
Risk and Protective Factors Related to Offending: Results From a Chinese Cohort Study

Terrance J. Taylor

Department of Criminal Justice, Georgia State University, United States of America

Paul C. Friday

Criminal Justice Department, University of North Carolina at Charlotte, United States of America

Xin Ren

Criminal Justice Department, California State University–Sacramento, United States of America

Elmar G.M. Weitekamp

Department of Criminal Law and Criminology, Faculty of Law, Katholic University Leuven, Belgium

Hans-Jürgen Kerner

Institute of Criminology, University of Tübingen, Federal Republic of Germany

Recent research has illustrated the importance of risk and protective factors on offending. The current study examines survey data from a sample of 81 offenders and 81 nonoffenders residing in Wuhan, China, in 1991/92 to determine how the accumulation of risk and protective factors in various domains differentiates offenders from nonoffenders. Specifically, we examine the importance of multiple causation and cumulative effects of risk and protective factors as they apply in a Chinese context. Results suggest that the risk and protective factor approach often used in studies of western offending also holds promise in studies of Chinese offending. Specifically, our findings support the importance of examining multiple causation and cumulative effects of risk and protective factors as related to offending. The findings also suggest that the risk and protective factors found to be important in China may be somewhat different to those identified through studies conducted in the West, illustrating the importance of recognising historical and cultural context in the risk and protective factor paradigm.

Recent criminological efforts have attempted to outline risk and protective factors of criminal offending in hopes of developing successful prevention and intervention

Address for correspondence: Terrance J. Taylor, Department of Criminal Justice, Georgia State University, PO Box 4018, Atlanta, GA, USA 30302-4018. E-mail: tjtaylor@gsu.edu

programs. While early research into the 'causes' of delinquency tried to identify the factors most associated with becoming delinquent (e.g., Glueck & Glueck, 1950) or inhibiting involvement in delinquency (e.g., Hirschi, 1969), Hawkins, Catalano and Miller (1992) have introduced the notions of risk and protective factor approach within the criminological discipline. Their early work drew on the emergent research in the fields of public health, which has since been expanded (Kazdin et al., 1997; Kraemer et al., 1997; Mercy & O'Carroll, 1988) to identify factors that enhanced or ameliorated the odds that an individual would misuse alcohol and illicit drugs in adolescence and early adulthood. Their efforts also provided a foundation for efforts to apply criminological theory in developing successful prevention practices (Hawkins, Catalano, & Brewer, 1995). Since that time, efforts have turned to identifying and categorising risk and protective factors for a number of misbehaviours, especially serious, chronic and/or violent behaviour (for extensive reviews, see the works of Howell et al., 1995; Loeber & Farrington, 1998). Many of the identified risk and protective factors come from longitudinal studies conducted in the United States (Denno, 1990; Elliott, Huisinga, & Ageton, 1985; Glueck & Glueck, 1950; Hawkins et al., 1992; McCord & McCord, 1959; Polk et al., 1981; Robins & Wish, 1977; Shannon, 1988; West & Farrington, 1973; Wolfgang, Figlio, & Sellin, 1972); England, Wales and Scotland (Farrington & West, 1993; Ferguson, 1952; West, 1969; Wilkins, 1960); Scandinavia (Christiansen, 1964; Guttridge et al., 1983; Magnusson, Stattin, & Duner, 1983; Wickström, 1985); and Germany (Pongratz et al., 1977; Traulsen, 1976; Weschke & Krause, 1983). To this point, however, only one such cohort study has been conducted in a developing country (Puerto Rico; Nevares, Wolfgang, & Tracy, 1990).

Data for the current project were collected as part of a study initiated by the late Marvin Wolfgang in 1989 and later by Friday, Ren and Weitekamp (2002). Working with the China Society for Juvenile Delinquency Research, Wolfgang initiated an ambitious project to collect information from police records on a birth cohort for a population born in Wuhan, Hubei Province, China, in 1973. The original cohort as designed by Wolfgang and his Chinese colleagues consisted of all persons in the Wuchang District of the city of Wuhan who were born in 1973.¹ While some basic descriptive information documenting the low offending rate and basic characteristics of the sample was published in Chinese (Xu et al., 1994, 1996, 1997), Wolfgang passed away and much of the cohort data he had originally collected was sadly lost before any substantial analysis of the data.

One component of the original Wolfgang data collection was retained, however: surveys were completed by all 81 offenders identified in police records and a matched group of 81 nonoffenders. The present study examines this survey data to examine two specific research questions. First, what are the risk and protective factors for offending and are they different from those identified in western studies? Second, what are the relationships between the risk and protective factors associated with offending? Specifically, how much overlap is there between the risk and protective factors identified in the Chinese birth cohort?

We begin by discussing previous research, which has used the risk and protective factor approach for studying juvenile delinquency. Since this work has been mainly conducted in western countries, we then turn our attention to an examina-

tion of the uniqueness of the Chinese social context, as this presents an important contrast to the current research. We next provide a description of the methodology employed in the Wuhan study and examine the empirical support for our main research questions. We conclude by elaborating on the implications that the current study has for future research on cross-cultural approaches to the risk and protective factor paradigm.

Literature Review

RISK AND PROTECTIVE FACTORS RELATED TO JUVENILE DELINQUENCY

Some disagreement exists as to how risk and protective factors are to be conceptualised and used (Farrington, 2000). For example, Friday and Hage (1976) separated risk factors into three main categories: *individual*, *institutional* (including family and school factors) and *structural* (including neighbourhood, social class and economic conditions). Others (e.g., Howell, 2003) suggest that risk and protective factors may be grouped into five distinct domains: *individual*, *family*, *school*, *peer* and *community*. Still another approach is to examine the time in which the risk and protective factors occur in relation to the outcome of interest. Kraemer and colleagues (1997), for example, differentiate between *correlates* (those factors which occur simultaneously with the problem behaviour), *predictors* (those which occur before the problem behaviour) and *causes* (those which have been found to be amenable to change). Regardless of the classification system used, however, risk factors may be conceptualised as factors associated with an increased probability of delinquency, while protective factors may be conceptualised as factors associated with a decreased probability of delinquency.

Previous studies have attempted to synthesise the voluminous risk and protective factors identified in longitudinal research projects. Lipsey and Derzon (1998), for example, conducted a meta-analysis of risk factors related to serious and violent offenders as identified in prior longitudinal studies. Their results suggested the risk factors could be grouped into four main categories: *antisocial behaviour*, as manifested by physical violence and aggression, and involvement in substance abuse, criminal activities and other problem behaviour; *personal characteristics*, such as gender, ethnicity, IQ, psychological conditions and school performance; *family characteristics*, such as having antisocial or abusive parents, or coming from a broken home or a home with poor parent-child relations; and *social factors*, including disrupted social ties and associations with antisocial peers. Others have focused primarily on the protective factors associated with delinquency. In his extensive review, Howell (2003) suggests that *individual* factors, including high IQ, intolerant attitudes towards deviance, guilt, trustworthiness, high accountability and a general positive orientation; *family* factors, including strong relationships and communication with family members; *school* factors, including strong commitment, motivation and high educational achievement; *peer* factors, such as having nondelinquent friends; and *community* factors, including residing in a nondisadvantaged neighbourhood or a neighbourhood with low crime rates can protect youth from delinquency, even where risk factors are present.

Yet other studies have examined the utility of various risk and protective factors in explaining misconduct across different contexts, such as by life stage. In their meta-analysis of predictors of violent offending, Lipsey and Derzon (1998) also examined two distinct life stages: ages 6–11 and ages 12–14. Their results suggested significant variation in the importance of these predictors at different periods of adolescence. For example, having a juvenile offence in the early period was a much stronger predictor for early violent offending compared with later violence. Substance use showed a similar pattern. Conversely, the importance of interpersonal relations such as involvement with delinquent peers was a much more important predictor of offending during between ages 12–14 than it was between ages 6–11.

Another approach is to examine factors across social settings, such as through cross-national comparisons. Farrington and Loeber (1999), for example, compared results from two longitudinal panel studies, one conducted in London, England, and one conducted in Pittsburgh, Pennsylvania, USA. Results of the comparison produced relatively consistent findings across settings. Three quarters of the risk factors identified as predicting delinquency in London were also found to predict delinquency in Pittsburgh. Equally important was the comparability of findings which failed to predict delinquency across the two settings: two thirds of the factors failing to predict delinquency in London also failed to predict delinquency in Pittsburgh.

Some differences across cultural context, however, have been found to be important for delineating specific risk and protective factors related to offending. Homel, Lincoln and Herd (1999) found risk and protective factors unique to Aboriginal people in Australia. Risk factors such as forced dislocation from native lands, dependence on state programs, institutionalised racism within the justice system, the use of alcohol, and cultural factors related to methods of conflict resolution and domestic violence were identified as being particularly important for Aboriginal people. A number of protective factors, such as cultural resilience related to shared governance, land claims, a culture organised around ownership of social goods, negotiation, heterogeneity and population mobility; personal controls associated with self-esteem and confidence; and family controls related to interpersonal attachments and parental controls were also identified as being unique to the indigenous people. Homel and colleagues (1999) suggest that risk and protective factors must be examined and understood in the historical and cultural context in which they develop and occur.

The Chinese Context: Implications for Current Research

The present study presents a unique opportunity to expand the risk and protective factor approach using a Chinese birth cohort. As Farrington (2000, p. 19) pointed out, many of the works developed as part of the 'risk factor prevention paradigm' have important cross-cultural roots and universal applications. This may be particularly important in a country such as China. While one fifth of the world's population lives in China, the country offers more than mere size and cultural difference. It is experiencing major economic, social and demographic changes. We expect that the risk and protective factors associated in China may be somewhat different from those in the West due to the unique historical and cultural development of China.

China's quest for modernisation and economic success not only significantly improved the material life of Chinese people but also profoundly changed the people's way of thinking and the basic social relations in the society. As more personal freedom is afforded to Chinese citizens, the traditional social fabrics that tied individual to social conformity, such as family, community and work units, are also rapidly breaking down and losing their grip over individuals. Civil disorder and crime are no longer an occasional event but part of daily life for average citizens in China. Such changes have led some to conclude that the recent increases in China's crime rate are due primarily to economic reform and changes in methods of social control (Deng & Cordilia, 1999).

According to Anderson and Gil's (1998) examination of sexual mores and prostitution, China has experienced massive migrations, rapid urbanisation, smaller families, liberalisation in terms of greater gender equality and economic opportunity, and partial decentralisation of state power and a globalisation of tastes and lifestyles. China's overall crime rates based on official statistics jumped from 56/100,000 in 1978 to 200/100,000 in 1991, an all-time high, with the rate from 1988 to 1991 having quadrupled (Yu, 1993, as cited by Yu, 1995). The most recent official data, however, suggest that the crime rate has declined to a level of 131–140/100,000. As it was reported, the crime rate was 139/100,000 in 1992, 140/100,000 for the subsequent three years, 132/100,000 in 1996, and 131/100,000 in 1997, following the peak years in 1990 and 1991 (Anonymous, 2000; Deng & Cordilia, 1999). It is noteworthy that despite the mystery and speculation surrounding China's crime statistics, due largely to the secrecy and artificial effect of anticrime campaigns periodically launched by the police, various sources of data available suggest that the upward-moving trend in crime rates has indeed coincided with China's modernisation process (Liu & Messner, 2001). While this modernisation has resulted in a sharp increase in crime, it has also radically reinvented China's law machine, such as law enforcement, the judiciary and penal institutions, to strengthen formal social control in the society. Even so, based on crime victim surveys and a broader inclusion of public security or public safety violations as well as violations of the criminal law, it has been recently argued that this figure is underestimated (Yu & Zhang, 1999).²

Property offences such as theft and burglary appear to account for 30% to 40% of all recorded crime in China (Dai, 1997). The total increase in the 1980s was 160%, with the most predominant increases in the cities, which accounted for 47.5% of the nation's total in 1990. The regions with the greatest increase were those with thriving market economies, a greater concentration of commercial goods, and the convenience of transportation (Yu, 1995). Overall, the total criminal case rate increased from 51.9/100,000 in 1986 to 142.25/100,000 in 1995 (Xiang, 1999). Transient crimes, crimes of drug trafficking, commercial fraud and counterfeiting have increased (Yuan, 1992; Song & Grillham, 2002), as have other offences such as homicide, assault, robbery, rape, grand larceny, fraud and counterfeiting (Deng & Cordilia, 1999).

China has traditionally had a low rate of crime but current conditions introduce new challenges. While the Chinese have traditionally rejected the formal law as an efficient deterrent (Anderson & Gil, 1998), with increasing modernisation and a

breakdown in the more traditional sense of community that fosters informal control, formal controls, laws and law enforcement are increasing. This is reflected in the changes in the crime rates. It remains to be seen whether and the extent to which China's crime rate will be susceptible to changes in development, as has been seen in the former Soviet Union, or whether indigenous factors will mitigate the negative impact of development (Friday, 1998). Discovering the circumstances that increase the probability of offending under such conditions in a developing country with the world's fifth largest economy can have far-reaching implications for crime prevention and control.

China is at an important crossroads in its social development and the potential for increasing crime. This crossroads introduces issues of significant theoretical and practical importance. The country is cognisant of this and has initiated programs and policies to address the negative consequences traditionally associated with major economic change. The efforts appear to focus on the reinforcement of traditional and cultural values, norms and informal control mechanisms. It is especially important to follow the 1973 Wuhan age cohort, which offers a longitudinal perspective, to see if such social policies and the emphasis on informal control and resocialisation of deviants are effective since they are quite different from the traditional western approach to crime control, which emphasises stronger legal and penal sanctions.

The importance of such comparisons must be recognised, as there is a philosophical difference in approaches to crime across these contexts. In general the West, as epitomised by the United States, stresses individualism and individual responsibility. As a result, the focus of crime control is on punishment as an individual; being 'tough' on crime is seen as the best deterrent. Historically and philosophically, the Chinese have had a collective focus (Ren, 1997) and address crime control as a communal issue with greater emphasis on social integration, the reeducation of offenders, and reintegration. The challenge for China is whether the collective approach can be efficient and effective in the light of social and economic change that threatens the traditional sense of community.

Methodology

SUBJECT IDENTIFICATION

Marvin Wolfgang initiated the Chinese cohort study in 1991. Between 1991 and 1992, the 722,599 individual residential registration files in each of the 12 neighbourhood police offices were reviewed to identify individuals born in Wuhan in 1973. Of the 5341 individuals meeting this criterion, the researchers identified 81 persons (76 males and 5 females) with records for administrative violations (i.e., violations of the Public Safety Regulations) or criminal violations. From the 5341 in the cohort, a comparison sample of 81 was matched by gender, neighbourhood background, parental economic status and occupation, and neighbourhood school district. These 81 offenders and 81 nonoffenders then completed surveys asking questions about a variety of family, peer, individual, school and cultural variables. These survey data were, however, not analysed until much later (see Friday, Ren, and Weitekamp, 2002; Friday et al., in press) and even then in only a limited

capacity. These survey data collected in 1991/92 (when the subjects were aged approximately 18) comprise the source of information used in the current study.³

RESEARCH SETTING

Wuhan has a population of 7.16 million residents and serves as the capital city of Hubei Province. A heavy industrial city with three distinct districts geographically divided by the two rivers, it is one of the most important industrial cities in central China. Hanyang, Hankou and Wuchang, on the south of Yangtze River bank, were formed as a commercial centre in central China about 1000 years ago. In the beginning of the last century, Wuchang district was the original area of the old city called Wuchang. The armed uprising to overthrow the Qing Emperor's power began in Wuchang, an event that marked the end of China's three-millennium-long imperial dynasty and the beginning of the Republic of China in 1911. Later the city was renamed Wuhan to incorporate Hanyang and Hankou into Wuchang District. Thus Wuchang is the heart of political, economic, cultural and educational affairs and the central hub for river, railway and highway transportation in central China. Wuchang District was administratively divided into 12 neighbourhoods in 1989 with a population of 722,599. Due to the rapid social and economic changes and population mobility during the period of economic reform, the district was later redivided into 14 neighbourhoods with 15 police precincts for the population of 731,790 in 1998. In addition to the various city and provincial government agencies, Wuchang district is home for hundreds of educational institutions: 34 universities and colleges,⁴ 22 professional trade schools, 39 high schools, 45 elementary schools and 16 other vocational training schools. Since the economic reform in the early 1980s, Wuchang has gradually become the centre for commerce, finance, and high-tech industry.

The 1973 cohort was the first cohort born under China's one-child-per-family policy, implemented in major urban areas in 1972. Although many cohort subjects do have siblings, they are the first generation growing up in families of smaller size than their older counterparts. When the Cultural Revolution ended in 1976, the 1973 cohort was three years old. Although 10 years of political turmoil did not leave much memory on the cohort population, the Cultural Revolution and its aftermath took a heavy toll on economic conditions and social stability. After five years of recovery, the economic reform and 'open door' program was tentatively launched under Deng Xiaoping's leadership in the early 1980s. At the same time, the cohort had begun their elementary school years. As China gradually transformed its state centrally controlled economy into a market-oriented model, the cohort was the first generation to face the challenges under the new economic order. Compared with their older counterparts, they were facing far more pressure due to social competition in areas of higher education and employment opportunity, while having far less support from family, school and neighbourhood organisations.

RECENT FINDINGS FROM THE CHINESE COHORT STUDY

As reported in earlier work (Wolfgang, 1996; Friday et al., in press), official offending rates in the Wuhan 1973 birth age cohort were extremely low, and there were

no offenders found who fitted a characterisation of a 'chronic' offender. Only 1.5% of the male/female age cohort were found to have ever been involved in any type of recorded contacts for offending behaviour (i.e., criminal offences and administrative offences) up to age 18, much lower than those reported in studies conducted in western settings. By comparison, the rate of police involvement by age 18 in the 1945 Philadelphia cohort was 35% (Wolfgang et al., 1972) and 33% in the 1958 Philadelphia cohort (Tracy et al., 1990) and approximately 30% in London (West & Farrington, 1973) and Tübingen, Germany (Kerner et al., 1995). Additionally, approximately 19% of the subjects in Stockholm had been arrested at least once by age 19 (Janson, 1975).

Further analyses of the Chinese cohort revealed that approximately 86% of these offenders had only a single offence and none of the offenders had 'registered' with more than four offences, with no offenders matching the criteria of five or more offences Wolfgang and colleagues (1972) used to identify chronic offenders in Philadelphia. Additionally, a number of peer influences, family background and influences, and school factors (i.e., performance, expectations and goals) were found to operate similarly to those reported in previous western studies.

FINDINGS

Our categorisation of risk and protective factors proceeded in the following manner. First, we reviewed a number of prior studies on the topic described earlier. Next, we examined the data collected from the 81 known offenders at age 18 and from 81 matched nonoffenders in order to identify survey measures fitting the classifications 'risk factors' and 'protective factors' found to be related to offending in prior studies. We identified 18 measures fitting our definition of risk factors and 29 measures fitting our definition of protective factors. These measures tapped constructs related to educational aspirations and achievements, family interactions and communication, and personal interests and activities.

Consistent with the risk and protective factor approach, we then transformed the measures into dichotomous variables representing factors expected to facilitate or inhibit delinquency. Once this transformation was done, we conducted descriptive analyses on each measure. The frequencies and cross-tabular analyses differentiating offenders and nonoffenders in terms of risk in Table 1 and protective factors are presented in Table 2.

The analyses illustrated wide variability in the prevalence of these factors within the sample. For example, regarding the risk factors, only 8.6% of the sample reported being currently unemployed, while more than two thirds reported that no-one helped them in their academic studies while in school. A similar pattern was found regarding the protective factors — prevalence ranged from a low of 5.6% reporting having an interest in studying the activities of contemporary reformers and an interest in beginning a career in natural science research, compared with a high of 92% of the sample reporting having been involved in visits to important cultural exhibits.

These frequencies, however, mask important differences between offenders and nonoffenders. Cross-tabular analyses on each risk and protective factor illustrated statistically significant differences between offenders and nonoffenders on each risk

TABLE 1

Risk Factors for Offending

	Total sample (N = 162)	% Offenders (N = 81)	% Nonoffenders (N = 81)	Chi-square value*
Personal interest				
Interest in fantasy	38.3	56.8	19.8	23.513
Interest in war stories	48.1	66.7	29.6	22.253
Interest in detective stories	43.2	64.2	22.2	29.080
Occupation				
Labour is tiresome and insignificant	42.6	49.4	11.1	28.117
Interest in becoming a labourer	55.6	81.5	29.6	44.100
Interest in private business ownership	21.0	39.5	2.5	33.502
Currently unemployed	8.6	17.3	0.0	15.324
Education				
Teacher failed to discipline for misdeeds	15.4	30.9	0.0	29.562
No help in studies	67.3	80.2	54.3	12.367
Low educational attainment	60.9	88.9	32.5	53.731
Students did not finish homework	43.4	98.5	48.1	45.368
Students quarrelled	44.5	100.0	42.0	43.662
Students fought	36.9	100.0	27.3	60.496
Students truanted	40.9	98.4	31.5	65.374
Inferior middle school or no school	38.8	55.7	22.2	18.881
Did not complete courses	24.3	40.7	4.5	26.196
Were truant	61.3	90.7	33.8	52.855

*Note: $p < .05$ for all offender–nonoffender comparisons

and protective factor. The majority of offenders could be classified as having a primary interest in fantasy, war, and detective stories; having a primary interest in becoming a labourer; receiving no help in their educational activities; attending an inferior middle school; and experiencing an educational environment where students quarrelled, fought, did not finish homework, and were often truant. In comparison, only in the case of receiving no help in studies did a majority of nonoffenders report similar experiences. These differences in risk factors between offenders and nonoffenders were also typically quite large in magnitude.

The patterns for each protective factor also illustrated important differences between offenders and nonoffenders. Unlike the risk factors, however, larger percentages of nonoffenders than offenders reported the protective factors present. Compared with offenders, the nonoffenders were more likely to report having an interest in philosophy, science or the activities of contemporary reformers; having an interest in social practice, administrative work, international ventures, political or legal work, or research; to view school as important; to have parents with strong

TABLE 2

Protective Factors for Offending

	Total sample (N = 162)	% Offenders (N = 81)	% Nonoffenders (N = 81)	χ^2 value*
Personal interest				
Interest in philosophy	24.1	1.2	46.9	46.233
Interest in science	32.7	18.5	46.9	14.834
Interest in contemporary reformers	5.6	0.0	11.1	9.529
Cultural involvement				
Main task of students is to study	56.8	38.3	75.3	22.640
Participate in social activities	90.1	84.0	96.6	6.935
Visiting cultural exhibits	92.0	84.0	100.0	14.134
Attending cultural lectures	30.2	0.0	60.5	70.248
Engage in public security activities	13.0	1.2	24.7	19.751
Future goals				
Interest in administrative work	19.1	11.1	27.2	6.742
Interest in business ownership	6.8	1.2	12.3	7.900
Interest in research (natural science)	5.6	0.0	11.1	9.529
Interest in research (social science)	6.8	0.0	13.6	11.801
Interest in political/legal work	7.4	0.0	14.8	12.960
Interest in international ventures	20.4	13.6	27.2	4.605
Interested in issues of social practice	34.0	13.0	51.9	25.008
Family education and discipline				
Father helps in studies	31.5	18.5	44.4	12.620
Newspaper/magazine subscription	35.8	20.5	50.0	14.238
High educational expectation	28.4	14.8	42.0	14.694
Unhappy if forced to leave school	35.8	21.0	50.6	15.469
View school as highly significant	63.6	42.0	85.2	32.656
Father expects top-level student	44.1	23.8	64.2	26.711
Mother expects top-level student	41.9	24.1	59.3	20.369
Father expects college or university	24.2	17.3	31.3	4.277
Mother expects college or university	21.7	14.5	28.4	4.479
Frequent family communication	27.8	18.5	37.0	6.923
Early assistance with mathematics	73.2	64.5	81.5	5.788
Father: positive reinforcement as discipline	21.7	2.5	40.7	34.595
Mother: positive reinforcement as discipline	24.7	6.2	43.2	29.877

Note: * $p < .05$ for all offender–nonoffender comparisons

educational expectations who used positive reinforcement as a method of discipline for misdeeds. While larger percentages of nonoffenders than offenders exhibited each protective factor, only 10 of the 28 protective factors examined were reported by the majority of nonoffenders (and three of these were also reported by a majority of offenders). We then created composite measures of 'risk' and 'protection' from each of the factors found to differentiate between offenders and nonoffenders in the cross-tabular analyses. The concepts of 'risk' were created by summing the individual risk factors (present = 1) into a single summary index (range 0–8). Similarly, a summary index of 'protective factors' was created by summing the individual 'protective' items found to differentiate between offenders and nonoffenders (range 0–28). This approach allowed us to examine the importance of cumulative effects of risk and protective factors as illustrated in prior studies.

Analyses conducted on the risk and protective factor summary indices revealed important differences between offenders and nonoffenders. Comparing offenders and nonoffenders, more than 28% of the nonoffenders reported having no identifiable risk factors, compared with fewer than 4% of the offenders. On the other end of the spectrum, 10 or more risk factors were present for more than 50% of offenders, compared with fewer than 3% of nonoffenders. This situation was reversed for protective factors: approximately 57% of nonoffenders and 22% of offenders reported having 10 or more protective factors present. Interestingly, no nonoffenders reported having fewer than one protective factors present, while the corresponding figure for offenders was approximately 10%. When aggregated, offenders reported having 9.71 risk factors present ($SD = 4.54$) and 6.12 protective factors ($SD = 5.05$), compared with nonoffenders' mean of 3.30 risk factors ($SD = 3.36$) and 12.75 protective factors ($SD = 7.21$). Each of these differences was statistically significant at the .05 level. These results are presented in Table 3.

We then examined the interrelationship between risk and protective factors for offenders and nonoffenders. We were specifically interested in whether offending results when the number of risk factors present surpasses the number of protective factors. To examine this question, we partitioned the data by offender/nonoffender

TABLE 3
Cumulative Effects of Risk and Protective Factors

# of factors present	Nonoffenders (<i>N</i> = 81)		Offenders (<i>N</i> = 81)	
	Risk factors %	Protective factors %	Risk factors %	Protective factors %
0	28.4	0.0	3.7	9.9
1–5	45.7	22.2	16.0	51.9
6–10	23.5	21.0	29.6	16.0
10 +	2.5	56.8	50.6	22.2
Mean (<i>SD</i>)	3.60 (3.34)	12.87 (7.24)	12.35 (2.69)	7.23 (4.81)

Note: * $p < .05$, all comparisons between offenders and nonoffenders

status and conducted cross-tabular analyses comparing the number of risk factors present by the number of protective factors present. The results of these analyses (presented in Table 4) illustrate a pattern consistent with prior research findings. Risk factors present outnumber protective factors present for the majority of offenders, while protective factors present outnumber risk factors for the majority of nonoffenders. These findings again suggest that while many offenders report having a number of protective factors present, and many nonoffenders report having a number of risk factors present, it is the relative proportion of risk and protective factors which influences offending/nonoffending behaviour. For offenders, the modal category is more than 10 risk factors present and between one and five protective factors present. For nonoffenders, the modal category is more than 10 protective factors and five or fewer risk factors present. Offending is more likely to occur when risk factors outweigh protective factors, and offending is less likely to occur when protective factors outweigh risk factors.

We then used factor analyses to group risk and protective factors into various conceptual domains. First, we grouped variables into a number of conceptual categories illustrated in Tables 1 and 2. Next, we used principal components analyses with varimax rotation to determine the dimensionality of our scales. We trimmed the variables that failed to load at 0.4 or higher on each of the scales. This process produced three sets of risk factors and six sets of protective factors with eigenvalues greater than 1.0 and the clearest break in the scree plot between the first and second factors.⁵ Finally, we subjected each of the conceptual domains to SPSS reliability analyses to determine the internal consistency of our scales. Cronbach's alpha for each scale was as follows: interest in fantasy (0.73), worker orientation (0.73), poor educational environment (0.91), interest in social reform (0.72), interest in public cultural issues (0.90), interest in public order (0.58), educational expectations (0.94), educational attainment (0.94), and positive reinforcement by parents (0.89). This process resulted in the creation of separate scales for three domains of risk factors (interest in fantasy, worker orientation, poor educational environment) and six protective factors (interest in social reform, interest in public cultural issues, interest in public order, educational expectations,

TABLE 4
Interrelationships Between Risk and Protective Factors

		Protective factors							
		Nonoffenders (N = 81)				Offenders (N = 81)			
		0	1-5	6-10	10+	0	1-5	6-10	10+
		%	%	%	%	%	%	%	%
Risk factors	0	0.0	0.0	0.0	28.4	0.0	0.0	0.0	3.7
	1-5	0.0	1.2	16.0	28.4	1.2	0.0	0.0	14.8
	6-10	0.0	18.5	4.9	0.0	4.9	9.9	11.1	3.7
	10+	0.0	2.5	0.0	0.0	3.7	42.0	4.9	0.0

educational attainment, and positive reinforcement by parents) that were identified from this approach.

Our final set of analyses examined the extent to which these various domains overlapped for offenders and nonoffenders. Once our scales were created, we examined the correlation coefficients between these risk and protective factors, controlling for offending status. The results of the analyses across risk factor domains are presented in Table 5, while those for protective factors are presented in Table 6. The results suggest that the risk and protective factors do overlap, but appear to operate in a different manner for offenders and nonoffenders. For nonoffenders' risk factors, having a poor educational environment is significantly associated with having an interest in fantasy and having a worker orientation, and the strength of these relationships is moderate to strong. Concerning offenders' risk factors, however, only the relationship between having an interest in fantasy and having a worker orientation is strong and statistically significant. Concerning protective factors, we also see considerable overlap across domains, for both offenders and nonoffenders. Differences exist across offenders and nonoffenders, however, particularly regarding the role of positive reinforcement by parents. Specifically, having parents who use positive reinforcement shows considerable overlap with the other protective factors for offenders, but is not significantly associated with the other protective factors for nonoffenders.

Discussion

The risk and protective factor approach to the study of criminal offending has gained popularity since the inception of the 'criminal career' paradigm of the early 1980s (Blumstein et al., 1986). Farrington (2000), among others, has championed this approach as holding the key to accomplishing the twin aims of criminology: to advance knowledge and to improve people's lives. Following Farrington's approach, the current study has examined risk and protective factors associated with offending in a Chinese birth cohort. Survey data collected from offenders and nonoffenders residing in Wuhan, China, were examined to determine the individual-level correlates of offending in a Chinese context.

The current study has used a sample of offenders and nonoffenders identified as part of a Chinese cohort study conducted in 1991/1992 when subjects were approx-

TABLE 5
Interrelationship Between Risk Factor Domains

	Nonoffenders above diagonal/Offenders below diagonal		
	Interest in fantasy	Worker orientation	Poor educational environment
Interest in fantasy	1.00	.192	.456**
Worker orientation	.639**	1.00	.697**
Poor educational environment	.220	.270	1.00

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

TABLE 6

Interrelationship Between Protective Factor Domains

	Nonoffenders above diagonal/Offenders below diagonal					
	Interest in social reform	Interest in public cultural issues	Interest in public order	Educational expectations by parents	Educational attainment	Positive reinforcement
Interest in social reform	1.00	.021	.592**	.678**	.689**	.811**
Interest in public cultural issues	.167	1.00	.314**	.015	.039	.171
Interest in public order	.316**	.306**	1.00	.594**	.418**	.557**
Educational expectations	.694**	.380**	.486**	1.00	.672**	.661**
Educational attainment	.543**	.147	.401**	.628**	1.00	.795**
Positive reinforcement by parents	.052	.109	.232*	.200	.207	1.00

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

imately 18 years old. We were specifically interested in examining two main questions. First, what are the risk and protective factors for offending and are they different from those identified in western studies? Second, what are the relationships between the risk and protective factors associated with offending? Specifically, what roles do multiple causality and cumulative effects of risk and protective factors play in enhancing or ameliorating offending in a Chinese context?

Our results suggest that numerous risk and protective factors may be identified in this Chinese birth cohort, and that it is the accumulation of multiple factors within different, but overlapping, domains affecting offending behaviour. Offenders and nonoffenders were found to differ in terms of a number of factors. Significant differences were found between the groups in three sets of risk factors (interest in fantasy, having a worker orientation, poor educational environment) and six protective factors (interest in social reform, interest in public cultural issues, interest in public order, educational expectations, educational attainment, and positive reinforcement by parents). While some of these factors (e.g., educational environment, expectations, and attainment; reinforcement by parents) are consistent with those found to be important in studies conducted in the West, other factors (e.g., interest in social reform and public cultural issues) may have a unique effect in China. As Ren (1997) points out, China's historical focus on crime control as a communal issue, with an emphasis on social integration for offenders, differs somewhat from the individualistic approach often used in western countries. Additionally, our findings are consistent with the conclusions of Deng and Cordilia

(1999) and Homel and colleagues (1999) that the specific risk and protective factors may vary by context.

These results also suggest that it is equally important to examine risk and protective factors together. Offenders in our sample were characterised by having more risk factors than nonoffenders while nonoffenders were characterised as having more protective factors than offenders. That being said, however, we found little evidence that offenders have no protective factors. Rather, our results suggest that it is the accumulation of risk factors, in relation to protective factors, that differentiated offenders from nonoffenders.

Our results also present considerable evidence of strong relationships between risk and protective factors of various domains, and it is difficult to disentangle the unique effect of each risk factor from others and the unique effect of each protective factor from one another. Instead of looking at independent effects, then, it may be beneficial to consider the whole — specifically, how risk and protective factors accumulate across domains to enhance or ameliorate offending behaviour.

A number of limitations are evident in the current study. First, our analyses are limited to survey data collected from 81 offenders and 81 nonoffenders more than a decade ago. We expect that the rapid social changes occurring in China during this time have introduced added complexities to the cultural context in which delinquency occurs. Additionally, the small sample size limits the generalisability of our findings. Second, a number of factors cannot be examined with the current data. The low prevalence of offending makes it particularly difficult to examine issues related to chronic offending. Additionally, the progression of risk and protective factors and individual offending over time cannot be addressed with the current data. Finally, we are limited to the examination of the risk and protective factors included in the survey collected as part of the original study. While a number of theoretical constructs were included in the instrument, it was not designed to specifically address the questions posed in the current study. Thus a number of risk and protective factors which have important effects on delinquency are not captured by our current efforts. We hope that future research is able to address these limitations.

Conclusion

The current study has used a ‘risk factor paradigm’ approach (Farrington, 2000) to examine the factors differentiating Chinese offenders from nonoffenders at the individual level. Consistent with research in other countries, our results suggest the importance of focusing on individual factors in preventing and intervening in offending in a Chinese context. Nonetheless, we must not forget the important cultural context in which individuals operate. While some factors may be universal, the cultural context undoubtedly affects how additional factors operate in terms of ‘risk’ and ‘protection’. We encourage future researchers to continue examining risk and protective factors in different cultural contexts in order to help understand not only the factors which influence offending behaviours, but how these factors interrelate.

Endnotes

- 1 Due to scarcity in population mobility before the 1990s in China, Wolfgang did not use the same cohort criteria (that the subject must have lived in the district between their 10th and 18th year) in this China cohort study as he did in his Philadelphia study. Consequently, cohort attrition is not known but is assumed to be insignificant.
- 2 These figures, however, remain significantly lower than most western rates. Germany, for example, had a rate of 7,625/100,000 for all crimes in 2000 (Bundeskriminalamt, 2000) while in the United States the rate for index crimes only was 4,267/100,000 in 1999 (Maguire & Pastore, 2000, p. 279).
- 3 A number of other complications with the Wuhan birth cohort study have been outlined in other contexts (Friday et al., 2002; Friday et al., in press). The problems mainly revolved around the fact that information collected about the entire cohort of 5341 was lost at the time of Wolfgang's death. Friday and colleagues (2002; in press) reexamined the Wuhan police records in 2000 using Wolfgang's original criteria. While unable to exactly reproduce the sample drawn by Wolfgang, the researchers reported descriptive results similar to those reported earlier by Wolfgang (1996). It should be noted that the data used in the current study come from Wolfgang's original data collection efforts and not from the reexamination by Friday and colleagues.
- 4 Under China's residential registration system, college and university students (as well as military personnel) are excluded from the municipal residential registration system. Therefore, this cohort sample does not include any college/university student population enrolled in universities in Wuchang district at the time of data collection.
- 5 The results of the analyses used to create these scales are available on request from the first author.

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