, Wittchen et al. (2000) concluded that anxiety disorders typically precede the onset of depression when the two co-occur, and the number and type of anxiety disorders present influence the risk for later depression.

However, research on the developmental ontogeny of depression and anxiety is critical to this debate. For example, if depressive disorders are nearly always preceded by anxiety, then it is possible the two symptom groups may be better thought of as a syndrome that begins with anxiety and emerges as depression or comorbid depression and anxiety. The Dunedin Study is one of the few studies which the relative predictive utility of anxiety versus depression to later disorders was tested (Moffitt et al., 2007). Their results demonstrated that anxiety and major depression had a reciprocal relation such that one preceded the onset of the other relatively equally from ages 11 to 32 years (Moffitt et al., 2007). Similar findings of reciprocal relations between anxiety and depression were reported in the Great Smoky Mountains Study, in which testing of heterotypic and homotypic patterns of stability in anxiety and depression was carried out using a much narrower age range from 9–16 (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003).

Moreover, consistent with Beck and Streer (1987), I argue that adolescents may perceive depressive symptoms as a loss in regard of limited resources that can aid school success and access to material needs, which may precede a late-onset of feeling of anxiety. Also, adolescents may perceive anxiety as a threat, due to the possibility of truncating their education and excessive working hours to earn money, which, in turn, may precede late-onset of depressive
symptoms. Thus, the current study hypothesizes that anxiety and depression are mutually influenced over time.

Mental health problems may lead to physical health problems. For instance, mental disorders, such as depression, may directly lead to physical complaints by weakening and/or altering the immune response. There is extensive evidence suggesting that stress can lead to decreased immune functioning (Miller, Chen, & Zhou, 2007) and mental health problems, such as depression, have been linked to changes in cellular immunity (Cohen & Herbert, 1996), often resulting in reduced immune response. These changes may lead to an increase in physical complaints, including fatigue and the common cold (Takkouche, Regueira, & Gestal-Otero, 2001).

In addition, individuals with depressive symptoms may be more likely to engage in behaviors that lead to physical complaints. For instance, depressive symptoms are associated with poor self-care (Katon, & Sullivan, 1990), and individuals who are depressed often sleep less and exercise less than those who are not depressed (Herbert, & Cohen, 1993). Finally, depression symptoms have been linked to poor eating habits and a lack of exercise, leading to elevated weight status maintained from childhood into adulthood (Anderson, Cohen, Naumova, & Must, 2006).

While most previous research on the link between mental and physical health has focused on depression, some evidence suggests that anxiety increases the risk of physical complaints as well. Several recent studies report that anxiety disorders are associated with back pain and headaches (Culpepper, 2009; Simon & Fischmann, 2005). Explanations for the association between anxiety and physical complaints include dysregulation of the stress-response system (Culpepper, 2009; Roy-Byrne et al., 2008).
In contrast, Lavigne and Faier-Routman (1993) reported that physical illness has influenced psychological problems. They stated the results of their analysis indicated that children with physical health problems are at an increased risk for psychological symptoms compared to children without health problems, with internalizing symptoms being more likely than externalizing symptoms.

Physical health problems may also predict mental health problems in psychosocial mechanisms. First, internalized problems such as depression and anxiety, may be caused physiologically by physical illness or through side effects resulting from medications used to treat a disease (Eiser, 1990; Wallander & Varni, 1998). Second, previous studies suggest that physical complaints may contribute to mental health problems through unhappiness about having to heal with the ailment, physical complaints, or body pain or limitations, change in physical appearance (Lewinshon, et al., 1995), and a limited socioeconomic attainment (Wickrama, et al., 2005).

For the most part, the many studies that have examined the relationships between physical health problems and psychological functioning in children and youth have been cross-sectional or clinic-based, and have involved small, condition-specific samples (Barnett, Manly, & Cicchetti, 1993). Few studies have followed a sizable cohort prospectively or have used population-based samples. Moreover, given the paucity of longitudinal studies of comorbid mental and physical health problems in adolescents from community populations, this study examines the associations of mental and physical health problems in a sample of youth served in community settings. Thus, the current study uses community-based longitudinal data. Also, this study proposes that depression, anxiety, and physical complaints can influence each other over time.
Moderating Effect of Supportive Parenting on the Association between Chronic Family Economic Hardships, and Adolescents’ Health Problems

Systems theory emphasizes the family context of the adolescent as the critical factor influencing the processes of coping and long-term adaptation (Mott, James, & Spherac, 1990). Research has indicated that warm, supportive, and non-coercive parental practices buffer children’s physical health problems from some of the adverse consequences of economic hardships (Hanson, McLanahan, & Thomson, 1997). Conversely, Lempers et al. (1989) have argued that hostile parenting might be expected to amplify adolescents’ mental health problems against the disruptive threats posed by economic hardships. That is, supportive parenting may moderate the association between economic hardships and adolescent mental and physical problems. Thus, this study investigates the moderating influence of supportive parenting on the association between family economic hardships and adolescents’ health problems.

Moderating Effects of Supportive Parenting on the Association between Marital Conflicts, and Adolescents’ Health Problems

Previous research suggests that parent-child relationships may moderate the associations between marital conflicts and adolescent health, such that relationships characterized by high affective quality buffer adolescents from the negative consequences of marital conflict. For instance, in keeping with the family systems theory principle of wholism, Grych and Fincham (1990) argue that children interpret marital conflicts within the context of parent-child relations. Therefore, marital conflicts that occur in the context of close, warm, and supportive parenting will be perceived as less negative and threatening than marital conflicts that occur in the context of less positive parenting. Similarly, Davies and Cummings (1994) argued that positive and effective parenting protects and enhances children’s feelings of emotional security, which defend
children against the negative consequences of marital conflict exposure. Similar arguments for
the buffering role of parent-child relationships are found in chronic stress and early adversity
literature, in which high quality parent-child relationships are viewed as a mechanism by which
children are protected from negative consequences of early adversity (e.g., Bugental, 2004).
Viewing parenting practices as a moderator suggests that rather than playing a causal role in the
pathway between marital conflicts and child outcomes, there are individual differences in the
levels of parenting; supportive parenting is protective against the negative consequences of
marital conflict exposure. Therefore, consonant with this idea, this study proposes the
association between marital conflicts and adolescents’ health problems is moderated by
supportive parenting.

Gender Moderation on the Associations among Chronic Family Economic Hardships,
Marital Conflicts, Supportive Parenting, and Adolescents’ Health Problems

Gender differences in mental and physical health are well documented. Research on
gender differences in mental health has clearly established that women have higher rates of so-
called “internalizing” disorders, including depression and anxiety disorders (Kessler et al., 2005).
Research on gender differences in physical health has demonstrated that patterns of physical
complaints are gendered as well. The evidence suggests that women are more likely to have
chronic debilitating conditions, such as fatigues and headaches (Bird & Rieker, 2008; Verbrugge,
1985). Furthermore, Furnham and Kirkcaldy (1997) reported significant gender differences in
the frequency of physical ailments of individuals over six months: women reported an average of
3.4 complaints in contrast to 2.6 complaints for males. Females were more likely to report
headaches, general fatigue, and constipation compared to males. Moreover, in the case of adults,
women reported physical complaints consistently more frequently than men in longitudinal
research (Ajdacic-Gross et al., 2006). Also, the studies by both Garber et al. (2002) and Ge et al. (2001) showed that females generally had more depressive symptoms at an earlier onset.

Also, evidence for differences in psychobiological processes between genders was observed by Egger, Costello, Erkanli, and Angold (1999). They found that among 9-16 year olds, physical complaints were strongly associated with emotional disorders in females. Also, there is a study on gender differences on the comorbidity of mental health problems and physical complaints. In Silverstein and Lynch’s study (1998), for both the genders, musculoskeletal pains were related to depression. However, it was reported that females more often self-reported anxious somatic depression, but not pure depression.

Although many studies imply that gender differences in mental and physical health are widely acknowledged, it is unclear whether there are gender differences in the association between mental health (i.e., depression and anxiety) and physical complaints. Thus, the current study is an attempt to explore how the gender difference for adolescents’ health problems occurs over adolescent years.

In addition to gender issues impacting adolescents’ health problems, some support for testing gender moderation derives from work showing the mediating path through ineffective parenting is stronger for sons than daughters (Buehler & Gerard, 2002). Moreover, prior research proposes that economic stress may also influence males and females differently (Bolger et al., 1995; Elder & Caspi, 1988). Also, child gender can moderate the association between marital conflict and their health problems, including emotional problems and physical complaints (Baviskar, 2010). Thus, this study extends this work by addressing gender differences on the association between family economic hardships, marital conflicts, supportive parenting, and adolescent’s health problems (i.e., depression, anxiety, and physical complaints).
Study Control

Demographic characteristics may influence contemporaneous and cumulative mental health, as well as physical health consequences in adolescents. To further isolate the independent influence of family economic hardships on self-assessed health problems through marital conflicts and supportive parenting, this study controls for parental education and parental depression. This is not only because, to a significant degree, adolescent health is an outcome of the direct investment of parental knowledge and available resources (Becker, 1993), but also because parental depression can influence their children’s outcome (Goodman & Gotlib, 2002; Jaser et al., 2005).

Specific Study Hypotheses

This study simultaneously examines factors among individuals, parents, and family economics for the development of youth’s anxiety, depression, and their physical complaints during adolescence. The purpose of this study is to begin to address the specific issue of how family circumstances (i.e., family economic hardships, and marital conflicts, and supportive parenting) influence adolescents’ depression, anxiety, and physical complaints. Moreover, this study examines how anxiety, depression, and physical complaints mutually influence one another over time. Figure 2 depicts the specific hypotheses for this research.

Hypothesis 1. Chronic family adversity (i.e., economic hardships) directly influences adolescents’ health problems (i.e., anxiety, depressive symptoms, and physical complaints), controlling for parental education and parental depression.

Hypothesis 2. Chronic family adversity indirectly influences adolescents’ health problems through marital conflicts, controlling for parental education and parental depression. (Mediating effect.)
Hypothesis 3. Chronic family adversity indirectly influences adolescents’ health problems through supportive parenting, controlling for parental education and parental depression. (Mediating effect.)

Hypothesis 4. Marital conflicts indirectly influence adolescents’ health problems through supportive parenting, controlling for parental education and parental depression. (Mediating effect.)

Hypothesis 5. Adolescents’ anxiety, depression, and physical complaints mutually influence one another over time, controlling for parental education and parental depression (cross-lagged effect).

Hypothesis 6. The association between chronic family economic hardships and adolescents’ health problems is moderated by supportive parenting (moderating effect).

Hypothesis 7. The association between marital conflicts and adolescents’ health problems is moderated by supportive parenting (moderating effect).

Hypothesis 8. Gender moderates the associations among adolescents’ health problems over the years.

Hypothesis 9. Gender moderates the associations among family economic hardships, supportive parenting, marital conflicts, and adolescents’ health problems.
CHAPTER 3
METHODS AND MEASUREMENTS

Sample

This study sampled 424 adolescents, who participated in the Iowa Youth Project (IYFP) and Family Transitions Project (FTP). The IYFP began in 1989 and involved 451 families in 8 counties in Iowa. The site for the research was determined by an interest in rural economic stress and well-being. Because many of the outcomes and processes considered in the overall study were concerned with adolescent development, the families selected had at least two adolescents. Beginning in 1994, the IYFP samples were combined with the FTP.

Data for the current study’s analyses originated from Wave 1 (N= 451), Wave 2 (N= 424), Wave 3(N= 407), Wave 4(N= 404) of the IYFP, and Wave 6(N= 424) for the FTP longitudinal study. Predictor variables of chronic family economic hardships were gathered through target self-reported measures from Wave 1 (1989) to Wave 3 (1991). Supportive parenting was assessed through parents’ self-report at Wave 2. This variable consisted of perceived father’s support and mother’s support. The adolescents were in 7th grade and in the age range of 12-14 years of age when information on the predictor variables was collected in 1989. The longitudinal IYFP study at Wave 3, Wave 4, and Wave 6 produced information on the outcome variables—anxiety, depression, and physical complaints. At the time of the initial wave in 1989, 34% of the families lived on a farm, around 12% lived in rural areas but not specifically on a farm, and 54% of the families lived in rural communities with a population less than 6,500 (Conger et al., 1992). The median family income of the previous year of the study (1988) was $33,000 and 11% of the
families in the IYFP data set had a median income that fell below the federal poverty line (Conger et al., 1992). The median number of years of education was 13 years for fathers and mothers, and the median age for fathers was 39 years and 37 years for mothers (Conger et al., 1992). The average number of family members for the IYFP sample in 1989 was 4.95 children (Conger et al., 1992). Around 53% of the targeted adolescents were female and 47% were male.

**Procedure**

Families were contacted prior to participation and information regarding participation was obtained through letters in the mail and telephone-based interactions. Around 78% of the participants who were contacted agreed to participate in the current study.

Data for this study originated through home visit methodologies (Conger et al., 1992). For each wave, families were interviewed two different times. During the first visit, each of the four family members was asked demographics, family economic circumstances, family characteristics, and self-reports on behavior and cognitions/attitudes through surveys (Conger et al., 1992). The second home visit, within 2 weeks of the first visit, consisted of the family completing a structured task to assess interactions within the families. Coders were trained using the Iowa Families Interactions Rating Scales (IFIRS) developed by Janet Melby and colleagues at the Institute for Social and Behavioral Research at Iowa State University (Melby et al., 1999). Coders were required to have a minimum of a bachelor’s degree in science, humanities, literature, or education (Melby & Conger, 2001) and work no more than 20 hours a week, due to the high intensity of the job. Coders were trained for 10-12 weeks at 20 hours per week to achieve a high level of agreement (Melby & Conger, 2001).
Data from the current study only utilized the first home visit in which survey information was collected. This current study did not utilize information collected during the second home visit in which observational data were collected on a structured task.

**Measures**

*Anxiety* In 1991, 1992, and 1994, target adolescents reported their feelings on how much anxiety they felt during a week. Anxiety in the current study was assessed from 10 sub-items from the Symptoms Checklist (SCL-90-R; see Derogatis & Melisaratos, 1983). First, the target adolescents were asked to report on anxiety on a scale from 1 (not at all) to 5 (extremely), regarding “During the past week, how much were you distressed or bothered by ‘nervousness or shakiness inside’, ‘trembling’, ‘suddenly scared for no reason’, ‘feeling fearful’, ‘heart pounding or racing’, ‘feeling tense or keyed up’, ‘spells of terror or panic’, ‘feeling so restless you couldn’t sit still’, ‘the feeling that something bad is going to happen to you’, and ‘thoughts and images of a frightening nature’.” Scores on these items were then summed in which higher levels of the summed score reflect higher levels of anxiety. The internal consistency (Cronbach’s alpha) for the scale equaled .83, .85, and .90 for 1991, 1992, and 1994, respectively, for the target adolescents.

*Depressive symptoms* In 1991, 1992, and 1994, target adolescents reported their feelings of distress using the 12-item depressive symptomology subscale of the Symptoms Checklist (SCL-90-R; see Derogatis and Melisaratos, 1983). Respondents used a 5-point Likert-type scale anchored with ‘not at all’ (1) and ‘extremely’ (5), regarding “how often during the past week they were bothered by ‘feeling low in energy or slowed down’, ‘thoughts of ending your life’, ‘crying easily’, ‘feelings of being trapped or caught’, ‘blaming yourself for things’, ‘feeling lonely’, ‘feeling blue’, ‘worrying too much about things’, ‘feeling no interest in things’, ‘feeling
hopeless about the future’, ‘feeling everything is an effort’, and ‘feelings of worthlessness’,”

Scores on these items were then summed in which higher levels of the summed score reflect higher levels of depression. Internal consistency (Cronbach’s alpha) equaled .89, .91, and .92 for 1991, 1992, and 1994, respectively.

**Physical complaints** In 1991, 1992, and 1994, target adolescents reported their feelings of physical condition using 12 common physical complaints. These complaints included headaches, coughs, sore throats, muscular aches, stomach aches, congested nose, constipation, vomiting, skin rashes, diarrhea, allergies, and bad acne or pimples experienced during the past three months (Mechanic & Hansell, 1987). Respondents used a 4-point scale anchored with ‘never’ (1) and ‘always’ (4) to indicate how often during the past three months they were bothered by symptoms of physical complaints. Scores on the items were then summed in which higher levels of the summed score reflect higher levels of physical complaints. Internal consistency (Cronbach’s alpha) equaled .76, .74 and .77, for 1991, 1992, and 1994, respectively.

**Marital conflict** In 1991, marital conflict was measured by asking both father and mother to report, on a five-point scale from “never” (0) to “all of the time” (4), how often you and your spouse disagree or get upset about “Money,” “Discipline/ raising children,” “Time alone together,” “Tobacco,” “Alcohol,” “Drugs,” “Outside activities,” “Work schedules,” “Church,” “Vacation time,” “Intimate times,” “Household chores,” “Relative/In-laws,” “Family time together,” “Transportation,” and “Attitudes.” The rating for each item was summed to create a score of marital conflict for each parent. Internal consistency (Cronbach’s alpha) equaled .87 for father and .84 for mother.

**Supportive Parenting** In 1991, supportive parenting was measured by asking both father and mother to report on a five-point Likert-type scale from “always” (1) to “never” (5), “I really trust
target child,” “I experience strong feelings of love for target child,” “How often do you talk with
the target child about what is going on in his or her life?,” “When you and the target child have a
problem, how often can the two of you figure out how to deal with it?,” “How often does the
target child talk to you about things that bother him or her?,” “How often do you ask the target
child what he or she thinks before deciding on family matters that involve him or her?,” “How
often do you give reasons to the target child for your decisions?,” “How often do you ask the
target child what he or she thinks before making decisions that affect him or her?,” “When the
target child has done something you like or approve of, how often do you let him or her know
you are pleased about it?”. The lists of supportive parenting were adapted from the supportive
parenting scale (Simons, Lorenz, Conger, & Wu, 1992). The rating for each item was reverse
coded so that a high score indicated high support. The supportive parenting scale was
constructed by summing the score for both parents. Internal consistency (Cronbach’s alpha)
equaled .87 for father’s supportiveness, and .84 for mother’s supportiveness.

**Chronic Family economic hardships** The lists of economic problems were adapted from Conger
(1988). The measure of family economic hardships was created by a 5-point Likert-type scale
anchored with ‘always’ (1), and ‘never’ (5). The targets responded to four items in 1989, 1990,
and 1991, that indicated economic problems experienced by the family. The list of economic
problems included items, such as “How often do you have enough money for things like clothes,
school activities, or other things you need?,” “How often do you have enough money for doing
things you and friends like to do, such as going to movies, eating pizza, etc.?,” “How often do
you argue with your parents about not having enough money?,” and “How often do your parents
argue with each other about not having enough money?”. Two items were reverse-coded. Scores
on these items were then summed in which higher levels of the summed score reflect higher
levels of family economic hardships. The internal consistency (Cronbach’s alpha) of the scale equaled .67, .70, and .67 for 1989, 1990, and 1991, respectively.

**Parental depressive symptoms (control variable)** Participants reported their feelings of distress using the 13-item depressive symptomology subscale of the Symptoms Checklist (SCL-90-R; see Derogatis and Melisaratos, 1983). Respondents used a 5-point Likert-type scale anchored with ‘not at all’ (1) and ‘extremely’ (5) regarding how often during the past week they were bothered by ‘loss of sexual interest or pleasure’, ‘feeling low in energy or slowed down’, ‘thoughts of ending our life’, ‘crying easily’, ‘feelings of being trapped or caught’, ‘blaming yourself for things’, ‘feeling lonely’, ‘feeling blue’, ‘worrying too much about things’, ‘feeling no interest in things’, ‘feeling hopeless about the future’, ‘feeling everything is an effort’, and ‘feelings of worthlessness’. Scores on these items were then summed in which higher levels of the summed score reflect higher levels of depressive symptoms. Internal consistency (Cronbach’s alpha) equaled .92 for both father and mother.

**Parental education (control variable)** Parental education was measured by the number of years of formal education and constructed by summing scores for both parents reported in 1991. The mean score for father and mother is 13.54 and 13.35 years, respectively.

**Gender (moderate variable)** This current study also assessed the gender of the adolescent through self-reported items. Gender was coded as 0 for females and 1 for males.

**Analytical Plan**

Prior to testing the hypotheses, descriptive statistics will be calculated for all this study’s measures. Descriptive statistics include means, ranges, standard deviations, skewness, and Cronbach’s alpha. Table 1 displays descriptive statistics, and Table 2 displays the mean difference between males and females on study’s variables. Table 3 displays the correlations of
this study’s variables. The current study uses Structural Equation Modeling (SEM) to assess the hypothesized longitudinal path model. SEM in the current study was employed to reduce the impact of measurement error and analyze three repeated measures of health outcomes on the succinct causal model. The latent construct of family economic hardships is captured by three multiple indicators measured in 1989, 1990, and 1991, respectively. Moreover, the latent construct of marital conflict is also calculated using two multiple indicators, which include father’s and mother’s reports in 1991. The latent construct of supportive parenting is also calculated using two multiple indicators, which include father’s and mother’s report in 1991. The constructs of anxiety, depression, and physical complaints are measured directly by self-reported measures. These observed measures were constructed by summing scores of individual items and dividing the total of the items by the number of items to achieve a mean score.

Computer software program, AMOS 18.0, will be utilized to estimate standardized and unstandardized coefficients for all paths in the SEM model. The default missing data program in AMOS version 18.0 will use FIML (full-information maximum likelihood) to impute missing data for all missing values. Also, model fit information will be calculated using absolute fit index such as \textit{Chi-Squared} and goodness of fit indices such as \textit{Root Mean Squared Error Approximation} (RMSEA), \textit{Comparative Fit Indices} (CFI), and \textit{Tucker Lewis Index} (TLI). For good model fit, Hu and Bentler (1999) suggested that RMSEA values be close to .06 or below, and CFI and TLI values be close to .95 or greater for model fit. However, for acceptable model fit, Browne and Cudeck (1993) proposed that RMSEA values less than .07 and CFI and/or TLI values in the range of .90 - .95 suggest an acceptable model fit.

The SEM framework will allow for the current study to test Hypotheses 1. This is the direct pathways in the SEM framework.
Meditational Hypotheses

Three mediation effects are assessed using the two approaches in the Structural Equation Modeling. The first approach for testing the mediating effect is the nested modeling approach in the SEM framework (Baron & Kenny, 1986). According to this approach, mediation is said to occur when the causal effect of an independent variable (X) on a dependent variable (Y) is transmitted by a mediator (M). “Indirect effects” estimate the magnitude of mediation. In other words, X affects Y because X affects M, and M, in turn, affects Y.

For example, to examine the mediating effect of marital conflicts and supportive parenting on the association between chronic family economic hardships and adolescents’ health problems, the first step in this analysis is to employ an SEM model in which the latent constructs of chronic family economic hardships directly influence each of the outcome variables (i.e., anxiety, depression, and physical complaints) (M 1). The second step in the mediation analysis is to create a model in the SEM framework in which the latent constructs of chronic family economic hardships directly influence each outcome variable, as well as chronic family economic hardships indirectly influencing each of the outcome variables through marital conflicts (M 2), supportive parenting (M 3), and both marital conflicts and supportive parenting (M4), respectively. The final step is to compare the direct path model (M 1) with the mediation models (M 2, M 3, and M4). These models will be compared and discussed in the results section to address hypotheses 2, 3, and 4. If direct paths become non-significant and meditational paths are significant in meditational model (M 2, M 3, and M4), according to Baron and Kenny (1986), supportive parenting and marital conflicts mediated the influence of chronic family economic hardships on health problems.
For the second approach, the mediating effects of the current study are assessed using a mediation test proposed by Sobel (1982). According to this test, the amount of mediation which can be tested by the z-test is defined as the reduction of the effect of the initial variation on the outcome or \( c - c' \). This difference in coefficients is equal to the product of the effect of X on M times the effect of M on Y or \( ab \) and so:

\[
ab = c - c'.
\]

If this indirect effect on the second step of the nested modeling approach is statistically significant, it follows there necessarily is a reduction in the effect of X on Y. One method to test the null hypothesis (i.e., indirect effect) that \( ab = 0 \) is to test if both a and b are zero. Baron and Kenny (1986) provide a direct test of \( ab \), which is a modification of a test originally proposed by Sobel (1982). This requires the standard error of a or \( S_a \) (which equals \( a/t_a \) where \( t_a \) is the t-test of coefficient a) and the standard error of b or \( S_b \) (See Figure 3).

The standard error of \( ab \) equals

\[
\text{SE}_{ab} = \sqrt{S_a^2 S_b^2 + a^2 S_b^2 + b^2 S_a^2}.
\]

Therefore, under the null hypothesis that \( ab \) equals zero, the following,

\[
\frac{ab}{\sqrt{S_a^2 S_b^2 + a^2 S_b^2 + b^2 S_a^2}},
\]

is approximately distributed as z. In most cases, however, the \( S_a^2 S_b^2 \) term is insignificantly small and can be safely omitted, yielding:

\[
\text{SE}_{ab} = \sqrt{a^2 S_b^2 + b^2 S_a^2}.
\]

Hence, following the recommendation from MacKinnon, Warsi, and Dwyer (1995), the significance of the indirect paths can be assessed using the modified Sobel test of indirect effects:
To test the significance of the indirect effect, it was calculated by hand because this test is not available in AMOS. A significant Sobel test suggests the level of mediation is meaningful. The significance of the indirect paths can be assessed using the modified Sobel test of indirect effects. According to the $z$-test, the mediating effect of hypotheses 2 – 4 will be assessed.

**Cross-lagged hypothesis**

The current study will examine a cross-lagged model to strengthen the hypothesized associations of the theoretical path model using AMOS 18.0. Using a cross-lagged design, the reciprocal relationship between mental problems and physical complaints will be explored in greater detail. The benefit of this design is that it offers insight into the relative strengths of two or more time-varying covariates on each other (Lorenz, Wickrama, & Conger, 2004). To examine the health progression of adolescents, the “cross-lagged model” will be tested for Hypothesis 5.

**Moderational hypotheses**

Moderation effects will be assessed through a stacked model approach using two groups for the low and high levels of supportive parenting (Wickrama et al., 1995). In this approach, the path coefficients are allowed to be different in one model for the low and the high groups, based on one standard deviation from a mean of the grouping variable (i.e., unconstrained model). A second model will be analyzed in which the path coefficients are held constant for the low and high groups (i.e., constrained model). According to Bentler and Bonett (1980), a $\Delta \chi^2$ difference can be calculated for the constrained model subtracted from the unconstrained model. The $\Delta \chi^2$ difference will have degrees of freedom equal to the degrees of freedom of the constrained
model minus the unconstrained model, and will be normally distributed. This \( \chi^2 \) difference test will allow for the test of significance for any significant interactions or moderations between high and low groups for hypotheses 6 and 7.

**Gender moderational hypotheses**

Finally, to investigate the hypothesized gender difference, the model shown will estimate the cross-lagged model and path model separately for males and females; these results will be presented. The model allows comparison of male’s paths with corresponding female’s paths using the equality constraint test (Wickrama et al., 1995). In these tests, the two theoretically-relevant paths are constrained as equal in the model to determine whether this procedure would significantly reduce the model fit. The change in chi-squared for one degree of freedom for each paired comparison will be used to test whether two paths are significantly different for hypotheses 8 and 9. Also, for Hypothesis 8, the group’s mean between male and female will be estimated to report on whether group means among anxiety, depressive symptoms, and physical complaints change for 1991, 1992, and 1994.

**Supplement Growth Curve Analysis**

Moreover, as a supplementary analysis, latent growth curve (LGC) analysis will be performed using AMOS 18.0. The LGC model estimates individual change parameters, as well as their differences across individuals, and systematically relates these differences to the differences in time-invariant and/or time-varying predictors and in Sequence across individuals (Karney & Bradbury, 1995; Wickrama, Beiser, & Kaspar, 2002). For example, this study will relate growth parameters for depression, anxiety, and physical complaints to marital conflicts, supportive parenting, and economic hardships, and then take the associations among growth parameters into account.
CHAPTER 4

RESULTS

Descriptive Statistics of Study Variables

Table 1 presents the descriptive statistics of the study variables for the current research. The mean scores for anxiety showed no significant change over time; 1.40, 1.37, and 1.39, for 1991, 1992, and 1994, respectively ($F(2, 752)=1.18, p>.05$). However, the mean scores for depression showed a significant increase; 1.51, 1.57, and 1.62, for 1991, 1992, and 1994, respectively ($F(2, 752)=4.99, p<.01$). Also, the mean scores for physical complaints showed a significant increase; 1.92, 2.03, and 2.01, for 1991, 1992, and 1994 ($F(2, 696)=12.43, p<.001$).

The mean scores for family economic hardships indicated a significant difference over time; 2.11, 2.08, and 2.20 for 1989, 1990, and 1991, respectively ($F(2, 804)=9.40, p<.001$). The mean scores for marital conflicts showed no significant difference; 1.13, and 1.10, for father and mother respectively ($F(1, 396)=1.60, p>.05$). Supportiveness for fathers and mothers indicated significant differences, 3.79 and 4.02 in 1991, respectively ($F(1, 405)=92.92, p<.001$). The mean scores for parental depression indicated a significant difference in 1991, 1.32 for father and 1.50 for mother, respectively ($F(1, 405)=30.18, p<.001$). Finally, mean scores for fathers and mothers’ education were 13.54 and 13.35 years in 1991, respectively.

For the most part, skewness is not an issue for the distribution of the current study’s variables. Father’s depression in 1991 was the most skewed variable among predictors. However, this skewness is to be expected, based on the nature of the study variables and the self-report measurement technique, which is subject to a potential bias in the answers.
Mean difference in health problems between males and females are provided in table 2. Females report higher mean levels of depression, anxiety, and physical complaints in several time points.

**Correlations among Study Variables**

Table 3 presents bivariate correlations among study variables. All outcome variables were correlated in the expected direction. Significant correlations were observed among repeated measures of anxiety symptoms in 1991, 1992, and 1994 ($p<.01$). Significant positive correlations were also observed among repeated measures for depressive symptoms in the same period ($p<.01$). Furthermore, significant positive correlations were observed among repeated measures for physical complaints in the same period ($p<.01$). Also, significant contemporaneous and longitudinal positive correlations were observed among different health domain variables; anxiety and depressive symptoms ($p<.01$), between depression and physical complaints ($p<.01$), and between anxiety and physical complaints ($p<.01$) (See Table 2).

For predicted variables, as expected, a significant correlation was observed among family economic hardships in 1998, 1990, and 1991. The correlations ranged from .41 to .51 ($p<.01$). In addition, these variables showed significant correlations with adolescents’ health problems (i.e., anxiety, depression, and physical complaints). The correlation coefficient ranged from .10 to .29 ($p<.05$) Moreover, a moderate correlation was observed between father’s marital conflicts and mother’s marital conflicts measures. The correlation was .38 ($p<.01$). These variables were also significantly correlated with most health problems during the same time period. The correlations ranged from .11 to .15 ($p<.05$). However, marital conflicts for both father and mother were not correlated with depression in 1992 and 1994. Additionally, marital conflicts measures for both parents were significantly correlated with family economic hardships in 1989, 1990, and 1991.
The correlations ranged from .10 to .27 ($p<.05$). Furthermore, a significant correlation was observed between fathers’ supportive and mothers’ supportive parenting. The correlation was .31 ($p<.05$). In addition, these variables were negatively correlated with anxiety and depression in 1991, 1992, and 1994. The correlation coefficients ranged from -.21 to -.12 ($p<.05$). However, parental support for both parents was not significantly correlated with physical complaints in the same time period. Nevertheless, parental support for both father and mother was significantly correlated with marital conflicts and family economic hardships. The correlation between marital conflicts and supportive parenting for both parents ranged from -.22 to -.11 ($p<.05$).

**Testing Specific Hypotheses**

**Direct Path Model (Hypothesis 1)**

The first hypothesis of the current study was that chronic family economic hardships directly influence adolescents’ anxiety, depression, and physical complaints, controlling for parental depression and education. The results can be seen in Figure 4. For anxiety, the chronic family economic hardships directly influence anxiety in 1991 ($\beta=.21, t=3.53$). For depression, the family economic hardships directly influence depression in 1991 ($\beta=.29, t=4.84$). Moreover, for physical complaints, the family economic hardships directly influence adolescents’ physical complaints in 1991 ($\beta=.29, t=4.73$). Thus, the first hypothesis of the current study was supported by data.

**Mediations of the Current Study (Hypothesis 2, 3, and 4)**

*Testing mediational hypothesis for marital conflicts on the association between chronic family economic hardships and adolescents’ health problems (Hypothesis 2)*

Figure 4 presents a simple SEM model in which the chronic family economic hardships directly influence adolescent health problems. Figure 5 presents an SEM model in which the
chronic family economic hardship indirectly influences adolescents’ health problems through marital conflicts (MC).

The model in Figure 4 can be compared to Figure 5 to assess the meditational effects of marital conflicts on the association between the family economic hardships and adolescents’ health problems. The model in Figure 5 adds marital conflicts to the model in Figure 4. The model in Figure 5 found a direct pathway between family economic hardships and adolescents’ health problems. In Figure 5, the pathway between family economic hardships and adolescents’ health problems was still significant ($\beta=.20$, $t=2.96$ for anxiety; $\beta=.25$, $t=3.70$ for depression, and $\beta=.28$, $t=4.05$ for physical complaints). Moreover, the pathway between family economic hardships and marital conflicts was significant in the model for Figure 5 ($\beta=.38$, $t=4.32$). The pathways for family economic hardships and adolescents’ health problems shown in Figure 4 are still significant in the model, as shown in Figure 5. The pathway between family economic hardships and marital conflicts was significant. However, the pathways among marital conflicts and all of health problems of adolescents were not significant, as shown in Figure 5. Thus, the Sobel test cannot be used because indirect effect between chronic family economic hardships and adolescents’ health problems is not statistically significant. Accordingly, the current study suggests the association between chronic family economic hardships and adolescents’ health problems is not mediated by marital conflicts, based on the mediating tests proposed by Baron and Kenny (1986) and modified Sobel test (1995). Thus, the second hypothesis of the current study was not supported by data.

Testing mediational hypothesis for supportive parenting on the association between chronic family economic hardships and adolescents’ health problems (Hypothesis 3)
Another mediation to examine is whether supportive parenting mediates the association between chronic family economic hardships and adolescents’ health problems. To examine this, the current study compares the model shown in Figure 4 with the model shown in Figure 6. In the hypothesized model of the current study shown in Figure 6, a significant association was observed between chronic family economic hardships and supportive parenting ($\beta = -.37$, $t=-3.99$). A significant association was also observed between supportive parenting and anxiety ($\beta = -.28$, $t= -2.95$). However, a significant association was not observed between chronic family economic hardships and anxiety as found for the model in Figure 6 ($\beta=.11$, $t=1.67$). This demonstrates the association between chronic family economic hardships and anxiety is mediated by supportive parenting. For depressive symptoms of adolescents, Figure 6, a significant association was observed between supportive parenting and depression ($\beta = -.26$, $t= -2.83$). Also, a significant association was still observed between chronic economic hardships and depression ($\beta = .19$, $t= 2.81$). However, when this model is compared with the model in Figure 4, the standardized regression coefficient in the association was diminished from .28 (4.84) to .19 (2.81). According to analysis of mediation hypotheses presented by Baron and Kenny (1986), to establish supportive parenting completely mediates the association between chronic economic hardships and depression, the effect of chronic economic hardships on depression of adolescents controlling for supportive parenting should not be significant. However, although the direct effect is reduced in the association between chronic family economic hardships and depression in the current hypothesized model, the direct influence of chronic family economic hardships on depression is still significant when controlling for supportive parenting. Therefore, partial mediation on the association between chronic economic hardships and depressive symptoms of adolescents is indicated. For physical complaints, a significant association was not observed
between supportive parenting and physical complaints ($\beta = .07, t= .91$) shown in Figure 6. However, a direct pathway was significantly observed between chronic family economic hardships and physical complaints ($\beta = .31, t= 4.46$). Therefore, the relationship between chronic family economic hardships and adolescents’ physical complaints is not mediated by supportive parenting.

Moreover, to test the significance of the indirect effect, the recommendations by MacKinnon, Warsi, and Dwyer (1995) are followed. For anxiety, the indirect effect using the modified Sobel test is statistically significant ($z = 2.35, p < .01$); for depression, the indirect effect is also significant ($z = 2.23, p < .05$). However, for physical complaints, the z-value for the Sobel test was not calculated, because the indirect effect of the nested modeling approach is not met (e.g., step 2 of the nested modeling approach).

*In summary, supportive parenting mediates the association between chronic family economic hardships and anxiety of adolescents, and partially mediates the association between chronic family economic hardships and depression of adolescents. However, supportive parenting did not mediate the association between chronic family economic hardships and physical complaints. Thus, the third hypothesis of the current study was partially supported by data.*

**Indirect effect of marital conflicts on adolescents’ health problems through supportive parenting (Hypothesis 4)**

The other mediation to examine is whether supportive parenting mediates the association between marital conflicts and adolescents’ health problems. In the hypothesized model of the current study shown in Figure 7 for anxiety and depression, a significant association was observed between marital conflicts and supportive parenting ($\beta = -.41, t= -3.26$). A significant
association was also observed between supportive parenting and anxiety (β = -.31, t = -2.75), and between supportive parenting and depression (β = -.26, t = -2.49), respectively. However, a significant direct effect was not observed between marital conflicts and anxiety (β = -.07, t = -.72) and between marital conflicts and depression anxiety (β = .01, t = .04) shown in Figure 7. Thus, this suggests the association between marital conflicts and anxiety is mediated by supportive parenting. The association between marital conflicts and depression is also mediated by supportive parenting. For physical complaints, a significant association was not observed between supportive parenting and physical complaints (β = .10, t = 1.00), as well as between marital conflicts and physical complaints anxiety (β = .07, t = .79) shown in Figure 7. Therefore, the results show the association between marital conflicts and physical complaints of adolescents is not mediated by marital complaints (MC).

In addition, the z-values for the modified Sobel test were calculated to assess the significance of the indirect effect. For anxiety, the indirect effect using the modified Sobel test is statistically significant (z = 2.25, p < .05); for depression, the indirect effect is also significant (z = 2.18, p < .05). However, for physical complaints, the z-value for the Sobel test was not calculated, because the indirect effect of the nested modeling approach is not met (e.g., step 2 of the nested modeling approach).

In summary, supportive parenting mediates the association between marital conflicts and anxiety and depression of adolescents. However, supportive parenting does not mediate the association between marital conflicts and physical complaints. Thus, the fourth hypothesis of the current study was partially supported by data.

The Operationalized SEM Model
Figure 8 presents the results for the comprehensive model. The factor loadings for the study variables for the full operationalized model are presented in Figure 8. Three repeated measures of family economic hardships significantly loaded on the latent construct of family economic hardships ($\beta = .66, .73, \text{and} .65, p < .001$). Father’s marital conflicts ($\beta = .65$) and mother’s marital conflicts ($\beta = .59$) also significantly loaded on the latent construct of marital conflicts ($p < .001$). In addition, Father’s supportive parenting ($\beta = .59$) and mother’s supportive parenting ($\beta = .52$) significantly loaded on the latent construct of marital conflicts ($p < .001$). The operationalized model had a $\chi^2$ of 262.28 with 123 degrees of freedom. The ratio of $\chi^2$ divided by the degrees of freedom equaled 2.13. According to Carmines and McIver (1981), a $\chi^2$ divided by a degrees of freedom ratio of less than 3.00 suggests an acceptable fit, thus confirming this model fits the data very well. Also, other model fit indices, such as CFI and TLI, indicate the model fits the data very well.

For the control variables, contrary to expectations, parental education and depressive symptoms fail to significantly predict anxiety, depressive symptoms, and physical complaints in 1991, 1992, and 1994.

**Cross-Lagged Hypotheses (Hypothesis 5)**

The fifth hypothesis of the current study is that adolescents’ anxiety, depression, and physical complaints mutually influence one another over time, controlling for parental education and depression. This hypothesis was partially confirmed in the current study as the several significant associations among anxiety, depression, and physical complaints were observed. As seen in Figure 8, for the association between anxiety and depression, depression in 1991 significantly predicts anxiety in 1992 ($\beta = .14, t = 2.18$), and anxiety in 1992 significantly predicts depression in 1994 ($\beta = .15, t = 2.01$). Moreover, for the association between depression and
physical complaints, physical complaints in 1991 significantly predict depression in 1992 (β=.14, t=3.28) and physical complaints in 1992 moderately predict depression in 1994 (β=.09, t=1.85). Also, for the association between anxiety and physical complaints, the results indicate physical complaints in 1991 significantly predict anxiety in 1992 (β=.10, t=2.17) and physical complaints in 1992 significantly predict anxiety in 1994 (β=.12, t=2.34). However, the results show depression in 1991 and 1992 does not predict physical complaints in 1992 and 1994. Anxiety in 1991 and 1992 also failed to influence physical complaints in 1992 and 1994. Consequently, the fifth hypothesis of the current study was partially supported by data.

Moderation of the Current Study (Hypotheses 6 and 7)

Supportive parenting moderating hypotheses

Descriptive statistics show the measures for marital conflicts, supportive parenting, and adolescents’ outcomes were all normally distributed. Therefore, the present study proceeded to test the moderating effects (McClelland & Judd, 1993). Hypotheses 6 and 7 test the moderation effects of supportive parenting on the association between chronic family economic hardships and adolescents’ health problems, and between marital conflicts and adolescents’ health problems using a stacked model approach (Wickrama, Conger, Lorenz, & Matthews, 1995). According to this approach, the same structural model is estimated, using these two groups simultaneously. Multiple group analysis is useful to test for differences using the “parameter invariance” method of structural equation modeling.

In accordance with the guidelines set forth by Brookmeyer, Henrich, and Schwab-Stone (2005), as a first step in the analysis, two groups (i.e., high vs. low supportive parenting group) were selected from the sample in the following order (without replacement). First selected was the low supportive parenting group—the low group whose score on supportive parenting in 1991
was equal to or less than one standard deviation (.34) away from the mean score (3.91) of supportive parenting. Second, from the remaining parents, the high supportive parenting group was selected—the high group whose score was equal to or more than one standard deviation from the mean score of supportive parenting.

The current study followed the procedure for a stacked models approach used by Wickrama et al. (1995) to test for moderations of study variables. According to this approach, for the moderation effect on supportive parenting on the association between chronic family economic hardships and adolescents’ health problems, a first model was analyzed in which the all paths were freed across the two models. The second model was analyzed in which the path of interest was constrained to be equal.

The fit between the model with equally constrained paths and the model with freed paths can then be compared using a $\Delta \chi^2$ difference test (Bentler & Bonett, 1980; Wickrama et al., 1995). For all model comparisons, a $\Delta \chi^2$ difference of 3.83 with a 1 degree of freedom is deemed a significant moderation effect. The stacked models address hypotheses 6 and 7. Table 4 provides a summary of standardized coefficients ($\beta$), associated standard errors, intercepts, and the differences in $\Delta \chi^2$ between low and high groups.

The first series of moderations to examine involve Hypothesis 6. This hypothesis states the relationship between chronic family economic hardships and adolescents’ health problems is moderated by the level of supportive parenting. For anxiety, a non-significant moderation effect of supportive parenting on the association between chronic family economic hardships and anxiety ($\Delta \chi^2 = .01, \text{ df}=1$) was observed. For depressive symptoms, a non-significant moderation effect of the level of a supportive parenting on the association between chronic family economic hardships and depression ($\Delta \chi^2 = .03, \text{ df}=1$) was observed. Moreover, for physical complaints, a
non-significant moderation effect of the level of a supportive parenting on the association between chronic family economic hardships and physical complaints ($\Delta \chi^2 = .18$, df=1) was observed.

*In summary, there was no significant moderation in the level of supportive parenting on the association between chronic family economic hardships and adolescents’ health problems. Therefore, Hypothesis 6 was not supported by data.*

The second series of moderations to examine involve Hypothesis 7. This hypothesis states the association between marital conflicts and adolescents’ health problems is moderated by the level of supportive parenting. For anxiety, a non-significant moderation effect of supportive parenting on the association between marital conflicts and anxiety ($\Delta \chi^2 = .26$, df=1) was observed. However, for depressive symptoms, a significant moderation effect of supportive parenting on the association between marital conflicts and depression ($\Delta \chi^2 = 4.13$, df=1) was observed. Figure 9 illustrates the moderating effect of supportive parenting on the association between marital conflicts and adolescents’ depressive symptoms. The graph clearly shows the interpretation for the results of moderation. As shown in Figure 9, low level of supportive parenting had lower average levels of depressive symptoms (M=1.71, SD=.66) than the higher level of supportive parenting (M=1.35, SD=.40). Also, this mean difference was statistically significant (t=3.94, $p <.001$). More importantly, the influence of marital conflicts on depressive symptoms was stronger for low-level supportive parenting group than for high-level supportive parenting group. However, for physical complaints, a non-significant moderation effect of supportive parenting on the association between marital conflicts and physical complaints ($\Delta \chi^2 = 1.58$, df=1) was observed.
Consequently, Hypothesis 7 was partially confirmed in the current study. There was only a significant moderation of supportive parenting on the association between marital conflicts and depressive symptoms.

**Gender Difference of the Current Study (Hypotheses 8 and 9)**

As in the case of supportive parenting effect, the two theoretically relevant paths are constrained to be equal across male and female models to determine whether this procedure would significantly reduce the model fit compared to the unconstrained model. The change in chi-squared for one degree of freedom for each paired comparison is used to test whether two paths are significantly different across male and female groups. Through $\chi^2$ difference testing, a model constraining path coefficient was analyzed for males and females.

Figure 10 presents the comprehensive model for gender difference on adolescents’ health problems from 1991 to 1994. Among the 27 interaction effects, only one significant moderating mechanism was seen in Table 5. For intra-domain continuity (i.e., homotypic continuity), the stability coefficient of depressive symptoms in 1992 on depressive symptoms in 1994 was only significantly different for males and females ($\Delta \chi^2 = 5.00$, df=1). Thus, Hypothesis 8 was partially supported by data.

The other series of gender differences to examine involve Hypotheses 9. This hypothesis states that gender moderates the associations among the family economic hardships, supportive parenting, marital conflicts, and adolescents’ health problems. The moderating effects of gender for the hypothesized path model can be seen in Figure 11. Through $\chi^2$ difference testing, a model constraining all paths coefficients was analyzed for male and female. The result was a $\chi^2$ difference of 40.06 with 19 degrees of freedom. This is statistically significant. In other words, there is significantly different between males and females on the association among anxiety,
depression, and physical complaints over time. In detail, Table 6 presents the summary of standardized coefficients, associated standard errors, and the difference in $\chi^2$ between the constrained model and the unconstrained model for each path for both the male and female groups.

Among the 12 paths, two significant moderating mechanisms were seen in Table 6. For depressive symptoms, gender of the adolescent moderates the association between chronic family economic hardships and depressive symptoms ($\Delta \chi^2 = 5.10$, df=1). Also, gender of the adolescent moderates the association between chronic family economic hardships and marital conflicts ($\Delta \chi^2 = 8.46$, df=1). That is, females are more vulnerable to chronic family economic hardships for both depressive symptoms ($\beta = .29$, t=1.93) and marital conflicts ($\beta = .35$, t= 7.00).

Moreover, to examine the moderating effect of gender on the association between chronic family economic hardships and depressive symptoms in 1991, the graph depicts the moderation. As shown in Figure 12, males had lower average levels of depressive symptoms ($M=1.36$, SD=.39) than females ($M=1.63$, SD=.53). Also, this mean difference was statistically significant ($t=4.95$, $p <.001$). However, the influence of depressive symptoms on chronic family economic hardships was greater among females than among males.

Also, in case of marital conflicts, the result of this moderation is quite similar to gender moderation on association between chronic family economic hardships and depressive symptoms. The males had lower average levels of marital conflicts ($M=1.08$, SD=.36) than females ($M=1.14$, SD=.37). Although, this mean difference was not statistically significant ($t=1.51$, $p >.05$), the influence of marital conflicts on chronic family economic hardships was greater among females than among males.
In summary, gender of adolescents moderates the association between chronic family economic hardships and depressive symptoms, and between chronic family economic hardships and marital conflicts. Although gender marginally influences the association between chronic family economic hardships and physical complaints, other associations among anxiety, marital conflicts, and supportive parenting were not impacted by gender. Therefore, Hypothesis 9 was partially supported by data.

Latent Growth Curve Analysis (Supplementary analysis)

As a supplementary analysis, latent growth curve (LGC) analysis using AMOS 18.0 was estimated. The LGC model estimates individual change parameters as well as their differences across individuals, and systematically relates these differences to the differences in time-invariant and/or time-varying predictors, and in sequence across individuals (Karney & Bradbury, 1995; Wickrama, Beiser, & Kaspar, 2002). Consequently, through this analysis, growth parameters of depression, anxiety, and physical complaints were related to marital conflicts, supportive parenting, and chronic family economic hardships, and then the associations among growth parameters were taken into account. The interlocking LGC model estimates are shown in Figure 13.

For the current data, the results from fitting linear growth curves to three waves of anxiety, depressive symptoms, and physical complaints (1991, 1992, and 1994) are summarized in Table 7. As shown in Table 7, each univariate growth curve model for anxiety, depressive symptoms, and physical complaints of adolescents showed a respectable fit with the data—a chi-squared of 2.59, 1df; a chi-squared of .26, 1df; and a chi-squared of 18.88, 1df, respectively. Fit indices (CFI) for the models also exceeded .90. In Table 7, significant slope shows linear trends in
depressive symptoms and physical complaints. More importantly, significant slope variances show inter-individual variations in the rate of change in health problems.

The three univariate growth curves and exogenous variables were modeled together in an interlocking trajectory model so that chronic family economic hardships, marital conflicts, and parenting behaviors predict the adolescents’ health growth model. The interlocking trajectories model is shown in Figure 13. The model fit indices indicate a good model fit. As expected, exogenous variables predict the initial level of each health problem (i.e., anxiety, depressive symptoms, and physical complaints). However, they did not predict the level of change at all. In addition, Contrary to this researcher’s expectations, several path coefficients showed a negative impact level of change. According to Conger, Lorenz, and Wickrama (2004), the growth curve model, in contrast with the autoregressive model, may provide different results based on correlation coefficients among repeated measures.
CHAPTER 5

DISCUSSION

Summary and Understanding the Research Findings

Although a considerable body of empirical research has established the importance of family context, few studies have examined the unique influences of family factors and their multiplicative influences on a range of adolescents’ health problems (Wickrama, Conger & Abraham, 2008). The goals of the current research were to address the unique influences of chronic family economic hardships as they influence marital conflicts, supportive parenting, and adolescents’ health problems (i.e., anxiety, depressive symptoms, and physical complaints). To find unique pathways, the current study also added to the direct and indirect influence by using an SEM framework. The current research analyzed data from a longitudinal sample of mothers, fathers, and target adolescents (N= 404-451) to assess theoretical pathways.

The Direct Influences of Chronic Family Economic Hardships

The family stress model posits that cumulative health disadvantages over the life course by positing that stress proliferation takes a long-term toll on health through a process that places people already facing serious adversity at risk for continued exposure to further adverse circumstances (Pearlin, Schieman, Fazio, & Meersman, 2005). According to stress-process theory, this study demonstrated family mechanisms, which influence risks for developing adolescents’ health problems over time. The current study also provides support to previous research (Conger et al., 1992; O’Rand & Hamil-Luker, 2005; Wickrama, Conger, & Abraham,
As expected, the current study determined chronic family economic hardships directly influence anxiety, depressive symptoms, and physical complaints of adolescents.

**The Mediating Effect of Marital Conflicts**

According to Wadsworth and Compas (2002), parental conflicts partially mediated the relationship between economic strain and adolescent adjustment. However, the current study failed to determine the significant mediating effect of marital conflicts on the association between chronic family economic hardships and adolescents’ health problems (i.e., anxiety, depressive symptoms, and physical complaints). Moreover, the findings indicated that chronic family economic hardships still have a direct influence on each of the adolescents’ health problems after controlling for marital conflicts.

This non-significant direct influence of marital conflicts on adolescents’ health problems is similar with recent studies. For example, Crockenberg and Langrock (2001) reported that marital behavior continued to only predict females' external problems, but not internal problems such as anger, fear, and depressive symptoms. Moreover, the amount of variance accounted for by effects was too small (i.e., 5% or less). Furthermore, in Frosch and Mangelsdorf’s study (2001), they observed marital behaviors were not associated with child functioning.

This pathway between marital behavior and adolescents’ health problems can be inferred from evidence that correlated parenting behaviors partially explains associations between marital conflicts and adolescents’ health problems. Consistent with the family process model (Conger et al., 1992), it appears that marital conflicts primarily influence inefficient parenting, which, in turn, negatively influences their children (Conger et al., 1992).

Moreover, this association between marital conflicts and adolescents’ outcomes may be explained by the cognitive contextual framework (Grych & Fincham, 1990), the emotional
security hypothesis (Cummings & Davies, 1994), and the specific emotions model (Crockenberg & Forgays, 1996; Crockenberg & Langrock, 2001). In the cognitive-contextual framework, emotions are conceptualized as primary responses to parental conflicts, which then influence secondary, cognitive, processing of the event. Through its relation to cognitions, affect is thus viewed as a mediator of the relationship between parental conflicts and adolescents’ adjustment. The emotional security hypothesis conceptualizes affect as an additional index of emotional security, which is ultimately related to child adjustment (Cummings & Davies, 1994). Last, the specific emotions model posits that adolescents’ evaluations of marital conflicts lead to affective reactions, based on adolescents’ expectations of specific goal attainment. These affective reactions are then theorized to relate to adolescents’ internalizing and externalizing behavior problems (Crockenberg & Langrock, 2001).

**The Mediating Effect of Supportive Parenting**

The current study found the association between chronic family economic hardships and anxiety and depressive symptoms is mediated by supportive parenting. Additionally, supportive parenting mediated the association between marital conflicts and anxiety and depressive symptoms of adolescents. These findings are consistent with previous studies. For example, Wicrama, Lorenz, and Conger (1997) found that through adolescent perception of parental support, parental supportive behavior is connected with changes in adolescent health problems. Lempers et al. (1989) also reported that the indirect effects of parental nurturance on the association economic strain and adolescent depressive symptoms.

Moreover, in case of mediating effects on the association between marital conflicts and adolescents’ health problems, the current study determined the association between marital conflicts and adolescents’ mental health problems, such as anxiety and depressive symptoms, is
mediated by supportive parenting. This conclusion is similar with research on mediating effect of parenting on the association between marital conflicts and child adjustment (Kaczynski, Lindahl, Malik, & Laurenceau, 2006).

However, the current study failed to support the hypothesis that the associations between martial conflicts and physical complaints and between chronic family economic hardships and physical complaints are mediated by supportive parenting. These findings are similar with the findings from previous studies. According to Wickrama et al. (1997), observed parental behavior do not directly affect physical health status. This means that parental behavior does not have an independent contemporaneous direct effect on adolescents-reported physical complaints in the same fashion as perceived parental support does. Because the scale of supportive parenting in the current study is parent-self reported, the non-significant pathway of supportive parenting on physical complaints implies that parental supports, which adolescents think is different from the parental supports which parents think.

In the context of the family process model, chronic family economic hardships impact their children’s distress through other family factors, such as inefficient parenting (Conger et al., 1997), parental depressive symptoms (Liber et al., 2008), and marital conflicts (Nicolotti et al., 2003). In the case of physical complaints, of special interest is the finding that chronic family economic hardships still significantly influence physical complaints after controlling for marital conflicts and supportive parenting. This may be due to the fact that chronic family economic hardships influence adolescent health problems through structural constraints and limitations, such as lack of food, clothing, proper housing, leisure, and other health resources. Additionally, recent clinical studies support the evidence that chronic stressful conditions are linked with other negative physical complaints (Stoney, Niaura, Bausserman, & Matacin, 1999).
The Association among Anxiety, Depressive symptoms, and Physical Complaints over time

The results of the cross-lagged model provided evidence that anxiety and depressive symptoms have mutual influence on one another over the adolescent years. This finding is the same result as the Dunedin study (Moffitt et al., 2007). According to this study, anxiety and depressive symptoms have a reciprocal relationship, based on a longitudinal study. Moreover, the current study tested homotypic continuity of anxiety and depressive symptoms. The results indicated all stability coefficients of anxiety and depressive symptoms are statistically significant. This means early anxiety predicts late anxiety, and early depressive symptoms also predict late depressive symptoms.

However, in the case of physical complaints, although the current study indicated homotypic continuity of physical complaints, for heterotypic continuity, the study indicates early physical complaints only predict late depressive symptoms and anxiety, but not vice versa.

In the case for comorbidity, all comorbidities occur over time. Especially, the study showed that comorbidities between anxiety and depressive symptoms have higher rates than comorbidity between depressive symptoms and physical complaints, and between anxiety and physical complaints. This result is consistent with previous studies (Silberg, Rutter, & Eaves, 2001). However, the current research showed that comorbidity among anxiety, depressive symptoms and physical complaints decreased over adolescence. This result implies that adolescents consider anxiety, depressive symptoms, and physical complaints respectively over time.

The Moderating Effect of Supportive Parenting

For the moderating effect, the current study indicated that supportive parenting as a resilience factor moderated the association between marital conflicts and depressive symptoms.
of adolescents. This result is consistent with the findings of previous studies (Gordis et al., 1997; Frosch & Mangelsdorf, 2001). It seems that high-level supportive parenting breaks down cognitive and emotional mechanisms that link parents’ marital conflicts with generation of adolescents’ depressive symptoms.

However, supportive parenting did not moderate the association between chronic family economic hardships and adolescents’ health problems. Moreover, supportive parenting did not moderate the associations between marital conflicts and anxiety and physical complaints.

**Gender Differences**

For homotypic continuity, males have a higher stability coefficient for depressive symptoms than females during 1992-1994. This means that depressive symptoms for males have stronger homotypic continuity than females over time. Also, in the case of mean differences, females’ health problems (i.e., anxiety, depressive symptoms, and physical complaints) are higher than males over time. It seems that severity of health problems is greater for females than for males. This finding is consistent with previous research (Kessler et al., 2005). Furthermore, over the three years, only males showed decreasing anxiety and increasing depression during the same period. However, for females, only physical complaints significantly increased.

Furthermore, as can be seen in figure 11, chronic family economic hardship is stronger associated with depressive symptoms in females. This finding is also consistent with previous study (Lempers et al., 1989). Additionally, in the present study, females perceived more inter-parental conflicts in relation to chronic family economic hardships than males. Earlier study may support this finding. For example, Gottman (1990) suggested that female is largely responsible for the emotional work in family relationships. Based on this study, adolescents female may be more sensitive about family adversities such as financial problems and inter-parental conflicts.
Implications for the Current Study

The purpose of this study was to explore the mechanisms through which family economic stressors may positively impact inter-parental conflicts and undermine effective parenting skills, which, in turn, influence adolescents’ mental and physical health problems. According to the family stress paradigm, negative stressors, such as economic stress and negative life events, lead to poor mental health in parents—negatively impacting the marital relationship and undermining effective parenting. In turn, poor parental mental health, marital distress, and ineffective parenting are expected to have a cumulative negative impact on adolescents’ well-being.

Specifically, this study explored whether effective parenting significantly buffered the negative effects of economic stress and marital conflicts. The implications of such findings would be that the benefits of positive parental supports may be limited to married couples because this result may be difficult to apply to divorced parents or single parents. However, according to previous research on co-parenting (Lengua, Wolchick, & Braver, 1995), research suggests that maintaining a stable relationship with both parents, even if they are separated or divorced, is very important for their children to keep a healthy adjustment. Hence, the long-term outlooks on well-being and parenting effectiveness of divorced single parents does not necessarily have to be as bleak as many make it out to be.

Managing both mental and physical health problems leads to the need to negotiate multiple health care systems, particularly among youths in the often complex community health care system. It is important that youths with co-occurring problems understand the separate systems and linkages between them. However, systems can also enact policies, structures, and processes to support service access. For example, a study by Hurlburt et al. (2004) suggests that
linkages between child welfare and mental health agencies lead to stronger associations between mental health needs and mental health service use. A similar theoretical approach could be applied to the investigation of the impact of linkages between medical and mental health systems on adolescents with comorbid physical and mental health problems seen in community mental health settings.

**Limitations and Future Works for the Current Study**

*The continuity of change*

The traditional regression method for analyzing change in psychiatric research typically includes regressing the final measurement of symptoms on predictors after controlling for the initial level of symptoms. This is known as ‘residualized scores’ or autoregression (or cross-lagged models in the SEM framework) because covariates are used to predict residualized scores of the final measurement after removing the effect of the initial measurement. This method entails several limitations. First, the non-dynamic nature of these models views psychopathology as a status rather than a process that unfolds over time (Coyn & Downy, 1991). Second, when individual change follows a non-linear trajectory, regression methods are unlikely to reveal intricacies of such change (Willet & Sayer, 1994). Moreover, “Ignoring the continuous nature of change process, traditional methods prevent empirical researchers from engaging a richer, broader spectrum of research questions, questions that deal with the nature of individual development” (Willet, 1988, p. 347). In the context of changing continuity, the current study showed univariate growth curve modeling for each health problem to show how each changed over time to preserve the continuity of change for adolescents’ health problems, such as anxiety, depressive symptoms, and physical complaints. The latent growth curve modeling approach is needed to show individual change over time. However, the current study failed to demonstrate
how each of these changes is mutually related. Additionally, to identify homogeneous subpopulations within the larger heterogeneous population and for the identification of meaningful groups or classes of individuals, the use of latent class growth analysis (LCGA) and general mixture modeling (GMM) approaches have recently grown in popularity in family research, but were not covered in the current study. Thus, future research should investigate ‘interlocking’ trajectories within the context of the ‘latent growth class modeling approach’ for adolescents’ health problems.

The gender moderating of parents

In the current study, the hypothesized mediating effects of marital conflicts on adolescents’ health problems were not observed. However, there may be gender differences for parents in terms of the amount of distress caused by financial events. This explanation is consistent with a previous study demonstrating that husbands and wives respond differently to undesirable life events (Conger et al., 1993). The results of the present study also showed an insight of gender difference on the associations among financial strains, marital conflicts, and adolescents’ health problems. For example, chronic family economic hardships were stronger associated with marital conflicts for females. Moreover, females are more vulnerable to depressive symptoms in response to financial stress. Based on the findings of the present study, marital conflicts of fathers and mothers may differently influence the association between chronic family economic hardship stress and adolescents’ health problems. However, marital conflicts indicators were combined to form a latent factor in this study. Thus, it is not possible to tease apart the differential outcomes using the current models. However, future studies could certainly explore these differential outcomes in greater detail.

The sample size of current study
Another limitation is the sample size in the current study. The current study used Wave 1, Wave 2, Wave 3, and Wave 4 of the IYFP study. The sample size for the four waves ranged from 404 to 451. Missing data were not a problem for the current study and the sample size was adequate for the hypothesized associations. However, the sample was derived from a rural area consisting of 100% Caucasian parents and adolescents. Information on adolescents living in an urban setting was not assessed. Future research should incorporate a more diverse sample population from various ethnic backgrounds to improve the generalizations made in the current study. Future research should also assess adolescents living in a rural setting and an urban setting to improve the findings and generalizations made in the current study.
Table 1. Descriptive Statistics of Study Samples (N=404 - 451)

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<th>Variables</th>
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<th>SD</th>
<th>Range (Max-Min)</th>
<th>Skewness</th>
<th>Alpha</th>
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<td>1.00 – 3.17</td>
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<td>.76</td>
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Note. FEH = Family Economic Hardship; Max = Maximum; Min = Minimum.
Table 2. Mean Differences between Male and Female of the Health Problems

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<th>Variables (year)</th>
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<th>t-value</th>
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<th>Female’s mean change over time</th>
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<td>1.73(.64)</td>
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Note. n = 189 (Males), and 218 (Females). Standard Deviations are in the parentheses

*p <.10; **p <.01; ***p <.001
**Table 3. Correlations among Study Variables**

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*Note.* $p < .05$, **$p < .01$
Table 4. Moderating Effects of Supportive Parenting

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<th>Outcomes</th>
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<th>Standard Error</th>
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<tr>
<td>Supportive Parenting – L</td>
<td>Marital Conflicts</td>
<td>Physical Complaints</td>
<td>.15 (.13)</td>
<td>.12</td>
<td>1.96</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.58</td>
</tr>
<tr>
<td>Supportive Parenting – H</td>
<td>Marital Conflicts</td>
<td>Physical Complaints</td>
<td>-.08 (-.07)</td>
<td>.10</td>
<td>1.83</td>
<td></td>
</tr>
</tbody>
</table>

Note. L= the low group (n = 62); H= the high group (n = 69). Unstandardized coefficient in parentheses. *p<.05; **p<.01
Table 5. Gender Difference of Health Problems

<table>
<thead>
<tr>
<th>Domain</th>
<th>Predictors (year)</th>
<th>Outcomes (year)</th>
<th>Grouping</th>
<th>Standardized Coefficient</th>
<th>Intercept</th>
<th>$\Delta \chi^2$ difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-domain Continuity</td>
<td>Depression (1992)</td>
<td>Depression (1994)</td>
<td>Male</td>
<td>.47*** (.57)</td>
<td>.55</td>
<td>5.00*</td>
</tr>
<tr>
<td>(Homotypic Continuity)</td>
<td></td>
<td></td>
<td>Female</td>
<td>.22* (.21)</td>
<td>.82</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Group: Male (n= 189), Female (n = 218). Unstandardized coefficient in parentheses

*p < .05; ***p < .001
Table 6. Gender Difference of the Hypothesized Path Model

<table>
<thead>
<tr>
<th>Predictors (year)</th>
<th>Outcomes (year)</th>
<th>Grouping</th>
<th>Standardized coefficients</th>
<th>Standard errors</th>
<th>Δχ² difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Family</td>
<td>Anxiety(1991)</td>
<td>Male</td>
<td>.09</td>
<td>.10</td>
<td>.42</td>
</tr>
<tr>
<td>Economic</td>
<td></td>
<td>Female</td>
<td>.15</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>.29</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>Physical</td>
<td>Male</td>
<td>.17</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Complaints(1991)</td>
<td></td>
<td>Female</td>
<td>.35</td>
<td>.10</td>
<td>2.11</td>
</tr>
<tr>
<td>Marital</td>
<td>Marital</td>
<td>Male</td>
<td>.08</td>
<td>.03</td>
<td>8.46**</td>
</tr>
<tr>
<td>Conflicts(1991)</td>
<td></td>
<td>Female</td>
<td>.32</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>Supportive</td>
<td>Supportive</td>
<td>Male</td>
<td>-.40</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>Parenting(1991)</td>
<td>Parenting</td>
<td>Female</td>
<td>-.17</td>
<td>.10</td>
<td>.45</td>
</tr>
<tr>
<td></td>
<td>Anxiety(1991)</td>
<td>Male</td>
<td>-.02</td>
<td>.26</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>.01</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression(1991)</td>
<td>Male</td>
<td>-.02</td>
<td>.18</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>-.03</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical</td>
<td>Male</td>
<td>.03</td>
<td>.24</td>
<td>.05</td>
</tr>
<tr>
<td>Complaints(1991)</td>
<td></td>
<td>Female</td>
<td>.08</td>
<td>.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supportive</td>
<td>Male</td>
<td>-.25</td>
<td>.21</td>
<td>.01</td>
</tr>
<tr>
<td>Parenting(1991)</td>
<td>Parenting</td>
<td>Female</td>
<td>-.26</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety(1991)</td>
<td>Male</td>
<td>-.32</td>
<td>.30</td>
<td>.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>-.25</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression(1991)</td>
<td>Male</td>
<td>-.36</td>
<td>.30</td>
<td>.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>-.20</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical</td>
<td>Male</td>
<td>-.07</td>
<td>.25</td>
<td>.75</td>
</tr>
<tr>
<td>Complaints(1991)</td>
<td></td>
<td>Female</td>
<td>.16</td>
<td>.13</td>
<td></td>
</tr>
</tbody>
</table>

Note.  *p<.05;  **p<.01
Table 7. Univariate Growth Curves Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intercept Mean</th>
<th>Intercept Variance</th>
<th>Slope Mean</th>
<th>Slope Variance</th>
<th>Chi-Square (df)</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety (1991-1994)</td>
<td>1.39*** (62.96)</td>
<td>.15*** (8.64)</td>
<td>.01(-.12)</td>
<td>.02*** (3.36)</td>
<td>2.59(1)</td>
<td>.99</td>
</tr>
<tr>
<td>Depression (1991-1994)</td>
<td>1.52*** (57.14)</td>
<td>.23*** (9.17)</td>
<td>.03*** (3.30)</td>
<td>.02*** (3.17)</td>
<td>.26(1)</td>
<td>1.00</td>
</tr>
<tr>
<td>Physical Complaints (1991-1994)</td>
<td>1.95*** (104.27)</td>
<td>.10*** (8.81)</td>
<td>.03*** (3.44)</td>
<td>.01** (3.20)</td>
<td>18.18(1)</td>
<td>.94</td>
</tr>
</tbody>
</table>

Note. t-ratios in parentheses. **p<.01; ***p<.001
Early Depression
Early Anxiety (t1)
Moderating variable
- Gender, Supportive Parenting

Control variable
- Parental Depression
- Parental Education

Figure 1. Theoretical Model
Note. Double arrows depict hypothesized moderating effects
The Study Time Line

Moderating variable
- Supportive parenting, Gender

Control variable
- Parental Education
- Parental Depression

Cross-lagged Model

Figure 2. Operationalized Model

Note. DEP=Depression; ANX=Anxiety; Double arrows depict moderating effects of supportive parenting
Direct effect: \( c' \)

Indirect effect: \( ab \)

Total effect(\( c \)): \( ab + c' \)

\( a (S_a) \)

\( b (S_b) \)

\( c (c') \)

\( X \)

\( M \)

\( Y \)

Figure 3. Basic Mediational Structure for Sobel Test

*Note.* \( a, b, \) and \( c \)= unstandardized regression coefficient; \( c' \)= unstandardized regression efficient after controlling for \( M \); \( S_a, \) and \( S_b \)= standard error of \( a \) and \( b \)
Figure 4. Direct Influence of Chronic Family Economic Hardship on Adolescents’ Health Problems

Note. Standardized regression coefficients, t-values in the parentheses; CFEH = Chronic Family Economic Hardship; *p<.05; **p<.01; ***p<.001
Figure 5. Indirect Influence of Chronic Family Economic Hardship on Adolescents’ Health Problems through Marital Conflict

Note. Standardized regression coefficient; t-values in the parentheses; CFEH = Chronic Family Economic Hardship; MC = Marital Conflict; **p<.01; ***p<.001
Figure 6. Indirect Influence of Chronic Family Economic Hardship on Adolescents’ Health Problems through Supportive Parenting. 

Note. Standardized regression coefficient; t-values in the parentheses; CFEH = Chronic Family Economic Hardship; SP = Supportive Parenting; **p<.01; ***p<.001
Figure 7. Indirect Influence of Marital Conflict on Adolescents’ Health Problems through Supportive Parenting

Note. Standardized regression coefficient; t-values in the parentheses; CFEH=Chronic Family Economic Hardships; MC = Marital Conflict; SP = Supportive Parenting; *p<.05; **p<.01; ***p<.001

Control variable
- Parental Depression
- Parental Education

CFI= .90
RMSEA= .06
TLI= .89
Figure 8. The Operationalized Associations of the Current Study

Note. Standardized regression coefficient; DEP=Depression; ANX=Anxiety; \(^*_{p<.10}\); \(^*_{p<.05}\); \(^*_{p<.01}\); \(^***_{p<.001}\)
Figure 9. Supportive Parenting Moderation of Marital Conflict on Adolescents’ Depression

Note. Unstandardized coefficient
Figure 10. Moderating Effect of Gender Difference on Adolescents’ Health Problems

Note. Standardized regression coefficients, Female in the parentheses. All comorbidities are significant at the .001 level

* p<.10;  * p<.05;  ** p<.01;  *** p<.001
Figure 11. Gender Difference on the Associations among Chronic Family Economic Hardship, Marital Conflicts, Supportive Parenting, and Adolescents’ Health Problems. Note. Standardized regression coefficients; Female in the parentheses; CFEH = chronic family economic hardships; MC = Marital Conflicts; SP = Supportive Parenting, \( p < .05 \); \( \star \star p < .01 \); \( \star \star \star p < .001 \)
**Figure 12.** Gender Difference of Chronic Family Economic Hardship on Depression

*Note.* Unstandardized coefficient.
Figure 13. Hypothesized Interlocking Model. Note. Standardized coefficients; \( ^* p<.10; ^*^* p<.05; ^*^*^* p<.01; ^*^*^*^* p<.001 \)
REFERENCES


