

Family Influences on Adolescent Delinquent Behaviors: Applying the Social Development Model to A Chinese Sample

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Abstract The current study applied the Social Development Model (SDM) to improve understanding of the mediation processes through which the family environment was related to Chinese adolescent delinquent behavior. We tested the hypothesized model using structural equation modeling with questionnaire data collected from 736 Chinese 7th and 9th graders, their parents, and their teachers from two middle schools in Beijing, China. Testing the model separately for boys and girls yielded adequate fit indices for both although the hypothesized model was not invariant across gender and several gender differences were identified. The SDM appeared to be a valuable tool in studying the development of Chinese adolescent delinquency.

Keywords Delinquent behavior · Social development model · Family · Chinese adolescents

Adolescent delinquency is a growing social problem in China (Curran and Cook 1993; Wong 2001; Xiang 1999). While there have been numerous studies in the US and other western countries to understand and prevent the development of delinquency (e.g., Catalano et al. 1996; Kumpfer and Alvarado 2003), research on psychosocial factors associated with delinquency in Chinese youth has

just started (e.g., Zhang and Messner 1995). Most studies on delinquent behavior among Chinese youth are exploratory and few are theory-grounded. To begin filling this gap, the present study used a widely validated theoretical framework, the Social Development Model (i.e., SDM; Catalano and Hawkins 1996; Hawkins and Weis 1985), to understand how Chinese families influence adolescent delinquent behavior.

Most recent studies on Chinese delinquency were conducted in Hong Kong (e.g., Lau and Leung 1992; Ma et al. 1996), examined risk factors such as low family support, high parent–child conflict, and association with delinquent peers, and had findings similar to those in US studies. However, Hong Kong was a British dependency from the 1840s until 1997 when it passed to Chinese sovereignty. Thus, for more than 150 years, the political, economic and social systems there were largely westernized and significant differences in values, beliefs, and behaviors developed between mainland Chinese society and Hong Kong. Findings from these studies need to be treated cautiously before applying them to youth in mainland China.

Most studies on delinquency among mainland Chinese adolescents were conducted with official juvenile offenders and primarily focused on personality characteristics (e.g., Deng et al. 2000; Zhang 2003). For example, Zhang (2003) found that adolescent offenders generally reported low self-esteem. Other studies compared official juvenile offenders with community samples from schools or work units (e.g., Sun et al. 1993; Zhang and Messner 1995). These studies addressed the relationships to delinquency of individual physical and psychosocial characteristics such as height, weight, IQ, and emotional control as well as some factors such as parenting behaviors and parent–child relationships. Most importantly, there are few theory-grounded studies of

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delinquency in China. Among the exceptions, Zhang and Messner (1995) found support for the relationship between family deviance and delinquency using social control theory. Similarly, Jessor et al. (2003) found many similarities in family, school, and community risk and protective factors for US and Chinese samples using problem behavior theory. These pioneering studies suggest that it can be useful to apply some western theoretical frameworks to the study of Chinese delinquency.

The Hypothesized Model

The SDM (Catalano and Hawkins 1996; Hawkins and Weis 1985) was developed by integrating social control (Hirschi 1969), social learning (Bandura 1977), and differential association theories (Matsueda 1988). The SDM specifies that social development is a process in which the family, school, peer, and community influence children's behavior. The opportunities a child has to be involved in conventional activities, the social skills necessary for successful involvement, and the rewards provided by those with whom he/she interacts shape the child's behaviors. The SDM has been used to explain the etiology of various forms of child adaptation problems (e.g., substance use, minor and serious delinquency) in western studies with predominantly non-Hispanic White samples (e.g., Locke and Newcomb 2004; Lonczak et al. 2000; O'Donnell et al. 1995). However, studies that applied the SDM to adolescent drug use in Anglo and Hispanic families and to delinquency related attitudes and beliefs of Australian adolescents (da-Silva et al. 2004; Richardson et al. 2002) suggest that this model also can be useful in other cultural

contexts. No previous study had applied this theoretical framework to an Asian population.

In the Chinese cultural context, the family has been and remains the central source of social control (Curran and Cook 1993; Zhang and Messner 1995) and takes the dominant responsibility for the socialization of children. Therefore, as the first step in applying the SDM to Chinese youth, the present study focused on the socialization unit of the family and tested the hypothesized model of Chinese delinquency presented in Fig. 1. Family conventional activities refer to activities such as playing games or shopping together. The SDM includes both the *opportunities* that families provide for involvement and adolescents' degree of *involvement* in these activities. The association between the availability of opportunities and involvement in conventional behaviors is supported by previous studies (e.g., Fleming et al. 2002; Kosterman et al. 2004). Parents also monitor adolescents' participation in these conventional activities as well as other desirable and undesirable behaviors. Parents then can respond to their children's desirable behaviors with rewards that can influence future involvement in similar behaviors (Hawkins and Weis 1985). According to the SDM, external constraints such as family monitoring affect adolescent behavior through the mediation of parents' rewarding behaviors (Catalano and Hawkins 1996; O'Donnell et al. 1995). Note that the SDM emphasizes the role of adolescent perceptions of both opportunities for involvement in conventional activities as well as rewards received for desirable behaviors (Catalano and Hawkins 1996). Adolescents' perceptions of rewards are believed to have stronger influences on behavior than actual rewards. Thus, we expected high levels of monitoring would help parents provide appropriate feedback about adolescents' behaviors,

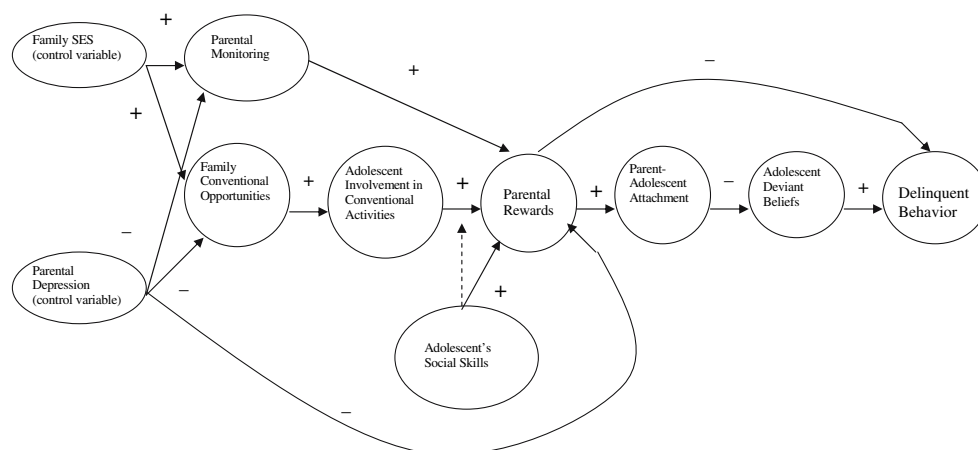


Fig. 1 Theoretical social development model of adolescent delinquency among Chinese families. →, Direct effects; - - - ->, Moderation effects; +, Positive relationship; -, Negative relationship

which, in turn, would decrease the probability for delinquent behaviors.

Numerous studies have demonstrated that parental monitoring is related to less delinquent behavior in both western (e.g., Kosterman et al. 2004; Sampson and Laub 1993) and Chinese youth (e.g., Chen et al. 2000). In Chinese culture, parental monitoring may be of particular importance to determining adolescents' behaviors (Ngai and Cheung 2000). The relationship between parent and child is characterized by filial piety, i.e., children are expected to respect and conform to parents' expectations (Yang 1988). Thus, the parent–child relationship is expected to be hierarchical and parental monitoring and management constitute the most significant portion of parent–child interaction in Chinese families (Chen et al. 2000). Chinese researchers report that children whose parents fail to provide positive reinforcements for desirable behaviors were more likely to develop problem behaviors (e.g., Qu et al. 1998; Guo et al. 1998). Thus, we hypothesized that when adolescents had high levels of involvement in conventional activities, they would perceive more rewards from parents, which would, in turn, decrease the likelihood for delinquent behaviors.

According to the SDM, parental rewards for conventional activities also facilitate adolescents' attachment to parents (Catalano and Hawkins 1996). *Parent–adolescent attachment* is inversely related to delinquent behavior for western and mainland Chinese youth (e.g., Greenberg 1999; Zheng 1996). The SDM hypothesizes that the association between parental attachment and delinquent behaviors is mediated by *adolescent deviant beliefs*. Parents' rewards were expected to be positively related to parent–adolescent attachment, which protects youth from developing deviant beliefs and, thereby, decreases the likelihood of delinquent behaviors.

Adolescent social skills are another factor that, according to the SDM, may influence adolescent behavior (Catalano and Hawkins 1996). Social skills refer to adolescents' abilities to manage emotions, solve problems, and communicate with others. According to the SDM, adolescent social skills could either directly contribute to parental rewards or moderate the relationship between involvement and parental rewards. Few studies have tested either of these hypotheses; both were examined in this study.

Lastly, family background variables such as low socioeconomic status and parental depression often have been associated with adolescent delinquent behavior (e.g., Keller et al. 2002; Pagani et al. 1998). Therefore, we included the relationships of family SES to monitoring and family conventional opportunities, and the relationships of parental psychopathology to the three parenting variables (i.e., monitoring, conventional opportunities, and rewards) in the hypothesized model as control paths.

Methods

Participants

This study was approved and monitored by the Institutional Review Board at the second author's institution and complied with APA Ethical Principles in research with human subjects. Ten classes were randomly selected from the 18 7th grade and 16 9th grade classrooms of two middle schools in Beijing, China and all children in these classrooms, and their parents, were invited to participate in the study. A total of 934 students and their families were contacted for recruitment and 783 (83.8%) families participated. Of the participating parents, 449 (57.3%) were biological mothers, 287 (36.7%) were biological fathers, 45 (5.7%) cases were identified as others (e.g., stepfathers, grandparents), and 2 (0.3%) cases had missing data on this question. The fact that primary caregivers other than biological parents constituted a very small proportion of the sample (less than 6%) and such family structures might be associated with delinquency (Han et al. 1995; Li et al. 1996), represented a potential confound in the study. Therefore, analyses focused on the 736 families with biological parents only. Three hundred thirty (44.8%) adolescents were boys, 366 (49.7%) were girls and 40 (5.4%) did not answer the gender question. The mean age of the adolescents was 13.8 years old ($SD = 1.2$, range = 11–17 years). Parents' ages ranged from 29 to 58 with a mean of 40.2 ($SD = 4.4$).

Measures

Questionnaires were the data collection tool. The measures used were chosen because: 1) they were appropriate to assess SDM constructs for adolescents of this age group (13–16 years); 2) item content was judged to be culturally appropriate for Chinese participants; and 3) most of them had satisfactory reliability and validity in previous research with western and/or Chinese samples. Measures not used previously with Chinese were forward- and back-translated by two bilingual doctoral students in psychology and family science programs in the US. When inconsistencies occurred, psychologists in both the US and China were consulted to obtain a conceptually equivalent translation. These translations were reviewed and approved by a research team headed by a mainland Chinese psychology professor and final changes made before the measures were used in the study.

Socioeconomic Status

Parents were asked about how much education they completed to represent families' SES. The average parent education level was 11.1 years ($SD = 2.8$).

Parental Depression

We used the Chinese version of the 20-item Center for Epidemiologic Studies Depression Scale (Radloff 1977; Huang and Guo 2001). Participating parents were asked to report the occurrence of symptoms during the past 6 months from “0 = rarely or none of the time” to “4 = most or all of the time.” High scores reflected high levels of depression. Cronbach’s alpha for the whole sample was .78.

Parental Monitoring

A revision of the 10-item parental monitoring scale developed by Small and Luster (1994) was used in this study. Parents were asked to indicate how often each item (e.g., “I knew what my child was doing after school”) occurred during the past 6 months (ranging from “0 = rarely or none of the time” to “4 = most or all of the time”). A high score reflects a high level of parental monitoring. For the current sample, Cronbach’s alpha was .85.

Family Opportunities for Conventional Activities

Six questions regarding opportunities families provide for conventional activities were used. Four of these had been used in previous studies (e.g., Fleming et al. 2002); two questions were added by the current research team. Adolescents were asked to indicate how often each interaction (e.g., “your father/mother finds ways to keep you involved with family decisions about fun and work activities”) occurred in the past 6 months (ranging from “0 = rarely or none of the time” to “4 = most or all of the time”). High scores reflect high levels of conventional opportunities. For the current sample, Cronbach’s alpha was .78.

Adolescent Involvement in Conventional ACTIVITIES

Eight questions measured the frequency of adolescents’ participation in conventional family activities such as shopping or playing a sport together. Five of these were used previously in a Chinese study by Jessor et al. (2003); three were from a study by Fleming et al. (2002). Adolescents indicated how often during the past 6 months they did these activities with their parents (ranging from “0 = rarely or none of the time” to “4 = most or all of the time”). High scores reflect high levels of conventional activity involvement. Cronbach’s alpha was .81.

Perceived Parental Rewards

Seven questions assessed adolescents’ perceptions of parental rewards for desirable behaviors (Fleming et al. 2002). Adolescents reported how often each item (e.g., “when you complete jobs around the house, how often do your Mom/Dad praise you or give you rewards, such as privileges or money”) happened in the past 6 months (ranging from “0 = rarely or none of the time” to “4 = most or all of the time”). High scores reflect a high level of parental rewards for conventional behaviors. For the current sample, Cronbach’s alpha was .81.

Adolescent Social Skills

Teachers were asked 20 questions about adolescents’ cognitive, social, and emotional skills for interaction and involvement (Fleming et al. 2002). Participants indicated how true each statement was for the target adolescents (ranging from “0 = not true at all” to “4 = very true”). An example item is “controls his/her temper when there is a disagreement.” Cronbach’s alpha was .95.

Parent–adolescent Attachment

We used a shortened version (9 items) of the Inventory of Parent and Peer Attachment (Armsden and Greenberg 1987) to assess adolescents’ attachment to parents. Adolescents were asked to indicate the frequency that each of the 9 behaviors, such as “my father/mother respects my feelings,” happened to them in the past 6 months (ranging from “0 = rarely or none of the time” to “4 = most or all of the time”). High scores reflect high levels of parent–adolescent attachment. Cronbach’s alpha for the sample was .88.

Deviant Beliefs

Twelve items were used to assess adolescents’ beliefs about deviant behavior. Ten of these items were used in Jessor et al.’s Chinese study (2003) and two culturally specific items were added by the current research team. Adolescents were asked to indicate the degree to which each listed behavior (e.g., cheating on a test or homework) was wrong on a 4-point scale ranging from “very wrong” to “not wrong.” High scores indicate higher levels of deviant beliefs. Cronbach’s alpha was .87 for the whole sample.

Adolescent Delinquent Behaviors

The Chinese Adolescent Behavior Questionnaire (CABQ; Ma et al. 1996; Shek et al. 2000) has been widely used to assess adolescent delinquent and altruistic behaviors in Hong Kong. Only the delinquent dimension was used in this study. As in western studies, adolescent delinquency refers to behaviors of individuals under age 18 that violate social norms, rules, or laws (Quinsey et al. 2004) whether or not these lead to official criminal status (Moffitt 1997). The delinquent behavior dimension of the CABQ has 44 items assessing a broad range of delinquent behavior including (1) socially disapproved acts in school settings (e.g., truancy); (2) socially undesirable sexual activities (e.g., being a peeping Tom); (3) acts against teachers or schools (e.g., lying to a teacher, destroying school property); (4) antisocial acts that occurred with one's family (e.g., disobeying parents); (5) delinquent behavior in other settings (e.g., gambling); and (6) aggressive or hostile acts (e.g., fighting in gangs). Adolescents, parents, and teachers reported how often each behavior occurred in the past 6 months (from "0 = rarely or none of the time," to "4 = most or all of the time"). Parents did not report on school related behaviors and teachers did not report on home related or psycho-sexual problems. Cronbach's alpha was .95 for adolescents, .86 for parents, and .94 for teachers. Correlations among parent, adolescent, and teacher reports ranged from .14 to .42. For such low to moderate cross-rater correlations, researchers have recommended not combining the scores but to use them separately in statistical analyses (Deng et al. 2004; Tein et al. 1994). Thus, the three informants' reports on delinquent behaviors were included in the hypothesized model as separate outcome variables. In addition, teachers were asked to report whether the target adolescent had formal contacts with police. The results indicated that among the 736 participating adolescents, only 1 had trouble with police. Due to the lack of variance, no statistical analyses were conducted on this variable.

Results

Preliminary Analyses

Gender Differences

We used *t*-tests to examine mean differences between boys and girls on the study variables. Girls reported more parental monitoring ($p < .001$), more involvement in conventional activities ($p < .01$), and better social skills ($p < .001$) than boys. Not surprisingly, boys reported more deviant beliefs ($p < .01$) and delinquent behaviors than

girls across all three informants ($p < .01$ for parent report, $p < .001$ for adolescent and teacher reports). Box's M analysis (Winer 1971) showed that there were gender differences in the variance and covariance matrices for boys and girls (Box's $M = 107.43$, $F = 1.35$, and $p < .05$).

Bivariate Correlations

Table 1 shows the correlations among study variables separately for boys and girls. All correlations were in the hypothesized direction and about 80% of the coefficients were significant at $p < .05$, considerably more than would be expected by chance.

Testing the Hypothesized Model

Structural equation modeling (SEM) was used to test the hypothesized model with LISREL statistical software (Hayduk 1987). Because all theoretical constructs in the hypothesized model had only one indicator (i.e., the score of each scale was used as the indicator of that construct), we used the path analysis procedure (Kline 1998).

Results for Boys

The boys' model showed a good fit with χ^2 ($df = 14$, $N = 321$) = 17.80, $p = .22$, CFI = 1.00, GFI = .99, RMSEA = .028. The model explained 20%, 45%, and 22%, respectively, of the variance of parent, adolescent, and teacher reports of adolescent delinquent behaviors. Significant paths and their standardized coefficients are shown in Fig. 2. The paths between conventional opportunities and involvement, between involvement and rewards, between rewards and attachment, and between deviant beliefs and adolescent report delinquent behaviors were significant as hypothesized in the SDM. In addition, to test mediation effects, direct effects from independent variables to the dependent variables for each hypothesized theoretical mediation relationship were included in the model and the results demonstrated several significant relationships. These additional paths, like the control paths, are shown as dotted lines in Fig. 2.

By itself, path analysis cannot determine if mediation occurred, that is, if part of the relationship between the independent variable and outcome is accounted for by the relationship each has with the mediator (Sobel 1986). Therefore, we used the multivariate-delta method to test potential mediation effects (MacKinnon 1994; Sobel 1986). This method calculates a *z*-score using the standard error of the product of the path coefficient from the

Table 1 Bivariate correlation analysis for boys and girls

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Parental education	–	–0.17**	0.25***	0.16**	0.16**	0.11*	0.25***	0.19***	–0.07	–0.09	–0.18**	–0.15**	–0.22***
2 Parental depression	–0.04	–	–0.11*	–0.16**	–0.18**	–0.06	–0.05	–0.15**	0.26***	0.14**	0.32***	0.16**	0.03
3 Parental monitoring	0.31***	–0.10	–	0.24***	0.27***	0.29***	0.24***	0.34***	–0.14**	–0.21***	–0.26***	–0.29***	–0.16**
4 Family conventional opportunities	0.26***	–0.12*	0.25***	–	0.68***	0.55***	0.14**	0.58***	–0.12*	–0.23***	–0.20***	–0.25***	–0.08
5 Adolescent involvement in conventional activities	0.23***	–0.16**	0.26***	0.68***	–	0.56***	0.15**	0.55***	–0.07	–0.22***	–0.17**	–0.21***	–0.10
6 Parental rewards	0.20***	–0.04	0.15**	0.51***	0.58***	–	0.12*	0.62***	–0.07	–0.16**	–0.16**	–0.14**	–0.09
7 Adolescent social skills	0.15**	–0.06	0.12*	0.12*	0.10	0.09	–	0.12*	–0.06	–0.10	–0.12*	–0.20***	–0.47***
8 Parent–adolescent attachment	0.23***	–0.13*	0.31***	0.60***	0.59***	0.63***	0.12*	–	–0.15**	–0.31***	–0.21***	–0.26***	–0.13*
9 Parental deviant beliefs	–0.12*	0.24***	–0.16**	–0.15**	–0.17**	–0.12*	–0.06	–0.12*	–	0.18***	0.25***	0.16**	0.02
10 Adolescent deviant beliefs	–0.10	0.07	–0.22***	–0.34***	–0.27***	–0.15**	–0.16**	–0.23***	0.19**	–	0.24***	0.55***	0.15**
11 Adolescent delinquent behaviors (P)	–0.16**	0.30***	–0.34***	–0.23***	–0.22***	–0.18**	–0.16**	–0.18**	0.38***	0.19***	–	0.42***	0.14**
12 Adolescent delinquent behaviors (A)	–0.14**	0.17**	–0.23***	–0.31***	–0.24***	–0.13*	–0.20***	–0.27***	0.23***	0.65***	0.38***	–	0.20***
13 Adolescent delinquent behaviors (T)	–0.10	0.08	–0.22***	–0.12*	–0.07	–0.04	–0.44***	–0.10	0.09	0.18**	0.22***	0.30***	–

Note: The coefficients below the diagonal are for boys (valid $n = 321$) and the coefficients above the diagonal are for girls (valid $n = 360$). P = parent report; A = adolescent report; T = teacher report. * $p < .05$; ** $p < .01$; *** $p < .001$

independent variable to the mediator and the path coefficient from the mediator to the dependent variable. This z -score is used to test the significance of the mediation effects (i.e., $z = ab/SEab$; $z > 1.645$ for $p < .05$, one-tailed test). For the boys’ model, only two hypothesized mediation paths (i.e., from conventional opportunities to rewards and from involvement in conventional activities to parent–adolescent attachment) were possible according to the path analysis and the multivariate-delta test was applied to these two paths (Table 2). The z -scores were significant for both cases.

Results for Girls

The girls’ model had acceptable goodness of fit with χ^2 ($df = 14, N = 360$) = 31.87, $p = .0042$, CFI = .99, GFI = .99, RMSEA = .059. The model explained 17%, 35%, and 23%, respectively, of the variance of parent, adolescent, and teacher report delinquent behaviors. The significant paths and their standardized coefficients are presented in Fig. 3. For the girls’ model, the multivariate-delta test was applied to six potential mediation paths (Table 2) and the z -scores were significant for each path supporting the hypothesized mediation effects.

Testing Model Invariance by Gender

To test model invariance, we used multigroup analysis of SEM (Kline 1998). The results showed that the model was not invariant across groups ($\chi^2(28) = 285.39, p < .001$). More specifically, paths from monitoring to parental rewards ($\chi^2(1) = 13.72, p < .001$), from parent–adolescent attachment to deviant beliefs ($\chi^2(1) = 29.3, p < .001$), and from deviant beliefs to parent report delinquent behaviors ($\chi^2(1) = 62.27, p < .001$) were significant for girls but not for boys. The paths from involvement to parental rewards ($\chi^2(1) = 35.16, p < .001$), from parental rewards to parent–adolescent attachment ($\chi^2(1) = 8.33, p < .01$), and from deviant beliefs to adolescent report delinquency ($\chi^2(1) = 59.07, p < .001$) were also significantly different for boys and girls with the relationships stronger for boys.

Testing the Moderation Effect of Adolescent Social Skills

Adolescent social skills were hypothesized to moderate the relationship of adolescent involvement in conventional activities with parental rewards. Hierarchical regression models were performed in which parental rewards was regressed onto parental education, parental depression,

Fig. 2 The alternative social development model of adolescent delinquency for Chinese boys. Letters in the parentheses represent the reporters: P = parent report; A = adolescent report; T = teacher report. Only significant paths and their standardized coefficients are shown. →, Hypothesized theoretical paths; →, Additional paths. * $p < .05$; ** $p < .01$; *** $p < .001$

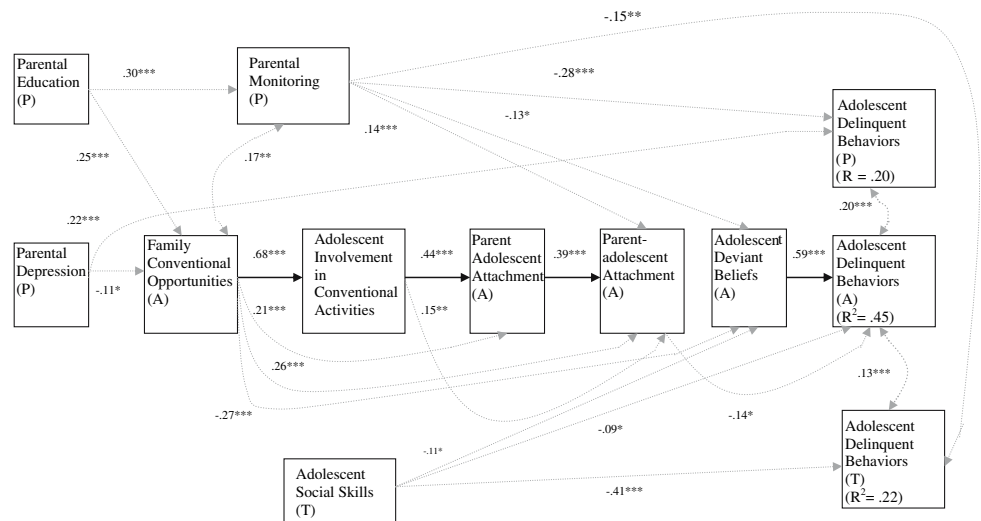


Table 2 Multivariate-delta test results of the hypothesized mediation paths for boys and girls

Path	z-score
<i>Boys</i>	
Family conventional opportunities→Adolescent involvement in conventional activities→Adolescent perceived rewards	6.02***
Adolescent involvement in conventional activities→Adolescent perceived rewards→Parent–adolescent attachment	4.41***
<i>Girls</i>	
Family conventional opportunities→Adolescent involvement in conventional activities→Adolescent perceived rewards	5.22***
Adolescent involvement in conventional activities→Adolescent perceived rewards→Parent–adolescent attachment	4.05***
Parental monitoring→Adolescent perceived rewards→Parent–adolescent attachment	2.80**
Adolescent perceived rewards→Parent–adolescent attachment→Adolescent deviant beliefs	3.13***
Parent–adolescent attachment→Adolescent deviant beliefs→Parent report adolescent delinquent behaviors	2.32*
Parent–adolescent attachment→Adolescent deviant beliefs→Adolescent self report delinquent behaviors	3.54***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

parental monitoring, family conventional opportunities, adolescent involvement in conventional activities, adolescent skills, and the interaction between adolescent involvement in conventional activities and adolescent social skills. The results revealed no significant interaction for either boys ($B = -.0006, SE = .004, p < .88$) or girls ($B = .005, SE = .003, p < .11$).

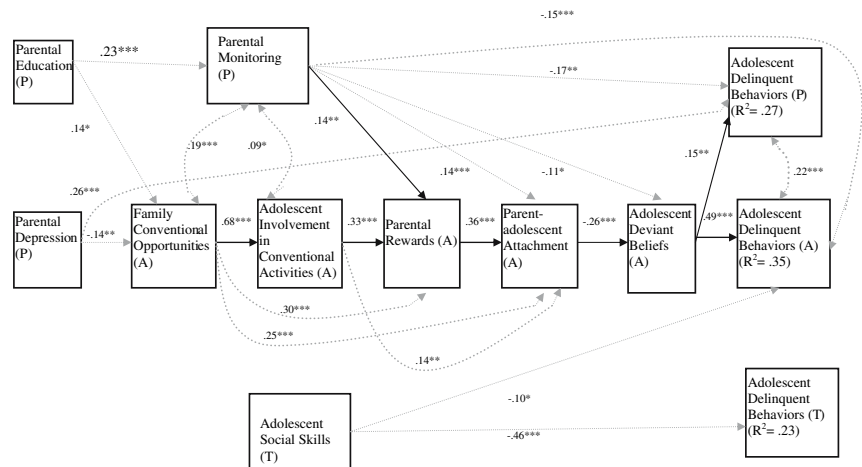
Discussion

The purpose of this study was to use the SDM as a framework to understand mechanisms through which family environment was related to Chinese adolescent delinquent behaviors. The following mediation processes were identified for both boys and girls: (1) adolescent involvement in conventional activities mediated the relation between family conventional opportunities and adolescent perceived parental rewards; and (2) parental rewards in turn mediated the relation of adolescent

involvement in conventional activities to parent–adolescent attachment. However, unlike results of a similar study with a western sample (Fleming et al. 2002), multi-group analyses revealed that several paths varied across gender. For girls only, parental rewards mediated the relationship between monitoring and parent–adolescent attachment, and parent–adolescent attachment was related to parent and adolescent reports of delinquency through the mediation effects of deviant beliefs. Meanwhile, boys had stronger relationships between involvement and parental rewards, between parental rewards and attachment, and between deviant beliefs and adolescent report delinquent behaviors than did girls.

Consistent with predictions of the SDM (Catalano and Hawkins 1996; Catalano et al. 1996; Hawkins and Weis 1985), the analyses confirmed the mediation path at the heart of the model for both boys and girls. When adolescents took advantage of opportunities parents provided and involved themselves in conventional behaviors, parents apparently rewarded these behaviors, which in turn,

Fig. 3 The alternative social development model of adolescent delinquency for Chinese girls. Letters in the parentheses represent the reporters: P = parent report; A = adolescent report; T = teacher report. Only significant paths and their standardized coefficients are shown. →, Hypothesized theoretical paths; →, Additional paths. * $p < .05$; ** $p < .01$; *** $p < .001$



contributed to parent–adolescent attachment. In addition, the direct association between family conventional opportunities and parental rewards was significant despite the significant mediation effect of involvement in conventional activities. Similarly, both conventional opportunities and involvement in conventional activities were associated with parent–adolescent attachment directly despite the existence of mediators. These results emphasize the potential power of providing adolescents with opportunities for conventional activities for preventing delinquency while also indicating that the mediators only partially accounted for the relationships between variables. Furthermore, these unexpected direct relationships deserve greater attention because there may be important additional mediators that help explain these direct effects that would be useful to theory development and prevention efforts.

One of the more intriguing findings in this study is that the associations between involvement in conventional activities and parental rewards and between parental rewards and parent–adolescent attachment were stronger for boys than for girls. A previous SDM study that examined gender differences of the SDM paths using multigroup analysis but did not report significant differences (Fleming et al. 2002). Although girls reported more involvement in conventional activities than boys in the current study, the relationship between involvement in conventional activities and parental rewards was stronger for boys. That is, when boys and girls had similar levels of conventional activities, boys received more rewards. These gender differences may be due, at least partially, to cultural differences between the west and China, in particular to the traditional preference for males among Chinese parents. Male children are considered more important because they are expected to carry the family name and bring fame and honor to the family in traditional Chinese culture (Mosher 1983; Ogilvy and Schwartz 2000). Furthermore, male children often remain close to their parents and are

responsible for them in later years. In contrast, females become identified with their husbands' families when they marry and their filial responsibilities are directed to their in-laws more than to their birth parents. Thus, it is not unusual for Chinese parents to be more responsive to boys' behaviors (i.e., as an investment in their own future) and such extra devotion may also strengthen the relationship between parental rewards and attachment. These results suggest that, despite decades of rapid modernization that have seen millions of Chinese women achieve high levels of success in education, business, and politics, centuries old traditions rooted in an agricultural past may still have strong effects on family life and child development even in a major urban area like Beijing.

Consistent with western studies (e.g., Kosterman et al. 2004; Lonczak et al. 2000), the hypothesized direct association between parental rewards and delinquent behaviors was not significant whereas the mediation path through parental attachment was supported. Parental rewards for children's conventional behaviors, as one expression of positive parent–adolescent interaction, seemed to promote emotional bonding between parents and adolescents, which was associated with a reduced number of delinquent behaviors directly (for boys) or indirectly through the mediation of adolescent deviant beliefs (for girls).

Parental monitoring was expected to be related to delinquent behaviors indirectly through the mediation effects of parental rewards (Catalano and Hawkins 1996; Guo et al. 2001). This hypothesis was supported only for girls. The results indicated that parents monitored girls more than boys and the variance of monitoring on boys was significantly smaller than that of girls. This might illustrate that, in the Chinese culture as well as in many other cultures around the world, female adolescents are considered more vulnerable to outside harm than males and, therefore, that parents monitor female adolescents' activities and behaviors beyond the family more than male adolescents'

(e.g., Black et al. 1997; Carlo et al. 1999; Richards et al. 2004). The lack of a relationship between monitoring and rewards for males may also suggest that males receive parental rewards without regard to their behavior outside the family thus supporting the male preference bias discussed earlier.

In addition, the results demonstrated that monitoring was directly associated with parental attachment, adolescent deviant beliefs, and delinquent behaviors. Although these direct associations were not hypothesized by the SDM, they should not be dismissed. These associations suggest there may be other mediated paths through which monitoring contributes to adolescent delinquent behaviors. For example, the relationship between monitoring and delinquency may be at least partially mediated by parental attachment and adolescent deviant beliefs. Strict monitoring is commonly practiced in Chinese families and is believed to be a sign of parental love and concern for children (i.e., Chao 1994; Chen et al. 2000). Thus, it is not surprising to find a direct association between monitoring and attachment.

The relationship of weak social skills to greater risk for delinquent behaviors that we found is one of the most robust findings in both western (e.g., Gottfredson et al. 2004; Wall and Barth 2005) and Chinese delinquency research (e.g., Ngai and Cheung 2005; Wong 2004). However, according to the SDM this association should be mediated by parental rewards, or alternatively, social skills may moderate the relationship between involvement and parental rewards (Catalano and Hawkins 1996); neither of these hypotheses were supported. Interestingly, previous studies that examined rewards from both parents and others such as neighbors and peers usually found a relationship between social skills and rewards (e.g., Catalano et al. 1996). In contrast, studies focusing only on parental rewards usually did not report this relationship (e.g., Catalano et al. 1999; Fleming et al. 2002). The lack of a direct association between social skills and parental rewards might be due to parents being less discriminating in their rewarding behaviors than people in other contexts (Oxford et al. 2000). No previous study had tested the moderating role of social skills. Considering the mixed evidence for the mediation hypothesis and the dearth of studies on the moderation hypothesis, more work is required to verify the specific role of adolescent social skills in the SDM. Other mediation processes may need to be considered to better understand the influence of social skills on delinquency. For example, our results suggested that deviant beliefs might partially mediate the relationship between social skills and male delinquency.

In the current study, deviant beliefs mediated the relationship between attachment and delinquent behaviors reported by parents and adolescents for girls only. For

boys, attachment to parents was not related to deviant beliefs; instead, attachment and deviant beliefs both directly predicted adolescent self-report delinquent behaviors. These results generally confirmed the often reported finding in western and Chinese literature that high parental attachment (e.g., Greenberg 1999; Locke and Newcomb 2004) and deviant beliefs (Catalano et al. 1996; Ngai and Cheung 2005) are associated with fewer adolescent adjustment problems. Gender differences in the mediation effect of adolescent deviant beliefs, however, were in contrast to results in western studies (Laundra et al. 2002; Kosterman et al. 2004). In an SDM study of serious delinquency, Laundra et al. (2002) found that the relationship of parent–adolescent attachment to adolescent conventional beliefs was significant for boys but not for girls, and that attachment directly predicted delinquency for girls only. Similarly, Kosterman et al. (2004) found that attachment predicted 6th graders' conventional beliefs for boys but not for girls. Differences across studies in the age groups studied, the types of delinquency measured, and perhaps the mean levels of delinquency engaged in may explain these differing results. There is no obvious cultural explanation. Clearly, more attention needs to be given to gender differences in research on delinquency.

Additionally, a few unanticipated direct effects occurred regarding the correlates of deviant beliefs. First, parental monitoring was directly and negatively related to both boys' and girls' deviant beliefs. Considering that parental monitoring has been widely reported to reduce negative outside influences (e.g., Dishion et al. 1995; Flannery et al. 1999), the direct relation of parental monitoring to deviant beliefs may be explained by reduced negative peer interactions. Second, family conventional opportunities and adolescent social skills were directly related to boys' deviant beliefs but not girls'. These relationships were not hypothesized in the SDM and the gender differences were not reported in previous SDM studies. Future research is needed to further address these direct relationships.

Finally, the three outcomes demonstrated different patterns of relationships with the other SDM constructs. Adolescent self-report delinquent behaviors seemed to be the variable best supported by the model; directly or indirectly, it was related to all other SDM constructs and the model explained the highest percentage of variance among the delinquency variables for both boys and girls. However, the pattern of explained variance reflects the variations in comprehensiveness in the delinquency measures used by each reporter; the adolescent self-report measure was comprehensive while the others were context specific. On the other hand, it is important to note that the different relationship patterns of the three outcome variables with other SDM constructs may also be due, in part, to informant bias. Because most study variables were reported by

adolescents as the SDM recommends, the shared method variance problem that occurs when so much data come from one informant may account for some of the significant relationships found. Parent report adolescent delinquent behaviors seemed to work well in the model for girls with its significant association (direct or indirect) with all major SDM constructs except adolescent social skills. However, for boys, the path analysis revealed that parent report delinquent behaviors were predicted by only one SDM construct, parental monitoring, which also was reported by parents. The lack of association between parent report adolescent delinquency and other SDM constructs for boys might suggest that boys' deviant behavior occurs further afield from the family than it does for girls making it less likely than parents will observe it. Lastly, teacher report delinquent behaviors were predicted by social skills (also reported by teachers) and monitoring for boys, and by social skills for girls. Compared to the other two delinquency variables, teacher report adolescent delinquent behaviors were related to the least number of SDM constructs in the hypothesized model.

Some caution must be exercised when interpreting findings of this study. First, this study was cross-sectional and neither causality nor the direction of potentially causal relationships could be determined. Second, a convenience sample was drawn from two public middle schools, thus the current sample may not represent the general population of adolescents in China or Beijing. Third, this study measured delinquent behaviors with questionnaires rather than accessing official delinquency records. Moreover, sampling from public schools excluded adolescents who did not go to regular middle schools (e.g., those who went to work and study [i.e., reform] schools and those who dropped out) and who may be at higher risk for more serious delinquent behaviors. Both the sample studied and the measure used undermines comparability to studies focusing on more serious delinquent behaviors.

Despite these limitations, the current study also had considerable strengths. It extended previous research with Chinese delinquency by applying a well established theoretical model to a Chinese sample. Overall, the results provided some support for the hypothesized model of adolescent delinquency in a Chinese sample. Not surprisingly, some differences between this and previous SDM studies with western samples were also reported. In particular, some of the gender differences found were believed to be due to cultural differences between China and the west. As a nationality with over 5,000 years' history that has experienced dramatic social and economic changes during the past 30 years of economic reform, Chinese peoples' behaviors and life styles are deeply influenced by traditional cultural values as well as newly emerging social trends. While it is not hard to imagine that Chinese life

styles and behaviors differ from those in western cultures, it is not always clear whether tradition or modernization is the major influence on family life and child development. This study confirmed the feasibility of adopting western theories to study the Chinese population yet also highlighted the need to identify cultural differences for necessary theoretical adaptations. The differences demonstrated in this study should provide meaningful insights for future cross-cultural comparison studies on delinquency.

The current study has significant implications for application as well. Chinese culture is characterized by collectivism and Confucianism and these cultural heritages strongly assert the centrality of family in people's life (Lin and Lai 1995; Ngai and Cheung 2000). Families take the dominant responsibility for the socialization of children's behaviors and are believed to be one of the most important root causes of, and protections from, adolescent delinquency (Curran and Cook 1993; Zhang and Messner 1995). In today's China, families live under the combined influences of long-term traditional values such as filial piety (e.g., children's absolute obedience to parents) and emerging more contemporary and western beliefs (e.g., emphasizing more equality and mutual respect between parents and children). Thus, parenting has become even more challenging. When behavior problems become a concern, Chinese parents generally find themselves uncertain about appropriate and effective strategies to intervene with their adolescents and deter them from delinquency. Considering the dearth of scientific and systematic prevention and intervention services available to help and support parents, the SDM per se and the risk factors and mediators identified in this study could be valuable starting points for professionals to help such troubled parents.

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