

**RISK AND PROMOTIVE FACTORS FOR CHINESE ADOLESCENT
PROBLEM BEHAVIORS:**

A RESILIENCY APPROACH

by

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Abstract

The current dissertation aimed to test risks and promotive factors for problem behaviors among Chinese adolescents based on a resiliency perspective. The first study tested the risk effects of stress and the modifying effect of John Henryism on psychological well-being and problem behaviors. The second study tested the risk effect of negative peer influence and the modifying effect of parental support on psychological well-being and problem behaviors. The third study tested the effects of cumulative risks and promotive factors across the individual, family, peer and community domains. A cross-sectional survey using self-reported questionnaires was conducted in two urban cities in China: Beijing and Xian. Participants in the study include 1356 students in Grades 7 to 12 from middle and high schools. Structural equation modeling (SEM) analyses were conducted to test the conceptual models in the three studies.

After controlling for demographics, analyses results of all three studies indicated good fit to the data by each of the models. Stress was associated with decreased self acceptance, increased mental distress among adolescents. Higher degree of mental distress was associated with increased delinquent behaviors and substance use. The results also indicated that individuals who have higher John Henryism reported more substance use as a result of mental distress.

In the second study, negative peer influence was associated with increased delinquent behaviors, substance use, and increased psychological distress. The association between psychological distress and substance use became non-significant for

adolescents with high parental support compared to adolescents with low parental support. Yet, the relationship between negative peer influence and psychological distress was stronger among adolescents who reported higher parental support.

The findings in the third study indicated that higher cumulative risk was associated both directly and indirectly with more problem behaviors. The promotive factors provided compensatory effects through decreased likelihood of psychological distress. Children with more promotive factors also tend to report higher self acceptance. Promotive factors were also found to buffer the negative influence of cumulative risks on delinquency. Yet, the relationship between cumulative risks and psychological distress is stronger for children with more promotive factors than those with less promotive factors.

CHAPTER I

Introduction

A. SPECIFIC AIMS

The current study tests risk and promotive factors for cigarette smoking, alcohol use, non-violent delinquency and violent behavior among Chinese adolescents. The three papers are based on behavioral and developmental theories (e.g., Transactional Model for Stress and Coping, Social Development Model) to guide the hypotheses about risk and protective effects. A resiliency perspective (Fergus & Zimmerman, 2005) is applied to study the risk effects of stressors on Chinese adolescent problem behaviors. As a counter part to risk factors, promotive factors are the individual assets and contextual resources that compensate for or protect against the negative risk effects in health development (Ostaszewski & Zimmerman, 2006). My main goal is to identify the promotive factors that may moderate the adverse effects of risk exposure on problem behaviors in individual, family, peers, and community domains among Chinese adolescents. Chinese adolescents are under the influence from both traditional Chinese cultural values and the growing impact of western cultures in China. The study examines the conceptual models brought forth in western theories to identify potential promotive factors for Chinese adolescents when risks are present. The current study is one of the first few studies on delinquency and substance use among mainland Chinese adolescents that is theory-grounded. Different from previous research that focuses on risks, findings from this study

have unique contributions on the knowledge base of adolescent resilience and promotive factors. The findings will hopefully provide implications on adapting theoretical models in Chinese contexts and inform interventions to promote positive factors in the developmental process of Chinese adolescents.

B. BACKGROUND AND SIGNIFICANCE

China is culturally collective, economically capitalistic, and politically communistic, contrasting sharply with western countries (Auerbach, Abela, Zhu, & Yao, 2007). Traditional Chinese culture for example, emphasizes collaboration, courteousness, modesty, interpersonal harmony and hierarchical relationships. Yet, western culture often values independence, competition, individual achievement, and equality of relationships (Liu et al., 2000; Liu, Tein, & Zhao, 2004; Sue & Sue, 1999). Moreover, the importance of interconnectedness and the fundamental role of the extended family have been marked to influence an individual's life in Chinese society (Auerbach, et al., 2007). Such a unique composition of issues for Chinese youths and the differences from a Western context may be reflected in the socioecological system of adolescent development, including prevalence of psychological distress and problem behaviors, as well as differences in protective and risk factors in both societies. Thus, models of psychopathology derived from Western societies cannot be extended to China without modification (Auerbach, et al., 2007). On the other hand, China is in the midst of rapid modernization and change in social relations (L. Wong & Mok, 1995), and the role of the extended family has begun to diminish (Turbin et al., 2006). The consequences include

an emerging youth culture that is rejecting traditions and authoritative cultural values while emphasizing personal autonomy (Unger et al., 2002) and individual values (Wang, 2006). Moreover, researchers identified many similarities in promotive and risk factors of problematic behaviors between Chinese and U.S. adolescents (Jessor et al., 2003). Thus, Chinese adolescents also have begun to adopt more coping strategies that are more typical in Western society, making models of coping and resiliency developed within the Western cultural context increasingly relevant to Chinese adolescence (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002). There is, therefore, an emerging need of studies that can address the influence from both traditional cultural values and the newly growing social trends on adolescent development in China. One feasible approach is to examine the conceptual models brought forth in western theories and then to identify cultural differences for necessary adaptations in the Chinese contexts.

With the marked increases in delinquent-type behaviors (Greenberger, Chen, Beam, Whang, & Dong, 2000; D. S. W. Wong, 2001) and cigarette smoking (Hesketh, Lu, Jun, & Mei, 2007; G. Yang et al., 1999; G. H. Yang, Ma, Liu, & Zhou, 2005) among Chinese adolescents, increased emphasis is placed on examining potential susceptibility, promotive factors and their mechanisms affecting adolescents' psychological well-being and problem behaviors. Few researchers, however, have employed an integrative theoretical model to study risk and protective factors among Chinese adolescents from a resiliency perspective. Furthermore, most previous studies on adolescent problem behaviors in China have focused on individual behaviors such as smoking, alcohol consumption, and drug use (Arthur, et al., 2002) rather than looking at multiple problem behaviors. Adolescent problem behaviors, however, are shaped by a number of

developmental and environmental factors, including age, adverse family environments, negative peer groups, availability and financial means (Jessor, Donovan, & Costa, 1996). Hence, adolescents are often vulnerable to an array of problem behaviors, and the engagement in any given type of problem behaviors increases the likelihood of engaging in other types of problem behaviors (Arthur, et al., 2002; Graber & Brooks-Gunn, 1995; Jessor, 1993). The current study, therefore, investigated an array of problem behaviors by examining risk and promotive factors. Previous studies of U.S. adolescents have also demonstrated the connections between psychological well-being and problem behavior (Byrne & Mazanov, 2001; Fergus & Zimmerman, 2005; Griffin, Botvin, Scheier, Epstein, & Doyle, 2002; Repetto, Caldwell, & Zimmerman, 2005; Schmeelk-Cone & Zimmerman, 2003) and the protective effects of social support and social influences on adolescent problem behaviors based on the resiliency perspective in the Western context (Caldwell, Sellers, Bernat, & Zimmerman, 2004; Fleming, Kim, Harachi, & Catalano, 2002; Lloyd-Richardson, Papandonatos, Kazura, Stanton, & Niaura, 2002; Scheier, Botvin, & Miller, 2000; Wills, Yaeger, & Sandy, 2003; Xue, Zimmerman, & Caldwell, 2007; Zimmerman, Bingenheimer, & Notaro, 2002; Zimmerman, Salem, & Maton, 1995; Zimmerman, Steinman, & Rowe, 1998). Informed by the stress-coping theory and the social development theory, the current study aimed to define the risk and promotive factors of problem behaviors among Chinese adolescents. Three theory-informed conceptual frameworks across three papers were examined within the current Chinese cultural context in this study.

C. CONCEPTUAL FRAMEWORK

The aims of these three studies were to identify risk and promotive factors of Chinese adolescent problem behaviors by applying the ecological theory, the social development theory, and the stress-coping theory. The overall conceptual frameworks of the three papers integrate factors in individual, family, peers, and community domains. A resiliency perspective, moreover, was adopted throughout the three papers to understand the mechanisms of how Chinese adolescents overcome negative effects of risk exposure.

Transactional Model of Stress and Coping

My study draws on the stress-coping model to understand the mechanism of stress and coping among adolescents and its effect on behavioral outcomes. The Transactional Model of Stress and Coping is a model for evaluating the processes of coping with stressful events, also called stressors. The model suggested that stressful experiences are interpreted as transactions between the person and the environments while encountering stressful events (Wenzel, Glanz, & Lerman, 2002). Stressors have a negative effect on psychological well-being, which in turn is associated with negative outcomes, while coping resources help protect against the deleterious effects of stressors (Lazarus & Folkman, 1984). Stress does not affect all people equally because the effects of an external stressor may be mediated by the person's assessment of the stressor and the psychological, social, and cultural resources at his or her disposal (F. Cohen, 1984; Lazarus & Folkman, 1984; Wenzel, et al., 2002). I draw on a transactional model of stress and coping to understand Chinese adolescence's adjustment outcomes when exposed to stressors. One aim in this study was to identify protective factors that mediate

and moderate the effect of stressful experience on teenagers. Therefore, in the first model, I examined the stress and coping process among Chinese adolescents within the individual level. The direct and indirect effects of stressors on a child's internalizing outcomes (e.g. mental health, self acceptance) and externalizing outcomes (e.g. delinquencies, substance use) were measured using structural equation modeling analyses.

Ecological Theory

The Ecological Theory (Bronfenbrenner, 1979, 1989) suggests the need to examine individual, family, and neighborhood influences on individuals' development. The ecological perspective emphasizes the nature of people's transactions with physical and sociocultural surroundings (Stokols, 1992). For a teenager's development, the ecological theory has also been applied to study the reciprocal interactions between a child, immediate environment (family, school, and peers) and the larger social environment (community, society, culture) (Bronfenbrenner, 1986; Ostaszewski & Zimmerman, 2006). Yet, most previous studies on problem behaviors among Chinese adolescents were primarily focused on individual characteristics. For example, Deng et al. conducted a study of the personality traits and related factors of teen criminals (Y. Deng, Dou, & Zhang, 2000) and Zhang reported a relationship between official offense status and low self-esteem among Chinese youth (Zhang, 2003). Few researchers address family influences on Chinese adolescent problem behaviors (S. Deng & Roosa, 2007) and even a lack of theoretical-based research addressing contextual factors. Within China contexts nowadays, families are under the influences of traditional values such as *filial piety* (Chinese: 孝, xiào) (e.g. children's general pattern of obedience to parents) and

contemporary western beliefs (e.g. equal respect between parents and children) (S. Deng & Roosa, 2007). The current study is based on the idea of the cross-context influence on adolescent development to identify multi-level risks and promotive factors of a teenager's problem behaviors. Therefore, to better understand the resilience mechanisms among Chinese teenagers, constructs addressing adolescents' psychological factors and social environments were included to examine factors on the individual level, the family and peer level, and the community level, respectively.

Social Development Model

The Social Development Model (SDM) also supports the rationale of including multiple-level factors (e.g. individual, family, peer, and community level) of problem behaviors in the current study. The concept of social influence and social integration is borrowed from the SDM (Hawkins & Weis, 1985), a theoretical framework integrating the Social Control Theory and the Social Learning Theory. The concept of social influences in SDM suggests the importance of positive and negative role models. Social integration in SDM refers to attitudes, behaviors, and social context that influence an individual's perceived social bonds to the community. The SDM proposes that family, schools, peers, and community influence adolescents' behavior successively (Hawkins & Weis, 1985). A deviance is made possible by weak bonding with prosocial groups and weak commitment to conventional society (Hirschi, 1969). Adolescents, therefore, are less likely to engage in anti-social behaviors when they are bonded to persons or institutions that support conformity to the rules of society (Revera & McCorry, 2007). The SDM summarizes that strengthening bonds to prosocial others and prosocial

participation may protect youth against the development of problem behaviors (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996; Hawkins & Weis, 1985). Deng and Roosa applied the SDM and examined family influences with 734 7th and 9th grade Chinese students (S. Deng & Roosa, 2007). The results confirmed the potential protective effect of providing adolescents with opportunities in conventional activities from deviant beliefs and delinquency behaviors. Some differences, especially gender differences of the effect of parent-adolescent interactions, between the study and previous SDM studies with western samples were also reported (S. Deng & Roosa, 2007). Further studies addressing the cross-cultural differences of the mechanisms of peer, family, and neighborhood factors of adolescents' problem behaviors are then suggested. Informed by the SDM, my second study included peer influence and parental support as two important social factors that influence adolescent social development. Furthermore, in my third paper, all promotive factors and risk factors at individual, family/peer, and neighborhood levels were then integrated into the socioecological model for adolescent problem behavior to examine the mechanism within the comprehensive framework.

Resilience Perspective

My hypotheses for all three studies were framed with a resiliency perspective in an effort to understand how individual assets and environmental resources may operate to offset or moderate risks for problematic behaviors among Chinese students. Unlike traditional risk-focused theories (Blitstein, Murray, Lytle, Birnbaum, & Perry, 2005), the resilience theory is a framework that emphasizes the positive factors that counteract risks for adolescent problem behaviors (Fergus & Zimmerman, 2005). As summarized by

Fergus and Zimmerman (2005), “Resilience refers to the process of overcoming the negative effects of risk exposure, coping successfully with traumatic experiences, and avoiding the negative trajectories associated with risks.” (p. 399). Resilience, therefore, requires the presence of both risks and promotive factors that either facilitate positive outcomes, or reduce or neutralize the negative effects of risks (Fergus & Zimmerman, 2005). Promotive factors are a counterpart to risk factors and may be either assets or resources that can help adolescents reduce or avoid the negative outcomes (Beauvais, 1999). Assets refer to positive factors that an individual possesses internally, such as competence, coping skills, and self-efficacy. Resources, however, are external factors that help the individual to overcome risks. These beneficial resources can include parental support, positive peer influence, role models, or school activities.

Two resilience models — compensatory and protective — were applied in the current study to explain how promotive factors may operate to protect teens from the effects of risk exposure on behavioral outcomes. The compensatory model implies that promotive factors can counteract, or compensate for, the effect of risk factors (Ostaszewski & Zimmerman, 2006). The protective model suggests that promotive factors can buffer, or moderate, the negative effects of exposure to risk. In other words, the relationship between risks and negative outcomes may be weakened as promotive factors increase. Researchers have reported empirical evidence to support the compensatory and the protective effects of promotive factors on risk factors associated with substance use and other adolescent problem behaviors (Fergus & Zimmerman, 2005; Jessor, Turbin, & Costa, 1998; Newcomb & Felix-Ortiz, 1992; Simons-Morton, Hartos, & Haynie, 2004). The goal of my study was to understand the resiliency process among

Chinese adolescents and identify factors that can help successful coping and adjustment despite risk exposures.

Ecological theory, Social Development Model, and Transactional Model of Stress and Coping guide my three studies. The resiliency perspective serves as the basis of each model to understand positive adjustment in the face of risk exposure among Chinese adolescents. The proposed study is one of the first of its kind to test among adolescents in China the mediating and moderating effects of psychological well-being and the resilience mechanisms on problem behaviors. The results may extend the knowledge base of teen development by examining the resiliency theory in a sample of Chinese adolescents that experience a very different social and structural context than their U.S. counterparts. The knowledge gained from the proposed studies may also inform future interventions to help teens through stressful experiences and prevent the development of negative psychological outcomes and problem behaviors.

D. RESEARCH SAMPLE AND MESURES

Samples and Procedures

Participants in the study include 1357 students in Grades 7 to 12 (i.e., 13-21 years old) from middle and high schools in Beijing and Xian. Experienced researchers in Beijing and Xian helped select participating schools based on characteristics such as diverse size, test scores, and social status. Youth were asked to complete questionnaires in school during a group administration in classrooms. Chinese research staff administered the data collection including following UM IRB protocol, and student assents were obtained before the survey was administrated. Schools participating in the survey study received a small stipend, but individual youth did not.

A questionnaire developed for the Flint Adolescent Study (e.g. Ostaszewski & Zimmerman, 2006) was adapted for the current study. The revisions of the questionnaire focused on culturally relevant terminology and contexts, and eliminated less relevant measures (e.g., sibling influences). A Chinese researcher translated the questionnaire into Chinese and then a Chinese student translated it back into English. The U.S. team reviewed the translation and back-translation for accuracy.

Measures

Perceived Stress ($\alpha=.77$). The stress level was measured by Cohen's Perceived Stress Scale (PSS) (S. Cohen, Kamarck, & Mermelstein, 1983; S. Cohen & Williamson, 1988). The 14-item scale is the most widely used psychological instrument for measuring the perception of stress. It measures the degree to which situations in one's life are appraised as stressful. Items were designed to assess how unpredictable, uncontrollable, and overloaded individuals perceived their daily lives. Coefficient alpha reliability for the PSS was .84 to .86 among U.S. college student samples. Test-retest correlations were .55 to .85 (S. Cohen, Kamarck, & Mermelstein, 1983).

Active Coping ($\alpha=.66$). The active coping was measured using the John Henryism Scale for Active Coping, or JHAC12, developed by James (James, 1996; James, Hartnett, & Kalsbeek, 1983). John Henryism originally refers to a strong behavioral predisposition among African Americans to employ high effort coping when encountering environmental stressors and difficulties to success (James, 1994; James, et al., 1983). The 12-Item, 5-point Likert Scale has been extended to research with community samples of Chinese and Indian immigrants in the U.S. (Haritatos, Mahalingam, & James, 2007). In the current study, a shorter version of the scale adapted from JHAC12 was used for our

target population. Five items were adopted to measure the degree of active coping among Chinese adolescents when experiencing stressful events.

Problem behaviors. We ask about the frequency of substance use (e.g. cigarette smoking and alcohol use) in the last 12 months and during the past 30 days. Both smoking and alcohol use were integrated into single-item scales. The ratings of smoking were provided on a 5-point scale ranging from 1 = never smoke to 5 = regularly smoking now. The rating of alcohol use ranged from 1 = never to 14 = 40 or more times during the last 30 days. The frequency of violent behavior ($\alpha=.77$) (e.g. school fights, weapons use, hurt someone badly) was measured with a 5-item scale, with 5 points in each item. Similarly, the frequency of non-violent delinquent behavior ($\alpha=.88$) (e.g. stealing, arson, damage school property) was measured with an 8-item, 5-point scale.

Psychological Distress. Depression ($\alpha=.91$) and anxiety ($\alpha=.89$) symptoms were each measured with six items (Derogatis & Spencer, 1982). The 5-point rating scales ask youth to indicate how much they were bothered by the symptoms in the past week.

Self Acceptance ($\alpha=.73$). We used three separate questions, each with a 5- point scale, to assess self acceptance (Newcomb, Huba, & Bentler, 1986),. Questions include how happy or unhappy the student is with his/her life, how pleased or discouraged they are, and how much the student regards himself/herself as a failure or a success. The higher the score indicates the more self acceptance an individual has.

Negative Peer Influence ($\alpha=.85$). Negative peer influences were measured by 10 items, each with a 5- point scale, that were included in sub-scales such as friends who use alcohol (Stacy, Newcomb, & Bentler, 1992), friends who use drugs (Dielman, Butchart,

& Shope, 1993), friend's aggressive or delinquent behavior, and friends who cut/suspended/dropped out of school (Ostaszewski & Zimmerman, 2006).

Parental Support ($\alpha=.87$). The promotive factor of parental support is measured by the perceived support of a father and the perceived support of a mother in daily life (Procidano & Heller, 1983). A total of 10 items, with a 5-point scale in each item, were included.

Friends' Support ($\alpha=.87$). The friends' support is measured by the perceived support of friends such as perceived emotional support, friends help solve problems, moral support. A total of 5 items, with a 5-point scale in each item, were included (Procidano & Heller, 1983).

Parental monitoring ($\alpha=.88$). The parental monitoring construct was assessed with 6 items, each with a 5-point Likert scale (Moos & Moos, 1981), that asked the adolescents how often the parents know where they were, what they were doing, and what friends they have.

Antisocial influences. These measurements include 4 subscales (Moos & Moos, 1981): misdeeds/misconducts (e.g. threats to hurt other people, or carry a knife) by parents ($\alpha=.85$) in a 4-item, 5-point scale; alcohol and tobacco use by parents ($\alpha=.70$) in a 3-item, 5-point scale; misdeeds/misconducts (e.g. threats to hurt other people, or carry a knife) by non-familial adults in life of student ($\alpha=.81$) in a 4-item, 5-point scale; alcohol use by non-familial adults in life of student ($\alpha=.76$) in a 3-item, 5-point scale.

School bonding. This scale consists of questions that pertain to the level of attachment and commitment to school (Hawkins et al., 1992). In particular, positive attitude of students toward school and classes was measured in a 5-item, 5-point scale ($\alpha=.78$).

Exposure to community violence. Two scales were included to ask how often have the student been victimized (3 items, $\alpha=.71$) or witnessed of violence (2 items, $\alpha=.73$) in the community in the past 12 months.

Neighborhood Monitoring ($\alpha=.82$). Three questions were included to ask how often the following is true to the student: “if I were to do something wrong and neighbors or other adults in my community were to see, they would probably tell my parents”, “if I were smoking cigarettes and a neighbor were to see, they would probably tell my parents”, and “if I were to get drunk or high and a neighbor were to see, they would probably tell my parents.” Each item included a 5-point scale from “definitely not” to “definitely yes.”

Table 1.1 presents a comparison of participants’ gender, the means and standard deviations of dependent variables of the two cities. Independent-samples T Tests were conducted for the variables between two cities to see if there was a significant difference. Although a significant difference was shown in alcohol use between the two cities, the difference was minimal and other variables were consistent without differences. Another significant difference was found in the school grades between the two cities.

Table 1.1. Means and Standard deviations of key variables by cities.

Variables	Total (n=1357)	Beijing (n=823)	Xian (n=534)
Male	n=650 (48%)	n=379 (46.1%)	n=271 (51.0%)
Female	n=703 (52%)	n=443 (53.9%)	n=260 (49.0%)
High School*	n=752 (55.6%)	n=526 (35.9%)	n=226 (57.5%)
Middle School*	n=601 (44.4%)	n=295 (64.1%)	n=306 (42.5%)
Anxiety	1.75 (.85)	1.75 (.87)	1.76 (.82)
Depression	1.79 (.87)	1.77 (.89)	1.83 (.84)
Self Acceptance	3.35 (.86)	3.32 (.85)	3.38 (.86)
Non-violent Delinquency	1.09 (.35)	1.10 (.40)	1.09 (.24)
Violent Behaviors	1.12 (.39)	1.12 (.41)	1.13 (.36)
Smoking (scale range 1-5)	1.27 (.72)	1.25 (.72)	1.29 (.74)
Alcohol use(scale range 1-14)*	2.68 (2.33)	2.55 (2.37)	2.87 (2.25)

*There is a significant difference between the two cities at $p<.01$ (chi-square= 60.93)

** There is a significant difference between the two cities at $p<.05$ ($t= -2.40$, $p=. 02$).

E. RESEARCH PLAN AND HYPOTHESES

In each model proposed, I analyzed promotive factors that would help avoid negative outcomes among Chinese adolescents exposed to risk factors. The aim of the three integrated papers was to understand healthy development within the individual, family and peer, and socioecological levels in spite of risk exposure.

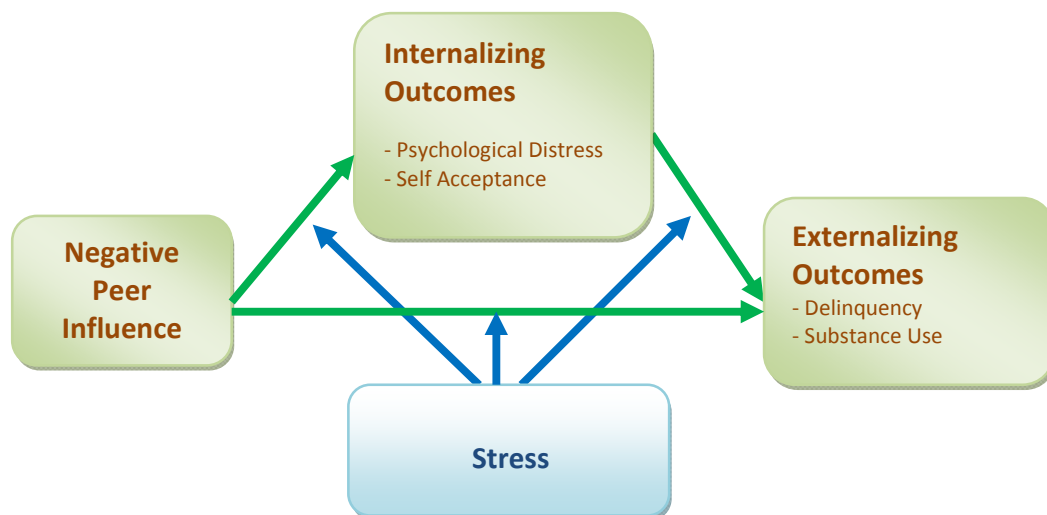
Paper 1: Individual Level Factors on Problem Behaviors

First, I tested the connections between stress, psychological well-being, and Chinese adolescents' problem behaviors. The Transactional Model of Stress and Coping suggests that stressful experiences have a negative effect on psychological well-being, which in turn is associated with negative outcomes (Lazarus & Folkman, 1984), while positive coping helps protect against the deleterious effects of stressors. The first paper draws on this theory to guide the hypothesis about the *direct* risk effects of stressors on Chinese adolescent externalizing outcomes (e.g. non-delinquent behaviors, violent behaviors, cigarette and alcohol use) and *indirect* effects through internalizing outcomes (e.g. mental distress and lower self acceptance). The stress level was measured by five items pulled out from Cohen's Perceived Stress Scale (PSS). The active coping was measured using the John Henryism Scale for Active Coping developed by James (James, 1996). As shown in **Figure 1.1**, active coping was tested as a modifying factor that mitigates the direct and indirect effect of stress on delinquencies and substance use. In other words, the link between stress and problem behaviors is hypothesized to be weaker when a child has a high level of active coping, compared to those who with a low level of active coping. Similarly, the mediating effect of internalized outcomes (e.g. poor mental

health and low self acceptance) on stress and problem behaviors may also be reduced for youth with a high level of active coping.

In the first model, active coping can be viewed as an individual-level protective factor in resilience framework that may operate in several ways to influence outcomes. Researchers have identified, for example, protective-stabilizing and protective-reactive models (Luthar, Cicchetti, & Becker, 2000). When a protective factor helps to neutralize the effects of risks, there is a protective-stabilizing effect of the factor (Fergus & Zimmerman, 2005). In other words, with the presence of a protective factor, the effect of a certain risk factor on negative outcomes disappears. Among youth who experience high levels of stress, for example, those with a high level of active coping (a protective factor) might report no internalizing psychological distress or externalizing problem behaviors, whereas those with a low level of active coping might report more negative outcomes.

Figure 1.1 Individual coping model



When a protective factor weakens, but not completely removes, the relationship between a risk and an outcome, it is called protective-reactive model (Luthar, et al., 2000). In this study, it is hypothesized that the effect of stress on negative psychological outcomes and behavioral outcomes will be decreased with the presence of active coping among adolescents. That is, among youth who experience high levels of stress, a high level of active coping (a protective factor) might mitigate the negative effect of stress on internalizing and externalizing outcomes.

Paper 2: Family and Peer Level Factors on Problem Behaviors

Paper 2 examined a conceptual model of family and peer influence on the psychological wellbeing and problem behaviors among Chinese adolescents. Other than assets such as coping skills that reside within the individual, contextual factors are also hypothesized to help reduce the negative effects of risks. Family connectedness, for example, was found to compensate for the risk effect of low school connectedness on cigarette smoking. (Lloyd-Richardson, et al., 2002). Parental-child mutual attachment has also been found to mitigate the negative effect from factors such as tolerance of deviance and sensation seeking, leading to less marijuana use and delinquency (Brook, Brook, De La Rosa, Whiteman, & Montoya, 1999). In Hong Kong, Shek (1997) investigated the effect of family environment on secondary school students in a Chinese context. With a sample of 365 students, he found evidence indicating that family functioning was related to higher amount of adolescent psychological well-being, better school adjustment and less problematic behavior. A more positive perception of family functioning was related to better adolescent adjustment (Shek, 1997). Yet, few researchers have studied

adolescents in Mainland China addressing problematic behaviors and their association with peer and family influence.

The relationship between peer influences and risky behaviors has also been documented. Chen et al. (1988), for example, reported that peer sanctions (peer approval) of misconduct were correlated with misconduct among Chinese American adolescents (Chen, Roberts, & Aday, 1998). Results of previous studies of family functioning outside Mainland China, however, are not consistent or comparable because the cultures and contexts remained quite different across Chinese people in Hong-Kong, Taiwan, and Mainland China. Hong-Kong, for example, is considered more Westernized and runs on economic and political systems that are different from those in Mainland China due to the historical background that Hong-King has been the center of trade across Asian nations and was governed by the British. Studies of family and peer influences on Mainland Chinese youth, however, are limited. In particular, little is known about the mechanisms of stress coping, peer influence, and their associations with mental health and behavior problems among adolescents in Mainland China.

Figure 1.2 Peer and family influence model

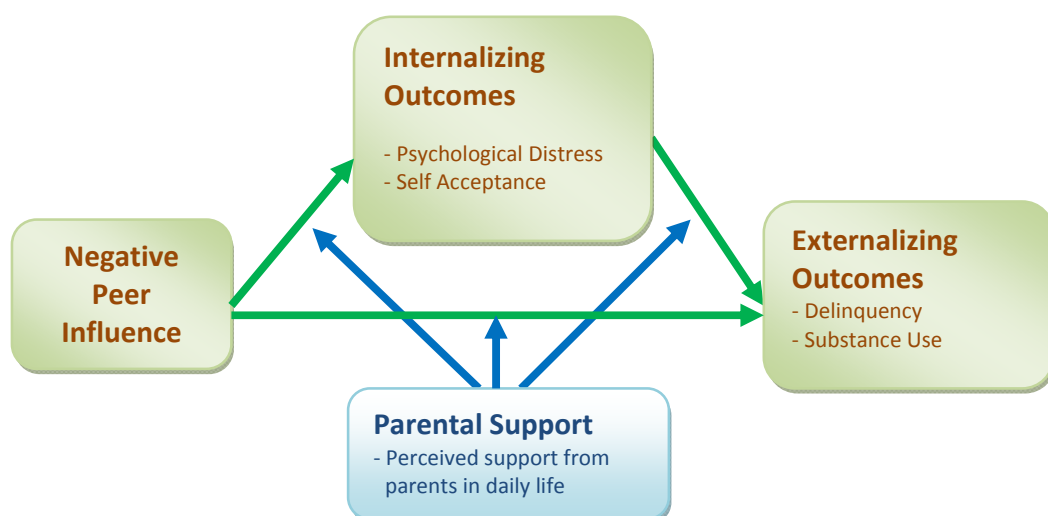


Figure 1.2 presents the model that guides my study of a social influence model to explain problem behaviors among Chinese adolescents. The risk factor (e.g. negative peer influence) is hypothesized to have both a *direct* effect on adolescent externalizing outcomes (e.g. non-violent behaviors, violent behaviors, cigarette and alcohol use) and an *indirect* effect that is mediated by internalizing outcomes (e.g. depression, anxiety, and low self acceptance). In other words, a child with more exposure to negative peer influences may be at higher risk of having poor mental health and low self acceptance. The negative internalizing outcomes then increase the risk of engaging in problematic behaviors among these adolescents. Moreover, the more a child is exposed to negative peer influences, such as aggressive behaviors of friends or friends using alcohol, the higher risk he/she may engage in problematic behaviors.

Parental support as a protective factor, also viewed as an essential coping resource among Chinese adolescents is expected to offset or moderate the deleterious effects of the risk factor. That is to say, for teens with a high level of parental support, the correlation between risk exposure to negative peer influence and negative health outcomes may be weaker compared to those with a low level of parental support. Negative peer influences were measured by friends who use alcohol (Stacy, et al., 1992), friends who use drugs (Dielman, et al., 1993), friend's aggressive or delinquent behavior, and friends who cut/suspended/dropped out of school (Ostaszewski & Zimmerman, 2006). Parental support was measured by 10 items assessing perceived support of the father and mother in daily life (Procidano & Heller, 1983). Measures of internalizing and externalizing outcomes remain the same as those used in my first paper.

The second paper took a step forward to examine the mechanisms of stress and coping beyond the individual-level factors. It takes into account the impact of family and peers and was based on the SDM and resiliency perspectives. The results of this study may hopefully contribute to the knowledge base of how parental support plays a role in protecting adolescents from the risks of negative peer influence in the Chinese contexts. In a society where family connectedness is highly valued, it would be important to assess how parental support may modify the relationship between risks and both internalizing and externalizing outcomes among the young generation. Findings are of special relevance to youth presenting the additional risk of negative peer influences and hopefully will provide implications on preventive efforts.

Paper 3: Cumulative Factors on Problem Behaviors from the Socioecological Perspective

Drawing on social ecological theory (Bronfenbrenner, 1979; Kumpfer & Turner, 1990) the final paper investigated a Chinese adolescent's development within the system of the interaction between an individual, immediate environment (family, school, and peers), and a larger social environment (community, society, cultural). The model in the third study therefore addressed the factors from the individual level to the social-ecological level in order to examine the cumulative effects of these factors.

In a review of studies of adolescent resiliency, Ostaszewski & Zimmerman (2006) summarized that most of previous research on adolescent resiliency has focused on single risk factors or promotive factors, for example, negative peer influence or parental-child attachment, rather than considering the cumulative effects of multiple factors. Yet, in the

face of a particular constellation of risks or within specific social contexts, a single aspect of promotive factors may not be sufficient to help youth over the effects of multiple risks (Rutter, 1987). Ecological theory also suggests that social contexts may interact to influence children's developmental outcomes (Aber, Gephart, Brooks-Gunn, & Connell, 1997; Bronfenbrenner, 1979). To reflect socioecologic perspectives of successful transitions in the face of risks, some researchers have examined the compensatory and protective effect of promotive factors by developing cumulative measures of risks and promotive factors (Duncan, Duncan, & Strycker, 2000; Jessor, et al., 1998; Newcomb & Felix-Ortiz, 1992; Ostaszewski & Zimmerman, 2006). Fergus & Zimmerman concluded that there were two models of resiliency being identified and described in previous research: the compensatory model (direct effect) and risk-protective model (interaction effect) (Fergus & Zimmerman, 2005; Garnezy, Masten, & Tellegen, 1984). The compensatory model stands for the condition where promotive factors counteract the effects of risk factors. Promotive factors, in other words, may compensate for the effects of risk exposure. The protective model, instead, describes the situation when promotive factors buffer the negative impact of risk exposure. In the protective model, promotive factors are assumed to interact with risks and mitigate, but not eliminate, the negative influence (Ostaszewski & Zimmerman, 2006).

Based on a review of resilience literature, Ostaszewski and Zimmerman (2006) concluded that risk and promotive factors in the empirical studies are most commonly categorized into four domains: 1) individual characteristics (e.g. self-acceptance, coping styles and skills, social skills, academic performance, violence victimization, hopelessness); 2) peer influences (e.g. peer health-related behaviors, friends' support,

friends' positive influence); 3) family relationships (e.g. parent-child relationship, parental support, parental monitoring, family conflicts); and 4) community characteristics (e.g. drug, alcohol, or cigarette availability in the community, availability of after-school activities, community violence) (Ostaszewski & Zimmerman, 2006). The review also suggested that cumulative measures of risk and promotive factors usually consist of several variables within each domain, with a number of indicators ranging from six (Dekovic, 1999) to over twenty (Bowen & Flora, 2002).

My third study addressed individual-level factors, peer influences, family-level factors, and community-level factors. Based on the theories and findings from previous studies, variables from each level will be selected and assigned as either promotive factors or risk factors (Arthur, et al., 2002; Hawkins, Catalano, & Miller, 1992; Kumpfer, Olds, Alexanderson, Zucker, & Gary, 1998; Ostaszewski & Zimmerman, 2006; Petraitis, Flay, & Miller, 1995). Following the procedures for developing cumulative indices that are similar to those used by other researchers (Bowen & Flora, 2002; Dewit, Silverman, Goodstadt, & Stoduto, 1995; Newcomb & Felix-Ortiz, 1992; Ostaszewski & Zimmerman, 2006; Stoddard et al., 2012), I identified the upper 25% of the distribution of each of the variables for promotive factors. The actual cutoff points were assigned as close to the upper 25% threshold as each variable distribution will allow. Each student will be given a score of 1 if the original score was equal to or above the cutoff point, otherwise, a zero will be given. Based on the highly skewed distributions of our data for most of the risk indices (most of the students answered not being exposed to those risks), a different criterion was used to identify students exposed to the risk. In order to identify the students who have been exposed to the risks and maintain the variance of cumulative

risk factors, a decision was made to assign a score of 1 if the original score was equal to or above 2 from a 4-point or 5-point likert scale. Otherwise, a zero was given to students who had never been exposed to a risk (ex. never been a victim of violence or parents never drank alcohol or smoked). Cumulative indices were then computed by summing the promotive and risk factors under each domain, respectively, for each individual. The effect of cumulative risk factors on adolescent externalizing outcomes was hypothesized to be mediated by internalizing outcomes of psychological distress. Cumulative promotive factors are tested in this model with both their compensatory effect and protective effect on internalizing and externalizing outcomes.

Several studies utilizing cumulative measures of risk and promotive factors provide evidence of adolescent problem behaviors. Studies by Dekovic and Jessor et al., for example, supported the compensatory model for adolescent problem behaviors (Dekovic, 1999; Jessor, et al., 1998), but neither of these study outcomes supports the protective model of resiliency. A cross-sectional study of cumulative risk/promotive factors, however, demonstrates both a compensatory and protective effect in adolescent and young adult substance use (Newcomb & Felix-Ortiz, 1992). Ostaszewski and Zimmerman provide evidence to support a compensatory model of cumulative promotive factors on poly-drug use in a longitudinal study (Ostaszewski & Zimmerman, 2006). Researchers have not examined the effect of cumulative risks and promotive factors on adolescent problem behavior in mainland China. More effort should be made to locate the direction of influence and the mechanisms that mediate or moderate between risks and adolescent development outcomes. The current study aimed to address these issues by

testing both compensatory and protective models of resiliency in a sample of Chinese adolescents.

Figure 1.3 Socioecological model of risk and protective factors for adolescent problem behaviors

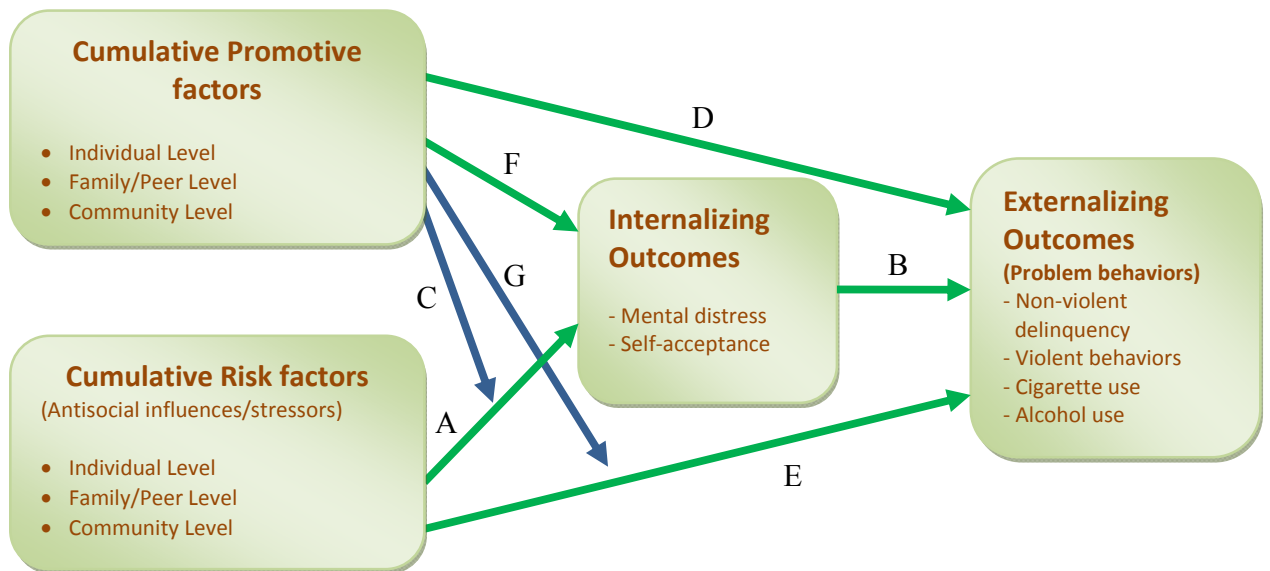


Figure 1.3 presents the socioecological model that guides our study of cumulative risk and promotive factors for adolescent problem behaviors. The effects of cumulative risk factors (e.g., observed violence, negative peer influence, fight and acting out in family) on problem behaviors were hypothesized to be mediated by internalizing outcomes (Paths A & B). Moreover, cumulative risk factors were expected to directly associate with externalizing problem behaviors (Path E). Promotive factors from individual assets (e.g., self-esteem, prosocial involvement, school bonding), family/ peer influences (e.g. social support), and community characteristics (e.g. after-school activities), on the other hand, were expected to offset or moderate the negative effects of risk factors on internalizing behavioral problems. In other words, cumulative promotive factors are expected to be directly associated with less externalizing outcomes (Path D) and better internalizing outcomes (e.g. less psychological distress and higher self-

acceptance) (Path F). Cumulative promotive factors were hypothesized to moderate the adverse effects of negative influences of risks (Path C & G). The direct effect of promotive factors on internalizing and externalizing outcomes will be tested in a compensatory model of resiliency, while the modifying effect of promotive factors on the relationship between risks and outcomes will be tested in a protective model of resiliency.

All the models in the three studies will be tested by confirmatory latent-variable structural equation analyses using EQS program (Bentler, 1995). Structural equation modeling (SEM) analysis was chosen because it allowed the examination of two dependent variables in a model and it also described the relationship among several endogenous factors simultaneously (Klem, 2000). Another benefit of using SEM analysis is that it recognizes and takes into account the existence of measurement errors of predictive variables (Benbenishty, Astor, Zeira, & Vinokur, 2002). The goodness-of-fit indices examined according to the recommendation of (Raykov, Tomer, & Nesselroade, 1991) were: normed fit index (NFI), nonnormed fit index (NNFI), and comparative fit index (CFI). A widely used misfit indices of root mean square error of approximation (RMSEA) was also reported. In the following chapters, I will report on whether or not the models and the paths in each model are supported by our sample and then discuss possible interpretations.

REFERENCES

- Aber, J. L., Gephart, M. A., Brooks-Gunn, J., & Connell, J. P. (1997). Development in context: Implications for studying neighborhood effects. In J. Brooks-Gunn, G. J. Duncan & J. L. Aber (Eds.), *Neighborhood poverty: Context and consequences for children* (pp. 44-61). New York: Russell Sage Foundation.
- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J., Jr. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The Communities That Care Youth Survey. *Eval Rev*, 26(6), 575-601.
- Auerbach, R. P., Abela, J. R., Zhu, X., & Yao, S. (2007). A diathesis-stress model of engagement in risky behaviors in Chinese adolescents. *Behav Res Ther*, 45(12), 2850-2860.
- Beauvais, F., Oetting, E. R. (1999). Drug use, resilience, and the myth of the golden child. See Ref. 44a (pp. 101-108).
- Benbenishty, R., Astor, R. A., Zeira, A., & Vinokur, A. D. (2002). Perceptions of violence and fear of school attendance among junior high school students in Israel. *Social Work Research*, 26(2), 71-87.
- Bentler, P. M. (1995). *EQS structural equation manual*. Los Angeles: BMDP Statistics Software.
- Blitstein, J. L., Murray, D. M., Lytle, L. A., Birnbaum, A. S., & Perry, C. L. (2005). Predictors of violent behavior in an early adolescent cohort: similarities and differences across genders. *Health Educ Behav*, 32(2), 175-194.
- Bowen, N. K., & Flora, D. B. (2002). When is it appropriate to focus on protection in interventions for adolescents? *Am J Orthopsychiatry*, 72(4), 526-538.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research Perspectives. *Developmental Psychology*, 22(6), 723-742.
- Brook, J. S., Brook, D. W., De La Rosa, M., Whiteman, M., & Montoya, I. D. (1999). The role of parents in protecting Colombian adolescents from delinquency and marijuana use. *Arch Pediatr Adolesc Med*, 153(5), 457-464.
- Byrne, D. G., & Mazanov, J. (2001). Self-esteem, stress and cigarette smoking in adolescents. *Stress Health*, 17, 105-110.
- Caldwell, C. H., Sellers, R. M., Bernat, D. H., & Zimmerman, M. A. (2004). Racial identity, parental support, and alcohol use in a sample of academically at-risk African American high school students. *Am J Community Psychol*, 34(1-2), 71-82.
- Catalano, R. F., Kosterman, R., Hawkins, J. D., Newcomb, M. D., & Abbott, R. D. (1996). Modeling the Etiology of Adolescent Substance Use: A Test of the Social Development Model. *J Drug Issues*, 26(2), 429-455.
- Chen, I. G., Roberts, R. E., & Aday, L. A. (1998). Ethnicity and adolescent depression: the case of Chinese Americans. *J Nerv Ment Dis*, 186(10), 623-630.
- Cohen, F. (1984). Coping. In J. D. Matarazzo, S. M. Weiss, J. A. Herd, N. E. Miller & S. M. Weiss (Eds.), *Behavioral Health: A Handbook of Health Enhancement and Disease Prevention*. New York: Wiley.

- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *J Health Soc Behav*, 24(4), 385-396.
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.
- Dekovic, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence*, 28(6), 667-685.
- Deng, S., & Roosa, M. W. (2007). Family influences on adolescent delinquent behaviors: applying the social development model to a Chinese sample. *Am J Community Psychol*, 40(3-4), 333-344.
- Deng, Y., Dou, G., & Zhang, F. (2000). A study of the basic personality traits of juvenile criminals and related factors. *Chinese Journal of Clinical Psychology*, 8, 160-162.
- Derogatis, L. R., & Spencer, P. M. (1982). *The Brief Symptom Inventory (BSI): Administration and scoring procedures*. Baltimore: Division of Medical Psychology: John Hopkins University School of Medicine.
- Dewit, D. J., Silverman, G., Goodstadt, M., & Stoduto, G. (1995). The construction of risk and protective factor indices for adolescent alcohol and other drug use. *Journal of Drug Issues*, 25(4), 837-863.
- Dielman, T. E., Butchart, A. T., & Shope, J. T. (1993). Structural equation model tests of patterns of family interaction, peer alcohol use, and intrapersonal predictors of adolescent alcohol use and misuse. *J Drug Educ*, 23(3), 273-316.
- Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2000). Risk and protective factors influencing adolescent problem behavior: a multivariate latent growth curve analysis. *Ann Behav Med*, 22(2), 103-109.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health*, 26, 399-419.
- Fleming, C. B., Kim, H., Harachi, T. W., & Catalano, R. F. (2002). Family processes for children in early elementary school as predictors of smoking initiation. *J Adolesc Health*, 30(3), 184-189.
- Garnezy, N., Masten, A. S., & Tellegen, A. (1984). The study of stress and competence in children: a building block for developmental psychopathology. *Child Dev*, 55(1), 97-111.
- Graber, J. A., & Brooks-Gunn, J. (1995). Models of development: understanding risk in adolescence. *Suicide Life Threat Behav*, 25 Suppl, 18-25.
- Greenberger, E., Chen, C., Beam, M., Whang, S., & Dong, Q. (2000). The perceived social contexts of adolescents' misconduct: A comparative study of youths in three cultures. *Journal of Research on Adolescence*, 10, 365-388.
- Griffin, K. W., Botvin, G. J., Scheier, L. M., Epstein, J. A., & Doyle, M. M. (2002). Personal competence skills, distress, and well-being as determinants of substance use in a predominantly minority urban adolescent sample. *Prev Sci*, 3(1), 23-33.
- Haritatos, J., Mahalingam, R., & James, S. A. (2007). John Henryism, self-reported physical health indicators, and the mediating role of perceived stress among high socio-economic status Asian immigrants. *Soc Sci Med*, 64(6), 1192-1203.

- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull*, *112*(1), 64-105.
- Hawkins, J. D., & Weis, J. G. (1985). The social development model: An integrated approach to delinquency prevention. *The Journal of Primary Prevention*, *6*(2), 73-97.
- Hesketh, T., Lu, L., Jun, Y. X., & Mei, W. H. (2007). Smoking, cessation and expenditure in low income Chinese: cross sectional survey. *BMC Public Health*, *7*, 29.
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.
- James, S. A. (1994). John Henryism and the health of African-Americans. *Cult Med Psychiatry*, *18*(2), 163-182.
- James, S. A. (1996). The John Henryism scale for active coping. In R. L. Jones (Ed.), *Handbook of tests and measurements for Black populations* (Vol. 2, pp. 415-425). Hampton, VA: Cobb & Henry Publishers.
- James, S. A., Hartnett, S. A., & Kalsbeek, W. D. (1983). John Henryism and blood pressure differences among black men. *J Behav Med*, *6*(3), 259-278.
- Jessor, R. (1993). Successful adolescent development among youth in high-risk settings. *Am Psychol*, *48*(2), 117-126.
- Jessor, R., Donovan, J. E., & Costa, F. (1996). Personality, perceived life chances, and adolescent behavior. In K. Hurrelmann & S. F. Hamilton (Eds.), *Social problem and social contexts in adolescence: Perspectives across boundaries*. Hawthorne NY: Aldine de Gruyter.
- Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Protective factors in adolescent health behavior. *J Pers Soc Psychol*, *75*(3), 788-800.
- Jessor, R., Turbin, M. S., Costa, F. M., Dong, Q., Zhang, H., & Wang, C. (2003). Adolescent Problem Behavior in China and the United States: A Cross-National Study of Psychosocial Protective Factors. *Journal of Research on Adolescence*, *13*(3), 329-360.
- Klem, L. (2000). Structural equation modeling. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 227-257). Washington, DC: American Psychological Association.
- Kumpfer, K. L., Olds, D., Alexanderson, J., Zucker, R., & Gary, L. (1998). Family etiology of youth problems. In E. R. R. Ashery, & K. Kumpfer (Ed.), *Drug abuse prevention through family interventions* (pp. 42-77): NIDA Research Monograph 177, U.S. Department of Health and Human Services.
- Kumpfer, K. L., & Turner, C. W. (1990). The social ecology model of adolescent substance abuse: implications for prevention. *Int J Addict*, *25*(4A), 435-463.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. NY: Springer.
- Liu, X., Kurita, H., Uchiyama, M., Okawa, M., Liu, L., & Ma, D. (2000). Life events, locus of control, and behavioral problems among Chinese adolescents. *J Clin Psychol*, *56*(12), 1565-1577.
- Liu, X., Tein, J. Y., & Zhao, Z. (2004). Coping strategies and behavioral/emotional problems among Chinese adolescents. *Psychiatry Res*, *126*(3), 275-285.

- Lloyd-Richardson, E. E., Papandonatos, G., Kazura, A., Stanton, C., & Niaura, R. (2002). Differentiating stages of smoking intensity among adolescents: stage-specific psychological and social influences. *J Consult Clin Psychol*, *70*(4), 998-1009.
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: a critical evaluation and guidelines for future work. *Child Dev*, *71*(3), 543-562.
- Moos, R. H., & Moos, D. S. (1981). *Family Environment Scale Manual*. Palo Alto, CA: Consulting Psychologists.
- Newcomb, M. D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: cross-sectional and prospective findings. *J Pers Soc Psychol*, *63*(2), 280-296.
- Newcomb, M. D., Huba, G. J., & Bentler, P. M. (1986). Determinants of sexual and dating behaviors among adolescents. *J Pers Soc Psychol*, *50*(2), 428-438.
- Ostaszewski, K., & Zimmerman, M. A. (2006). The effects of cumulative risks and promotive factors on urban adolescent alcohol and other drug use: a longitudinal study of resiliency. *Am J Community Psychol*, *38*(3-4), 237-249.
- Petraitis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: organizing pieces in the puzzle. *Psychol Bull*, *117*(1), 67-86.
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: three validation studies. *Am J Community Psychol*, *11*(1), 1-24.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in Psychology and Aging: some proposed guidelines. *Psychol Aging*, *6*(4), 499-503.
- Repetto, P. B., Caldwell, C. H., & Zimmerman, M. A. (2005). A longitudinal study of the relationship between depressive symptoms and cigarette use among African American adolescents. *Health Psychol*, *24*(2), 209-219.
- Revera, F. J., & McCorry, T. A. (2007). An Evaluation of an After-School Program's Effectiveness in Preventing Juvenile Delinquency and Substance Use: A Test of the Social Development Model. *The New York Sociologist*, *2*.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *Am J Orthopsychiatry*, *57*(3), 316-331.
- Scheier, L. M., Botvin, G. J., & Miller, B. V. (2000). Life Events, Neighborhood Stress, Psychosocial Functioning, and Alcohol Use Among Urban Minority Youth *Journal of Child & Adolescent Substance Abuse*, *9*(1), 19-50.
- Schmeelk-Cone, K. H., & Zimmerman, M. A. (2003). A longitudinal analysis of stress in African American youth: Predictors and outcomes of stress trajectories. *Journal of Youth and Adolescence*, *32*(6), 419-430.
- Shek, D. T. (1997). The relation of family functioning to adolescent psychological well-being, school adjustment, and problem behavior. *J Genet Psychol*, *158*(4), 467-479.
- Simons-Morton, B. G., Hartos, J. L., & Haynie, D. L. (2004). Prospective analysis of peer and parent influences on minor aggression among early adolescents. *Health Educ Behav*, *31*(1), 22-33.
- Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1992). Interactive and higher-order effects of social influences on drug use. *J Health Soc Behav*, *33*(3), 226-241.
- Stoddard, S. A., Whiteside, L., Zimmerman, M. A., Cunningham, R. M., Chermack, S. T., & Walton, M. A. (2012). The Relationship Between Cumulative Risk and

- Promotive Factors and Violent Behavior Among Urban Adolescents. *Am J Community Psychol*.
- Stokols, D. (1992). Establishing and Maintaining Healthy Environments: Toward a Social Ecology of Health Promotion. *American Psychologist*, 47, 6-22.
- Sue, D. W., & Sue, D. (1999). *Counseling the Culturally Different: Theory and Practice*. (3rd Ed.). Hoboken, NJ: John Wiley & Sons Inc.
- Turbin, M. S., Jessor, R., Costa, F. M., Dong, Q., Zhang, H., & Wang, C. (2006). Protective and risk factors in health-enhancing behavior among adolescents in China and the United States: does social context matter? *Health Psychol*, 25(4), 445-454.
- Unger, J. B., Yan, L., Shakib, S., Rohrbach, L. A., Chen, X., Qian, G., et al. (2002). Peer influences and access to cigarettes as correlates of adolescent smoking: a cross-cultural comparison of Wuhan, China, and California. *Prev Med*, 34(4), 476-484.
- Wang, Y. (2006). Value changes in an era of social transformations: College-educated Chinese youth. *Educational Studies*, 32, 233-240.
- Wenzel, L., Glanz, K., & Lerman, C. (2002). Stress, Coping, and Health Behavior. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice* (pp. 210-239). San Francisco, CA: Jossey-Bass.
- Wills, T. A., Yaeger, A. M., & Sandy, J. M. (2003). Buffering effect of religiosity for adolescent substance use. *Psychol Addict Behav*, 17(1), 24-31.
- Wong, D. S. W. (2001). Changes in juvenile justice in China. *Youth and Society*, 32, 492-509.
- Wong, L., & Mok, K. (1995). The reform and the changing social context. In W. L. & S. MacPherson (Eds.), *Social change and social policy in contemporary China* (pp. 1-26). Aldershot, England: Avebury.
- Xue, Y., Zimmerman, M. A., & Caldwell, C. H. (2007). Neighborhood residence and cigarette smoking among urban youths: the protective role of prosocial activities. *Am J Public Health*, 97(10), 1865-1872.
- Yang, G., Fan, L., Tan, J., Qi, G., Zhang, Y., Samet, J. M., et al. (1999). Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA*, 282(13), 1247-1253.
- Yang, G. H., Ma, J. M., Liu, N., & Zhou, L. N. (2005). [Smoking and passive smoking in Chinese, 2002]. *Zhonghua Liu Xing Bing Xue Za Zhi*, 26(2), 77-83.
- Zhang, L. (2003). Official offense status and self esteem among Chinese youth. *Journal of Criminal Justice*, 31, 99-105.
- Zimmerman, M. A., Bingenheimer, J. B., & Notaro, P. C. (2002). Natural mentors and adolescent resiliency: a study with urban youth. *Am J Community Psychol*, 30(2), 221-243.
- Zimmerman, M. A., Salem, D. A., & Maton, K. I. (1995). Family structure and psychosocial correlates among urban African-American adolescent males. *Child Dev*, 66(6), 1598-1613.
- Zimmerman, M. A., Steinman, K. J., & Rowe, K. J. (1998). Violence among urban African American adolescents: The protective effects of parental support. In X. B. Arriaga & S. Oskamp (Eds.), *Addressing Community Problems: Psychological Research and Interventions* (pp. 78-103). Thousand Oaks, CA: Sage.

CHAPTER II

Individual Stress, John Henryism and Problem Behaviors among Chinese Adolescents

Introduction

Similar to many western countries, there is a growing public health concern in China regarding Chinese teenagers' delinquency and substance use. Some researchers have been examining the risk factors and mechanisms that bring about problem behaviors in Chinese youth (Booker et al., 2007; Cheng, 2008; Shek, 2002; Wong, 2001; Xiang, 1999). In contrast, numerous studies for adolescents in Western countries have for some time focused on both promotive and risk factors, while a few researchers in mainland China have addressed the need of prevention efforts (X. Liu, Tein, & Zhao, 2004). The main purpose of this paper is to examine how a theory-informed model addresses stress and coping processes which in turn affects problem behaviors among adolescents within the Chinese contexts. During this developmental stage, adolescents may encounter more daily stressful events from the individual psychological and physical changes and from peers, school and family. These stressful events are found to be associated with increased risk of depression, anxiety, and health behaviors in cross-sectional studies within Chinese adolescents (X. C. Liu, Oda, Peng, & Asai, 1997; X. C. Liu, Wang, J.L., Yu, J.C., & Tian, J., 1993).

Yet, because individuals appraise and cope with stress differently (Lazarus & Folkman, 1984), many adolescents who experience high levels of negative life stress do not end up with mental distress or other negative outcomes. Promotive factors such as adaptive coping, in particular, may assist adolescents to minimize the adverse effects from stressful events (Fergus & Zimmerman, 2005).

Coping is generally recognized as multidimensional in nature. Researchers have described diverse ways to categorize coping strategies, such as problem-focused coping and emotional-focused coping (Lazarus & Folkman, 1984); approach (engagement) coping and avoidance (disengagement) coping (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Krohne, 1996); and active, internal, and withdrawal coping (Seiffge-Krenke, 1993b). Some coping styles were considered particular salient among specific populations, such as John Henryism for African-Americans (James, Hartnett, & Kalsbeek, 1983), which is defined as a strong behavioral predisposition to engage in high effort coping when confronted by difficult psychosocial and environmental barriers to success (James, et al., 1983). *Fatalistic voluntarism* is a coping strategy particular salient for Chinese people. This is a coping strategy of emphasizing both the fatalistic acceptance of hardships in life and the effort to search for solutions (Hamid, Yue, & Leung, 2003). The adolescent years are a crucial stage of life for individuals to develop coping styles and strategies. Indeed, the development of coping strategies in adolescents is complex and multifaceted (Compas, et al., 2001). Researchers have documented that problem-focused coping and engagement (approach) coping are associated with better behavioral adjustment than emotion-focused and avoidant coping among adolescents (Compas, et al., 2001). Little is known about the coping mechanisms

among Chinese adolescents whose stress and coping may take different orientations from their counterparts in the Western cultures (Tam, 2008). Although John Henryism is a concept traditionally considered to be more salient to an American culture (James, 1994), it is a form of active coping that is consistent with efforts to search for solutions described in Chinese culture. To date, John Henryism has not been tested in a Chinese sample even though it may be particularly relevant among new generations of Chinese youth because more and more common ground has been shared in recent decades between this population and their western counterparts (Deng & Roosa, 2007). With greater consideration of cultural contexts and ecological factors that may be associated with specific coping strategies, investigators may find John Henryism and its ability to predict health outcomes are proven valid among a range of different ethnic and socioeconomic distinctions (Bennett et al., 2004). The John Henryism Active Coping is tested in this study to see if it is a potential promotive factor that protects adolescents from the effects of stress, therefore, reducing the prevalence of problem behaviors.

Many characteristics of traditional Chinese culture contrast sharply with Western culture, such as its emphases on collectivism, Confucianism, interpersonal harmony, and the centrality of family in people's lives (Auerbach, Abela, Zhu, & Yao, 2007; Lin & Lai, 1995). New generations in China, however, live under the combined influences of historical Chinese values such as filial piety (e.g. children's absolute obedience to parents) and emerging western beliefs (e.g. equality and mutual respect between parents and children) (Deng & Roosa, 2007). Moreover, an emerging Chinese youth culture emphasizes personal autonomy (Unger et al., 2002) and individual values (Wang, 2006), which may at the same time reject traditions and authoritative cultural values held by

their parents. While traditional values and beliefs remain strong, Chinese adolescents have begun to adopt more cultural characteristics from Western countries. Researchers identified many similarities in protective and risk factors of problem behaviors between Chinese and U.S. adolescents (Jessor et al., 2003). The cultural integrations and conflicts may occur at the same time in the melting pot of China's current society. Hence, not only has parenting become more challenging, but also a teenager's adjustment through the development process has become more complicated due to such a unique composition of values for Chinese adolescents. Therefore, there is an emerging need for studies that can contribute to the understanding of how both traditional cultural values and newly growing social trends influence adolescent development in China. Researchers have successfully applied psychopathology models derived from Western culture to a variety of populations. On the other hand, these models need to be carefully examined and adapted before they can be extended to Chinese youths. In an effort to understand how the theoretical concepts of stress and coping relate to the risk and protective factors of problem behaviors, the current study examines a model that considers these factors among Chinese adolescents.

The current study draws on the Transactional Model of Stress and Coping to understand the mechanisms of stress among Chinese adolescents and its effect on behavioral outcomes. The Transactional model suggests that the effects of a stressor are mediated by the person's appraisal of the stressor and the psychological, social, and cultural resources at his or her disposal (Wenzel, Glanz, & Lerman, 2002). Stressors have a negative effect on psychological well-being, which in turn is associated with negative externalizing outcomes (Lazarus & Folkman, 1984). Study results also suggested that

stress is a predictor of both internalizing and externalizing behavioral problems among adolescents (Conger, Ge, Elder, Lorenz, & Simons, 1994; Elgar, Arlett, & Groves, 2003). Therefore, with the current theoretical model, stress is assumed to have its direct and indirect negative effects on an adolescent's internalizing outcomes (e.g. mental health, self acceptance) and externalizing outcomes (e.g. delinquencies, substance use). In other words, stress is considered a risk factor that causes mental distress and lowers self acceptance among teenagers, and further increases delinquencies and substance use. Other than being mediated by the negative psychological effects, stress might directly increase the delinquencies and substance use among these adolescents. As shown in Figure 2.1, I examined a model that focused on two dependent variables: delinquent behaviors and substance use. Delinquent behaviors include both violent behaviors such as fighting or carrying a knife, and non-violent behaviors such as stealing or intentionally damaging school property. The model presents how perceived stress by these students affected these dependent variables directly and how these effects were mediated by mental distress and self acceptance.

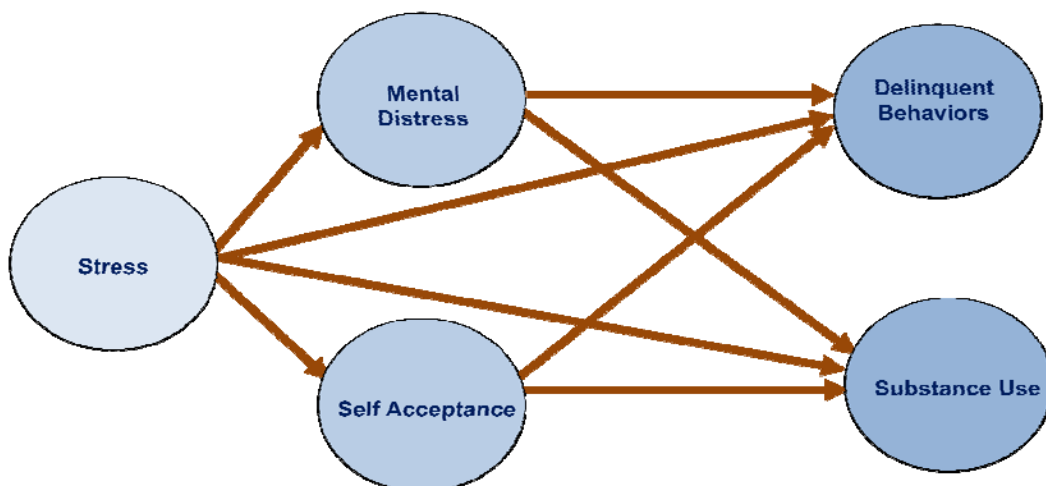


Figure 2.1 Theoretical Model of Direct and Mediational Effects of Stress on Chinese Teen's Problem Behaviors

It is crucial, however, to identify not only the risks but also the promotive factors that steer teens from delinquency and substance use. A resiliency perspective (Fergus & Zimmerman, 2005), therefore, is applied in the current study to examine the mechanisms of stress and the problem behaviors. A resiliency perspective emphasizes the positive factors that counteract risks for adolescent problem behaviors (Fergus & Zimmerman, 2005). As summarized by Fergus and Zimmerman (2005), “Resilience refers to the process of overcoming the negative effects of risk exposure, coping successfully with traumatic experiences, and avoiding the negative trajectories associated with risks” (p. 399). Resilience requires promotive factors as a counterpart to risk factors. Promotive factors may be either *assets* or *resources* that can help adolescents reduce or avoid the negative outcomes (Beauvais, 1999). *Assets* refer to positive factors that an individual possesses internally, such as competence, coping skills, and self-efficacy. *Resources*, on the other hand, are external factors that help the individual to overcome risk. These beneficial resources can include parental support, positive peer influence, role models, or school activities.

The resiliency perspective is consistent with Lazarus and Folkman’s (1984) framework of stress and coping, where coping is defined as “cognitive and behavioral efforts to manage external and internal demands that are appraised as taxing or exceeding the resources of an individual. (p.141)” In other words, coping can be considered as mental and behavioral adjustments that individuals use to manage demands from the environment. Resilience can be considered as the successful outcomes for which coping have been put into efforts (Compas, et al., 2001). Research has shown that in response to stressful situations, adolescents who adopted problem-focused or approach coping

strategies have fewer internalizing and externalizing problems than those who adopted avoidance coping strategies (Armistead et al., 1990; Compas, et al., 2001; Gomez, 1998). In particular, problem solving, cognitive restructuring, and positive reappraisal of the stressor are most consistently associated with better adjustment to stress among adolescents (Compas, et al., 2001). Other study results, however, indicate that approach coping did not moderate the influence of stress on psychological functioning (Elgar, et al., 2003). Unfortunately, few researchers address specific coping strategies and their interactions with stress and subsequent negative outcomes, especially among Chinese adolescents (X. Liu, et al., 2004).

One active coping construct that has drawn attention by researchers is “John Henryism (Grosfeld et al.)” (Adams, Aubert, & Clark, 1999; Bonham, Sellers, & Neighbors, 2004; Fernander et al., 2005; McKetney & Ragland, 1996; Merritt, Bennett, Williams, Sollers, & Thayer, 2004; Whitfield et al., 2010). Originally based on the American folk-legend of John Henry, James et al then applied John Henryism in research to describe prolonged high-effort coping when confronted by difficult psychosocial and environmental barriers (James, et al., 1983). The measurement of JH usually consists of statements such as “I don't let my personal feelings get in the way of doing a job”, “hard work is the best possible way for someone to get ahead in life”, and “I like doing things that other people thought could not be done” (James, 1996; James, et al., 1983). These statements reflect an individual’s beliefs that in order to attain success, one must strive to resist and overcome barriers through determination and persistent efforts. Because JH was originally derived from the African Americans’ folk legend, the majority of research using this measure focused of African American samples. James (1994) argues that JH

taps into cultural values that are particularly salient to Americans, but researchers have reputed evidence that JH is applicable to other populations that hold similar culture values (Duijkers, Drijver, Kromhout, & James, 1988; Somova, Connolly, & Diara, 1995), including Asian immigrants (Haritatos, Mahalingam, & James, 2007).

Researchers have not reached a consistent conclusion about the effects of JH on health and the mechanisms within the stress adjustment process. JH has been implicated as a risk factor for hypertension among African Americans because it could compromise health among those for whom environmental demands exceed personal coping resources (James, 1994). Conversely, other results of extended research indicate that JH may be a personal asset contributing to health among those with adequate resources (Bonham, et al., 2004; Haritatos, et al., 2007). The positive relationships between JH and self-reported health was examined and supported among the high Social Economic Status (SES) samples of Asian immigrants (Haritatos, et al., 2007). Nevertheless, very little is known about how JH Active Coping plays a role among Chinese adolescents to manage stress. As the emerging generations in China embrace both traditional and Western cultures, extending research on JH to Chinese adolescents will address whether JH is a coping strategy that is salient and beneficial to this group. Therefore, the current study further explores how JH affects the stress adjustment model. The hypothesis that active coping may serve as a promotive factor draws on the resilience theory (Fergus & Zimmerman, 2005). In particular, the risk-protective model in resiliency theory reveals how a promotive factor buffers or moderates the negative effects of risks (Fergus & Zimmerman, 2005). With a large sample of adolescents in Mainland China, the current study examines the possible interactions between John Henryism, stress, mental health

and behavioral outcomes. A scarcity of studies on active coping in Chinese adolescents did not enable a hypothesis about the effects of JH on adolescent functioning. Yet, based on the resilience theory, JH will be tested in this study as a protective factor that modifies the direct and indirect effect of stress on delinquencies and substance use.

Model Rationale and Hypotheses

In the current model, I tested the connections between stress, psychological well-being, and Chinese adolescents' problem behaviors. The Transactional Model of Stress and Coping suggests that stressful experiences have a negative effect on psychological well-being, which in turn is associated with negative outcomes (Lazarus & Folkman, 1984). It was anticipated that stress has negative effect on mental health and self acceptance among teenagers. Researchers have found that life stress was strongly associated with negative developmental outcomes for youth (Dubow, Edwards, & Ippolito, 1997; Dubow & Tisak, 1989). In particular, life stress was found to be associated with increased depression for girls (Silberg et al., 1999), and increased alcohol use and behavior problems for both boys and girls (Windle & Windle, 1996). Most previous studies, however, include only American teens from Western cultures. The current study draws on this theory to guide the hypothesis about the *direct* effects of perceived stress on Chinese adolescent externalizing outcomes (e.g. non-violent delinquent behaviors, violent behaviors, cigarette smoking and alcohol use) and *indirect* effect through internalizing outcomes (e.g. mental distress and lower self acceptance) to externalizing outcomes. The rationale is that anxiety, depression, and lower acceptance are negative responses to stress if teens have difficulty assessing, coping with, or

overcoming stressors. Furthermore, mental distress is predicted to increase problem behaviors among Chinese adolescents. That is, students who rated higher scores in anxiety and depression would tend to engage more in delinquent behaviors, smoking, or alcohol use. With regard to self acceptance, I predicted that higher self acceptance would lower the possibility for teens to engage in delinquency and substance use. In this model, a weak or negative association is expected between self acceptance and problem behaviors.

The construct of John Henryism active coping, on the other hand, is examined as a protective factor against the deleterious effects of stressors. I therefore tested a protective model of resiliency by comparing the model as it applied to high JH active coping and low JH active coping students to examine whether coping moderates the mechanisms in the model. The construct was measured using the John Henryism Scale for Active Coping (James, 1996). In this study, the link between stress and problem behaviors is hypothesized to be weaker when a child has a high level of JH active coping, compared to those who with a low level of JH active coping. Similarly, the mediating effect of internalized outcomes (e.g. poor mental health and low self acceptance) on stress and problem behaviors may also be reduced for youth with a high level of JH active coping.

Female and male adolescents may experience and respond to stress differently. Some researchers have found girls tend to report more stress from life events (Licitra-Kleckler & Waas, 1993) and daily hassles(Kohn & Milrose, 1993), and use more avoidance coping (Gomez, 1998) than boys. Compared to males, female adolescents tend to report more internalizing behaviors and fewer externalizing behaviors (hyperactive,

aggressive or disruptive behaviors) (Gjerde, Block, & Block, 1988). Another study then found that girls who reported more use of avoidance coping manifested more internalizing, externalizing and physical problems from stress (Armistead, et al., 1990). In contrast, other researchers reported more active coping among girls (Seiffge-Krenke, 1993a) or even no gender difference in coping strategies and depressive symptoms (Herman-Stabl, Stemmler, & Petersen, 1995). Research in China has indicated that boys experienced more depression than girls, and higher levels of stress from school, family, health, and romantic domains, while girls experienced higher level of peer stress (Sun, Tao, Hao, & Wan, 2010). Despite the inconsistent findings of gender with the stress adjustment among teenagers, gender is considered a factor that may influence the mechanisms of stress and coping among our target population. Another potential confounding factor of the stress-coping process is age. Research has identified the age differences in the moderation of stressful daily events. Older adolescents experienced more negative events than younger students (Larson & Ham, 1993). Moreover, older adolescents appeared to have exacerbating mental distress from chronic negative events compared to younger students (Ham & Larson, 1990). Therefore, both age and gender are taken into account in this study as potential confounding factors when examining the mechanisms of stress, coping, internalizing outcomes and externalizing outcomes.

Method

Samples and Procedures

The models were tested using survey data from middle and high school students from two urban cities in China: Beijing and Xian. Participants in the study include 1356 students in Grades 7 to 12 from middle (44%) and high schools (56%) in the urban areas of Beijing and Xian. Approximately 48% of the respondents were boys and 52% were

girls. Experienced researchers in Beijing and Xian helped select participating schools based on characteristics such as diverse size, test scores, and social status. Youth were asked to complete questionnaires in school during a group administration in classrooms. Chinese research staff administered the data collection including following UM IRB protocol, and student assents were obtained before the survey was administrated. Schools participating in the survey study received a small stipend, but individual youth did not.

A questionnaire developed for the Flint Adolescent Study (e.g. Ostaszewski & Zimmerman, 2006) was adapted for the current study. The revisions of the questionnaire focused on culturally relevant terminology and contexts, and eliminated less relevant measures (e.g., sibling influences). A Chinese researcher translated the questionnaire into Chinese and then a Chinese student translated it back into English. The U.S. team reviewed the translation and back-translation for accuracy.

Measures

Table 1 presents the means and standard deviations of each subscale. Detailed descriptions of each subscale are as follows.

Table 2.1 Means and standards deviations of independent and dependent variables

	N	Mean	Std. Deviation	Skewness
Perceived Stress	1352	2.33	.82	.49
Anxiety Symptoms	1350	1.75	.85	1.61
Depressive Behaviors	1350	1.79	.87	1.48
Self Acceptance	1323	3.35	.86	-.20
Non-violent delinquency	1352	1.09	.35	6.26
Violent Behavior	1354	1.12	.39	4.81
Smoking (frequency)	1312	1.27	.72	3.29
Alcohol use (frequency)	1292	2.68	2.33	1.83
John Henryism	1353	3.82	.66	-.55

Psychological Distress. Depression ($\alpha=.91$) and anxiety ($\alpha=.89$) symptoms were each measured with six items (Derogatis & Spencer, 1982). The 5-point rating scales asked youth to indicate how much they were bothered by each of 12 symptoms in the past week.

Self Acceptance ($\alpha=.73$). Four items were used to assess self-acceptance (Newcomb, Huba, & Bentler, 1986), each using a 5-point scale. The higher the score indicated the more self-acceptance. Three items were included in the final analyses of the study: how happy I am with myself, how generally pleased I am with myself, and how much I regard myself as successful. One question, *how much I like myself* was removed from the scale because the item has particular low standardized factor loading (-.09) compared to other items (.50 to .85) in the preliminary factor analysis of self acceptance. In the model, we treat self acceptance as a latent factor with the three items as indicators.

Substance use. Smoking and alcohol use were each represented on a single-item scale. The ratings of smoking were provided on a 5-point scale ranging from 1 = never smoke to 5 = regularly smoking now. The rating of alcohol use ranged from 1 = never to 14 = 40 or more times during the last 30 days. Both of the scores of alcohol use and cigarette use were standardized and summed for the analyses.

Delinquency. The frequency of violent behavior ($\alpha=.77$) was measured with a 5-item, 5-point scale. Similarly, the frequency of non-violent delinquent behavior ($\alpha=.88$) was measured with an 8-item, 5-point scale. Due to the skewness of these dependent variables, each item was recoded into a dichotomous (never/ever) scale. If a student answered 1 (never) to a question, he or she would get a new score of 0. If the student answered 2 to 5 in the original scale (ever), he or she will get a new score of 1. A sum of

8 items of non-violent delinquent behaviors (ranging from 0 to 8) and a sum of 5 items of violent behaviors (ranging from 0 to 5) were then obtained for the final analyses. The skewness of non-violent delinquent behaviors was improved to 4.52, and the skewness of violent behavior was improved to 3.37.

John Henryism Active Coping ($\alpha=.66$). The construct was measured using the John Henryism Scale for Active Coping, or JHAC12, developed by James (James, 1996; James, et al., 1983). The 12-Item, 5-point Likert Scale has been extended to research with community samples of Chinese and Indian immigrants in the U.S. (Haritatos, et al., 2007). In the current study, a shorter version of the scale adapted from JHAC12 was used for our target population. Eight items were adopted to measure the degree of active coping among Chinese adolescents when experiencing stressful events. A principal component analysis for the eight items was conducted. The result indicates a single component consisting of all eight items. A median split of the average score of the items for all samples was conducted to separate the students into two groups: high active-coping group (rated higher than 3.8 in the scale) and low active-coping group (rated 3.8 or lower).

Data Analyses

I tested the model by confirmatory latent-variable structural equation analyses using EQS program (Bentler, 1995). Structural equation modeling (SEM) analyses were used because it allowed me to examine two dependent variables in a model and describe the relationships among several endogenous factors simultaneously (Klem, 2000). Another benefit of using SEM analyses is that it recognizes and takes into account the existence of measurement errors in predictive variables (Benbenishty, Astor, Zeira, &

Vinokur, 2002). I performed these analyses on the total sample of the Chinese adolescent students and on subsamples of two active coping groups. The number of missing observations was not high (n=120; 8.9% of the total sample), and were handled using the more conservative procedure of listwise deletion of cases that did not have complete information for each of the analyses using the EQS program.

The goodness-of-fit indices examined according to the recommendation of (Raykov, Tomer, & Nesselroade, 1991) were: normed fit index (NFI), nonnormed fit index (NNFI), and comparative fit index (CFI). A widely used misfit indices of root mean square error of approximation (RMSEA) was also reported. According to Hu and Bentler, fit indices that exceeded .90 and RMSEA misfit indices that is .06 or lower, respectively, are considered to support acceptable fit of the model (Hu & Bentler, 1999).

Two of the dependent variables--non-violent delinquent behaviors and violent behaviors were skewed, with 81% indicating no incidence of these behaviors. The structural model was then tested with these dependent variables with and without transformed data. The results were found to be similar. Non-transformed dependent variables were preferred considering that the interpretation of the results would be more straightforward. Consequently, the items were re-coded as dichotomous variables and a sum was obtained for each subscale. In this way, the skewness of each variable was improved while the variance was still somewhat maintained.

The reverse model of the original theoretical model in Figure 2.1 was tested in order to exclude the possibility of having the reverse model as a better model. In other words, delinquent behaviors and substance use were tested as independent factors, while

stress was tested as a dependent variable in the reverse model. Mental distress and self acceptance remained as mediating factors in the model.

Results

Descriptive Statistics on Variables

Table 2 represents bivariate correlations among the variables included in this study. Perceived stress correlated with all other variables, including John Henryism, with correlations ranging from $-.29$ (self acceptance) to $.59$ (anxiety and depression, separately). Anxiety and depression correlated with less self acceptance ($-.32$ and $-.38$) and John Henryism ($-.18$ and $-.18$), while they are both positively correlated with other variables. Self acceptance was correlated with non-violent delinquent behaviors ($-.06$), smoking ($-.07$) and John Henryism ($.28$). All the four kinds of problem behaviors correlated with each other, with correlations ranging from $.20$ to $.65$. Moreover, John Henryism is correlated negatively with all other variables (correlations from $-.18$ to $-.07$) except self acceptance ($.28$). Table 3 provides the means and standard deviations of stress, internalized outcomes and externalized outcomes by high versus low John Henryism among boys and girls. Overall, students with low JH active coping reported slightly higher scores of anxiety, depression, delinquencies, and substance use but slightly lower scores of self acceptance compared to students with high JH active coping.

Table 2.2 Matrix of correlations among subscales

Subscale	Stress	Anxiety	Depression	Self Acceptance	Non-Violent Delinquencies	Violent Behaviors	Smoking	Alcohol Use	John Henryism
Stress	1.00								
Anxiety	0.59**	1.00							
Depression	0.59**	0.82**	1.00						
Self Acceptance	-0.29**	-0.32**	-0.38**	1.00					
Non-Violent Delinquencies	0.13**	0.21**	0.24**	-0.06*	1.00				
Violent Behaviors	0.12**	0.21**	0.24**	-0.05	0.65**	1.00			
Smoking	0.16**	0.13**	0.17**	-0.07**	0.21**	0.38**	1.00		
Alcohol Use	0.19**	0.17**	0.19**	-0.02	0.20**	0.28**	0.41**	1.00	
John Henryism	-0.13**	-0.18**	-0.18**	0.28**	-0.16**	-0.10**	-0.08**	-0.07*	1.00

** .Correlation is significant at the 0.01 level (2-tailed).

* .Correlation is significant at the 0.05 level (2-tailed).

Table 2.3 Means and standard deviations of subscales by John Henryism

Subscale and Factor	Low John Henryism	High John Henryism
	Mean (SD)	Mean (SD)
Stress	2.42 (.77)	2.24 (.85)
<i>Poor Mental Health</i>		
Anxiety	1.87 (.89)	1.68 (.79)
Depression	1.90 (.91)	1.68 (.82)
Self Acceptance	3.15 (.83)	3.54 (.84)
<i>Delinquencies</i>		
Non-Violent	0.54 (1.47)	0.27 (.82)
Violent	0.38(.98)	0.28 (.73)
<i>Substance Use</i>		
Smoking	1.31 (.76)	1.23 (.68)
Alcohol Use	2.78 (2.34)	2.57 (2.31)

Testing the Structural Model Based on Total Sample

Figure 2.2 presents the results of the structural equation parameter estimation of the model of teens' problem behaviors and the individual-level factors. The reverse model generated the same model fit as the original one; therefore, I adopted the original hypothesized model because it is supported by both theories and past research. The results of the analysis based on the total sample provided a very good fit to the data [χ^2 (85, N = 1,230) = 383.53, $p < 0.001$, and with NFI = 0.94, NNFI = 0.93, CFI = 0.95, RMSEA = 0.05, within 90% confidence interval.] The overall model explained 13 percent of the variance in delinquencies and 21 percent of the variance in substance use (Figure 2.2).

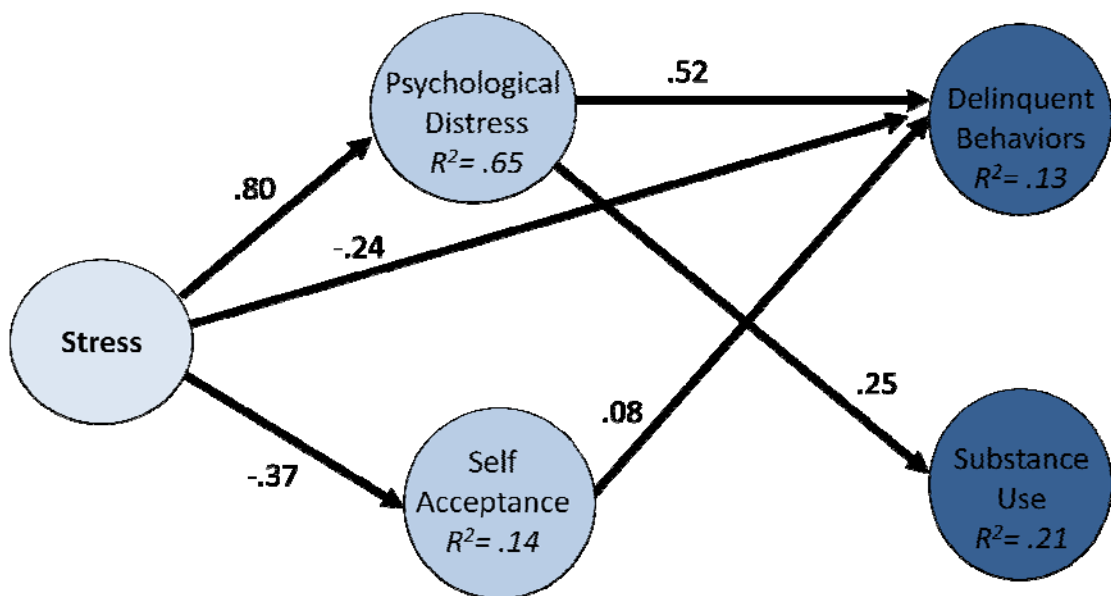


Figure 2.2 Model of Direct and Meditational Effects of Stress on Chinese Teen's Problem Behaviors (Total Sample). χ^2 (85, n = 1230) = 383.53 ($p < .001$), NFI = .94, NNFI = .93, CFI = .95, RMSEA = .053. All paths with solid lines are statistically significant at $p < .05$.

The main contributor to delinquent behaviors was mental distress ($\beta = 0.52$). Self acceptance was also found to slightly increase delinquencies ($\beta = 0.08$), while the higher level of stress reduced the involvement of delinquencies ($\beta = -0.24$). Only mental

distress was associated with substance use ($\beta = 0.25$). Neither the direct effect of stress nor the meditating effect of stress through self acceptance was associated with substance use. As expected, stress was found to be associated with more mental distress ($\beta = 0.80$) and less self acceptance ($\beta = -0.37$). Gender and school grade were both treated as background variables. Females are slightly more likely to experience stress ($\beta = .09$) and mental distress ($\beta = .08$) compared to males. Females are, however, less likely to be involved in substance use ($\beta = -.32$) and delinquent behaviors ($\beta = -.20$) than males. High school students are more likely to experience stress (correlation = .29) and be involved in substance use ($\beta = .13$) compared to junior high school students.

Testing the Structural Model with multiple groups (high vs. low JH active coping)

The multiple group analysis investigated the question of whether the same theoretical model was applicable to the samples of high and low coping individuals. A median split procedure was conducted to separate the whole sample into the two groups at the scale point 3.8 (range from 1 to 5). That is, students averaged above 3.8 in the John Henryism Active Coping scale were categorized into a high coping group ($n=678$; 50.5%), while students averaged 3.8 or lower were categorized into a low coping group (49.2%). Four missing observations (0.3%) of the active coping variable were deleted listwise in the analysis. The first analysis procedure was taken to fit the covariance matrices of the two subgroups simultaneously to the same model while constraining the factor loadings, the paths, and the covariances to be equal (Benbenishty, et al., 2002). The results produced a good fit to the data [$\chi^2(189, n \text{ low coping} = 617, n \text{ high coping} = 617) = 537.38, p < 0.001$, and with NFI = 0.97, NNFI = 0.97, CFI = 0.98, RMSEA = 0.055,

within 90% confidence interval.] Therefore, the same theoretical model fits the data from both groups decently.

The next analysis was tested to see if the goodness-of-fit could be improved significantly by releasing certain constraints on a path that revealed large differences between the two groups in the earlier analysis performed without any constraints on the path (Benbenishty, et al., 2002). In the current model, when one of the constraints was released, there was a statistically significant reduction in χ^2 , indicating that the difference of the specific path between the two groups is significant. The constraint of the path being released is between mental distress and substance use, with χ^2 reduced 5.58 ($p = 0.02$). The result from the final model with the constraint released were $\chi^2 (188, n \text{ low coping} = 617, n \text{ high coping} = 617) = 531.72, p < 0.001$, and with NFI = 0.97, NNFI = 0.97, CFI = 0.98, RMSEA = 0.054, within 90% confidence interval.

The results indicate that the structural models were basically the same for high coping and low coping groups, but the path coefficients differed in the relationship between mental distress and substance use. The results indicated that for mental distress there was a stronger association with substance use for high active coping adolescents ($\beta = .32$) compared to low active coping adolescents ($\beta = .17$). Similarities also existed for the two groups. Perceived stress has a negative effect on mental health and self acceptance across the two coping groups. All the coefficients were indicated in Figure 3 for two groups.

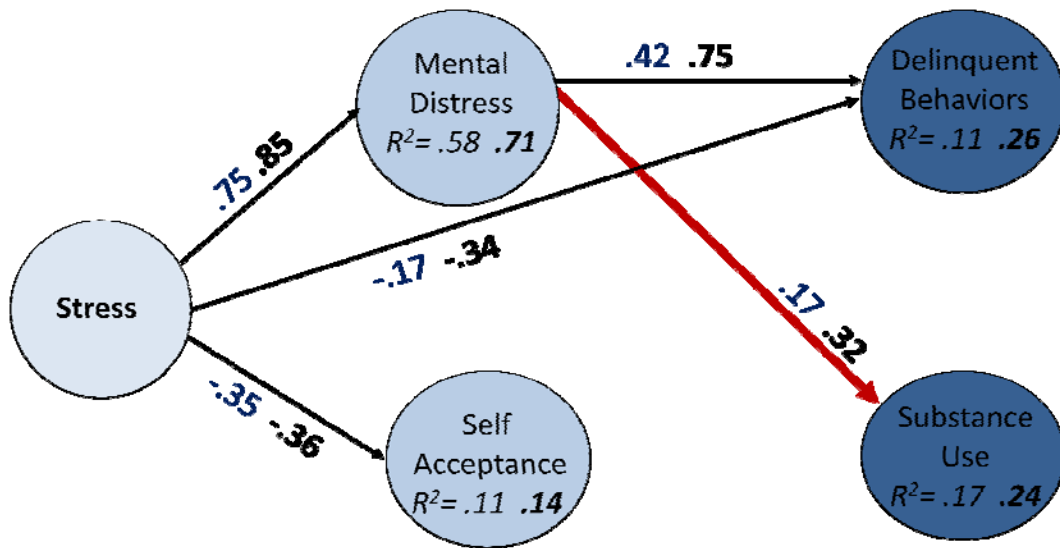


Figure 2.3 Coping Groups Comparison Structural Equation Modeling of Chinese Teen’s Problem Behaviors . $\chi^2(189, n \text{ low JH} = 617, n \text{ high JH} = 617) = 537.38, p < 0.001$, and with **NFI = 0.97, NNFI = 0.97, CFI = 0.98, RMSEA = 0.054**. All paths with solid lines are statistically significant at $p < .05$. The bold red line is the path that was modified by degrees of John Henryism. The bold numbers indicates coefficients for High John Henryism group

Discussion

The objective of the present study was to examine the theoretic model of stress and its internalizing and externalizing outcomes in the context of China. The study further examined how John Henryism active coping might modify the paths in the model. First, the overall model of the stress process and its effect on problem behaviors was supported by the sample representing urban Chinese adolescents. Secondly, most of the hypothesized paths in the model were statistically significant for the total sample and did not differ by high coping and low coping groups. As hypothesized, stress increased mental distress among adolescents, and higher degrees of mental distress increased both delinquent behaviors and substance use. Stress also decreased one’s self acceptance, while self acceptance had a weak linkage to delinquencies, and was not associated with

substance use. Yet, the results did not support the hypothesis that stress has a *direct* effect on delinquencies and substance use.

A higher level of stress was shown to decrease the involvement of delinquencies among our samples ($\beta = -0.24$, see Figure 2). This counter intuitive finding may be explained by two main reasons. One possible interpretation is that the main source of stress in the sample would come from achieving academic success in school. In a study with 1365 Chinese adolescents in mainland China, researchers found that 13 out of 27 negative life events came from the academic domain (e.g. Failure in a test, Homework overload, Test Pressure) and interpersonal relationships (X. Liu et al., 2000). The expectation and pressure from family members, especially parents, for students to achieve higher scores from exams or higher ranking in the class is quite common in Chinese society. The emphasis on their academic achievement may limit the opportunities for students to engage in other activities, including delinquency and substance use. On the other hand, the continuous academic pressure may increase the perceived stress among these students and in turn may affect their susceptibility to mental-health problems (X. Liu, et al., 2000). A study conducted among Chinese adolescents by Sun et al. also shows that the severity of depression correlated positively with school, family, health and romantic domain of stress, in particular among boys. The researchers argued that the higher expectations of excellence from boys than girls in China might contribute to the gender differences of perceived stress and depression (Sun, et al., 2010). In the current study, even though higher level of stress is associated with mental distress, the stress effects may not be externalized to problem behaviors among Chinese youth due to the source of the stressors.

Another possible interpretation of our findings is that other protective factors may help Chinese youth cope with stress and that individualistic constructs such as personal coping strategies may be less relevant. Positive peer influence, parent-adolescent interaction, family support, and parent surveillance have been reported to be important mediating or moderating factors of problem behaviors among Chinese adolescents (Deng & Roosa, 2007; Lau & Leung, 1992; Ma, Li, & Pow, 2011). This indicates further research that addresses factors of family and peer influences in the stress adjustment model may be especially informative.

In my original hypotheses, based on the stress buffering effect of approach coping, active coping would mitigate the impact of stress on behavioral problems (Gonzales, Tein, Sandler, & Friedman, 2001). Yet, in the multiple group comparison of the model between high JH active coping and low JH active coping, all the paths remained the same between the two groups except that the relationship between mental distress and substance use was stronger among adolescents who reported more JH active coping. That is, individuals who tend to adopt more active coping (e.g. John Henryism) reported more substance use as a result of mental distress. This finding lends itself to several interpretations. First, whether John Henryism will be beneficial to the adjustment of stress may highly depend on the controllability of the stressor and the availability of resources that one can assess. Researchers have found that the association of engagement coping with poorer adjustment among adolescents is related to the uncontrollable stressful events or circumstances (Compas, et al., 2001). Moreover, previous research suggests that among those experiencing greater environmental barriers, on-going attempts to manage stressors could lead to harmful homeostatic adjustments from chronic

psychosocial stressors (James, 1994). Most of these studies, however, focused on how John Henryism influences the relationship between SES and cardiovascular outcomes among African American samples (James, Keenan, Strogatz, Browning, & Garrett, 1992; James, LaCroix, Kleinbaum, & Strogatz, 1984; James, Strogatz, Wing, & Ramsey, 1987; McKetney & Ragland, 1996; Merritt, et al., 2004). One study examined the mediating role of stress and physical health among high SES status Asian immigrants (Haritatos, et al., 2007). The study results suggested that JH active coping relates to better health partially by reducing perceived stress when resources (e.g. financial, interpersonal) are present that help promote successful active coping. Youth in our samples were from urban areas of Beijing and Xian, so the types of barriers and resources for coping efforts may vary among the participants. While some of the students tend to adopt high-effort coping, it may be particularly difficult for those who encounter on-going barriers and limited resources to have successful adjustment. Previous findings indicate that engagement coping may be ineffective in circumstances that are beyond adolescents' control (Compas, et al., 2001; O'Brien, Margolin, & John, 1995). Similarly, the findings of my study highlight the importance of taking the contextual factors of coping into account when examining the effect of John Henryism among adolescents.

In the effort to identify beneficial resources, researchers have found the impact of stress on middle school children's later adjustment depends partially upon the availability of support from peers and adults (Pryor-Brown & Cowan, 1989). In particular, stress resilience is associated with family-level factors such as extended family support, close family relationships, and use of positive discipline strategies among urban children experiencing high levels of stress (Wyman, Cowen, Work, & Parker, 1991; Wyman et al.,

1992). Evidence Research indicates that parental support may moderate the effects of life stress on problem behaviors among adolescents (Wills, Vaccaro, & McNamara, 1992). Also, parental support has been found to moderate the effect of violence exposure and reduce the risk of depression for adolescents (Overstreet, Dempsey, Graham, & Moely, 1999). In the Chinese culture context, families have played the dominant role of the socialization of children's behaviors and are believed to be one of the key factors of adolescent delinquency (Zhang & Messner, 1995). Yet, few researchers have examined the relationship between family influence and problem behaviors among mainland Chinese adolescents (Deng & Roosa, 2007; Zhang & Messner, 1995). One study applied Social Development Model to examine the family influences on Chinese adolescents. The results indicate that the positive emotional bonding between parents and adolescents was associated with a reduced number of delinquent behaviors (Deng & Roosa, 2007). The findings supported the need to further examine promotive factors in the familial level to prevent problem behaviors for Chinese adolescents.

Furthermore, additional research is needed to examine whether John Henryism is a valid and reliable measurement for Chinese youth. The sole emphasis on continuous, high-effort coping may not be salient and completely beneficial among Chinese adolescents with demanding stressors. The JH scale includes statements such as "It is important for me to be able to do things my way rather than in the way other people want me to do them," and "I feel that I'm the kind of person who stands up for what I believe in, regardless of the consequence (James, 1996; James, et al., 1983)." Although in the western culture these statements may be considered as part of one's continuous efforts on overcoming barriers and as a way of active coping, they might indicate conflicts against

the rooted Chinese values of “harmony” and “filial piety”. Filial piety (Chinese: 孝, xiào), which can also be applied to general obedience to parents and respect for the family, is considered one of the most valued virtues and the most common element in Chinese culture (Baker, 1979). The young generations in China are growing under both the influences of these rooted values and the emerging westernized values. Chinese adolescents may find ways to avoid conflicts and still have desired independency and autonomy in their family, school and the society, but it may be quite stressful where the constraints of a hierarchical family structure still exists.

Moreover, different ways of coping may benefit Chinese adolescents from stress adjustment. In a series of logistic regression analyses on 1300 samples of Chinese adolescents, Liu et al (2004) found Chinese adolescents were likely to use multiple coping strategies when faced with stress. The study suggested that active coping was associated with reduced risk for internalizing and externalizing problems, after adjustment for adolescent’s age, gender, and father’s occupation. While the results suggest active coping may be beneficial, Liu et al. noted a limitation of the study regarding items included for coping (e.g. six items for active coping and three items for avoidant coping) (Liu et al, 2004, pp. 282). Our study may have a similar limitation by using John Henryism as the only scale measuring active coping. Moreover, the active coping style defined in Liu’s study involves not only problem solving but also positive appraisal, distancing, and help seeking. The active coping strategies included in Liu’s study are broader than the active coping efforts of John Henryism. The focus of John Henryism involves the coping attempts of personal control over the environment and his or her reactions to it, rather

than coping by adapting to the situation or cognitive restructuring. Yet, neither the John Henryism nor the Chinese Trait Coping Style Questionnaire adopted in Liu's study (2004) was specifically designed for adolescents, and may not provide complete understanding of the complex behavior of coping with stress in Chinese adolescents.

Another study in Hong Kong demonstrated coping profiles among Chinese adolescents using cluster analysis (Tam, 2008). Other than undifferentiated copers, a majority of students were classified as active-internal copers, who adopted coping strategies including not only seeking solutions and support, but also acknowledgement, appraisal and acceptance of the problem. This study further indicates that both active coping and active-internal coping are beneficial to psychosocial adjustment outcomes among Chinese adolescents compared to withdrawal coping (Tam, 2008). Tam's study results shed the light on future research to consider the acknowledgement and acceptance of problem as an adaptive coping strategy among Chinese adolescents. The coping efforts that oriented toward changing oneself to adapt to the situation, such as acceptance, cognitive restructuring, distraction, and positive thinking, were labeled as secondary control engagement coping (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). Other than primary control engagement coping that focuses on problem-solving, secondary control coping has been found to be associated with lower levels of depressive and anxious symptoms among Chinese college students (Yao et al., 2010). These findings indicate that coping strategies among Chinese adolescents also involves acceptance or cognitive restructuring, and these secondary control coping strategies may be adaptive among Chinese adolescents. In the Chinese cultural contexts, JH may not be the best way to capture the concept of adaptive coping for adolescents. Those coping styles and

strategies that are considered beneficial in western cultures may not benefit Chinese teenagers as much. Chinese parents and teachers who stress the obedience and collectivism, for example, may not value independency as much for their children compared to western parents. It may appear to be a difficult adjustment experience for the teens possessing high active coping style. Because they may face daily situations where they tend to stand up for what they believe in or tend to have more control of their situations while other adults around them are less supportive. On the other hand, coping efforts such as emotional regulation or seeking help from supernatural power, which are very common in Chinese people, may be more beneficial for them for coping with life stress (X. Liu, et al., 2004). Further studies with more comprehensive coping measures, including Chinese indigenous coping strategies, are necessary to further examination of the coping mechanisms among Chinese adolescents. Future research may benefit from a focus on coping strategies and resources relevant for Chinese adolescents.

Overall, our results support previous research on stress and internalizing and externalizing problem behaviors among adolescents. The findings underscore the importance of assessing stress and coping among Chinese adolescents. Although present findings support the hypothesized model that stress has an indirect effect on substance use and delinquencies through mental distress, active coping did not serve as a protective factor between stress and its negative outcomes in our sample. In considering the interpretations, it is important to note some methodological limitations of this study. First, our measure of active coping John Henryism, had limited viability. This may be partly due to the fact that the measures in the study were not designed for adolescents in China. It is possible that our measure of active coping did not capture the construct very

well for Chinese youth. The reliability of the measure was not high suggesting that perhaps the youth did not completely understand the relevance of the questions. The items do mostly focus on individual sense of control and influence, which may be less relevant for the Chinese culture contexts. It is crucial to keep examining and developing proper measures to better understand not only the active coping but also other coping strategies that are culturally sensitive to Chinese adolescents. Second, the data collected in the research was cross-sectional. Further studies with longitudinal designs may provide more evidence on the causal relationships between stress and its negative outcomes. Third, the samples were collected within two urban cities, Beijing and Xian, in mainland China, which present a geographical limitation. The results of this study may not be generalized to adolescents who live outside of the urban area. It is possible that children in rural area may be more accustomed to the traditional Chinese values than their urban counterparts.

Nevertheless, the present study extends previous understanding on stress, coping, internalizing and externalizing outcomes to Chinese adolescents. The findings provide evidence on the relations among stress, mental distress, substance use and delinquencies. The results also have implications for future research on considering more culturally-sensitive coping measures for Chinese adolescents and other risks and protective factors of problem behaviors in the adolescent's adjustment model. This study is a useful step in the beginning research in Chinese adolescent development that focuses on stress, mental health, and problem behavior. Our results suggest that future research that employs western models and measures may be informative, but also somewhat limited as they may require some adjustments to be most useful.

References

- Adams, J. H., Aubert, R. E., & Clark, V. R. (1999). The relationship among John Henryism, hostility, perceived stress, social support, and blood pressure in African-American college students. *Ethn Dis*, 9(3), 359-368.
- Armistead, L., McCombs, A., Forehand, R., Wierson, M., Long, N., & Fauber, R. (1990). Coping with divorce: A study of young adolescents. *Journal of Clinical Child Psychology*, 19(1), 79-84.
- Auerbach, R. P., Abela, J. R., Zhu, X., & Yao, S. (2007). A diathesis-stress model of engagement in risky behaviors in Chinese adolescents. *Behav Res Ther*, 45(12), 2850-2860.
- Baker, H. D. R. (1979). *Chinese Family and Kinship*. New York: Columbia University Press.
- Beauvais, F., Oetting, E. R. (1999). Drug use, resilience, and the myth of the golden child. See Ref. 44a (pp. 101-108).
- Benbenishty, R., Astor, R. A., Zeira, A., & Vinokur, A. D. (2002). Perceptions of violence and fear of school attendance among junior high school students in Israel. *Social Work Research*, 26(2), 71-87.
- Bennett, G. G., Merritt M. M., Sollers J.J., Edwards C.L., Whitfield K.E., Brandon D.T., et al. (2004). Stress, coping, and health outcomes among African-Americans: A review of the John Henryism hypothesis. *Psychol Health Med*, 19(3), 369-383.
- Bentler, P. M. (1995). *EQS structural equation manual*. Los Angeles: BMDP Statistics Software.
- Bonham, V. L., Sellers, S. L., & Neighbors, H. W. (2004). John Henryism and self-reported physical health among high-socioeconomic status African American men. *Am J Public Health*, 94(5), 737-738.
- Booker, C. L., Unger, J. B., Azen, S. P., Baezconde-Garbanati, L., Lickel, B., & Johnson, C. A. (2007). Stressful life events and smoking behaviors in Chinese adolescents: a longitudinal analysis. *Nicotine Tob Res*, 9(11), 1085-1094.
- Cheng, T. O. (2008). Adolescent smoking in China. *Int J Cardiol*, 126(1), 1-2.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *J Health Soc Behav*, 24(4), 385-396.
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: problems, progress, and potential in theory and research. *Psychol Bull*, 127(1), 87-127.
- Conger, R. D., Ge, X., Elder, G. H., Jr., Lorenz, F. O., & Simons, R. L. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Dev*, 65(2 Spec No), 541-561.
- Connor-Smith, J. K., Compas, B. E., Wadsworth, M. E., Thomsen, A. H., & Saltzman, H. (2000). Responses to stress in adolescence: measurement of coping and involuntary stress responses. *J Consult Clin Psychol*, 68(6), 976-992.

- Deng, S., & Roosa, M. W. (2007). Family influences on adolescent delinquent behaviors: applying the social development model to a Chinese sample. *Am J Community Psychol*, 40(3-4), 333-344.
- Derogatis, L. R., & Spencer, P. M. (1982). *The Brief Symptom Inventory (BSI): Administration and scoring procedures*. Baltimore: Division of Medical Psychology: John Hopkins University School of Medicine.
- Dubow, E. F., Edwards, S., & Ippolito, M. F. (1997). Life stressors, neighborhood disadvantage, and resources: a focus on inner-city children's adjustment. *J Clin Child Psychol*, 26(2), 130-144.
- Dubow, E. F., & Tisak, J. (1989). The relation between stressful life events and adjustment in elementary school children: the role of social support and social problem-solving skills. *Child Dev*, 60(6), 1412-1423.
- Duijkers, T. J., Drijver, M., Kromhout, D., & James, S. A. (1988). "John Henryism" and blood pressure in a Dutch population. *Psychosom Med*, 50(4), 353-359.
- Elgar, F. J., Arlett, C., & Groves, R. (2003). Stress, coping, and behavioural problems among rural and urban adolescents. *J Adolesc*, 26(5), 577-588.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health*, 26, 399-419.
- Fernander, A. F., Patten, C. A., Schroeder, D. R., Stevens, S. R., Eberman, K. M., & Hurt, R. D. (2005). Exploring the association of John Henry active coping and education on smoking behavior and nicotine dependence among Blacks in the USA. *Soc Sci Med*, 60(3), 491-500.
- Gjerde, F., Block, J., & Block, J. H. (1988). Depressive symptoms and personality during late adolescence: gender differences in the externalization-internalization of symptom expression. *J Abnorm Psychol*, 97(4), 475-486.
- Gomez, R. (1998). Impatience-aggression, competitiveness and avoidant coping: direct and moderating effects on maladjustment among adolescents *Personality and Individual Differences*, 25(4), 649-661.
- Gonzales, N. A., Tein, J. Y., Sandler, I. N., & Friedman, R. J. (2001). On the Limits of Coping: Interaction between Stress and Coping for Inner-City Adolescents. *Journal of Adolescent Research*, 16(4), 372-395.
- Grosfeld, F. J., Lips, C. J., Beemer, F. A., Blijham, G. H., Quirijnen, J. M., Mastenbroek, M. P., et al. (2000). Distress in MEN 2 family members and partners prior to DNA test disclosure. Multiple endocrine neoplasia type 2. *Am J Med Genet*, 91(1), 1-7.
- Ham, M., & Larson, R. (1990). The cognitive moderation of daily stress in early adolescence. *Am J Community Psychol*, 18(4), 567-585.
- Hamid, P. N., Yue, X. D., & Leung, C. M. (2003). Adolescent coping in different Chinese family environments. *Adolescence*, 38(149), 111-130.
- Haritatos, J., Mahalingam, R., & James, S. A. (2007). John Henryism, self-reported physical health indicators, and the mediating role of perceived stress among high socio-economic status Asian immigrants. *Soc Sci Med*, 64(6), 1192-1203.
- Herman-Stabl, M. A., Stemmler, M., & Petersen, A. C. (1995). Approach and avoidant coping: Implications for adolescent mental health. *Journal of Youth and Adolescence* 24(6), 649-665.

- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- James, S. A. (1994). John Henryism and the health of African-Americans. *Cult Med Psychiatry, 18*(2), 163-182.
- James, S. A. (1996). The John Henryism scale for active coping. In R. L. Jones (Ed.), *Handbook of tests and measurements for Black populations* (Vol. 2, pp. 415-425). Hampton, VA: Cobb & Henry Publishers.
- James, S. A., Hartnett, S. A., & Kalsbeek, W. D. (1983). John Henryism and blood pressure differences among black men. *J Behav Med, 6*(3), 259-278.
- James, S. A., Keenan, N. L., Strogatz, D. S., Browning, S. R., & Garrett, J. M. (1992). Socioeconomic status, John Henryism, and blood pressure in black adults. The Pitt County Study. *Am J Epidemiol, 135*(1), 59-67.
- James, S. A., LaCroix, A. Z., Kleinbaum, D. G., & Strogatz, D. S. (1984). John Henryism and blood pressure differences among black men. II. The role of occupational stressors. *J Behav Med, 7*(3), 259-275.
- James, S. A., Strogatz, D. S., Wing, S. B., & Ramsey, D. L. (1987). Socioeconomic status, John Henryism, and hypertension in blacks and whites. *Am J Epidemiol, 126*(4), 664-673.
- Jessor, R., Turbin, M. S., Costa, F. M., Dong, Q., Zhang, H., & Wang, C. (2003). Adolescent Problem Behavior in China and the United States: A Cross-National Study of Psychosocial Protective Factors. *Journal of Research on Adolescence, 13*(3), 329-360.
- Klem, L. (2000). Structural equation modeling. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 227-257). Washington, DC: American Psychological Association.
- Kohn, P. M., & Milrose, J. A. (1993). The Inventory of High-School Students' Recent Life Experiences: A Decontaminated Measure of Adolescents' Hassles. *Journal of Youth and Adolescence, 22*(1), 43-55.
- Krohne, H. W. (Ed.). (1996). *Individual Differences in coping*. New York: Wiley.
- Larson, R., & Ham, M. (1993). Stress and "Storm and Stress" in Early Adolescence: The Relationship of Negative Events with Dysphoric Affect. *Developmental Psychology, 29*(1), 130-140.
- Lau, S., & Leung, K. (1992). Relations with parents and school and Chinese adolescents' self-concept, delinquency, and academic performance. *Br J Educ Psychol, 62* (Pt 2), 193-202.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. NY: Springer.
- Licitra-Kleckler, D. M., & Waas, G. A. (1993). Perceived social support among high-stress adolescents: The role of peers and family. *Journal of Adolescent Research, 8*(4), 381-402.
- Lin, N., & Lai, G. (1995). Urban stress in China. *Soc Sci Med, 41*(8), 1131-1145.
- Liu, X., Kurita, H., Uchiyama, M., Okawa, M., Liu, L., & Ma, D. (2000). Life events, locus of control, and behavioral problems among Chinese adolescents. *J Clin Psychol, 56*(12), 1565-1577.

- Liu, X., Tein, J. Y., & Zhao, Z. (2004). Coping strategies and behavioral/emotional problems among Chinese adolescents. *Psychiatry Res*, *126*(3), 275-285.
- Liu, X. C., Oda, S., Peng, X., & Asai, K. (1997). Life events and anxiety in Chinese medical students. *Soc Psychiatry Psychiatr Epidemiol*, *32*(2), 63-67.
- Liu, X. C., Wang, J.L., Yu, J.C., & Tian, J. (1993). Mental health problems, health behavior, and life events in high school students. *Chinese Journal of Behavioral Medicine*, *2*, 37-40.
- Ma, H. K., Li, S. C., & Pow, J. W. (2011). The relation of Internet use to prosocial and antisocial behavior in Chinese adolescents. *Cyberpsychol Behav Soc Netw*, *14*(3), 123-130.
- McKetney, E. C., & Ragland, D. R. (1996). John Henryism, education, and blood pressure in young adults. The CARDIA study. Coronary Artery Risk Development in Young Adults Study. *Am J Epidemiol*, *143*(8), 787-791.
- Merritt, M. M., Bennett, G. G., Williams, R. B., Sollers, J. J., 3rd, & Thayer, J. F. (2004). Low educational attainment, John Henryism, and cardiovascular reactivity to and recovery from personally relevant stress. *Psychosom Med*, *66*(1), 49-55.
- Newcomb, M. D., Huba, G. J., & Bentler, P. M. (1986). Determinants of sexual and dating behaviors among adolescents. *J Pers Soc Psychol*, *50*(2), 428-438.
- O'Brien, M., Margolin, G., & John, R. S. (1995). Relation among marital conflict, child coping, and child adjustment. *Journal of Clinical Child Psychology*, *24*, 346-361.
- Overstreet, S., Dempsey, M., Graham, D., & Moely, B. (1999). Availability of family support as a moderator of exposure to community violence. *J Clin Child Psychol*, *28*(2), 151-159.
- Pryor-Brown, L., & Cowan, E. L. (1989). Stressful life events, support, and children's school adjustment. *Journal of Clinical Child Psychology*, *18*, 214-220.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in Psychology and Aging: some proposed guidelines. *Psychol Aging*, *6*(4), 499-503.
- Seiffge-Krenke, I. (1993a). Coping behavior in normal and clinical samples: more similarities than differences? *J Adolesc*, *16*(3), 285-303.
- Seiffge-Krenke, I. (1993b). Stress and coping in adolescence. Introduction. *J Adolesc*, *16*(3), 227-233.
- Shek, D. T. (2002). Family functioning and psychological well-being, school adjustment, and problem behavior in Chinese adolescents with and without economic disadvantage. *J Genet Psychol*, *163*(4), 497-502.
- Silberg, J., Pickles, A., Rutter, M., Hewitt, J., Simonoff, E., Maes, H., et al. (1999). The influence of genetic factors and life stress on depression among adolescent girls. *Arch Gen Psychiatry*, *56*(3), 225-232.
- Somova, L. I., Connolly, C., & Diara, K. (1995). Psychosocial predictors of hypertension in black and white Africans. *J Hypertens*, *13*(2), 193-199.
- Sun, Y., Tao, F., Hao, J., & Wan, Y. (2010). The mediating effects of stress and coping on depression among adolescents in China. *J Child Adolesc Psychiatr Nurs*, *23*(3), 173-180.
- Tam, V. C. (2008). Coping profiles among Chinese adolescents in Hong Kong: a person-centered approach. *Int J Adolesc Med Health*, *20*(1), 73-83.

- Unger, J. B., Yan, L., Shakib, S., Rohrbach, L. A., Chen, X., Qian, G., et al. (2002). Peer influences and access to cigarettes as correlates of adolescent smoking: a cross-cultural comparison of Wuhan, China, and California. *Prev Med*, *34*(4), 476-484.
- Wang, Y. (2006). Value changes in an era of social transformations: College-educated Chinese youth. *Educational Studies*, *32*, 233-240.
- Wenzel, L., Glanz, K., & Lerman, C. (2002). Stress, Coping, and Health Behavior. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice* (pp. 210-239). San Francisco, CA: Jossey-Bass.
- Whitfield, K. E., Jonassaint, C., Brandon, D., Stanton, M. V., Sims, R., Bennett, G., et al. (2010). Does coping mediate the relationship between personality and cardiovascular health in African Americans? *J Natl Med Assoc*, *102*(2), 95-100.
- Wills, T. A., Vaccaro, D., & McNamara, G. (1992). The role of life events, family support, and competence in adolescent substance use: a test of vulnerability and protective factors. *Am J Community Psychol*, *20*(3), 349-374.
- Windle, M., & Windle, R. C. (1996). Coping strategies, drinking motives, and stressful life events among middle adolescents: associations with emotional and behavioral problems and with academic functioning. *J Abnorm Psychol*, *105*(4), 551-560.
- Wong, D. S. W. (2001). Changes in juvenile justice in China. *Youth and Society*, *32*, 492-509.
- Wyman, P. A., Cowen, E. L., Work, W. C., & Parker, G. R. (1991). Developmental and family milieu correlates of resilience in urban children who have experienced major life stress. *Am J Community Psychol*, *19*(3), 405-426.
- Wyman, P. A., Cowen, E. L., Work, W. C., Raoof, A., Gribble, P. A., Parker, G. R., et al. (1992). Interviews with children who experienced major life stress: family and child attributes that predict resilient outcomes. *J Am Acad Child Adolesc Psychiatry*, *31*(5), 904-910.
- Xiang, G. (1999). Delinquency and its prevention in China. *Interventional Journal of Offender Therapy and Comparative Criminology*, *43*, 61-70.
- Yao, S., Xiao, J., Zhu, X., Zhang, C., Auerbach, R. P., McWhinnie, C. M., et al. (2010). Coping and involuntary responses to stress in Chinese university students: psychometric properties of the responses to stress questionnaire. *J Pers Assess*, *92*(4), 356-361.
- Zhang, L., & Messner, S. F. (1995). Family deviance and delinquency in China. *Criminology*, *33*, 359-387.

Chapter III

Negative Peer Influences, Parental Support and Problem Behaviors among Chinese Adolescents

Introduction

An emerging need for research on examining family and school environmental factors that are related to Chinese adolescent problem behaviors such as cigarette use has been noted by scientists in China (Wen et al., 2007). The relationship between peer influences and problem behaviors has been documented in Asian populations. Chen et al. (1988), for example, reported that peer approval of misconduct was associated with misdeeds among Chinese American adolescents (Chen, Roberts, & Aday, 1998). Studies of family and peer influences on Mainland Chinese youth, however, are limited. In particular, little is known about the mechanisms of family and peer influence and their associations with mental health and behavior problems among adolescents in Mainland China.

Families may play a crucial role in shaping adolescent development. Family connectedness, for example, was found to compensate for the risk effect of low school connectedness on cigarette smoking (Lloyd-Richardson, Papandonatos, Kazura, Stanton, & Niaura, 2002). Parental-child mutual attachment has also been found to mitigate the negative effect from factors such as tolerance of deviance and sensation seeking, leading

to less marijuana use and delinquency (Brook, Brook, De La Rosa, Whiteman, & Montoya, 1999). In China, the family is a strong part of cultural heritage and a central aspect of people's life (Lin & Lai, 1995). The influence of family factors on adolescent psychological well-being and problem behavior may be particularly salient to Chinese youth (Ma, Shek, Cheung, & Lam, 2000; Ma, Shek, Cheung, & Lee, 1996). Yet, most of the existing studies have been conducted in western contexts as few researchers have examined the role of family environment and peer influence in Chinese adolescent development (Deng & Roosa, 2007; Ho, Spinks, & Yueng, 1989; Ma, et al., 2000; Ma, et al., 1996; D. T. Shek, 1997b). In Hong Kong, Shek (1997) investigated the effect of family environment on secondary school students in a Chinese context. With a sample of 365 students, he found evidence indicating that positive family functioning was related to higher amount of adolescent psychological well-being, better school adjustment, and less problematic behavior. A more positive perception of parenting styles was related to better adolescent psychological well-being, school adjustment, and less problem behaviors (D. T. Shek, 1997b). Results of studies conducted in Hong-Kong, however, may not be generalized to all Chinese youth because the cultures and contexts remained quite different between mainland China and Hong-Kong. Another study of mainland Chinese adolescents that applied the Social Development Model (Hawkins & Weis, 1985) to understand the mediation process of how family environment is related to delinquent behaviors (Deng & Roosa, 2007). The researchers found part of the model was supported by the Chinese sample and highlighted the need to identify cultural differences when applying western theories to Chinese populations (Deng & Roosa, 2007). Continuous effort is needed to understand the mechanisms of how parental support plays a role in

mitigating or compensating the effect of negative peer influences in the Chinese contexts. To better understand the effects of family and peers influence, the current study examines a conceptual model based on a resiliency perspective in a large sample of mainland Chinese adolescents.

In an effort to understand how individual assets and environmental resources may operate to offset or moderate the negative effect of risks among Chinese students, the current study examines a conceptual model of family and peer influence on the psychological well-being and problem behaviors. The proposed conceptual model was grounded on the Social Development Model (SDM) (Hawkins & Weis, 1985). The SDM proposes that family, schools, peers, and community influence adolescents' behavior successively (Hawkins & Weis, 1985). The model includes peer influence and parental support as two important social factors that influence adolescent social development. In a society where family connectedness is highly valued, it would be important to assess how parental support may modify the relationship between risks and both internalizing and externalizing outcomes among the young generation. Drawing on the resilience theory (Fergus & Zimmerman, 2005), this study aims to understand whether parental support can counteract or moderate the effect of risks for predicting adolescent problem behaviors. Resilience requires the presence of both risks and promotive factors that either facilitate positive outcomes, or reduce or neutralize the negative effects of risks (Fergus & Zimmerman, 2005). The current study, therefore, examines the direct risk effects of negative peer influence on Chinese adolescent externalizing outcomes (e.g. non-delinquent behaviors, violent behaviors, cigarette and alcohol use) and indirect effects through internalizing outcomes (e.g. mental distress and lower self acceptance). Parental

support, on the other hand, is tested as a promotive factor in the resilience process that may neutralize or moderate the negative effect of the risks. The findings may contribute to a better understanding of the connections between negative peer influence, mental health, and problem behaviors among Chinese adolescents. The study will also add the knowledge base on the mechanisms through which parental support was related to Chinese adolescent problem behaviors.

Model Rationale and Hypotheses

The conceptual model is guided by the resiliency theory (Fergus & Zimmerman, 2005). Two resilience models — compensatory and protective — are applied in our study to explain how parental support may operate to protect teens from the effects of risk exposure on behavioral outcomes. The compensatory model implies that promotive factors can counteract, or compensate for, the effect of risk factors (Ostaszewski & Zimmerman, 2006). The compensatory model describes a direct effect of a promotive factor on an outcome and that effect is independent of the effect of a risk factor (Zimmerman & Arunkumar, 1994). Another model of resilience is the protective model, suggesting that promotive factors can buffer, or moderate, the negative effects of exposure to risk. In other words, the relationship between risks and negative outcomes may be weakened as promotive factors increase (Zimmerman & Arunkumar, 1994). Empirical evidence supports the compensatory and protective effects of promotive factors on risk factors associated with substance use and other adolescent problem behaviors (Fergus & Zimmerman, 2005; Jessor, Turbin, & Costa, 1998; Newcomb & Felix-Ortiz, 1992; Simons-Morton, Hartos, & Haynie, 2004). The goal of this study is to understand

family and peer influences on mainland Chinese adolescents and identify whether a compensatory model or a protective model describes the successful adjustment despite risk exposures.

Figure 3.1 presents the *compensatory model* of resilience that guides my study of a social influence on problem behaviors among Chinese adolescents. The risk factor (e.g. negative peer influence) is hypothesized to have both a *direct* effect on adolescent externalizing outcomes (e.g. non-violent behaviors, violent behaviors, cigarette and alcohol use) and an *indirect* effect that is mediated by internalizing outcomes (e.g. depression, anxiety, and low self acceptance). The direct effect of negative peer influences is described as the more a child is exposed to negative peer influences, such as aggressive behaviors of friends or friends using alcohol, the higher risk he/she may engage in problematic behaviors. Moreover, a child with more exposure to negative peer influences may be at higher risk of having mental distress and low self acceptance. The negative internalizing outcomes then increase the risk of engaging in problematic behaviors among these adolescents. Parental Support is also hypothesized to have both a *direct* effect on adolescent externalizing outcomes and an *indirect* effect that is mediated by internalizing outcomes. Different from the risk factor, parental support may serve as a positive factor that decreases mental distress and increases self acceptance, and then indirectly decreases externalizing problem behaviors. Parental support may also directly decrease delinquent behaviors and substance use. In other words, parental support is hypothesized to compensate for the negative outcome of peer influence.

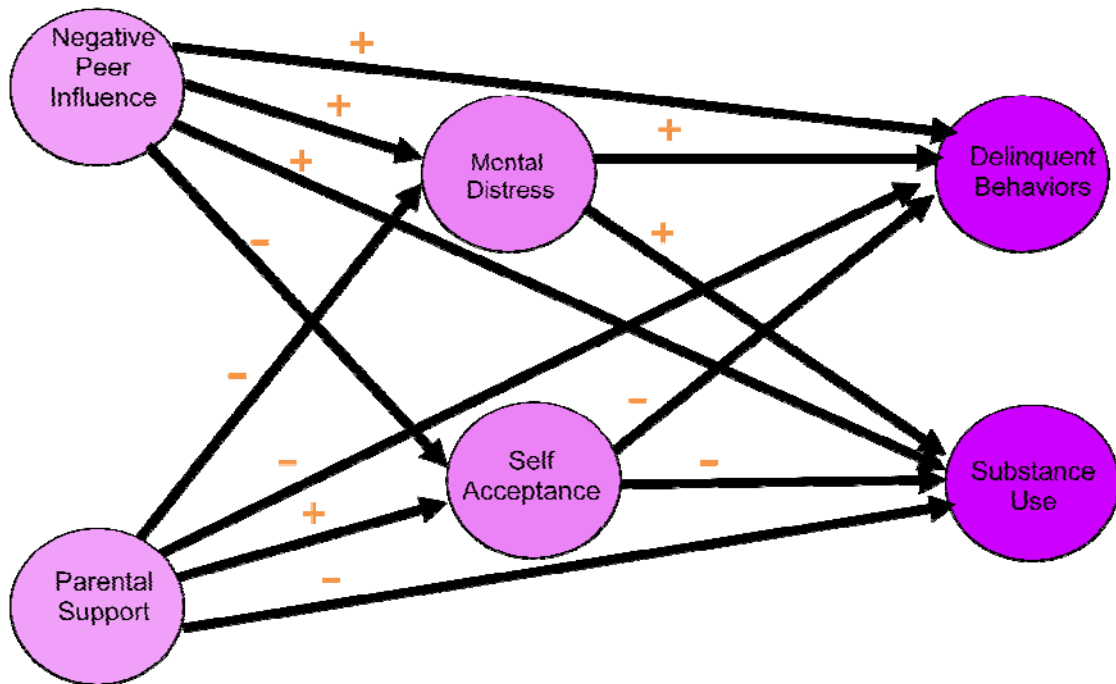


Figure 3.1 Theoretical Model of Direct and Mediation Effect of Negative Peer Influence and Parental Support on Chinese Teen's Problem Behaviors (A compensatory model of resilience).

In a protective model of resilience, however, parental support is expected to moderate or reduce the deleterious effects of negative peer influence. Parental support does not operate independently on decreasing the negative outcomes in a protective model. Rather, it operates to modify the links between a risk (negative peer influence) and the outcomes (psychological well-being and problem behavior). For instance, in teens with a high level of parental support, the correlation between negative peer influence and problem behaviors may be weaker compared to those with a low level of parental support. In the protective model, therefore, parental support will be used as a group defining variable (e.g. high parental support group or low parental support group) to examine its moderating (interaction) effects in the analyses. In order to understand

whether a compensatory model or a protective model will best describe the mechanism of how parental support effects the internalizing and externalizing outcomes among mainland Chinese adolescents, both resilience models will be tested in the study.

Method

Sample and Procedures

The models were tested using survey data from middle and high school students from two urban cities in China: Beijing and Xian. Participants in the study include 1356 students in Grades 7 to 12 from middle (44%) and high schools (56%) in the urban areas of Beijing and Xian. Approximately 48% of the respondents were boys and 52% were girls. Experienced researchers in Beijing and Xian helped select participating schools based on characteristics such as diverse size, test scores, and social status. Youth were asked to complete questionnaires in school during a group administration in classrooms. Chinese research staff administered the data collection including following UM IRB protocol, and student assents were obtained before the survey was administrated. Schools participating in the survey study received a small stipend, but individual youth did not.

A questionnaire developed for the Flint Adolescent Study (e.g. Ostaszewski & Zimmerman, 2006) was adapted for the current study. The revisions of the questionnaire focused on culturally relevant terminology and contexts, and eliminated less relevant measures (e.g., sibling influences). A Chinese researcher translated the questionnaire into Chinese and then a Chinese student translated it back into English. The U.S. team reviewed the translation and back-translation for accuracy.

Measures

A questionnaire developed for the Flint Adolescent Study (e.g. Ostaszewski & Zimmerman, 2006) was adapted for the current study. The revisions of the questionnaire focused on culturally relevant terminology and contexts, and eliminated less relevant measures (e.g., sibling influences). A Chinese researcher translated the questionnaire into Chinese and then a Chinese student translated it back into English. The U.S. team reviewed the translation and back-translation for accuracy. Table 3.1 presents the means and standard deviations of each measures used in the study. Detailed descriptions of each subscale are as follows. We also asked student to identify their grade and sex.

Table 3.1 Means and standard deviation of independent and dependent variables

	N	Mean	Std. Deviation	Skewness
Negative Peer Influence	1356	1.25	.39	.49
Anxiety Symptoms	1350	1.75	.85	1.61
Depressive Behaviors	1350	1.79	.87	1.48
Self Acceptance	1323	3.35	.86	-.20
Non-violent delinquency	1352	1.09	.35	6.26
Violent Behavior	1354	1.12	.39	4.81
Smoking (frequency)	1312	1.27	.72	3.30
Alcohol use (frequency)	1292	2.68	2.33	1.83
Parental Support in daily life	1353	3.51	.80	-.49

Negative Peer Influence ($\alpha=.85$). Negative peer influences were measured by 10 items, each with a 5- point scale, that were included in sub-scales such as friends who use alcohol (Stacy, Newcomb, & Bentler, 1992), friends who use drugs (Dielman, Butchart, & Shope, 1993), friend's aggressive or delinquent behavior, and friends who cut/suspended/dropped out of school (Ostaszewski & Zimmerman, 2006). In order to reduce the number of indicators of negative peer influence as a latent factor in the structural equation model, a principal axis factoring was conducted using SPSS to assist parceling the 10 items into three categories. The items were grouped by both the rank order of factor loading and the common feature of the items. Each category serves as a new indicator of the mean of the grouped items; the three indicators are peers engaging in substance use (mean of 4 items), peers engaging in negative school behaviors (mean of 2 items), and peers engaging in delinquencies (mean of 4 items).

Parental Support ($\alpha=.87$). Perceived mother and father support were each measured by 5 items (Procidano & Heller, 1983). The items used a 5-point scale. In the analysis testing the compensatory model, parental support was treated as a latent factor with two indicators: perceived support of a father and perceived support of a mother. In the analysis testing the protective model, parental support was first calculated as a mean of all 10 items. Then, a median split of the average score of the 10 items for the total sample was conducted to separate the students into a high parental-support group (rated higher than 3.5 in the scale) and a low parental-support group (rated 3.5 or lower).

Psychological Distress. Depression ($\alpha=.91$) and anxiety ($\alpha=.89$) symptoms were each measured with six items (Derogatis & Spencer, 1982). The 5-point rating scales asked

youth to indicate how much they were bothered by each of 12 symptoms in the past week.

***Self Acceptance* ($\alpha=.73$).** Four items were used to assess self-acceptance (Newcomb, Huba, & Bentler, 1986), each using a 5- point scale. The higher the score indicated the more self-acceptance. Three items were included in the final analyses of the study: how happy I am with myself, how generally pleased I am with myself, and how much I regard myself as successful. One question, *how much I like myself* was removed from the scale because the item has particular low standardized factor loading (-.09) compared to other items (.50 to .85) in the preliminary factor analysis of self acceptance. In the model, we treat self acceptance as a latent factor with the three items as indicators.

Substance use. Smoking and alcohol use were each represented on a single-item scale. The ratings of smoking were provided on a 5-point scale ranging from 1 = never smoke to 5 = regularly smoking now. The rating of alcohol use ranged from 1 = never to 14 = 40 or more times during the last 30 days. Both of the scores of alcohol use and cigarette use were standardized and summed for the analyses.

Delinquency. The frequency of violent behavior ($\alpha=.77$) was measured with a 5-item, 5-point scale. Similarly, the frequency of non-violent delinquent behavior ($\alpha=.88$) was measured with an 8-item, 5-point scale. Due to the skewness of these dependent variables, each item was recoded into a dichotomous (never/ever) scale. If a student answered 1 (never) to a question, he or she would get a new score of 0. If the student answered 2 to 5 in the original scale (ever), he or she will get a new score of 1. A sum of 8 items of non-violent delinquent behaviors (ranging from 0 to 8) and a sum of 5 items of violent behaviors (ranging from 0 to 5) were then obtained for the final analyses. The

skewness of non-violent delinquent behaviors was improved to 4.52, and the skewness of violent behavior was improved to 3.37.

Data Analyses

The models were tested by confirmatory latent-variable structural equation analyses using EQS program (Bentler, 1995). Structural equation modeling (SEM) analyses were chosen because it allowed the examination of two dependent variables in a model and describe the relationships among several endogenous factors simultaneously (Klem, 2000). Another benefit of using SEM analyses is that it recognizes and takes in to account the existence of measurement errors of predictive variables (Benbenishty, Astor, Zeira, & Vinokur, 2002). I performed these analyses on the total sample of the Chinese adolescent students (n=1356) and on subsamples of two parental support groups in order to examine the modifying effect. The number of missing observations was 114 (8.5% of the total sample), and were handled using the more conservative procedure of listwise deletion of cases because they did not have complete information for each of the analyses using the EQS program.

The goodness-of-fit indices examined according to the recommendation of (Raykov, Tomer, & Nesselroade, 1991) were: normed fit index (NFI), nonnormed fit index (NNFI), and comparative fit index (CFI). A widely used misfit indices of root mean square error of approximation (RMSEA) was also reported. According to Hu and Bentler, fit indices that exceeded .90 and RMSEA misfit indices that is .06 or lower, respectively, are considered to support acceptable fit of the model (Hu & Bentler, 1999). I first tested the compensatory hypothesis by examining the full model presented in Figure 1. The

protective model of parental support was tested using the dichotomous parent support variable created by a median split in a multi-group test of the model in Figure 1 excluding the parental support paths.

The reverse model of the original theoretical model in Figure 2.1 was tested in order to exclude the possibility of having the reverse model as a better model. In other words, delinquent behaviors and substance use were tested as independent factors, while parental support and negative peer influence were tested as dependent variable in the reverse model. Mental distress and self acceptance remained as mediating factors in the model.

Results

Descriptive statistics on variables

Table 3.2 provides bivariate correlations among the variables included in this study. Negative peer influence correlated with more anxiety, depression, non-violent delinquencies, violent behaviors, smoking and alcohol use (correlations range from 0.17 to 0.35); while it correlated with less self acceptance and parental support (-0.06 and -0.12). Anxiety and depression correlated with less self acceptance (-0.32 and -0.38) and parental support (-0.15 and -0.19), while they are both positively correlated with other variables. Self acceptance correlated with more parental support (0.21) and less smoking behavior (-0.07). All the four kinds of problem behaviors correlated with each other, with correlations ranging from 0.23 to 0.66. Parental support correlated with less non-violent delinquencies (-0.07), violent behaviors (-0.07), smoking (-0.10), and alcohol use (-0.16).

Table 3.3 presents the means and standard deviations of negative peer influence, internalized outcomes and externalized outcomes by high versus low parental support. Overall, students perceived more parental support reported slightly less anxiety, depression, delinquencies, and substance use and more self acceptance compared to students perceived less parental support.

Gender, school grade, father's education and mother's education were treated as background variables in the model. Females are less likely to report negative peer influence. In the result of structural equation analyses, females are more likely to experience more mental distress ($\beta = .19$) and have less self acceptance ($\beta = -.08$) compared to males. Females are, however, less likely to be involved in substance use ($\beta = -.21$) and delinquent behaviors ($\beta = -.07$) than males. High school students are more likely to experience mental distress ($\beta = .16$), report less self acceptance ($\beta = -.11$), and be involved in substance use ($\beta = .11$) compared to junior high school students.

Table 3.2 Matrix of correlations among subscales

Subscale	Negative Peer Influence	Anxiety	Depression	Self Acceptance	Non-Violent Delinquencies	Violent Behaviors	Smoking	Alcohol Use	Parental Support
Neg. Peer Influence	1.00								
Anxiety	0.17**	1.00							
Depression	0.21**	0.82**	1.00						
Self Acceptance	-0.06*	-0.32**	-0.38**	1.00					
Non-Violent Delinquencies	0.28**	0.21**	0.24**	-0.06*	1.00				
Violent Behaviors	0.41*	0.21**	0.24**	-0.05	0.65**	1.00			
Smoking	0.35**	0.13**	0.17**	-0.07**	0.21**	0.38**	1.00		
Alcohol Use	0.35**	0.17**	0.19**	-0.02	0.20**	0.28**	0.41**	1.00	
Parental Support	-0.12**	-0.15**	-0.19**	0.21**	-0.08**	-0.08**	-0.10**	-0.16**	1.00

** .Correlation is significant at the 0.01 level (2-tailed).

* .Correlation is significant at the 0.05 level (2-tailed).

Table 3.3 Means and standard deviations of subscales by parental support

Subscale and Factor	Low Parental Support	High Parental Support
	Mean (SD)	Mean (SD)
Negative Peer Influence	1.30 (.42)	1.25 (.39)
<i>Poor Mental Health</i>		
Anxiety	1.87 (.92)	1.75 (.85)
Depression	1.94 (.93)	1.79 (.87)
Self Acceptance	3.20 (.87)	3.35 (.86)
<i>Delinquency</i>		
Non-Violent	0.52 (1.35)	0.40 (1.20)
Violent	0.42 (0.99)	0.33 (.86)
<i>Substance Use</i>		
Smoking (standardized)	0.12 (1.12)	0.00 (1.00)
Alcohol Use (standardized)	0.15 (1.09)	0.00 (1.00)

Testing the Compensatory Model Based on Total Sample

Figure 3.2 presents the results of the structural equation parameter estimation of the compensatory model of resilience of Chinese adolescent problem behaviors. The reverse model generated the same model fit as the original one; therefore, I adopted the original hypothesized model because it is supported by both theories and past research. The results of the analysis based on the total sample provided a very good fit to the data [$\chi^2(98, N=1,201) = 374.04(p < .001)$, NFI = .95, NNFI = .94, CFI = .96, SMRM= .03, RMSEA = .05, within 90% confidence interval.] The overall model explained 29% of the variance in delinquent behaviors and 40% of the variance in substance use (Figure 3.2).

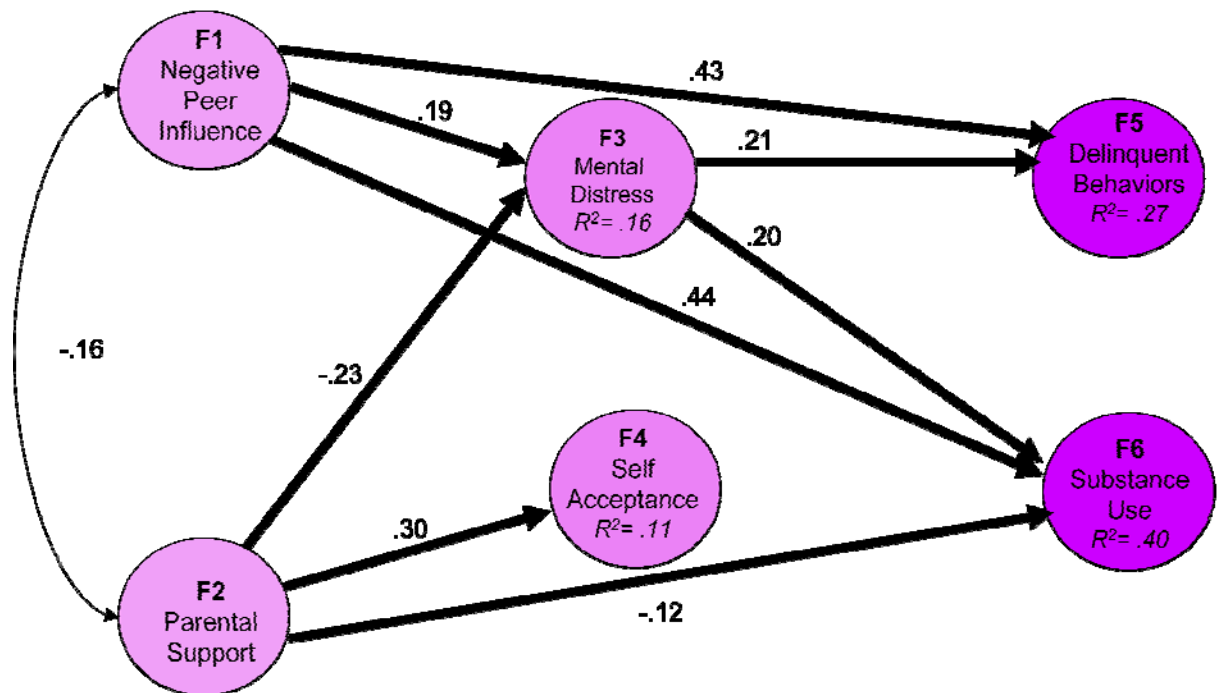


Figure 3.2 Chinese Teen’s Problem Behaviors as a Result of Negative Peer Influence and Parental Support (controlled for age, gender, and parents’ education). $\chi^2(98, n=1201) = 374.04$ ($p < .001$), NFI = .95, NNFI = .94, CFI = .96, RMR = .03, RMSEA = .05. All paths with solid lines are statistically significant at $p < .05$.

After controlling for gender, school grade, parents' education levels, the main contributor to both delinquent behaviors and substance use was negative peer influence ($\beta = 0.43; 0.44$, respectively, followed by mental distress ($\beta = 0.21; 0.20$, respectively). Self acceptance was associated with slightly higher delinquencies ($\beta = 0.08$) and substance use ($\beta = 0.09$). Parental support was associated with less substance use ($\beta = -0.12$), and no direct effect was found between the parental support and delinquency. Negative peer influence was also found to be associated with more mental distress ($\beta = 0.19$) while parental support was found to be associated with less mental distress ($\beta = -0.23$). No direct effect was found between negative peer influence and self acceptance. Parental support, as expected, was linked with higher self acceptance ($\beta = 0.30$). More parental support correlated with less negative peer influence ($r = -.16$). Negative peer influence had an indirect effect on problem behaviors through increasing mental distress; it also directly increased substance use and delinquent behaviors among Chinese adolescents.

Testing the Protective Model Based on Total Sample

A separate analysis was then performed on the total sample to test the structural model of negative peer influence on internalizing and externalizing outcomes. Different from the compensatory model, the protective model includes only negative peer influence as an independent risk factor. Parental support was treated as a moderating factor. Figure 3.3 presents the results of the structural equation parameter estimation of the model on the full sample.

The results also indicate a very good fit of this reduced model to the data [$\chi^2 (76, n = 1201) = 327.17 (p < .001)$, NFI = .95, NNFI = .94, CFI = .96, RMR = .033, RMSEA =

.052, within 90% confidence interval.] The overall model explained 27% of the variance in delinquencies and 38% of the variance in substance use. Similar to the compensatory model, the main contributor to both delinquent behaviors and substance use was negative peer influence ($\beta = 0.43$; 0.44, respectively), followed by mental distress ($\beta = 0.22$; 0.21, respectively). Self acceptance was not associated with behavior outcomes, and no effect of negative peer influence on self acceptance was found. As expected, negative peer influence was associated with more mental distress ($\beta = 0.22$); mental distress was also associated with more delinquent behaviors ($\beta = 0.22$) and more substance use ($\beta = 0.21$).

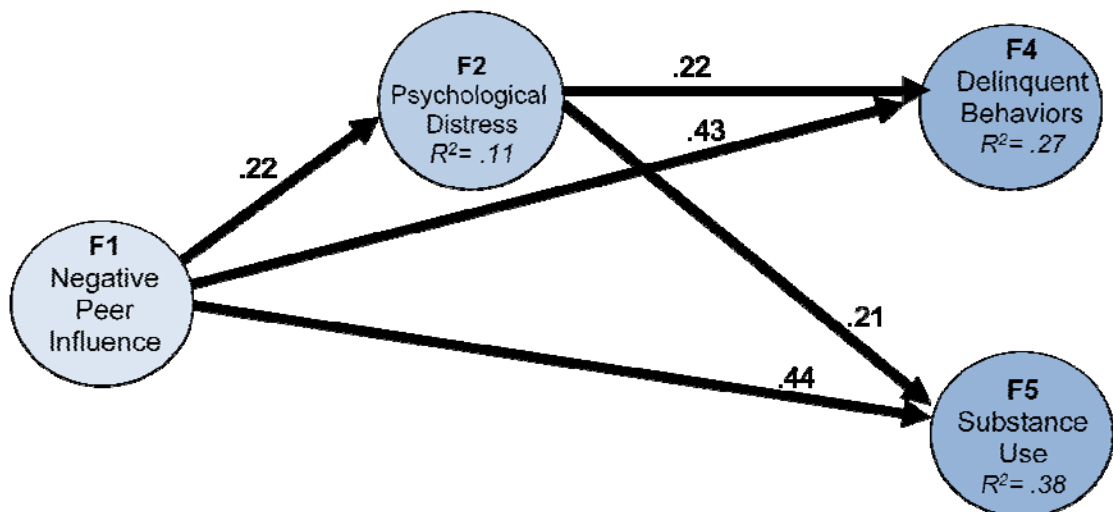


Figure 3.3 Chinese Teen’s Problem Behaviors as a Result of Negative Peer Influence $\chi^2(76, n = 1201) = 327.17$ ($p < .001$), $NFI = .95$, $NNFI = .94$, $CFI = .96$, $RMR = .033$, $RMSEA = .052$. All paths with solid lines are statistically significant at $p < .05$.

Testing the Moderating Effect of Parental Support

The next step was to test the moderating effect of parental support. A median split of the average score of parental support for all samples was conducted to separate the students into two groups: a high parental support group (rated higher than 3.5 in the scale) and a low parental support group (rated 3.5 or lower). A multiple group analysis

investigated the question of whether the same theoretical model was applied to the samples of high and low support individuals. The first analysis procedure was taken to fit the covariance matrices of the two subgroups simultaneously to the same model while constraining the factor loadings, the paths, and the covariances to be equal (Benbenishty, et al., 2002). The results produced a good fit to the data [$\chi^2(168, n \text{ low support} = 599, n \text{ high support} = 607) = 447.23, p < 0.001$, and with NFI = .93, NNFI = .94, CFI = .96, RMR = .052, RMSEA = .053, within 90% confidence interval.] Therefore, the same theoretical model fits the data from both groups.

The next analysis was tested to see if the goodness-of-fit could be improved significantly by releasing certain constraints on a path that revealed a large difference between the two groups in the earlier analysis performed without any constraints on the path (Benbenishty, et al., 2002). When one of the constraints was released, there was a statistically significant reduction in χ^2 , indicating that the difference of the specific path between the two groups is significant. In the protective model, the constraints of two paths were released: one was the link between negative peer influence and mental distress, with χ^2 reduced 6.64 ($p = .01$); another was the link between psychological distress and substance use, with χ^2 reduced 4.99 ($p = .03$) (See Figure 3.4. Paths released are in red color). The result from the final model with the constraint released were $\chi^2(166, n \text{ low support} = 599, n \text{ high support} = 607) = 434.95, p < 0.001$, and with NFI = .93, NNFI = .94, CFI = .96, RMSEA = .052, within 90% confidence interval.

The results indicate that the structural models were basically the same for high parental support and low parental support groups, but the path coefficients differed in the relationship between negative peer influence and psychological distress, as well as in the

relationship between psychological distress and substance use. The results indicated that for psychological distress there was a stronger association with negative peer influence for high parental support adolescents ($\beta = .33$) compared to low parental support adolescents ($\beta = .13$). The association between psychological distress and substance use was found only for low parental support group ($\beta = .24$), but not for the high parental group. Similarities also existed for the two groups. Negative peer influence has similar direct effects on delinquent behaviors and substance use across the two parental support groups. The effects of psychological distress on delinquent behaviors and substance use were also the same across the two parental support groups. All the coefficients were indicated in Figure 3.4 for two groups.

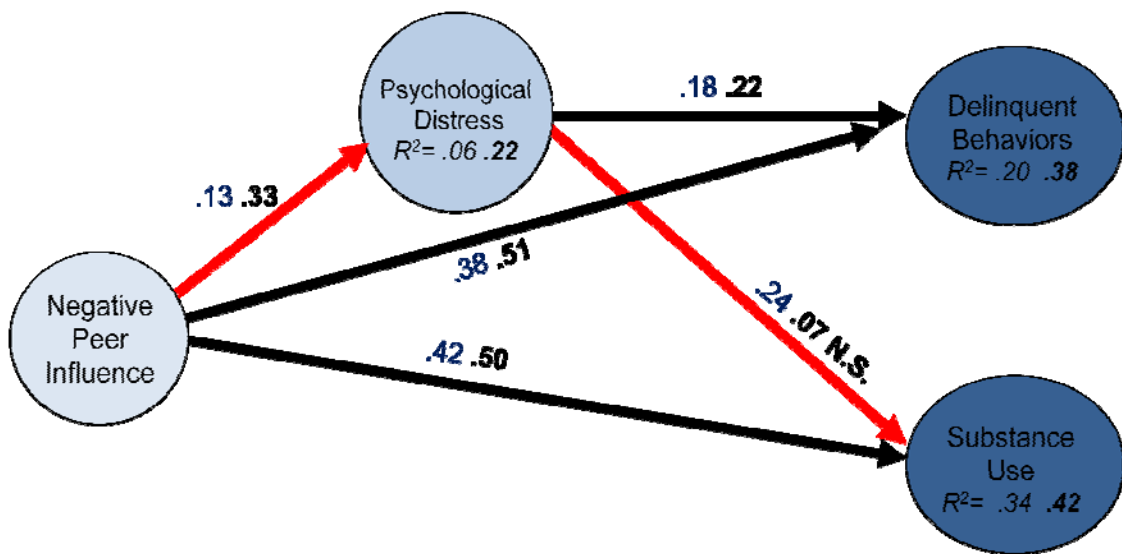


Figure 3.4 Parental Support Groups Comparison Structural Equation Modeling of Chinese Teen’s Problem Behaviors. $\chi^2(166, n \text{ low support} = 599, n \text{ high support} = 607) = 447.23, p < 0.001$, and with **NFI = 0.93, NNFI = 0.94, CFI = 0.96, RMR = .052, RMSEA = 0.053**. All paths with solid lines are statistically significant at $p < .05$. The bold numbers indicate coefficients for High Parental Support group. The red lines indicate paths that were modified by parental support.

Discussion

The results indicate that the overall compensatory model was strongly supported by our study with good fit indices, with good variances explained by the model. Most of the hypothesized paths and directions in the compensatory model were also supported. Negative peer influence plays a crucial role on Chinese adolescents' delinquent behaviors and substance use, and it also indirectly increases problem behaviors through increasing mental distress. Yet, negative peer influence did not have an effect on self acceptance. As hypothesized, parental support compensated for the negative effects of peers on problem behaviors. More parental support was directly associated with less substance use. Parental support also has indirect effects on reducing delinquencies and substance use through less mental distress. Moreover, parental support is associated with higher self acceptance. The current findings further support the importance of the positive family influence, especially parental support, in the psychological well-beings among Chinese adolescents and the prevention of problem behaviors (Ary, Duncan, Duncan, & Hops, 1999; Nash, McQueen, & Bray, 2005). Consistent with previous research outcomes (Ary, Duncan, Duncan, & Hops, 1999), the effects of negative peer influence was of greater magnitude compared to parental support. This result confirms that in the developmental stage, peer influence plays an important role on adolescent psychological well-being and behaviors. Nevertheless, parental support may attenuate the potentially negative effects of peers through reducing mental distress and increasing self acceptance.

The protective model of parental support proposed in current study was only partially supported by the sample. In the multiple group comparison of the model between high parental support and low parental support, all but two structural paths

remained the same between the two groups. First, the link between psychological distress and substance use became non-significant for adolescents with high parental support compared to adolescents with low parental support. The finding is consistent with the original hypothesis that the paths between risk and negative outcomes will become weaker or disappear with higher parental support. The finding is also consistent with the results of previous studies conducted in Western societies that positive family relationships have been shown to be protective factors in drug and alcohol use (Resnick et al., 1997; Resnick, Harris, & Blum, 1993). In particular, the current study provides evidence that parental support may be particularly helpful to prevent substance use among adolescents who experience mental distress.

Second, the relationship between negative peer influence and psychological distress was stronger among adolescents who reported higher parental support scores. That is, individuals who perceived more parental support reported more mental distress as a result of negative peer influence. This notable finding did not support the initial hypothesis and previous research that parental support would mitigate the effect of negative peer influence (Nash, et al., 2005; Youngstrom, Weist, & Albus, 2003). Yet, the result may enlighten the difference of the interactions among parental support, negative peer influence and psychological outcomes between Chinese adolescents and their western counterparts. One possible explanation of this counterintuitive result could be related to Chinese family values. Within the Chinese context, the oversight the parents have on children exceeds that of western parents. The Chinese cultural belief, for example, that harshness in parenting is beneficial for childhood development is quite different from western ways of parenting (D. T. Shek, 1997a). Chinese children have

been raised traditionally to be obedient to familial and parental expectations over individual needs. Individuals are responsible for behaviors that would reflect on the family as a whole and are expected to maintain the familial honor (Uba, 1994). This may be rooted in Chinese value of *filial piety* (Chinese: 孝, xiào). Filial piety refers to the general obedience to parents and the virtue of respect for the family. The strict oversight of parents and family expectations may create tension in those adolescents that are becoming increasingly accustomed to western culture that emphasizes personal autonomy (Unger et al., 2002). The result in the compensatory model indicates that, overall, higher parental support is associated with less psychological distress. The adolescents who have more peers with negative influence, however, may experience conflict between their parents' expectations and their peer relationships. Thus, adolescents with more friends engaging in problem behaviors while also having close relationships with their parents may struggle the most in achieving parents' expectations, and may potentially be at higher risk of developing mental distress. The emphasis on the traditional Chinese beliefs of familism and harmony within the family might exacerbate the negative influence of the parent-adolescent conflicts (D. T. Shek, 1997a). In my study, parental support was found to interact with the relationship between negative peer influence and psychological distress. It would be beneficial in future research to examine if this interaction resulted from potential parent-adolescent conflicts.

Another finding in the current study is that more parental support was associated with higher self acceptance. This finding is consistent with our hypotheses that parental support can serve as a promotive factor that would benefit adolescents for their development by increasing their self acceptance. Self acceptance, indeed, is an indicator

of psychological wellbeing that often was underestimated for its importance in adolescent development because most research in adolescent psychological well-being have been predominately focused on the psychiatric morbidity or symptoms rather than the positive mental health. Few researchers have examined the effects of parenting styles on the development of self-esteem or self-worth among Chinese adolescents (D. T. Shek, 1989, 1997a). In fact, researchers of these studies have argued that it would be theoretically enlightening if measures of positive mental health, such as life satisfaction, meaning in life, hope, or self-worth, could be included in studies of adolescent Chinese development (D. T. Shek, 1989, 1997a). In the protective model, self acceptance did not have mediating or direct effects on delinquent behaviors and substance use as a result of negative peer influence. One possible interpretation is that our measurement of self acceptance may not sufficiently capture the self-concept that would be related to problem behaviors among adolescents. Oyserman and Markus (1990) have conducted a study to demonstrate the relationship between possible selves (e.g. expected self, actual self and feared self) and delinquency. They found that youth who were not involved in delinquent behaviors are more likely to display a balance between expected possible selves and feared selves in the same domain. Moreover, the traditional measure of self-esteem indicates how people feel about themselves was not found to predict delinquency in the study (Oyserman & Markus, 1990). Although more parental support was related to higher self acceptance in our study, it would be beneficial in the future research of problem behavior to include measurement of possible selves that are related to delinquency. It would also be beneficial to consider similar instruments of positive mental health that

have been adapted to Chinese adolescents, such as Chinese Rosenberg Self-Esteem Scale (D.T. Shek, 1992).

The current study is one of the first that examine the mechanism of parental support with negative peer influence and problem behaviors in the Chinese contexts. Overall, the findings support previous research on negative peer influence, parental support, internalizing and externalizing outcomes. Negative peer influence was found to be associated with more psychological distress, delinquent behaviors and substance use among Chinese adolescents. On the other hand, parental support is directly associated with higher self acceptance, less substance use, and is indirectly associated with less delinquent behaviors and substance use through decreasing psychological distress.

In interpreting the findings, it is important to note some limitations of the study. First, the study used only cross-sectional data which cannot allow for causal connections. Further studies with longitudinal data may better help understand the causal relationships between risk and protective factors and their outcomes. Second, the samples were collected within two urban cities, Beijing and Xian, in mainland China, which limits the generalizability of the results. The results may not be generalized to adolescents who live in more rural areas or in other urban areas of China that may have somewhat different local values, norms, and cultures. Moreover, adolescent problem behaviors are shaped by an array of developmental and environmental factors. Thus, multiple indicators of family and school environments in future studies for examining the link between these promotive factors and the psychological and behavioral outcomes are needed. Family functions, for example, were found to influence adolescent psychological well-being and delinquency (Tolan & Lorion, 1988) and substance use (McKay, Murphy, Rivinus, &

Maisto, 1991). Parent-adolescent conflict has also been found to be associated with poor psychological well-being, poor school adjustment, and problem behavior among Chinese adolescents (D. T. Shek, 1997a). In addition, the influences and parenting styles of grandparents are important factors of youth development in China (Grant & Hutton, 2011; Haddad, Chen, & Greenberger, 2011) because children are increasingly being raised or cared for by their grandparents in China. Researchers have found in a survey in Nanjing that boys who were only children and who were cared for by grandparents reported more anxious aggression than only children cared for by parents (Tseng et al., 1988). The factors such as parenting styles by grandparents, grandparent-adolescent communication, supervision, and warmth provided to children need to be addressed in future research in how they may have an effect on adolescent development.

These limitations notwithstanding, this study extends the knowledge base of understanding family and peer influences on adolescent problem behaviors in several important ways. The findings from this study fill a void in existing research by examining on the relationships among negative peer influence, parental support, mental distress, self acceptance, substance use, and delinquent behaviors in a large sample of mainland Chinese youth. The current study aimed to identify specific promotive factor that will protect adolescents from engaging in problem behaviors with the exposure of the risk of negative peer influence. Perceived parental support is considered one of the most salient positive indicators in the family environment that would directly influence adolescent development. Very few studies have conducted to compare the effects of peer and parent influences on Chinese adolescents (Willgerodt, 2008). The findings in the study will

assist the understanding of how parental support interacts with negative peer influence on the internalizing and externalizing outcomes among Chinese adolescent.

The findings suggest that parental support and peer behaviors exert significant influences on psychological and behavioral outcomes in Chinese adolescents. Our study suggests that parental support serves as a promotive factor with a compensatory effect for Chinese youth. The current study also provides evidence that it is a protective, modifying factor for the relationship between psychological distress and substance use. Parents may benefit from knowing that their positive support for their children can help prevent or reduce their children's problem behaviors, especially for children with psychological distress. Based on resiliency theory and the Social Development Model, this study provides an initial step in understanding mainland Chinese adolescent development using western-developed conceptual models and measures. It is important to note in the further research to carefully examine the relationship between parental support, peer influence, and health outcomes with cultural and structural perspectives in a Chinese context. Our results highlight several preventive implications. First, interventions may focus on peer influence relevant for Chinese youth for delinquency and substance use. Second, resources that can help youth navigate parental press and peer influence may be useful. Finally, for the Chinese parents facing the rapid urbanization and emerging youth culture that may not necessarily embrace traditional values, interventions that provide parenting supports to help positive communication with children and successful adjustment of parenting styles may be particular fruitful. Our findings add support to the growing literature emphasizes on interpersonal resources and communication skills for youth and parents in preventing negative internalizing and externalizing outcomes.

References

- Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: the influence of parents and peers. *Behav Res Ther*, 37(3), 217-230.
- Benbenishty, R., Astor, R. A., Zeira, A., & Vinokur, A. D. (2002). Perceptions of violence and fear of school attendance among junior high school students in Israel. *Social Work Research*, 26(2), 71-87.
- Bentler, P. M. (1995). *EQS structural equation manual*. Los Angeles: BMDP Statistics Software.
- Brook, J. S., Brook, D. W., De La Rosa, M., Whiteman, M., & Montoya, I. D. (1999). The role of parents in protecting Colombian adolescents from delinquency and marijuana use. *Arch Pediatr Adolesc Med*, 153(5), 457-464.
- Chen, I. G., Roberts, R. E., & Aday, L. A. (1998). Ethnicity and adolescent depression: the case of Chinese Americans. *J Nerv Ment Dis*, 186(10), 623-630.
- Deng, S., & Roosa, M. W. (2007). Family influences on adolescent delinquent behaviors: applying the social development model to a Chinese sample. *Am J Community Psychol*, 40(3-4), 333-344.
- Derogatis, L. R., & Spencer, P. M. (1982). *The Brief Symptom Inventory (BSI): Administration and scoring procedures*. Baltimore: Division of Medical Psychology: John Hopkins University School of Medicine.
- Dielman, T. E., Butchart, A. T., & Shope, J. T. (1993). Structural equation model tests of patterns of family interaction, peer alcohol use, and intrapersonal predictors of adolescent alcohol use and misuse. *J Drug Educ*, 23(3), 273-316.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health*, 26, 399-419.
- Grant, J., & Hutton, A. (2011). Supporting adolescents in a rapidly urbanising China. *Contemp Nurse*, 40(1), 5-14.
- Haddad, E., Chen, C., & Greenberger, E. (2011). The role of important non-parental adults (VIPs) in the lives of older adolescents: a comparison of three ethnic groups. *J Youth Adolesc*, 40(3), 310-319.
- Hawkins, J. D., & Weis, J. G. (1985). The social development model: An integrated approach to delinquency prevention. *The Journal of Primary Prevention*, 6(2), 73-97.
- Ho, D. Y. F., Spinks, J. A., & Yueng, C. S. (Eds.). (1989). *Chinese patterns of behavior: A sourcebook of psychological and psychiatric studies*. New York: Praeger.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Protective factors in adolescent health behavior. *J Pers Soc Psychol*, 75(3), 788-800.
- Klem, L. (2000). Structural equation modeling. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 227-257). Washington, DC: American Psychological Association.
- Lin, N., & Lai, G. (1995). Urban stress in China. *Soc Sci Med*, 41(8), 1131-1145.

- Lloyd-Richardson, E. E., Papandonatos, G., Kazura, A., Stanton, C., & Niaura, R. (2002). Differentiating stages of smoking intensity among adolescents: stage-specific psychological and social influences. *J Consult Clin Psychol*, *70*(4), 998-1009.
- Ma, H. K., Shek, D. T., Cheung, P. C., & Lam, C. O. (2000). Parental, peer, and teacher influences on the social behavior of Hong Kong Chinese adolescents. *J Genet Psychol*, *161*(1), 65-78.
- Ma, H. K., Shek, D. T., Cheung, P. C., & Lee, R. Y. (1996). The relation of prosocial and antisocial behavior to personality and peer relationships of Hong Kong Chinese adolescents. *J Genet Psychol*, *157*(3), 255-266.
- McKay, J. R., Murphy, R. T., Rivinus, T. R., & Maisto, S. A. (1991). Family dysfunction and alcohol and drug use in adolescent psychiatric inpatients. *J Am Acad Child Adolesc Psychiatry*, *30*(6), 967-972.
- Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: family environment, peer influence, and parental expectations. *J Adolesc Health*, *37*(1), 19-28.
- Newcomb, M. D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: cross-sectional and prospective findings. *J Pers Soc Psychol*, *63*(2), 280-296.
- Newcomb, M. D., Huba, G. J., & Bentler, P. M. (1986). Determinants of sexual and dating behaviors among adolescents. *J Pers Soc Psychol*, *50*(2), 428-438.
- Ostaszewski, K., & Zimmerman, M. A. (2006). The effects of cumulative risks and promotive factors on urban adolescent alcohol and other drug use: a longitudinal study of resiliency. *Am J Community Psychol*, *38*(3-4), 237-249.
- Oyserman, D., & Markus, H. R. (1990). Possible selves and delinquency. *J Pers Soc Psychol*, *59*(1), 112-125.
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: three validation studies. *Am J Community Psychol*, *11*(1), 1-24.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in Psychology and Aging: some proposed guidelines. *Psychol Aging*, *6*(4), 499-503.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., et al. (1997). Protecting adolescents from harm. Findings from the National Longitudinal Study on Adolescent Health. *JAMA*, *278*(10), 823-832.
- Resnick, M. D., Harris, L. J., & Blum, R. W. (1993). The impact of caring and connectedness on adolescent health and well-being. *J Paediatr Child Health*, *29* Suppl 1, S3-9.
- Shek, D. T. (1989). Perceptions of parental treatment styles and psychological well-being in Chinese adolescents. *J Genet Psychol*, *150*(4), 403-415.
- Shek, D. T. (1992). "Actual-ideal" discrepancies in the representation of self and significant-others and psychological well-being in Chinese adolescents. *International Journal of Psychology*, *27*(3&4), 229.
- Shek, D. T. (1997a). Family environment and adolescent psychological well-being, school adjustment, and problem behavior: a pioneer study in a Chinese context. *J Genet Psychol*, *158*(1), 113-128.

- Shek, D. T. (1997b). The relation of family functioning to adolescent psychological well-being, school adjustment, and problem behavior. *J Genet Psychol*, *158*(4), 467-479.
- Simons-Morton, B. G., Hartos, J. L., & Haynie, D. L. (2004). Prospective analysis of peer and parent influences on minor aggression among early adolescents. *Health Educ Behav*, *31*(1), 22-33.
- Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1992). Interactive and higher-order effects of social influences on drug use. *J Health Soc Behav*, *33*(3), 226-241.
- Tolan, P. H., & Lorion, R. P. (1988). Multivariate approaches to the identification of delinquency proneness in adolescent males. *Am J Community Psychol*, *16*(4), 547-561.
- Tseng, W. S., Kuotai, T., Hsu, J., Chiu, J. H., Yu, L., & Kameoka, V. (1988). Family planning and child mental health in China: the Nanjing Survey. *Am J Psychiatry*, *145*(11), 1396-1403.
- Uba, L. (1994). Asian Americans: Personality patterns, identity, and mental health.
- Unger, J. B., Yan, L., Shakib, S., Rohrbach, L. A., Chen, X., Qian, G., et al. (2002). Peer influences and access to cigarettes as correlates of adolescent smoking: a cross-cultural comparison of Wuhan, China, and California. *Prev Med*, *34*(4), 476-484.
- Wen, X., Chen, W., Muscat, J. E., Qian, Z., Lu, C., Zhang, C., et al. (2007). Modifiable family and school environmental factors associated with smoking status among adolescents in Guangzhou, China. *Prev Med*, *45*(2-3), 189-197.
- Willgerodt, M. A. (2008). Family and peer influences on adjustment among Chinese, Filipino, and White youth. *Nurs Res*, *57*(6), 395-405.
- Youngstrom, E., Weist, M. D., & Albus, K. E. (2003). Exploring violence exposure, stress, protective factors and behavioral problems among inner-city youth. *Am J Community Psychol*, *32*(1-2), 115-129.
- Zimmerman, M., & Arunkumar, R. (1994). Resiliency research: implications for schools and policy. *Soc. Policy Rep*, *8*, 1-17.

CHAPTER IV

The Effect of Cumulative Risks and Promotive Factors on Chinese Adolescent Problem Behaviors

Introduction

Problem behaviors among Chinese youth are an emerging social and public health issue in China (T. O. Cheng, 1999; Cheng, 2008; Deng & Roosa, 2007; Wang, 2006). Although much of the previous research focuses on single risk or protective factors, or on single contexts, researchers in most western societies have increasingly noted the importance of applying comprehensive theoretical models of adolescent problem behaviors that examine both risk and promotive factors at multiple levels of the social environment (Catalano & Hawkins, 1996; Jessor, 1998; Lerner & Simi, 2000; Ostaszewski & Zimmerman, 2006; Stoddard et al., 2012; Youngblade et al., 2007). Both the Ecological Theory (Bronfenbrenner, 1986) and the Social Development Model (SDM) (Catalano & Hawkins, 1996) support the rationale of including multiple-level factors in understanding problem behavior during childhood and adolescence. Bronfenbrenner (1986) suggested a socioecological framework to examine how contextual factors (e.g. family, school, peers, community, society, and culture) may shape adolescent behaviors. The framework included both intrapersonal and interpersonal aspects and the neighborhood characteristics that can interact together to influence the development of problem behaviors. The SDM takes into account risk factors as well as

promotive factors to predict the development of prosocial or antisocial behaviors among adolescents (Catalano & Hawkins, 1996). The SDM hypothesizes that children's attitude, beliefs, and behaviors are shaped by the social unit, such as family, peers, or neighborhoods, to which they are firmly bonded. In other words, the more bonds with antisocial units that a child has, the more likely the child will engage in problem behavior. On the other hand, pro-social bonds may help the child to have more prosocial attitudes and behaviors (Catalano & Hawkins, 1996). Researchers who emphasize the social ecological perspective and the use of comprehensive theoretical models, therefore, generally examine adolescent problem behaviors by considering multiple factors in individual, family, peer, school, and neighborhood levels.

In addition, researchers have drawn growing attention on positive influences or promotive factors in youth development. Just like their western counterparts, not all Chinese children exposed to risk develop internalizing or externalizing problems in the presence of adversity (Lee, Shek, & Kwong, 2007). In a review of research literature on resiliency framework, Fergus and Zimmerman (2005) summarized the definition of promotive factors as the individual assets or contextual resources that help youth avoid the negative effects of risks. Resiliency theory proposed at least two processes on how promotive factors play a role in helping youth to overcome the negative risk effects and positively improve the health and well-being (Fergusson, Vitaro, Wanner, & Brendgen, 2007; Garmezy, Masten, & Tellegen, 1984; Luthar, Cicchetti, & Becker, 2000; Rutter, 1987). The first process is explained in a compensatory model where promotive factors directly reduce the negative outcomes, such as mental distress and problem behaviors, to compensate for the effect of risk exposure (Garmezy, et al., 1984). The second process is

described in a risk-protective model where promotive factors interact with risk factors and buffer or moderate the negative influence of risk exposure (Rutter, 1985). Overall, researchers have provided empirical evidence that supports either the compensatory or the risk-protective model, or both, of the risks and promotive factors associated with substance use and delinquent behaviors (Newcomb & Felix-Ortiz, 1992; Ostaszewski & Zimmerman, 2006; Simons-Morton, Hartos, & Haynie, 2004; Stoddard, et al., 2012; van der Laan, Veenstra, Bogaerts, Verhulst, & Ormel, 2010; Wills, Vaccaro, & McNamara, 1992). This notion of resiliency in adolescent development provides a rationale for examining not only risk factors, but also promotive factors under multiple levels of contexts rather than examining a single factor or factors under single contextual level.

Based on a review of resilience literature, Ostaszewski and Zimmerman (2006) concluded that risk and promotive factors in the empirical studies are most commonly categorized into four domains: 1) individual characteristics (e.g. self-acceptance, coping styles and skills, social skills, academic performance, violence victimization, hopelessness); 2) peer influences (e.g. peer health-related behaviors, friends' support, friends' positive influence); 3) family relationships (e.g. parent-child relationship, parental support, parental monitoring, family conflicts); and 4) community characteristics (e.g. drug, alcohol, or cigarette availability in the community, availability of after-school activities, community violence) (Ostaszewski & Zimmerman, 2006).

Few researchers have started to emphasize the importance of including multiple-level risks and promotive factors in the effort of preventing problem behaviors among Chinese adolescents (D.T.L. Shek, 2007; Wen et al., 2007). In a review article of substance abuse in Hong Kong, Shek (2007) noted that the social ecological

understanding and the resilience perspective are keys for understanding Chinese adolescent problem behaviors. Shek also discussed several factors that predispose the adolescent substance abuse problem. Individual-level factors such as curiosity, lack of coping skills, underachievement and non-engagement at school are associated with adolescent substance use (D. T. Shek, 2006a; D. T. Shek & Lee, 2004). Family-level factors such as the rise of the number of nuclear families, parental absence or parental marital problems, and parenting problems may play a role in influencing children's development of substance use (D. T. Shek, 2006b; D. T. L. Shek, 2006; D.T.L. Shek, 2007). Shek also noted that peer influence is a strong factor contributing to Chinese adolescent problem behaviors. In fact, he noted the effects of peer influence may interact with the larger social environment. The emerging subculture and virtual communication among adolescents, for example, may make children more vulnerable to negative interpersonal influences (D.T.L. Shek, 2007). Yet, most of the studies reviewed by Shek are conducted in Hong Kong, not mainland China. Although these risks and protective factors are mainly focusing on adolescents in Hong Kong, some similar factors have been examined in several studies in China. Wen et al. (2007) studies modifiable family and school environmental factors associated to teen smoking in China. The study indicated that the smoking behaviors and attitudes of peers, parents, and supervising teachers as well as the school surroundings influence the individual smoking behaviors in different statuses (e.g. experimental smoking, regular smoking, or attempting to quit (Wen, et al., 2007). Furthermore, the researchers noted that the emphasized family value and small family size (one family, one child) may be crucial and unique in their influences on adolescent problem behaviors in China, including smoking. Due to the single child

policy, the Chinese children who do not have siblings may have norms and behaviors shaped largely by peers and other interpersonal relationships (Wen, et al., 2007).

Although several specific contextual factors of problem behaviors among Chinese adolescents have been discussed by researchers, the empirical research literature that addresses multiple risks and promotive factors in the Chinese contexts is limited.

The current study may add to the knowledge base of adolescent problem behaviors in several aspects. First, most researchers studying adolescent resiliency have focused on single risk factors or promotive factors, for example, negative peer influence or parental-child attachment, rather than considering the cumulative effects of multiple factors (Ostaszewski & Zimmerman, 2006). Most researchers that have examined multiple factors of problem behaviors, however, focused on only one or two contextual levels (Wen, et al., 2007). Yet, in the face of a particular constellation of risks or within specific social contexts, a single aspect of promotive factors may not be sufficient to help youth overcome the effects of multiple risks (Rutter, 1987). The conceptual models in the current study will examine the cumulative effects of factors from the individual level to the social-ecological level. The current study investigates Chinese adolescents' development across the individual, immediate environment (family, school, and peers), and larger social environment (community, society, cultural). Second, most of the studies related to adolescent resiliency were conducted in western cultures and only few researchers have examined resilience theory among Chinese adolescents (D.T.L. Shek, 2007). In particular, the studies that applied resilience theory and considered both risks and promotive factors are mostly conducted in Hong Kong (Lee, et al., 2007; D. T. L. Shek, 2001). The current study is one of the first studies that draw on resilience theory

and examines multiple level factors of adolescent behaviors in China. Third, studies on youth problem behaviors that adopt social-ecological perspectives indicated that individuals exposed to an accumulation of risks in multiple domains, rather than a single domain, are more likely to develop negative outcomes later (Loeber, Slot, & Stouthamer-Loeber, 2008; Stoddard, et al., 2012). Conversely, an accumulation of promotive effects lowers the probability of negative outcomes or weakens the effects of risk exposure (Ostaszewski & Zimmerman, 2006; Stoddard, et al., 2012; van der Laan, et al., 2010). The current study provides a unique and significant contribution to the literature because it examines the cumulative effects of risk factors and promotive factors on Chinese adolescents' internalizing and externalizing outcomes. A compensatory model and a risk-protective model of resilience for problem behaviors are tested with the cumulative effect of risks and promotive factors including individual, peer, family, and community domains. This study is the first I know of that includes the most comprehensive factors across different contextual levels to examine their combined effect on Chinese adolescents.

Model Rationale and hypotheses

Based on a review of previous research results (Bowen & Flora, 2002; Ostaszewski & Zimmerman, 2006), we hypothesized that higher cumulative risk would have both a *direct* effect on adolescent externalizing outcomes (e.g. delinquency and substance use) and an *indirect* effect that is mediated by internalizing outcomes (e.g. psychological distress and low self acceptance). In other words, a child with more exposure to cumulative risk factors may be at higher risk of having more psychological distress and low self acceptance which would in turn exacerbate the risk of engaging in

problematic behaviors among these adolescents. Moreover, higher exposure to cumulative risks may directly increase the likelihood of a child engaging in problematic behaviors. Cumulative promotive factors are tested in the study with both their compensatory effects and risk-protective effects on internalizing and externalizing outcomes. Figure 4.1 presents the compensatory effects of resiliency model of cumulative promotive factors. Based on the literature of problem behaviors, cumulative factors and resiliency (Bowen & Flora, 2002; Fergus & Zimmerman, 2005; Ostaszewski & Zimmerman, 2006; Stoddard, et al., 2012), the cumulative promotive factors are hypothesized to be associated with less delinquent behaviors and substance use. More cumulative promotive factors are also hypothesized to be associated with less mental distress and more self acceptance.

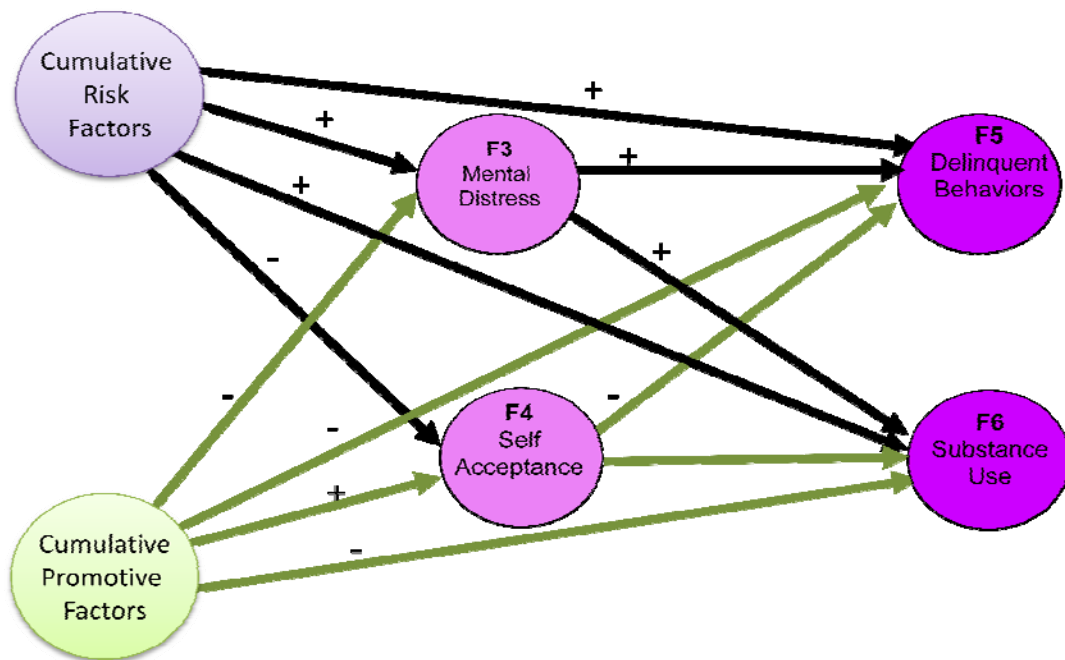


Figure 4.1 Theoretical Model of Direct and Mediation Effects of Cumulative Risk and Promotive Factors on Problem Behaviors among Chinese Teens.

The study will also test the risk-protective model of resilience. Cumulative promotive factors are assumed to have protective effects that offset or moderate the deleterious effects of risks. In other words, promotive factors operate as a modifying variable in the model. Instead of operating independently to decrease problems as depicted Figure 1, promotive factors are hypothesized to interact with risks and reduce the relationships between the cumulative risk effects and problem behaviors. Thus, my hypothesis is that for children with a high level of cumulative promotive factors, the correlation between risk exposures and negative health outcomes may be weaker compared to children with a low level of cumulative promotive factors. In the risk-protective model, cumulative promotive factors will be used as a group defining factor (e.g. high cumulative promotive group or low cumulative promotive group) to examine its moderating (interaction) effects in the analyses.

Method

Sample and Procedures

The models were tested using survey data from middle and high school students from two urban cities in China: Beijing and Xian. Participants in the study include 1356 students in Grades 7 to 12 from middle (44%) and high schools (56%) in the urban areas of Beijing and Xian. Approximately 48% of the respondents were boys and 52% were girls. Experienced researchers in Beijing and Xian helped select participating schools based on characteristics such as diverse size, test scores, and social status. Youth were asked to complete questionnaires in school during a group administration in classrooms. Chinese research staff administered the data collection including following UM IRB

protocol, and student assents were obtained before the survey was administrated. Schools participating in the survey study received a small stipend, but individual youth did not.

A questionnaire developed for the Flint Adolescent Study (e.g. Ostaszewski & Zimmerman, 2006) was adapted for the current study. The revisions of the questionnaire focused on culturally relevant terminology and contexts, and eliminated less relevant measures (e.g., sibling influences). A Chinese researcher translated the questionnaire into Chinese and then a Chinese student translated it back into English. The U.S. team reviewed the translation and back-translation for accuracy.

Internalizing and Externalizing Outcomes

Internalizing outcomes were psychological distress and self acceptance. We also measured substance use (e.g. smoking and drinking) and delinquency (violent behaviors and non-violent delinquent behaviors) as externalizing outcomes.

Psychological Distress. Depression ($\alpha=.91$) and anxiety ($\alpha=.89$) symptoms were each measured with six items (Derogatis & Spencer, 1982). The 5-point rating scales asked youth to indicate how much they were bothered by each of 12 symptoms in the past week.

Self Acceptance ($\alpha=.73$). Four items were used to assess self-acceptance (Newcomb, Huba, & Bentler, 1986), each using a 5- point scale. The higher the score indicated the more self-acceptance. Three items were included in the final analyses of the study: how happy I am with myself, how generally pleased I am with myself, and how much I regard myself as successful. One question, *how much I like myself* was removed from the scale

because the item has particular low standardized factor loading (-.09) compared to other items (.50 to .85) in the preliminary factor analysis of self acceptance. In the model, we treat self acceptance as a latent factor with the three items as indicators.

Substance use. Smoking and alcohol use were each represented on a single-item scale. The ratings of smoking were provided on a 5-point scale ranging from 1 = never smoke to 5 = regularly smoking now. The rating of alcohol use ranged from 1 = never to 14 = 40 or more times during the last 30 days. Both of the scores of alcohol use and cigarette use were standardized for the analyses.

Delinquency. The frequency of violent behavior ($\alpha=.77$) was measured with a 5-item, 5-point scale. Similarly, the frequency of non-violent delinquent behavior ($\alpha=.88$) was measured with an 8-item, 5-point scale. Due to the skewness of these dependent variables, each item was recoded into a dichotomous (never/ever) scale. If a student answered 1 (never) to a question, he or she would get a new score of 0. If the student answered 2 to 5 in the original scale (ever), he or she will get a new score of 1. A sum of 8 items of non-violent delinquent behaviors (ranging from 0 to 8) and a sum of 5 items of violent behaviors (ranging from 0 to 5) were then obtained for the final analyses. The skewness of non-violent delinquent behaviors was improved to 4.52, and the skewness of violent behavior was improved to 3.37.

Risk factor and Promotive Factor Measures

Cumulative measures of risk and promotive factors usually consist of several variables within each domain, with a number of indicators ranging from six (Dekovic, 1999) to over twenty indicators for risks and promotive factors (Bowen & Flora, 2002).

Based on the theories and findings from previous empirical studies, the current study selects indicators and assigned them as either promotive or risk factors based on the theory to each contextual domain (e.g. individual, family, peer, and neighborhood) (Arthur, et al., 2002; Hawkins, Catalano, & Miller, 1992; Kumpfer, Olds, Alexanderson, Zucker, & Gary, 1998; Ostaszewski & Zimmerman, 2006; Petraitis, Flay, & Miller, 1995). Individual-level factors included seven variables (four risks and three promotive factors) : approval of violence, being a victim of violence, observed violence (Ostaszewski & Zimmerman, 2006), perceived stress (Cohen, Kamarck, & Mermelstein, 1983), perceived control over personal life (Cohen, et al., 1983), orientation toward the future(Stein, Newcomb, & Bentler, 1986), and positive school attitudes (Hawkins, Catalano, & Miller, 1992; Ostaszewski & Zimmerman, 2006). Peer-level factors included five variables (three risks and two promotive factors): friends who use alcohol or drugs (Ostaszewski & Zimmerman, 2006; Stacy, Newcomb, & Bentler, 1992), friends who cut/suspended/dropped out of school (Ostaszewski & Zimmerman, 2006), friends' aggressive or delinquent behavior (Ostaszewski & Zimmerman, 2006), friends' support (Procidano & Heller, 1983), and friends' positive activities and school influences (Stein, et al., 1986). Parental/familial influences included seven variables (three risks and four promotive factors): drug and alcohol use by adult raising the respondent, fighting and acting out in family, (Moos & Moos, 1981), misdeeds/misconduct by parents (Ostaszewski & Zimmerman, 2006), involvement in making family decisions (Moos & Moos, 1981), parental support (Procidano & Heller, 1983), parental supervision (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002), and family participation in recreational or fun events (Moos & Moos, 1981). Community-level factors included five indicators (three

risks and two promotive factors): alcohol use by non-familial adults in the life of the student, misdeeds/misconduct by non-familial adults in the life of the student (Moos & Moos, 1981), fear of violence in school and neighborhood, neighborhood monitoring, and in-school and out-school activities. Table 4.1 presents the thirteen variables that were included in the cumulative *risk factors* by domain for the current study. Table 4.2 presents the variables that are included in the cumulative *promotive factors* by domain for the current study.

Table 4.1 Descriptive statistics and individual measures for cumulative *risk* factors

factors (number of items)	Mean	SD	α	Sample Item (type of scale used)
Risk Factors				
<i>Individual/behavioral</i>				
Approval of the use of violence to solve problems (4)	1.83	.89	.83	Fighting is the best way to solve problems (4-pt Likert, 1=strongly disagree, 4=strongly agree)
Perceived stress (5)	2.33	.82	.77	feel nervous and stressed out (5-pt Likert, 1 =never, 5=very often)
Being a victim of violence (3)	1.23	.55	.71	had someone threaten to hurt you during the last 12 months (5-pt Likert, 1= 0 times, 5=4+ times)
Observed violence (2)	1.44	.82	$r=.73$	Seen someone commit a violent crime where a person was hurt (5-pt Likert, 1= 0 times, 5=4+ times)
<i>Peer</i>				
Friends use alcohol or drugs (4)	1.27	.47	.75	How many of your friends drink beer or wine at least once a month (5-pt Likert, 1=none, 5=all)
Friends cut/suspended/dropped out of school (2)	1.28	.49	.62	How many of your friends cut class-just don't go (5-pt Likert, 1=none, 5=all)
Friends aggressive or delinquent behaviors (4)	1.21	.41	.72	How many of your friends get into fights (5-pt Likert, 1=none, 5=all)
<i>Parental/Familial</i>				
Alcohol and tobacco use by parents (3)	2.20	.97	.70	Does either of your parents get drunk (5-pt Likert, 1=never, 5=very often)
Fighting and acting out in family (5)	1.70	.68	.83	We fight in our family (4-pt Likert, 1=Hardly ever, 4=often)
Misdeeds/Misconduct by parents	1.15	.38	.85	Does either of your parents carry a knife or razor (5-pt Likert, 1=never, 5=very often)
<i>Social Contexts</i>				
Student's fear of violence in their school and neighborhood (3)	2.37	.96	.68	I'm afraid of the violence in my neighborhood (4-pt Likert, 1=strongly disagree, 4=strongly agree)
Misdeeds/misconduct by non-familial adults in life of student (4)	1.33	.55	.81	Not including your parents or the adults you live with how many adults do you know who threaten to hurt people (5-pt Likert, 1=none, 5=all)
Alcohol use by non-familial adults in life of student (4)	1.44	.61	.76	Not including your parents or the adults you live with how many adults do you know who get drunk at least once a month (5-pt Likert, 1=none, 5=all)

Table 4.2 Descriptive statistics and individual measures for cumulative *promotive* factors

factors (number of items)	Mean	SD	α/r	Sample Item (type of scale used)
Promotive Factors				
<i>Individual</i>				
Perceived control respondent feels s/he has over personal life (8)	2.96	.86	.87	In the last month, how often have you felt that you were in control of your life (5-pt Likert, 1=never, 5=very often)
Orientation toward the future (2)	3.53	1.15	.78	I think a lot about my future job (5-pt Likert, 1=not true, 5=very true)
School positive attitudes (5)	3.31	.81	.78	Most mornings I look forward to going to school (4-pt Likert, 1=strongly disagree, 5=strongly agree)
<i>Peer</i>				
Friends' support (5)	3.61	.84	.84	I rely on my friends for emotional support (5-pt Likert, 1=not true, 5=very true)
Friends Positive influence (3)	3.09	.81	.56	How many of your friends take part in student council (5-pt Likert, 1=none, 5=all)
<i>Parental/Familial</i>				
Student's involvement in making family decisions (3)	2.32	.86	.55	Family members make the rules together (4-pt Likert, 1=hardly ever, 4=often)
Parental support (10)	3.51	.80	.87	My father enjoys hearing about what I think (5-pt Likert, 1=not true, 5=very true)
Parent supervision of student's activities (6)	3.81	.98	.88	I tell my parents who I'm going to be with before I go out (5-pt Likert, 1=never, 5=always)
family participation in recreational activities and school activities (4)	2.31	.85	.73	We go to movies, sports events, or do other fun activities together as a family (4-pt Likert, 1=hardly ever, 4=often)
<i>Social Contexts</i>				
Neighborhood monitoring (3)	3.84	1.01	.82	If I were to do something wrong and neighbors or other adults in my community were to see, they would probably tell my parents (5-pt Likert, 1=yes definitely, 5=definitely not)
In-school and out-school activities (6)	Sum of z-scores	5.2 (range - 4.0~14.38)	.96	In the last year, have you participated in any school clubs, societies, sports or other extracurricular activities (for example cheerleading, student council, marching band, etc.) (yes or no) How often did you attend this activity (4-pt Likert, 1=hardly ever, 4=most of the time)

Cumulative Risk and Promotive Factors Indices

Following the procedures for developing cumulative indices that are similar to those used by other researchers (Bowen & Flora, 2002; Dewit, Silverman, Goodstadt, & Stoduto, 1995; Newcomb & Felix-Ortiz, 1992; Ostaszewski & Zimmerman, 2006; Stoddard, et al., 2012), we identified the upper 25% of the distribution of each of the variables for promotive factors. The actual cutoff points were assigned as close to the upper 25% threshold as each variable distribution allowed. Each student was given a score of 1 if the original score was equal to or above the cutoff point; otherwise, a score of zero was given.

For the risk factors, however, we used a different criterion to identify students with the risk because the risk measures were highly skewed (most of the students answered not being exposed to those risks). In order to identify the students who have been exposed to the risks and maintain the variance of cumulative risk factors, we assigned a score of 1 if the original score was equal to or above 2 from a 4-point or 5-point likert scale. Otherwise, a zero was given to students who had never been exposed to a risk. Cumulative indices were then computed by summing the promotive and risk factors under each domain, respectively, for each individual.

Data Analyses

The compensatory and risk-protective models of resilience were tested using confirmatory latent-variable structural equation analyses using the EQS program (Bentler, 1995). Structural equation modeling (SEM) analysis was chosen because it allowed the examination of two dependent variables in a model and it also described the

relationship among several endogenous factors simultaneously (Klem, 2000). Another benefit of using SEM analysis is that it recognizes and takes into account the existence of measurement errors of predictive variables (Benbenishty, Astor, Zeira, & Vinokur, 2002). An analyses was performed first with the total sample of the Chinese adolescent students (n=1356) and on subsamples of two cumulative promotive factor groups in order to examine the modifying effect. Gender, school grade, and parents' education were treated as control variables in the model. There were 149 missing observations (11% of the total sample), and they were handled using the more conservative procedure of listwise deletion of cases because they did not have complete information for each of the analyses using the EQS program.

The goodness-of-fit indices examined according to the recommendation of (Raykov, Tomer, & Nesselroade, 1991) were: normed fit index (NFI), nonnormed fit index (NNFI), and comparative fit index (CFI). A widely used misfit indices of root mean square error of approximation (RMSEA) was also reported. According to Hu and Bentler, fit indices that exceeded .90 and RMSEA misfit indices that is .06 or lower, respectively, are considered to support acceptable fit of the model (Hu & Bentler, 1999). The study first tested the compensatory hypothesis by examining the full model presented in Figure 1. The protective model was then tested in the multigroup SEM based on a median split of the cumulative promotive factor index in a multi-group test of the model in Figure 4.1 excluding the promotive factor paths.

The reverse model of the original theoretical model in Figure 4.1 was tested in order to exclude the possibility of having the reverse model as a better model. In other words, delinquent behaviors and substance use were tested as independent factors, while

cumulative risk factors and cumulative promotive factors were tested as dependent variables in the reverse model. Mental distress and self acceptance remained as mediating factors in the model.

Results

Descriptive statistics on variables

Participants reported moderate levels of cumulative risks ($M = 7.25$, range 0-13), and lower levels of cumulative promotive factors at the upper 25% level ($M = 3.00$, range 0-11). Table 4.3 presents the means and standard deviations of cumulative risk factors, internalized outcomes and externalized outcomes by high versus low promotive factors. Overall, students with higher cumulative promotive-factor scores reported slightly less anxiety, depression, less delinquency, and less substance use and higher self acceptance compared to students with lower promotive-factor scores.

Table 4.4 provides bivariate correlations among the variables included in this study. Risk indices in each domain (individual, peer, family, and community) correlated with more anxiety, depression, non-violent delinquencies, violent behaviors, and substance use (correlations range from 0.17 to 0.41); while it correlated with less self acceptance and parental support (-0.06 and -0.12). Cumulative promotive factors have negative correlations with each domain of risk indices (correlations range from -.21 to -.12). Cumulative factors also correlated with less non-violent delinquencies (-0.13), violent behaviors (-0.11), smoking (-0.13), and alcohol use (-0.08). Anxiety and depression were correlated with less self acceptance (-0.32 and -0.38) and accumulative promotive factors (-0.13 and -0.17), while they are both positively correlated with other

variables. Self acceptance correlated with more cumulative promotive factors (0.27), less smoking behavior (-0.07), and less non-violent delinquency (-0.06). All the four kinds of problem behaviors correlated with each other, with correlations ranging from 0.20 to 0.65.

Table 4.3 Means and standard deviations of subscales by cumulative promotive factors

Subscale and Factor	Low Promotive Factors	High Promotive Factors
	Total	Total
<i>Cumulative Risk Factors</i>	7.66 (2.69)	6.84 (2.73)
Individual level (0-4)	2.41 (0.95)	2.11 (1.01)
Peer level (0-3)	1.37 (1.18)	1.06 (1.12)
Family Level (0-3)	1.93 (0.82)	1.81 (0.78)
Community Level (0-3)	1.97 (0.89)	1.86 (0.90)
<i>Poor Mental Health</i>		
Anxiety	1.84 (0.89)	1.67 (0.80)
Depression	1.91 (0.90)	1.67 (0.82)
Self Acceptance	3.15 (0.80)	3.54 (0.86)
<i>Delinquency</i>		
Non-Violent	0.52 (1.39)	0.29 (0.96)
Violent	0.42 (0.96)	0.26 (0.73)
<i>Substance Use</i>		
Smoking (standardized)	0.11 (1.10)	-0.10 (0.88)
Alcohol Use(standardized)	0.04 (0.91)	-0.04 (1.01)

Table 4.4 Matrix of Correlations among subscales

Subscale	IRV	PRV	FRV	CRV	Anxiety	Depression	Self Acceptance	NVD	Violent Behaviors	Smoking	Alcohol Use	CPV
Individual Risk Variables	1.00											
Peer Risk Variables	.38**	1.00										
Family Risk Variables	.29**	.27**	1.00									
Community Risk Variables	.31**	.38**	.39**	1.00								
Anxiety	.24**	.17**	.24**	.19**	1.00							
Depression	.27**	.21**	.24**	.18*	.82**	1.00						
Self Acceptance	-.12**	-.09**	-.08**	-.06**	-.32**	-.38**	1.00					
Non-Violent Delinquency	.34**	.19**	.19**	.19**	.21**	.24**	-0.06*	1.00				
Violent Behaviors	.41**	.29**	.20**	.21**	.21**	.24**	-0.05	.65**	1.00			
Smoking	.28**	.30**	.17**	.23**	.13**	.17**	-0.07**	.21**	.38**	1.00		
Alcohol Use	.29**	.34**	.21**	.27**	.17**	.19**	-0.02	.20**	.28**	.41**	1.00	
Cumulative Promotive Factors	-.21**	-.19**	-.12**	-.13**	-.13**	-.17**	0.27**	-.13*	-.11**	-.13**	-.08**	1.00

** .Correlation is significant at the 0.01 level (2-tailed).

* .Correlation is significant at the 0.05 level (2-tailed).

Testing the Compensatory Model Based on Total Sample

Figure 4.2 presents the results of the structural equation parameter estimation of the compensatory model of resilience of Chinese adolescent problem behaviors. The reverse model generated the same model fit as the original one; therefore, I adopted the original hypothesized model because it is supported by both theories and past research. The results of the analysis based on the total sample provided a good fit to the data [χ^2 (152, N = 1,201) = 501.21 ($p < .001$), NFI = .93, NNFI = .93, CFI = .95, RMR = .04, RMSEA = .04, within 90% confidence interval.] The overall model explained 31% of the variance in delinquent behaviors and 53% of the variance in substance use (Figure 4.2).

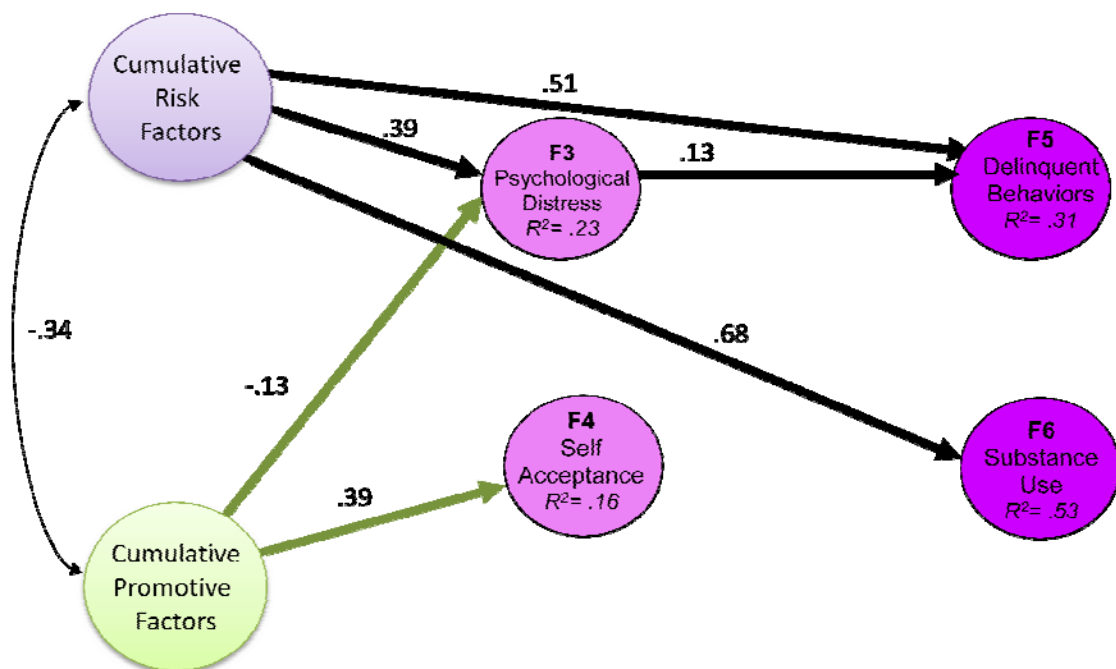


Figure 4.2 Chinese Teen’s Problematic Behaviors as a Result of Cumulative Risks and Promotive Factors. χ^2 (152, n = 1201) = 501.21 ($p < .001$), NFI = .93, NNFI = .93, CFI = .95, RMR = .037, RMSEA = .044. All paths with solid lines are statistically significant at $p < .05$. Controlled by age, gender, father’s education and mother’s education.

Higher cumulative promotive factors correlated with less cumulative risks ($r = -.34$). After controlling for gender, school grade, parents' education levels, the main contributor to both delinquent behaviors and substance use was cumulative risk factors ($\beta = 0.51; 0.68$, respectively). Psychological distress was also associated with delinquent behaviors ($\beta = 0.13$), but not substance use. Cumulative risk influence was also found to be associated with more mental distress ($\beta = 0.39$). No direct effect was found between cumulative risks and self acceptance. Higher cumulative promotive factors, as expected, was linked with higher self acceptance ($\beta = 0.39$), but self-acceptance was not correlated with either outcome. Cumulative promotive factors did not have direct effect on delinquency or substance use. Cumulative promotive factors, however, had an indirect effect that decreased delinquency through its association with less psychological distress ($\beta = -0.13$).

Testing the Risk-protective Model of Cumulative Promotive Effects

The results of multigroup test of protective effects of cumulative promotive factors indicated a good fit of the risk model to the data [$\chi^2 (91, n = 1201) = 373.22$ ($p < .001$), NFI = .94, NNFI = .93, CFI = .95, RMR = .04, RMSEA = .05, within 90% confidence interval] (Figure 4.3). The overall model explained 30% of the variance in delinquencies and 53% of the variance in substance use. Similar to the compensatory model, the main contributor to both delinquent behaviors and substance use was the cumulative risk factor ($\beta = 0.51; 0.67$, respectively). Higher cumulative risk was associated with more psychological distress ($\beta = 0.43$) and less self acceptance ($\beta = -0.14$). More psychological distress was associated with more delinquency ($\beta = 0.13$), but

not substance use. Self acceptance was not associated with either outcome. The results indicate that the cumulative risk factor directly increased the likelihood of delinquency and substance use, and indirectly increased the likelihood of delinquency through an increase of psychological distress.

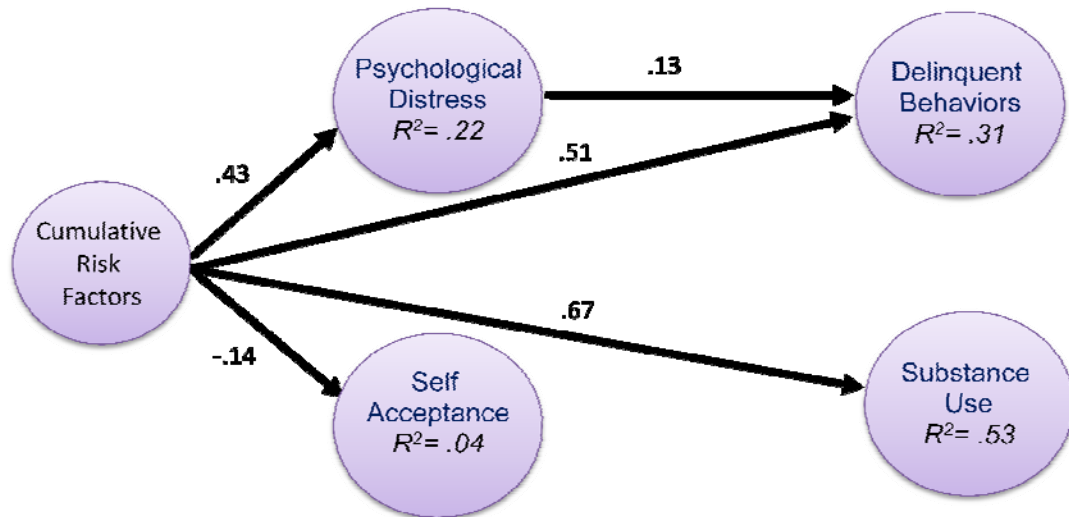


Figure 4.3 Direct and Mediational Effects of cumulative risk factors on Chinese Teen's Problem Behaviors. $\chi^2(91, n=1201) = 373.22$ ($p < .001$), $NFI = .94$, $NNFI = .93$, $CFI = .95$, $RMR = .038$, $RMSEA = .051$. All paths with solid lines are statistically significant at $p < .05$. Controlled by age, gender, father's education and mother's education.

A median split of the average score of the cumulative promotive indice was conducted to separate the students into a high promotive group (rated higher than 2.0 in the scale) and a low promotive group (rated 2.0 or lower) for a multiple group analysis. The first analysis procedure was taken to fit the covariance matrices of the two subgroups simultaneously to the same model while constraining the factor loadings, the paths, and the covariances to be equal (Benbenishty, et al., 2002). The results produced acceptable fit to the data [$\chi^2(199, n \text{ low promotive} = 596, n \text{ high promotive} = 610) = 524.75, p < 0.001$, and with $NFI = .91$, $NNFI = .92$, $CFI = .94$, $RMR = .05$, $RMSEA = .05$, within

90% confidence interval.] The result indicates that the same theoretical model fits the data from both groups.

A following analysis was conducted to see if the goodness-of-fit could be improved significantly by releasing certain constraints on a path that revealed a large difference between the two groups in the earlier analysis performed without any constraints on the specific path (Benbenishty, et al., 2002). When one of the constraints was released, there was a statistically significant reduction in χ^2 , indicating that the difference of the specific path between the two groups is significant. In the risk-protective model, the constraints of two paths were released: one was the link between cumulative risks and psychological distress, with χ^2 reduced 4.22 ($p < .05$); another was the link between cumulative risks and delinquent behaviors, with χ^2 reduced 8.54 ($p < .00$) (See Figure 4.4. Paths released are in red color). The result from the final model with the constraint released were χ^2 (197, n low support=596, n high support =610) = 508.55, $p < 0.001$, and with NFI = .92, NNFI = .92, CFI = .95, RMSEA = .05, RMR = .04, within 90% confidence interval.

Two paths are modified by the level of promotive factors: the relationship between cumulative risks and psychological distress, and the relationship between cumulative risks and delinquent behaviors. The results indicated that the effects of cumulative risk on delinquent behaviors were reduced for the high level of promotive factors ($\beta = .49$) compared to adolescents in a low level promotive factors ($\beta = .52$). Conversely, I found a stronger link between cumulative risks and psychological distress with higher level of promotive factors ($\beta = .53$) compared to those in a level low promotive factors ($\beta = .34$). Similarities also existed for the two groups. Cumulative risk

has similar direct effects on substance use and self acceptance across the two promotive index groups. The effects of self acceptance on delinquent behaviors were also the same across the two promotive groups. All the coefficients were indicated in Figure 4.4 for two groups.

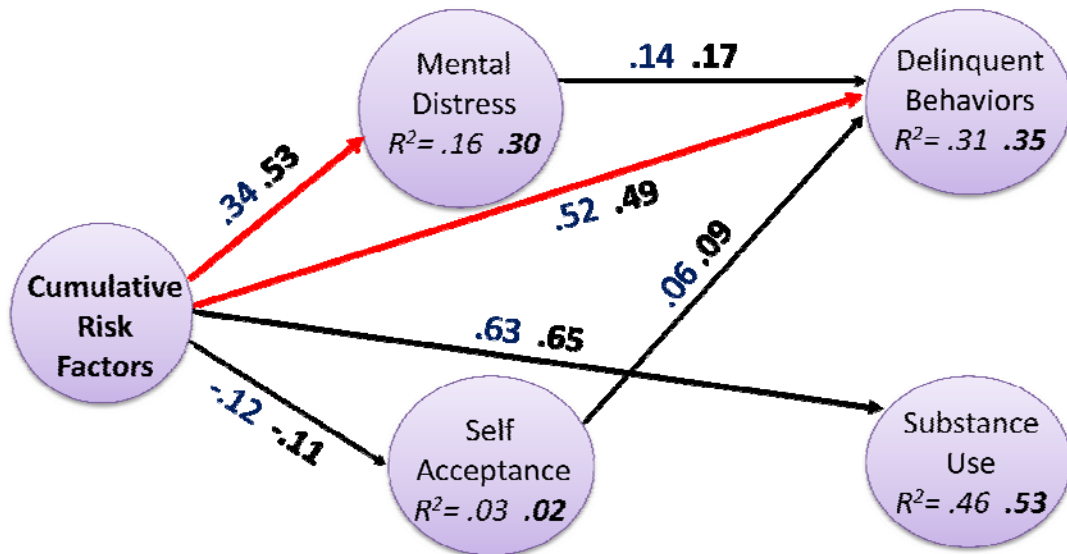


Figure 4.4 Cumulative Promotive Factors Groups Comparison Structural Equation Modeling of Chinese Teen’s Problem Behaviors. χ^2 (199, *n* low CPF =596, *n* high CPF =610) = 524.75, $p < 0.001$, and with NFI = 0.91, NNFI = 0.92, CFI = 0.94, RMR = 0.047, RMSEA = 0.052. After releasing the constrains: χ^2 (196, *n* low CPF =596, *n* high CPF =610) = 508.55, $p < 0.001$, and with NFI = 0.92, NNFI = 0.92, CFI = 0.95, RMR = 0.044, RMSEA = 0.051. All paths with solid lines are statistically significant at $p < .05$. The **bold red line** is the path that was modified by degrees of Cumulative Promotive Factros. The **bold numbers** indicate coefficients for High CPF group.

Discussion

The purpose of the study was to examine the cumulative effects of risks and promotive factors across four contextual domains (e.g. individual, peer, family and community) on Chinese adolescent problem behaviors. Our findings are consistent with literature on the cumulative risk effects that children exposed to multiple risks are more likely to develop problem behaviors in adolescence than those with single-risk exposure

(Guo, Hawkins, Hill, & Abbott, 2001; Ostaszewski & Zimmerman, 2006; Rutter, 1987; Stoddard, et al., 2012). In order to test how cumulative promotive factors play a role in protecting youth from problem behaviors, we examined the effects in two different resiliency models: a compensatory model and a risk-protective model. Our data supported the majority of the paths in the compensatory model. While contrary to our expectations, cumulative promotive factors did not directly decrease the likelihood of delinquency and substance use. The promotive factors, however, provided compensatory effects through decreasing the likelihood of psychological distress, which was associated with delinquent behaviors among adolescents in our study. Children with more promotive factors also tend to report higher self acceptance, which is in line with our hypothesis that promotive factors are beneficial in adolescent development. Moreover, it is worth noting that the variance explained by the compensatory model was comparably higher (31% for delinquency and 53% for substance use) than previous studies that included only several factors in a single domain (Benner & Kim, 2010; Nash, McQueen, & Bray, 2005; Tompkins, Hockett, Abraibesh, & Witt, 2011; Veronneau & Dishion, 2010). These results support a social ecological perspective and resilience theory because multiple factors across different contextual levels were associated with Chinese adolescent problem behaviors.

The following interpretations may explain the lack of support by our data on the hypothesis that cumulative promotive factor may directly suppress problem behaviors. First, while our cumulative measures included risk and promotive factors across different contextual domains, we may have missed some key factors that are important for problem behaviors among Chinese adolescents. A change in family structure in China as a result

of economic development was reported (Grant & Hutton, 2011). The rise of the number of nuclear families in China due to the *one family, one child* policy and the increasing number of both parents needing to work full time or work away from home contribute to a change of family structure. As a result, there is a growing trend that children are being raised by their grandparents. The influences and parenting styles of grandparents may therefore be an emerging factor for healthy youth development in China (Grant & Hutton, 2011; Haddad, Chen, & Greenberger, 2011). In particular, the differences between grandparents and parents in parenting styles, supervision, and warmth provided to children need to be addressed in future research in how they may have an effect on adolescent development. Moreover, many adolescents in China have no siblings due to the policy of *one family, one child*. These adolescents may be under greater influence by peers and other important non-parental adults (Haddad, et al.), and they may have fewer opportunities to practice interpersonal skills than those with siblings (Haddad, et al., 2011; D.T.L. Shek, 2007; Wen, et al., 2007). Wen et al. (2007), for example, have found peers have significant influence on adolescents smoking in China, and suggested that the result may be attributed to the shared social and school environment of peers and the fact that many Chinese students have no siblings. The small family size may also bring both positive and negative influences into the youth development in China, including problem behaviors. On one hand, children may get more parental attention and monitoring and thus they are less likely to engage delinquency or substance use. On the other hand, some parents or grandparents may overindulge their children, or focus too much on academic excellence at the expense of value development (D.T.L. Shek, 2007; Wen, et al., 2007). Moreover, the change of youth subculture that creates different peer relationships have

been noted by researchers for their influence on the youth development in China (Grant & Hutton, 2011; D.T.L. Shek, 2007; Wen, et al., 2007). For some adolescents, the online social networks that are shared particularly by peers may become a main source of interpersonal communication other than school settings (Shek, 2007), while the limited spaces and places for adolescent recreation provided by the community contribute to the emergence of adolescents reporting “lonely, isolated, and pressured by conflicting ideologies (Grant & Hutton, 2011, pp. 10).” Therefore, to better understand problem behaviors among Chinese adolescents, future research that addresses the risk and promotive factors in parental absence, grandparents’ or other adults’ influences, interpersonal skills, and emerging youth subcultures may be particularly helpful.

Second, although researchers have reported support for a compensatory model of resiliency for problem behaviors, it is very common in the literature to see the accumulation of risks over-powering the accumulation of promotive factors in their effects on adolescents (Bowen & Flora, 2002; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Newcomb & Felix-Ortiz, 1992; Ostaszewski & Zimmerman, 2006; Zimmerman, Bingenheimer, & Notaro, 2002). In the current study, the criterion to identify students with risks is more liberal than the criterion to identify students with promotive factors due to the highly skewed distribution of risk variables in our sample. This approach helped to identify the students who have been exposed to the risks and it also assisted in maintaining the variance of the cumulative indices. Yet, one may be cautious when comparing the cumulative influence between the risks and promotive factors. Nevertheless, the compensatory hypothesis of promotive factors was supported in our data indirectly through the mediating effect of decreased psychological distress.

Moreover, the fact that more promotive factors are associated with less psychological distress and higher self acceptance indicates that these factors may be particular beneficial for the positive development of adolescence.

Consistent with resilience theory and other cross-sectional research (Bowen & Flora, 2002; Dewit, et al., 1995; Jessor, et al., 1995; Luthar, 1991; Rutter, 1987), our results indicated that the modifying effect of promotive factors buffered the negative influence of cumulative risk on adolescent delinquency. This finding suggests that for children with more promotive factors, the negative effect of risks on increasing delinquent behaviors is weaker than youth with fewer promotive factors. The protective effect of the cumulative promotive index, however, was not found for substance use. It is possible that the promotive factors included in the study may be more relevant for delinquency than substance use among Chinese adolescents. In China, teachers are responsible for not only students' academic instruction, but also their social, behavioral and daily life activities (Chen et al, 2000, Grant & Hutton, 2011, Wen, et al., 2007). Wen et al (2007) found that teachers' smoking behaviors and attitudes may have direct and indirect effect on students' smoking behavior. Moreover, factor such as self-efficacy for avoiding smoking or drinking (Nash, et al., 2005), being taught smoking-related knowledge, the anti-tobacco school atmosphere (Wen, et al., 2007), and the availability of tobacco, alcohol and other drugs in China (T.O. Cheng, 1999; Cheng, 2008) may be more relevant for Chinese adolescents substance use, but were not part of our cumulative index.

A counter intuitive finding was the relationship between cumulative risks and psychological distress became stronger for children with more promotive factors. This is

opposite from what we hypothesized. One interpretation of this result is that for those children with more promotive factors and exposure to risk factors may have experienced more conflicts and tensions in their social relationships because of different values and expectations held by family, peers, school, and community. Children with more parental support but also with more negative peer influence, for example, may experience more mental distress because they are under the competing pressures of matching parental expectation and gaining peer acceptance at the same time. Some children may have felt distressed if they perceived they failed to achieve both especially when they do not have resources to negotiate for their needs. Therefore, those who do not have resources to cope with these tensions may be particularly overwhelmed and at greater risk for psychological distress. Researchers have noted that interpersonal systems of Chinese adolescents may have generated emerging issues such as lack of communication skills among youth as a combined result of single children in the family and the youth culture of virtual online networks (Haddad, et al., 2011; D.T.L. Shek, 2007; Wen, et al., 2007). Researchers have also observed the strong emphasis on school achievement by parents and school teachers in China and less attention on their psychological well-being (Grant & Hutton, 2011). Chinese children are also under the demand of obeying parents and succeeding at school in order to show their general obedience to parents and the virtue of respect for the family (i.e. *filial piety*; Chinese: 孝, xiào). Without much attention drawn to their complex socio-emotional needs by adults, children may be therefore more prone to feeling lonely, isolated, and pressured by conflicting ideologies without adequate support (Grant & Hutton, 2011). The conflicting ideologies may be attributed to the contrasting values from traditional duty of filial piety and the view from parents and teachers that children

are a part of a family and national collective rather than as individuals; contrast to the emerging value of independence, and the emerging need to explore self-identity and the acceptance of peers. The current study results are consistent with this interpretation because the children exposed to both risks and promotive factors, usually those encountering more competing values in their daily life, are more likely to develop psychological distress. It is also possible that our measure of promotive factors did not capture the most salient issues for Chinese adolescent development. Future research that includes measures of Chinese indigenous coping strategies (Liu, Tein, & Zhao, 2004), family functioning (D. T. Shek, 1997b), parenting styles among parents (D. T. Shek, 1997a, 1998) and the influences of grandparents may help address the cross-cultural differences in parenting and related family processes, as well as the expectations and values in Chinese society. These promotive factors may be more culturally relevant to Chinese adolescents and may help protect Chinese children from risk exposure.

Some limitations should be noted in our study. First, while a cross-sectional data may provide us a 'snapshot' of the associations and interactions between risks, promotive factors, and problem behaviors, a longitudinal data will help the interpretation of causality. Further study with longitudinal study is needed to better understand the mechanisms in which risk and promotive factors operate overtime. Second, the approach of using cumulative indices equates all the component variables, but they may have differential effects. Some risk and promotive factors, therefore, may have stronger or weaker effects in the cumulative indices. Further research with analysis techniques that can address the effect weights in a model may be useful for identifying particularly influential factors and better predict their cumulative effects on adolescent problem

behaviors. Third, the study relied on a self-report survey that only obtained the adolescents' subjective perspectives. With the emerging emphasis on examining the effect of contextual factors and interpersonal factors on adolescent problem behaviors, future research would benefit from incorporating both subjective and objective measures of the social contexts. For example, surveys and reports that are obtained from parents, other family members (such as grandparents), peers, schools, and neighborhoods would provide a more comprehensive knowledge in how social contexts play a role in adolescents' psychological and behavioral health. Finally, the risk and promotive factors included in the current study may not be the most culturally appropriate for Chinese adolescents. Although this first study took a cumulative approach to understand how risks and promotive factors is useful, further work focusing on issues tailored for Chinese culture is necessary. The risk and promotive factors selected in this study were based on a review of theories and the empirical research in the literature based on a western perspective. Nevertheless, even though most of the research on adolescent resiliency and the cumulative effects of factors are conducted within the western cultures, our study took a step further to examine how resilience theory can be generalized to Chinese culture.

The findings in our study may shed light on further understanding of adolescent development in mainland China. The approach of using cumulative indices to examine the effects of factors related to problem behaviors and their interactions allows a comprehensive, ecological perspective in understanding developmental mechanism among adolescents. Overall, the findings of our study support resilience theory that emphasizes the importance of identifying positive factors that may help adolescents to

overcome developmental adversity. The study draws on a theoretical framework and adopts analyses methods that allow an in-depth examination of paths in the models that apply to Chinese adolescents. Consistent with previous research on implications for adolescent resiliency (Fergus & Zimmerman, 2005; Luthar & Cicchetti, 2000), our findings suggest interventions with preventive approaches that focus on both decreasing risk exposure and increasing promotive factors to address adolescent problem behaviors. Finally, with the constant intersecting influences of worldviews and western values while their parents and grandparents may still embrace traditional values such as filial piety (e.g. the general obedience to parents and the virtue of respect for the family), Chinese adolescents are immersed in a unique youth culture and a complex social environment in China where a variety of values and beliefs may sometimes conflict with one another. The competing pressures from different cultural and generational values may play a role in influencing the mental health among Chinese adolescents. The results suggest that interventions designed to help youth cope with stress and resolve conflicting social values would be beneficial. Most importantly, as the results in this study provided evidence that adolescent resiliency is multidimensional, interventions that cut across behaviors and address multi-level factors may be most effective. This study contributes to the initial progress of research that supports a more social-ecological approach to prevention in China.

Reference

- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J., Jr. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The Communities That Care Youth Survey. *Eval Rev*, 26(6), 575-601.
- Benbenishty, R., Astor, R. A., Zeira, A., & Vinokur, A. D. (2002). Perceptions of violence and fear of school attendance among junior high school students in Israel. *Social Work Research*, 26(2), 71-87.
- Benner, A. D., & Kim, S. Y. (2010). Understanding Chinese American Adolescents' Developmental Outcomes: Insights From the Family Stress Model. *J Res Adolesc*, 20(1), 1-12.
- Bentler, P. M. (1995). *EQS structural equation manual*. Los Angeles: BMDP Statistics Software.
- Bowen, N. K., & Flora, D. B. (2002). When is it appropriate to focus on protection in interventions for adolescents? *Am J Orthopsychiatry*, 72(4), 526-538.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research Perspectives. *Developmental Psychology*, 22(6), 723-742.
- Catalano, R., & Hawkins, J. (Eds.). (1996). *The social development model: a theory of antisocial behavior*. New York, NY: Cambridge University Press.
- Cheng, T. O. (1999). Teenage smoking in China. *J Adolesc*, 22(107-620).
- Cheng, T. O. (1999). Teenage smoking in China. *J Adolesc*, 22(5), 607-620.
- Cheng, T. O. (2008). Adolescent smoking in China. *Int J Cardiol*, 126(1), 1-2.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *J Health Soc Behav*, 24(4), 385-396.
- Dekovic, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence*, 28(6), 667-685.
- Deng, S., & Roosa, M. W. (2007). Family influences on adolescent delinquent behaviors: applying the social development model to a Chinese sample. *Am J Community Psychol*, 40(3-4), 333-344.
- Derogatis, L. R., & Spencer, P. M. (1982). *The Brief Symptom Inventory (BSI): Administration and scoring procedures*. Baltimore: Division of Medical Psychology: John Hopkins University School of Medicine.
- Dewit, D. J., Silverman, G., Goodstadt, M., & Stoduto, G. (1995). The construction of risk and protective factor indices for adolescent alcohol and other drug use. *Journal of Drug Issues*, 25(4), 837-863.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health*, 26, 399-419.
- Fergusson, D. M., Vitaro, F., Wanner, B., & Brendgen, M. (2007). Protective and compensatory factors mitigating the influence of deviant friends on delinquent behaviours during early adolescence. *J Adolesc*, 30(1), 33-50.
- Garmezy, N., Masten, A. S., & Tellegen, A. (1984). The study of stress and competence in children: a building block for developmental psychopathology. *Child Dev*, 55(1), 97-111.

- Grant, J., & Hutton, A. (2011). Supporting adolescents in a rapidly urbanising China. *Contemp Nurse, 40*(1), 5-14.
- Guo, J., Hawkins, J. D., Hill, K. G., & Abbott, R. D. (2001). Childhood and adolescent predictors of alcohol abuse and dependence in young adulthood. *J Stud Alcohol, 62*(6), 754-762.
- Haddad, E., Chen, C., & Greenberger, E. (2011). The role of important non-parental adults (VIPs) in the lives of older adolescents: a comparison of three ethnic groups. *J Youth Adolesc, 40*(3), 310-319.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull, 112*(1), 64-105.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Jessor, R. (Ed.). (1998). *New Perspectives on Adolescent Risk Behavior*. Cambridge, United Kingdom: Cambridge University Press.
- Jessor, R., Van Den Bos, J., Vanderryn, J., Costa, F., & Turbin, M. (1995). Protective factors in adolescent problem behavior: moderator effects and developmental change. *Developmental Psychology, 31*(6), 923-933.
- Klem, L. (2000). Structural equation modeling. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 227-257). Washington, DC: American Psychological Association.
- Lee, T. Y., Shek, D. T., & Kwong, W. M. (2007). Chinese approaches to understanding and building resilience in at-risk children and adolescents. *Child Adolesc Psychiatr Clin N Am, 16*(2), 377-392, ix.
- Lerner, R., & Simi, N. (Eds.). (2000). *A holistic, integrated model of risk and protection in adolescence: A developmental contextual perspective about research, programs, and policies*. Madison, WI: Lawrence Erlbaum.
- Liu, X., Tein, J. Y., & Zhao, Z. (2004). Coping strategies and behavioral/emotional problems among Chinese adolescents. *Psychiatry Res, 126*(3), 275-285.
- Loeber, R., Slot, N. W., & Stouthamer-Loeber, M. (Eds.). (2008). *A cumulative developmental model of risk and promotive factors*. Farnham: Ashgate.
- Luthar, S. S. (1991). Vulnerability and resilience: a study of high-risk adolescents. *Child Dev, 62*(3), 600-616.
- Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: implications for interventions and social policies. *Development and Psychopathology, 12*, 857-885.
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: a critical evaluation and guidelines for future work. *Child Dev, 71*(3), 543-562.
- Moos, R. H., & Moos, D. S. (1981). *Family Environment Scale Manual*. Palo Alto, CA: Consulting Psychologists.
- Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: family environment, peer influence, and parental expectations. *J Adolesc Health, 37*(1), 19-28.

- Newcomb, M. D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: cross-sectional and prospective findings. *J Pers Soc Psychol*, 63(2), 280-296.
- Newcomb, M. D., Huba, G. J., & Bentler, P. M. (1986). Determinants of sexual and dating behaviors among adolescents. *J Pers Soc Psychol*, 50(2), 428-438.
- Ostaszewski, K., & Zimmerman, M. A. (2006). The effects of cumulative risks and promotive factors on urban adolescent alcohol and other drug use: a longitudinal study of resiliency. *Am J Community Psychol*, 38(3-4), 237-249.
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: three validation studies. *Am J Community Psychol*, 11(1), 1-24.
- Raykov, T., Tomer, A., & Nesselroade, J. R. (1991). Reporting structural equation modeling results in Psychology and Aging: some proposed guidelines. *Psychol Aging*, 6(4), 499-503.
- Rutter, M. (1985). Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *Br J Psychiatry*, 147, 598-611.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *Am J Orthopsychiatry*, 57(3), 316-331.
- Shek, D. T. (1997a). Family environment and adolescent psychological well-being, school adjustment, and problem behavior: a pioneer study in a Chinese context. *J Genet Psychol*, 158(1), 113-128.
- Shek, D. T. (1997b). The relation of family functioning to adolescent psychological well-being, school adjustment, and problem behavior. *J Genet Psychol*, 158(4), 467-479.
- Shek, D. T. (1998). A longitudinal study of the relations between parent-adolescent conflict and adolescent psychological well-being. *J Genet Psychol*, 159(1), 53-67.
- Shek, D. T. (2006a). Construction of a positive youth development program in Hong Kong. *Int J Adolesc Med Health*, 18(3), 299-302.
- Shek, D. T. (2006b). Perceived parent-child relational qualities and parental behavioral and psychological control in Chinese adolescents in Hong Kong. *Adolescence*, 41(163), 563-581.
- Shek, D. T., & Lee, B. M. (2004). "Non-engaged" young people in Hong Kong: key statistics and observations. *Int J Adolesc Med Health*, 16(2), 145-163.
- Shek, D. T. L. (2001). *Resilience in adolescence: western models and local findings*. Paper presented at the Centennial Conference on Counseling in China, Taiwan, and Hong Kong.
- Shek, D. T. L. (2006). *Drop in Family Harmony in Hong Kong: An Ecological Analysis and Related Research*. Paper presented at the Conference on Strengthening Hong Kong's Families: Awareness, Commitment and Action.
- Shek, D. T. L. (2007). Tackling Adolescent Substance Abuse in Hong Kong: Where We Should and Should Not Go. *The Scientific World Journal*, 7, 2021-2030.
- Simons-Morton, B. G., Hartos, J. L., & Haynie, D. L. (2004). Prospective analysis of peer and parent influences on minor aggression among early adolescents. *Health Educ Behav*, 31(1), 22-33.
- Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1992). Interactive and higher-order effects of social influences on drug use. *J Health Soc Behav*, 33(3), 226-241.

- Stein, J. A., Newcomb, M. D., & Bentler, P. M. (1986). Stability and change in personality: A longitudinal study from early adolescence to young adulthood. *Journal of Research in Personality, 20*, 276-291.
- Stoddard, S. A., Whiteside, L., Zimmerman, M. A., Cunningham, R. M., Chermack, S. T., & Walton, M. A. (2012). The Relationship Between Cumulative Risk and Promotive Factors and Violent Behavior Among Urban Adolescents. *Am J Community Psychol, 40*(1-2), 115-125.
- Tompkins, T. L., Hockett, A. R., Abraibesh, N., & Witt, J. L. (2011). A closer look at co-rumination: Gender, coping, peer functioning and internalizing/externalizing problems. *J Adolesc, 34*(1), 1-12.
- van der Laan, A. M., Veenstra, R., Bogaerts, S., Verhulst, F. C., & Ormel, J. (2010). Serious, minor, and non-delinquents in early adolescence: the impact of cumulative risk and promotive factors. The TRAILS study. *J Abnorm Child Psychol, 38*(3), 339-351.
- Veronneau, M. H., & Dishion, T. J. (2010). Predicting change in early adolescent problem behavior in the middle school years: a mesosystemic perspective on parenting and peer experiences. *J Abnorm Child Psychol, 38*(8), 1125-1137.
- Wang, D. (2006). Study of Juvenile Delinquency and Juvenile Protection in the People's Republic of China. *Crime & Justice International, 22*(94), 4-13.
- Wen, X., Chen, W., Muscat, J. E., Qian, Z., Lu, C., Zhang, C., et al. (2007). Modifiable family and school environmental factors associated with smoking status among adolescents in Guangzhou, China. *Prev Med, 45*(2-3), 189-197.
- Wills, T. A., Vaccaro, D., & McNamara, G. (1992). The role of life events, family support, and competence in adolescent substance use: a test of vulnerability and protective factors. *Am J Community Psychol, 20*(3), 349-374.
- Youngblade, L. M., Theokas, C., Schulenberg, J., Curry, L., Huang, I. C., & Novak, M. (2007). Risk and promotive factors in families, schools, and communities: a contextual model of positive youth development in adolescence. *Pediatrics, 119* Suppl 1, S47-53.
- Zimmerman, M. A., Bingenheimer, J. B., & Notaro, P. C. (2002). Natural mentors and adolescent resiliency: a study with urban youth. *Am J Community Psychol, 30*(2), 221-243.

CHAPTER V

Summary

Present day China has been undergoing dramatic social-economic changes in consequence of the global social phenomenon and rapid urbanization related to population growth (Chen, 2007). As a result of the globalization and modernization, adolescents in China today are under the influence of both traditional Chinese culture and western cultures from a variety of sources. Youth delinquency and substance use are global public health issues. These problem behaviors among adolescents also have been noted in China (T. O. Cheng, 1999; Cheng, 2008; Deng & Roosa, 2007; Wang, 2006). A study showed an estimate of at least 10% of Chinese middle-school children who have started smoking (Wright & Katz, 2007). Researchers found that Chinese adolescents who smoke prefer foreign brands, such as Marlboro, over local brands because they view smoking foreign brands as trendy and indicating affluence (T.O. Cheng, 1999). Chinese adolescents share many similar characteristics in youth development with U.S. adolescents. Nevertheless, many social-psychological factors could be uniquely salient to Chinese youth. Therefore, researcher noted an emerging need of studies that examine

theory-based models of coping and resiliency are increasingly relevant to Chinese adolescence within the Chinese contexts (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002) Conversely, these theory-based models need to be carefully examined and adapted before they can be extended to Chinese youths.

To address the marked increases in delinquent-type behaviors (Greenberger, Chen, Beam, Whang, & Dong, 2000; Wong, 2001) and cigarette smoking among Chinese adolescents (Hesketh, Lu, Jun, & Mei, 2007; G. Yang et al., 1999; G. H. Yang, Ma, Liu, & Zhou, 2005), the current study aimed to test potential susceptibility, promotive factors and their mechanisms affecting Chinese adolescents' psychological well-being and problem behaviors. Based on Transactional Model for Stress and Coping (Lazarus & Folkman, 1984), Social Development Model (Bronfenbrenner, 1986), Ecological Theory (Hawkins & Weis, 1985), and the resiliency perspective (Fergus & Zimmerman, 2005), this study examined the conceptual models brought forth in western cultures in the Chinese contexts.

Three studies were conducted to examine risk and promotive factors for cigarette smoking, alcohol use, non-violent delinquency, and violent behavior among Chinese adolescents. In order to examine the risk and resiliency process under different social-contextual levels, the first paper tested an individual-level stress process and the modifying effect of active coping (i.e. John Henryism). The second paper tested risk effect and resiliency under a family and peer level model. Finally, the third paper investigated the cumulative effect of risk factors and promotive factors from individual, family, peer, and community levels. Based on the findings of the studies, some social-cultural differences were identified and discussed for possible adaptations of selected

factors and their measurements. I would like to summarize the findings and important indications in each of the studies as follows.

Individual Stress, John Henryism and Problem Behaviors among Chinese Adolescents

The first study drew on the Transactional Model of Stress and Coping to understand the mechanisms of stress among Chinese adolescents and its effect on psychological well-being and behavioral outcomes. Stress is assumed to have its direct and indirect negative effects on an adolescent's internalizing outcomes (e.g. psychological distress, self acceptance) and externalizing outcomes (e.g. delinquencies, substance use). The first study also tested how active coping played a role in modifying the effects of stress on health outcomes. In past research, John Henryism describes prolonged high-effort coping when confronted by difficult psychosocial and environmental barriers (James, Hartnett, & Kalsbeek, 1983). Very little is known, yet, about how active coping plays a role among Chinese adolescents for managing stress. As the emerging generations in China embrace both traditional and Western cultures, extending research on JH to Chinese adolescents is needed to investigate whether JH is a coping strategy that is salient and beneficial to this group.

My first study results indicated that the overall model of the stress process and its effect on problem behaviors was supported. As hypothesized, stress increased mental distress among adolescents, and higher degrees of mental distress increased both delinquent behaviors and substance use. Stress also decreased one's self acceptance, while self acceptance had a weak linkage to delinquencies, and was not associated with substance use. Yet, the results did not support the hypothesis that stress has a *direct* effect

on delinquencies and substance use. Rather, a higher level of stress was found to decrease the involvement of delinquencies among our samples. An in-depth understanding of the source of stress that most Chinese students experience may help explain this finding. Researchers have identified the strong emphasis placed on school achievement by Chinese parents and teachers, so that the parents and teachers did not have enough time and attention on children's complex social-emotional needs (Grant & Hutton, 2011; Liu et al., 2000). The academic pressure was also identified as a main source of stress by the children in China (Grant & Hutton, 2011; Liu, et al., 2000). The emphasis on the students' academic achievement may limit their opportunities for students to engage in other activities, including delinquency and substance use. Yet, continuous academic pressure may increase their perception of stress and in turn affect their susceptibility to mental-health problems (Liu, et al., 2000). This increased stress to do well in school may help decrease their involvement in delinquency because that just furthers their academic concerns. Another possible interpretation of this finding is that other protective factors we did not assess may help Chinese youth cope with stress and that individualistic constructs such as personal coping strategies may be less relevant. Positive peer influence, parent-adolescent interaction, family support, and parent surveillance have all been reported as important mediating or moderating factors of problem behaviors among Chinese adolescents (Deng & Roosa, 2007; Lau & Leung, 1992; Ma, Li, & Pow, 2011). This indicates that further research is needed to address social factors (i.e. family and peer influences) in the stress adjustment model. The finding also supports the rationale of the second study, which includes peer and family factors in the resiliency model.

Another goal of the first study is to examine the modifying effect of John Henryism. A scarcity of studies on active coping in Chinese adolescents did not provide for a hypothesis about the effects of JH. Based on the resilience theory, my study tested whether JH may serve as a promotive factor that protects the adolescents from exposure to stress. Yet, the findings in the study did not support this initial hypothesis. In the two-group comparison (e.g. high John Henryism and low John Henryism), individuals who have higher John Henryism reported more substance use as a result of mental distress. Knowing the results regarding to JH in this first study, maybe I should have hypothesized the effect of JH in a contrast direction, as opposed to a promotive factor. Nevertheless, this finding lends to several interpretations. First, whether John Henryism will benefit an individual depends on the controllability of the stressor and the availability of the resources. Youth in our samples were from urban areas of Beijing and Xian, and the types of barriers and resources for coping efforts may vary among the participants. While some students tend to adopt high-effort coping, it may be particularly difficult for those who encounter on-going barriers and limited resources beyond their control to have a successful adjustment. Second, the sole emphasis on continuous, high-effort coping may be neither salient nor completely beneficial among Chinese adolescents with demanding stressors because Chinese cultures focus less on individualism but more on familism and harmony. The emphasis of John Henryism on achieving goals regardless of barriers and other's opinions might indicate conflicts with the deep-rooted Chinese values of "harmony" and "filial piety (Chinese: 孝, xiào)". Filial piety refers to a general pattern of obedience to parents and respect for the family. In other words, the nature of active coping may not be encouraged by a society with these traditional values; its children are

socialized to be obedient to the parents and maintain family harmony in the family. Therefore, John Henryism may be less relevant for adolescent resilience in China. Additional research is needed to examine whether John Henryism is a valid and reliable measurement for Chinese youth. The research might include comparing John Henryism and other coping styles in their effects on parent-child relationships, psychological well-being among children, and behavioral outcomes.

The findings in the first study suggested that the negative effects of stress on Chinese adolescents' psychological well-being and problem behaviors were supported by our sample. Although the effects may not be directly related to problem behaviors, the study showed that the stress indirectly increased susceptibility through psychological distress. Consistent with previous study findings (Grant & Hutton, 2011), these results indicated that efforts to address stress among Chinese adolescents may help to improve their psycho-social well-being and decrease problem behaviors. Moreover, the modifying effect of John Henryism in the study showed that JH may not be salient to Chinese adolescents. In the Chinese cultural contexts, JH may not be the best way to capture the concept of adaptive coping. The finding also indicates a need to identify coping strategies that may be more culturally appropriate to Chinese adolescents. Coping efforts that are very common among Chinese people such as acceptance, cognitive restructuring, or seeking help from a supernatural power may be more beneficial for them (Liu, Tein, & Zhao, 2004; Yao et al., 2010). Coping measurements that have been applied successfully to Chinese adolescents, such as the Chinese Trait Coping Style Questionnaire (Liu, et al., 2004), may need to be included in future studies to test their generalizability to different populations or areas in China. The results from the first study also support the rationale of

examining adolescent resiliency beyond individual factors to include more psycho-social factors that are addressed in the Social Development Model (Hawkins & Weis, 1985) and the Ecological Theory (Bronfenbrenner, 1986). In the second study, therefore, I examined the adolescent resiliency process at the family and peer level.

Negative Peer Influences, Parental Support and Problem Behaviors among Chinese Adolescents

In China, the family is a strong part of cultural heritage and a central aspect of people's lives (Lin & Lai, 1995). The influence of family factors on adolescent psychological well-being and problem behavior may be particularly salient for Chinese youth (Ma, Shek, Cheung, & Lam, 2000; Ma, Shek, Cheung, & Lee, 1996). Little is known, however, about the mechanisms of family and peer influence and their associations with mental health and behavior problems among adolescents in Mainland China. The second study, therefore, tested the conceptual model that was grounded on the Social Development Model (Hawkins & Weis, 1985). The model includes peer influence and parental support as two important social factors that influence adolescent social development. Negative peer influence was hypothesized to have direct risk effects on externalizing outcomes (e.g. non-delinquent behaviors, violent behaviors, cigarette and alcohol use) and indirect effects through internalizing outcomes (e.g. psychological distress and self acceptance). Drawing on the resilience theory (Fergus & Zimmerman, 2005), this study tested whether parental support can counteract (compensatory effect) or moderate (protective effect) the effect of risks for predicting adolescent problem behaviors.

The results indicated that our study strongly supported the overall compensatory model with good fit indices and variance explained by the model. Negative peer influence increases Chinese adolescents' delinquent behaviors and substance use, and has also indirectly increased problem behaviors through increasing mental distress. As hypothesized, parental support compensated for the negative effects of peers on problem behaviors. More parental support was directly associated with less substance use. Parental support also had indirect effects on reducing delinquencies and substance use by diminishing mental distress. Moreover, parental support was associated with higher self acceptance. Consistent with previous research outcomes (Ary, Duncan, Duncan, & Hops, 1999; Nash, McQueen, & Bray, 2005), the current findings further support the importance of parental support in the psychological well-being of Chinese adolescents and the prevention of problem behaviors. These results also confirm that peer influence plays an important role in Chinese adolescent psychological well-being and behaviors, as is also found in western samples (Nash, et al., 2005; Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikstrom, 2002).

The study further examined the protective model of resiliency by comparing high and low parental support for testing the structural model. The results indicated that the association between psychological distress and substance use became non-significant for adolescents with high parental support compared to adolescents with low parental support. Consistent with the hypothesis and previous research results (Resnick et al., 1997; Resnick, Harris, & Blum, 1993), the finding indicates that positive family relationships can protect adolescents against risks of drug and alcohol use. Contrary to my hypothesis, the relationship between negative peer influence and psychological

distress was stronger among adolescents who reported higher parental support. This interesting result may be because of differences between Chinese and western cultures. The Chinese cultural belief, for example, that harshness in parenting benefits childhood development is quite different from western ways of parenting (Shek, 1997). Chinese children have been raised traditionally to be obedient and deferential to familial and parental expectations over individual needs. Researchers reported that Chinese parents use traditional methods of punishment to ensure children achieve their expectations (Grant & Hutton, 2011). The Chinese value of *filial piety* (Chinese: 孝, xiào), referring to the general obedience to parents and the virtue of respect for the family, was emphasized by parents and school teachers. The emerging youth culture does not necessarily embrace these traditional values. The strict oversight of parents and family expectations may create tension in those adolescents who are becoming increasingly accustomed to a western culture that emphasizes personal autonomy (Unger et al., 2002). This constant intersecting of complex influences from both traditional Chinese values and the western cultures may play a significant role on adolescent development in China. The results of the current study indicated that adolescents who have more peers with negative influence may experience more conflict between their parents' expectations and their peer relationships. As a result, these adolescents may be at higher risk of developing mental distress when that conflict is greatest.

This study is one of the first that examines the mechanism of parental support with negative peer influence and problem behaviors in the Chinese contexts. The findings suggest that parental support and peer behaviors exert significant influences on psychological and behavioral outcomes in Chinese adolescents. The study suggests that

parental support serves as a promotive factor with a compensatory effect for Chinese youth. The current study also provides evidence that it is a protective, modifying factor for the relationship between psychological distress and substance use. Based on resiliency theory and the Social Development Model, this study provides an initial step in understanding mainland Chinese adolescent development using western-developed conceptual models and measures. Nevertheless, parental support was found to interact with the relationship between negative peer influence and psychological distress. The emphasis on the traditional Chinese beliefs of familism and harmony within the family might exacerbate the negative influence of the parent-adolescent conflicts (Shek, 1997). It would be beneficial in future research to examine if this interaction resulted from potential parent-adolescent conflicts.

The findings suggest preventive strategies for Chinese youth that focus on the conflict between peer influence and parental support may be necessary. This may include strengthening resources for youth to navigate parental pressure and peer influence, such as developing communication skills for both youth and parents.

The Effect of Cumulative Risks and Promotive Factors on Chinese Adolescent Problem Behaviors

The third study draws on resilience theory and examines the cumulative effects of multiple level risk and promotive factors on adolescent problem behaviors in China. Both Ecological Theory (Bronfenbrenner, 1986) and the Social Development Model (SDM) (Catalano & Hawkins, 1996) support the rationale of including multiple-level factors in understanding problem behavior during childhood and adolescence. Although researchers

have discussed several specific contextual factors of problem behaviors among Chinese adolescents (Wen et al., 2007), there is still a dearth of empirical research literature that addresses multiple risks and promotive factors in the Chinese contexts. The conceptual model includes individual-level factors, peer influences, family-level factors, and community-level factors in the cumulative indices to test their effects on internalizing and externalizing outcomes. Higher cumulative risk was hypothesized to be associated both directly and indirectly with more problem behaviors. Cumulative promotive factors were tested in the study with both their compensatory effects and risk-protective effects on internalizing and externalizing outcomes.

The findings are consistent with literature on the cumulative risk effects that children exposed to multiple risks are more likely to develop problem behaviors in adolescence than those with single-risk exposure (Guo, Hawkins, Hill, & Abbott, 2001; Ostaszewski & Zimmerman, 2006; Rutter, 1987; Stoddard et al., 2012). Contrary to our expectations, cumulative promotive factors did not directly decrease the likelihood of delinquency and substance use. The promotive factors, however, provide compensatory effects through decreasing the likelihood of psychological distress, which was associated with delinquent behaviors among adolescents. Children with more promotive factors also tend to report higher self acceptance, which is consistent with our hypothesis that promotive factors benefit adolescent development. Several interpretations may explain the lack of support by our data of the hypothesis that cumulative promotive factors may directly suppress problem behaviors. First, some key promotive factors that are important for Chinese adolescents to overcome risk exposures may not be measured. In particular, factors related to the current social-ecological compositions in China, such as social

competences and influences from grandparents, may be particularly relevant for Chinese adolescent resilience. Second, consistent with resiliency research, the predictive effect of cumulative factors may not be as powerful as the predictive effect of cumulative risks. The results suggest that the cumulative effect of the promotive factors in our study may not be influential enough to suppress the effects of risks. Nevertheless, the study provides evidence that promotive factors may indirectly decrease problem behaviors through decreased psychological distress.

The study result also supported the risk-protective effect of promotive factors by buffering the negative influence of cumulative risks on delinquency, but not on substance use. The finding suggests that for children with more promotive factors, the negative effect of risks on delinquency is reduced compared to Chinese youth with fewer promotive factors. The availability of more promotive factors may provide benefits for preventing delinquency among Chinese adolescents exposed to multiple risks for this outcome. Opposite from what was hypothesized; the relationship between cumulative risks and psychological distress is stronger for children with more promotive factors. It is possible that for those children with more promotive factors and exposure to risk factors do experience more conflicts and tensions in their social relationships because of the different values and expectations held by their family, peers, school, and community. For Chinese adolescents, the conflicts and tensions may be particularly overwhelming and put them in higher risk of psychological distress when they do not have resources to negotiate their values and needs. Further research that investigates how the perceived conflicts of values in the social surroundings may influence the psychological well-being among

Chinese adolescents may be necessary to understand development in the Chinese contexts.

The study took the first step to examine cumulative risks and promotive factors under the individual, family, peer, and community domains among Chinese adolescents. The approach of using cumulative indices allows for a comprehensive and ecological perspective in understanding how multiple factors have a combined effect on adolescent delinquency and substance use. The resiliency perspective was supported with the evidence of the compensatory effect and the risk-protective effect of cumulative promotive factors in the Chinese sample. Nevertheless, the results also indicate the need for including more culturally-appropriate factors in each contextual domain to improve the understanding of the resilience process among Chinese adolescents. These might include factors addressing the cross-cultural differences in parenting and related family processes, the expectations and values enforced in Chinese society on children, as well as the social competence that assist children in conflict resolution.

A Comparison and Contrast with Existing Literature

My study aimed to identify not only the risk factors that may play a significant role in problem behaviors among Chinese adolescents, but also identified potential promotive factors that assist the resilience process. The results suggests that in order to better understand the risks and protective factors and their relationships that may be important to Chinese adolescents, a discussion of how the conceptual models based on western theories fit into adolescent problem behaviors in China may be necessary. The similarities and differences between our findings and previous research of the effects of

risks and promotive factors in different contextual domains (e.g. individual, family and peer, and community) may improve the design of future research for Chinese adolescents. Researchers have provided a growing body of literature on adolescent resilience (Fergus & Zimmerman, 2005), but few have focused on non-white samples (Ostaszewski & Zimmerman, 2006). The current study provides evidence that, overall, an adolescent resiliency approach to understand Chinese adolescent development can be informative. Although the presence of risks is of concern, resilience theory emphasizes the promotive factors that can help adolescents overcome the negative effects of risk exposure (Fergus & Zimmerman, 2005). Consistent with most previous research (Conger, Ge, Elder, Lorenz, & Simons, 1994; Elgar, Arlett, & Groves, 2003), the first study provided evidence that stress in the individual level can influence adolescent problem behaviors indirectly through deteriorating psychological health. The current study finding is consistent with previous research showing that negative peer influences may both directly and indirectly increase the likelihood of delinquency and substance use (Wen, et al., 2007), while parental support may mitigate the negative effects (Ary, et al., 1999; Nash, et al., 2005). My studies provide evidence that parental support not only directly associates with less substance use, but also weakens the relationship between psychological distress and substance use. Our study also proved that parental support benefited self-acceptance among adolescents. Consistent with research literature (Loeber, Slot, & Stouthamer-Loeber, 2008; Stoddard, et al., 2012), cumulative risks in my study exert significant influence on delinquency and substance use among Chinese adolescents. Cumulative promotive factors, on the other hand, were found to provide an indirect compensatory effect through a decrease of psychological distress, which resonates with

prior research findings (Borowsky, Ireland, & Resnick, 2002). Moreover, the studies support the risk-protective model of cumulative promotive effect on buffering the relationship between cumulative risks and delinquent behaviors among Chinese adolescents.

Although the theory-based framework of adolescent resiliency was generally supported in my study, gaps between the current study findings and the literature of previous work, especially the research conducted within western cultures, remain. First, regardless of the fact that researchers have provided evidence that active coping is salient among Americans (James, 1996; James, et al., 1983) and even other populations including Asian Americans (Duijkers, Drijver, Kromhout, & James, 1988; Somova, Connolly, & Diara, 1995), my study did not provide support that the measure of John Henryism was a beneficial active coping strategy for Chinese adolescents. Additional research is needed to examine whether John Henryism is a valid and reliable measurement for Chinese youth. Nevertheless, this study was the first to test whether John Henryism is an effective coping disposition among Chinese adolescents. The finding of the interaction among John Henryism, psychological distress, and substance use suggests that further research is also needed on how a coping disposition can play a role in psychological well-being and substance use. Second, although both parental support and cumulative promotive factors were shown to have buffering effects on adolescent problem behaviors when exposed to risks, they also exert modifying effects that strengthen the relationship between risks and psychological distress. The findings suggest a need to further understand how social environmental factors can affect the psychological well-being of Chinese adolescents; in particular, Chinese culture is

characterized by its emphasis on family values and the responsibility of the family for the socialization of children's behaviors (Deng & Roosa, 2007). The traditional values Chinese families hold, such as filial piety (孝), are usually taken for granted by parents and older generations in Chinese society but are not necessarily embraced by emerging youth culture in China. This gap of values and expectations between different generations may have created identity conflicts and competing pressures among Chinese adolescents, which may possibly increase their susceptibility of mental distress during the developmental stage. Therefore, further research to get more in-depth information on family relationships may help clarify how the conflicts of peer and family influence parent-adolescent relationships in China. This research may help explain the interactions among negative peer influence, parental support, and psychological distress found in the studies in this thesis. Furthermore, the deep-rooted Chinese culture of collectivism and Confucianism both emphasize the value of harmony, which is in contrast with the western culture that values independency and individualism. Parent-child conflicts are usually not encouraged because children are socialized to be submissive to the parents and harmony in the family are prioritized in Chinese culture (Shek, 1997). With an emerging youth culture influenced by western values, Chinese adolescents may have experienced the pressure by these conflicting ideologies in their social surroundings (Grant & Hutton, 2011). The conflicting ideologies may be attributed to the values from traditional duty of filial piety, the view from parents and teachers that children are a part of a family and national collective rather than as individuals; this contrasts the emerging youth value of independence and the need to explore self-identity and the influence of peers. This social-structural perspective helps the interpretation of the findings in my

study that adolescents with higher promotive factors while also exposed to risk factors may be more likely to develop psychological distress than those with less promotive factors. Those children who were exposed to both risks and promotive factors usually experience more competing pressures from different values and expectations.

Study Limitations

It is important to note some methodological limitations of these studies. First, as noted above, the measurement of some factors (such as John Henryism) may not be relevant for Chinese youth. A similar issue may be true to some other factors used in the cumulative effect study where some important risks and promotive factors for Chinese adolescents may be missed out in the current study. Shek (1997), for example, has provided evidence in a study with Chinese adolescents that parent-adolescent conflict is influential to adolescent psychological well-being and problem behaviors. Yet, since the current study is among the first ones that brought forth theories and concepts developed in the western cultures and examined them in Chinese contexts, the findings extend previous understanding on these factors and their mechanisms for influencing problem behaviors. Nevertheless, it is crucial to keep examining and developing proper measures to factors that are culturally sensitive to Chinese adolescents. Second, the data collected in the research were cross-sectional. Further studies with longitudinal designs may provide more evidence on the causal relationships between risks, promotive factors and their outcomes. Third, the samples were collected within two urban cities in mainland China, Beijing and Xian, which present geographical limitations. The results of this study may not be generalized to adolescents who live outside of the urban area. It is possible

that children in rural area may be more accustomed to traditional Chinese values than their urban counterparts. Both cities were also in the North of China so the results may not apply to Southern cities as well. Nevertheless, the current study does provide unique information that may have significant implications for China, which is now undergoing rapid urbanization; an increasing number of Chinese adolescents live in the urban areas, so efforts to understand their developmental issues is increasingly vital.

Conclusion

In conclusion, the findings provide some support for resiliency theory in Chinese adolescent development. The findings from this study fill a void in existing research by examining the relationships among risks and promotive factors, psychological distress, self acceptance, substance use, and delinquent behaviors in a large sample of mainland Chinese youth. The results also have implications for future research on considering more culturally-sensitive measures of risks and protective factors for Chinese adolescents. With the rapid urbanization, modernization, and the increased connections to global cultures in China, Chinese adolescents grow up in a social environment that accommodates a variety of values and beliefs that are sometimes in conflict with one another. My study took useful steps in the beginning research in Chinese adolescent development.

The results highlight several preventive implications. First, resources that can help Chinese youth navigate parental pressure and peer influence may be useful. Second, for Chinese parents and adolescents facing the rapid urbanization and an emergent youth culture that may not necessarily embrace traditional values, interventions that both

address parenting styles and susceptibility to peer influences may be useful. Third, like western cultures, Chinese youth' psychological distress is a significant factor in the development of problem behaviors. Thus, interventions to help youth cope with stress and improve their mental health are indicated by the results of the three studies in this thesis. Finally, as the results in this study provided evidence that adolescent resiliency is multi-dimensional, interventions that cut across behaviors and address multi-level factors may be most effective. The findings support a growing literature that emphasizes socio-ecological perspectives in long-term efforts to prevent Chinese adolescent problem behaviors.

References

- Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J., Jr. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The Communities That Care Youth Survey. *Eval Rev*, 26(6), 575-601.
- Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: the influence of parents and peers. *Behav Res Ther*, 37(3), 217-230.
- Borowsky, I. W., Ireland, M., & Resnick, M. D. (2002). Violence risk and protective factors among youth held back in school. *Ambul Pediatr*, 2(6), 475-484.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research Perspectives. *Developmental Psychology*, 22(6), 723-742.
- Chen, J. (2007). Rapid urbanisation in China: A real challenge to soil protection and food security. *Catena*, 69(1), 1-15.
- Cheng, T. O. (1999). Teenage smoking in China. *J Adolesc*, 22(5), 607-620.
- Cheng, T. O. (1999). Teenage smoking in China. *J Adolesc*, 22(107-620).
- Cheng, T. O. (2008). Adolescent smoking in China. *Int J Cardiol*, 126(1), 1-2.
- Conger, R. D., Ge, X., Elder, G. H., Jr., Lorenz, F. O., & Simons, R. L. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Dev*, 65(2 Spec No), 541-561.
- Deng, S., & Roosa, M. W. (2007). Family influences on adolescent delinquent behaviors: applying the social development model to a Chinese sample. *Am J Community Psychol*, 40(3-4), 333-344.
- Duijkers, T. J., Drijver, M., Kromhout, D., & James, S. A. (1988). "John Henryism" and blood pressure in a Dutch population. *Psychosom Med*, 50(4), 353-359.
- Elgar, F. J., Arlett, C., & Groves, R. (2003). Stress, coping, and behavioural problems among rural and urban adolescents. *J Adolesc*, 26(5), 577-588.
- Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annu Rev Public Health*, 26, 399-419.
- Grant, J., & Hutton, A. (2011). Supporting adolescents in a rapidly urbanising China. *Contemp Nurse*, 40(1), 5-14.
- Greenberger, E., Chen, C., Beam, M., Whang, S., & Dong, Q. (2000). The perceived social contexts of adolescents' misconduct: A comparative study of youths in three cultures. *Journal of Research on Adolescence*, 10, 365-388.
- Guo, J., Hawkins, J. D., Hill, K. G., & Abbott, R. D. (2001). Childhood and adolescent predictors of alcohol abuse and dependence in young adulthood. *J Stud Alcohol*, 62(6), 754-762.
- Hawkins, J. D., & Weis, J. G. (1985). The social development model: An integrated approach to delinquency prevention. *The Journal of Primary Prevention*, 6(2), 73-97.
- Hesketh, T., Lu, L., Jun, Y. X., & Mei, W. H. (2007). Smoking, cessation and expenditure in low income Chinese: cross sectional survey. *BMC Public Health*, 7, 29.

- James, S. A. (1996). The John Henryism scale for active coping. In R. L. Jones (Ed.), *Handbook of tests and measurements for Black populations* (Vol. 2, pp. 415-425). Hampton, VA: Cobb & Henry Publishers.
- James, S. A., Hartnett, S. A., & Kalsbeek, W. D. (1983). John Henryism and blood pressure differences among black men. *J Behav Med*, 6(3), 259-278.
- Lau, S., & Leung, K. (1992). Relations with parents and school and Chinese adolescents' self-concept, delinquency, and academic performance. *Br J Educ Psychol*, 62 (Pt 2), 193-202.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. NY: Springer.
- Lin, N., & Lai, G. (1995). Urban stress in China. *Soc Sci Med*, 41(8), 1131-1145.
- Liu, X., Kurita, H., Uchiyama, M., Okawa, M., Liu, L., & Ma, D. (2000). Life events, locus of control, and behavioral problems among Chinese adolescents. *J Clin Psychol*, 56(12), 1565-1577.
- Liu, X., Tein, J. Y., & Zhao, Z. (2004). Coping strategies and behavioral/emotional problems among Chinese adolescents. *Psychiatry Res*, 126(3), 275-285.
- Loeber, R., Slot, N. W., & Stouthamer-Loeber, M. (Eds.). (2008). *A cumulative developmental model of risk and promotive factors*. Farnham: Ashgate.
- Ma, H. K., Li, S. C., & Pow, J. W. (2011). The relation of Internet use to prosocial and antisocial behavior in Chinese adolescents. *Cyberpsychol Behav Soc Netw*, 14(3), 123-130.
- Ma, H. K., Shek, D. T., Cheung, P. C., & Lam, C. O. (2000). Parental, peer, and teacher influences on the social behavior of Hong Kong Chinese adolescents. *J Genet Psychol*, 161(1), 65-78.
- Ma, H. K., Shek, D. T., Cheung, P. C., & Lee, R. Y. (1996). The relation of prosocial and antisocial behavior to personality and peer relationships of Hong Kong Chinese adolescents. *J Genet Psychol*, 157(3), 255-266.
- Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: family environment, peer influence, and parental expectations. *J Adolesc Health*, 37(1), 19-28.
- Ostaszewski, K., & Zimmerman, M. A. (2006). The effects of cumulative risks and promotive factors on urban adolescent alcohol and other drug use: a longitudinal study of resiliency. *Am J Community Psychol*, 38(3-4), 237-249.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., et al. (1997). Protecting adolescents from harm. Findings from the National Longitudinal Study on Adolescent Health. *JAMA*, 278(10), 823-832.
- Resnick, M. D., Harris, L. J., & Blum, R. W. (1993). The impact of caring and connectedness on adolescent health and well-being. *J Paediatr Child Health*, 29 Suppl 1, S3-9.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *Am J Orthopsychiatry*, 57(3), 316-331.
- Shek, D. T. (1997). Family environment and adolescent psychological well-being, school adjustment, and problem behavior: a pioneer study in a Chinese context. *J Genet Psychol*, 158(1), 113-128.
- Somova, L. I., Connolly, C., & Diara, K. (1995). Psychosocial predictors of hypertension in black and white Africans. *J Hypertens*, 13(2), 193-199.

- Stoddard, S. A., Whiteside, L., Zimmerman, M. A., Cunningham, R. M., Chermack, S. T., & Walton, M. A. (2012). The Relationship Between Cumulative Risk and Promotive Factors and Violent Behavior Among Urban Adolescents. *Am J Community Psychol*.
- Stouthamer-Loeber, M., Loeber, R., Wei, E., Farrington, D. P., & Wikstrom, P. O. (2002). Risk and promotive effects in the explanation of persistent serious delinquency in boys. *J Consult Clin Psychol*, 70(1), 111-123.
- Unger, J. B., Yan, L., Shakib, S., Rohrbach, L. A., Chen, X., Qian, G., et al. (2002). Peer influences and access to cigarettes as correlates of adolescent smoking: a cross-cultural comparison of Wuhan, China, and California. *Prev Med*, 34(4), 476-484.
- Wang, D. (2006). Study of Juvenile Delinquency and Juvenile Protection in the People's Republic of China. *Crime & Justice International*, 22(94), 4-13.
- Wen, X., Chen, W., Muscat, J. E., Qian, Z., Lu, C., Zhang, C., et al. (2007). Modifiable family and school environmental factors associated with smoking status among adolescents in Guangzhou, China. *Prev Med*, 45(2-3), 189-197.
- Wong, D. S. W. (2001). Changes in juvenile justice in China. *Youth and Society*, 32, 492-509.
- Wright, A. A., & Katz, I. T. (2007). Tobacco tightrope -- balancing disease prevention and economic development in China. *N Engl J Med*, 356(1493-1496).
- Yang, G., Fan, L., Tan, J., Qi, G., Zhang, Y., Samet, J. M., et al. (1999). Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA*, 282(13), 1247-1253.
- Yang, G. H., Ma, J. M., Liu, N., & Zhou, L. N. (2005). [Smoking and passive smoking in Chinese, 2002]. *Zhonghua Liu Xing Bing Xue Za Zhi*, 26(2), 77-83.
- Yao, S., Xiao, J., Zhu, X., Zhang, C., Auerbach, R. P., McWhinnie, C. M., et al. (2010). Coping and involuntary responses to stress in Chinese university students: psychometric properties of the responses to stress questionnaire. *J Pers Assess*, 92(4), 356-361.