Chapter 10
The Cross-National Generality of Problem Behavior Theory

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Although recent trends in studies of adolescent behavior and development reflect a "remarkable invigoration of theoretical and empirical work" (Jessor, 1998, p. 1), most of this work has been confined to Western, especially North American, populations (Alsaker & Flammer, 1999). A key challenge for the scientific study of adolescence is to extend research to non-Western societies and to undertake systematic, comparative, cross-national inquiries that can capture what is general as well as what is local and idiosyncratic in adolescent behavior and development and in their determinants.

In this article we examine the generality of an explanatory model of adolescent problem behavior in a cross-national study of adolescents from two different societies: the People's Republic of China and the United States. The model, developed in the United States, describes the relations of psychosocial protective factors and risk factors to involvement in problem behaviors such as delinquency, tobacco use, alcohol abuse, marijuana and other illicit drug use, and early sexual intercourse experience. Based on a theoretically derived conceptualization that incorporates both

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contextual and individual differences in protection and risk, the model takes into account both the direct effects of protective and risk factors and the moderating influence that protection may have on the impact of exposure to risk.

The delineation of protective and risk factors in the present study emerges from a reformulation and extension of Problem Behavior Theory (Jessor, Donovan, & Costa, 1991; Jessor, Graves, Hanson, & Jessor, 1968; Jessor & Jessor, 1977). The protection-risk conceptual framework employed in the present study encompasses a more exhaustive range of protection and risk variables by including not only measures of individual-level protection and risk (e.g., attitudes, values, and beliefs) but also measures of protection and risk in the multiple social contexts that are salient in the ecology of daily adolescent life: family, peers, school, and neighborhood.

Conceptually, protective factors decrease the likelihood of engaging in problem behaviors by providing models for positive or prosocial behavior, personal or social controls against problem behavior, and an environment of support. Risk factors, in contrast, increase the likelihood of engaging in problem behavior by providing models for problem behavior, greater opportunity for engaging in problem behavior, and greater personal vulnerability to problem behavior involvement (Costa, Jessor, & Turbin, 1999; Jessor, Turbin, & Costa, 1998a, 1998b; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). Psychosocial risk and protective factors have been shown to account for substantial amounts of variance in adolescent problem behavior, and the linkages of risk and protection to problem behavior are robust in relation to multiple outcome criteria (e.g., delinquent-type behavior, problem drinking, marijuana use) for both males and females, for younger and older adolescents, across groups varying in socioeconomic status, and across race and ethnicity subgroups (White, Hispanic, and African American youth; Costa et al., 1999; Jessor et al., 1998a, 1998b; Jessor et al., 1995).

Protective factors can play an additional—indirect—role in the occurrence of adolescent problem behavior by moderating or buffering the impact of risk factors, and indeed, there is considerable empirical evidence of such moderation (Costa et al., 1999; Jessor et al., 1998a, 1998b; Jessor et al., 1995). When protection is low, the higher the risk the greater the involvement in problem behavior, but when protection is high, that relation is attenuated. The detection of such moderator or interaction effects is not only of theoretical importance but also has significant implications for intervention and policy: The strengthening of protection would assume importance along with the reducing of risk as prevention and intervention strategies for adolescent problem behavior.

The protection-risk model used in the present research is an effort to systematize work in this field. It consists of three types of protection and three types of risk that together, and in interaction, can account for variation in problem behavior. The model, and the protection and risk constructs it includes, has emerged from the series of studies on Problem Behavior Theory cited previously as well as from the recent developmental literature (e.g., Barber & Olsen, 1997). Models protection includes measures of models such as parental involvement in community groups and volunteer work, and peer models for health-enhancing behaviors such as engagement in regular exercise; controls protection includes individual-level measures of control such as attitudinal intolerance of deviance, and social environmen-

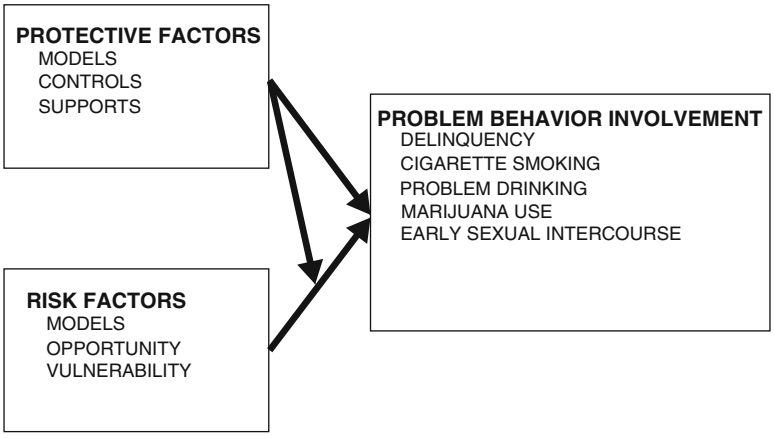

Fig. 10.1 Explanatory model of direct effects of protective factors and risk factors on adolescent problem behavior, and moderation of Risk × Protection

tal measures of controls such as predictable parental sanctions; and support protection includes measures of contextual supports such as family closeness and teacher interest in students. With regard to risk, models risk includes measures of models such as parental smoking, and peer models for alcohol use; opportunity risk includes opportunity measures such as availability of alcohol in the home and presence of gang activity in the neighborhood; and vulnerability risk includes measures of personal vulnerability such as felt stress and low self-esteem. Similar protective and risk factors have been employed in several other investigations of adolescent risk behavior (Felix-Ortiz & Newcomb, 1992; Hawkins, Catalano, & Miller, 1992; Resnick et al., 1997; Stacy, Newcomb, & Bentler, 1992; Wills, Vaccaro, & McNamara, 1992). The explanatory model, showing the direct effects of protective and risk factors on problem behavior involvement and the moderator effect of protection on the impact of risk, can be seen in Fig. 10.1.

As a site for comparative research, the People's Republic of China, the world's most populous nation, is a society that contrasts markedly with the United States in its social, political, and economic systems, as well as in the proximal social contexts in which adolescents are embedded. In China, for example, adolescents spend a major portion of their waking time in school, and schools are viewed as a context that facilitates adolescents' socioemotional development as well as cognitive and career development (Dong & Chen, 2001). Schools in China seek to maintain consistent values, standards, and requirements for adolescents' behavior and development. Schools are also enrolled as branches in national organizations such as the Young Pioneer Party and Communism Youth League that aim to inculcate prosocial values and morality education and to reinforce the schools in exercising social guidance and control over students' behavior. The structure of the family also differs across the two countries, with the prevalence of one-child families and an extremely low divorce rate in China, as against the substantial prevalence of nonintact families in the United States. Adolescents in China spend more time and have closer

relationships with their parents (Chen, Dong, & Zhou, 1997; Darling & Steinberg, 1993; Ekblad, 1986; Wu, 1981). Recent research also suggests that nonparental adults may play an important role in the development of adolescents in China (Chen, Greenberger, Farruggia, Bush, & Dong, 2003).

At the same time, China is undergoing rapid modernization and social change (Wong & Mok, 1995), and this has obvious implications for increasing adolescent problem behavior. The globalization of economies and of information may be contributing to the erosion of regulatory traditions and authoritative cultural values (Unger et al., 2002), and exposure to a globalizing "youth culture," emphasizing personal autonomy and peer orientation, may well be exerting an important influence on young people's outlooks and behavior, including problem behavior (Unger et al., 2001).

These larger intersocietal differences and similarities may well be reflected in the proximal ecology of adolescent life in the two countries, including differences in prevalence and magnitude of protective factors and risk factors. The perspective of the present study is that cross-national variation in risk and protective factors can reflect significant aspects of intersocietal difference and can do so in a theoretically illuminating rather than merely descriptive fashion. Such a theoretically based, descriptive approach permits examination of intersocietal differences in mean scores on the various protection and risk measures, and of the differential salience of the several contexts in which they are assessed. But the major contribution of such an approach is the opportunity it provides for testing the adequacy of an explanatory model to account for variation in adolescent problem behavior in both societies despite whatever mean differences in protective and risk factors and, indeed, in prevalence levels of problem behavior may obtain. Exploring the generality of an explanatory model across diverse societies emphasizes their underlying, dynamic, or genotypic (Lewin, 1931) commonality rather than their obvious, apparent, or phenotypic differences—the latter being the more traditional approach to comparative cross-national research.

The bulk of studies on adolescent problem behaviors in China has been largely epidemiological, although some have examined relations among problem behaviors or associations of problem behavior with selected measures of individual differences or social environmental characteristics. Various psychosocial theories and approaches have been employed for description and interpretation of the relationships of those measures with problem behaviors, but to our knowledge, no study has employed an integrative, theory-based psychosocial model that includes comprehensive measures of risk and protection in the various contexts of adolescent life, as well as at the individual level.

Available data indicate a lower prevalence of various adolescent problem behaviors in China than in the United States, including delinquent-type behavior (Greenberger, Chen, Beam, Whang, & Dong, 2000), cigarette smoking (Hesketh, Ding, & Tomkins, 2001; Johnston, O'Malley, & Bachman, 2001; Li, Fang, & Stanton, 1996; Unger et al., 2001; Unger et al., 2002; Zhang, Wang, Zhao, & Vartainen, 2000), regular or excessive alcohol use (Guang-Ren, 1997; Johnston et al., 2001; Li, Fang, Stanton, Feigelman, & Dong, 1996; Zhimin et al., 2001), and marijuana use (Greenberger et al., 2000; Johnston et al., 2001; Zhimin et al., 2001). In general, Chinese girls report lower involvement in problem behaviors than do Chinese boys (Guang-Ren, 1997; Hesketh et al., 2001; Li, Fang, Stanton, et al.,

1996; Unger et al., 2001; Ye, 1997; Zhang et al., 2000; Zhimin et al., 2001). As has been demonstrated in the United States (e.g., Donovan & Jessor, 1985; Elliott, 1993; Jessor & Jessor, 1977), there are also, in China, positive and significant associations among alcohol use, cigarette smoking, and delinquent-type behavior such as truancy, theft, and fighting (Li, Fang, & Stanton, 1996; Li, Fang, Stanton, et al., 1996). Among the psychosocial factors linked with Chinese adolescents' involvement in various problem behaviors have been parental monitoring, peer disapproval of misconduct, peer models for problem behavior, parental smoking, availability of cigarettes, school attachment, and expectations for academic achievement (Chen, Greenberger, Lester, Dong, & Guo, 1998; Greenberger et al., 2000; Hesketh et al., 2001; Li, Fang, & Stanton, 1996; Unger et al., 2002; Zhang & Messner, 1996; Zhang et al., 2000). None of these studies, however, has explicitly investigated the contributions of the various constructs of protection and risk (i.e., models, controls, support, opportunity, vulnerability) to accounting for variation in problem behavior, none has employed a comprehensive network of measures of both context and individual, and none has assessed the moderating influence of protection on risk.

In summary, the explanatory framework used in the present cross-national, comparative study focuses on variation in risk and protective factors in the individual adolescent and in the daily ecology of adolescent life. Assessment of these risk and protective factors should permit both a description and an explanation of intra- and inter-societal variation in adolescent problem behavior in samples drawn from The People's Republic of China and the United States.

Four key questions are addressed in this study:

1. Are there differences between the Chinese sample and the U.S. sample on measures of problem behavior involvement and on measures of protective and risk factors that are consonant with the societal differences described earlier between Chinese and U.S. society?
2. Does the same set of individual-level and contextual protective factors and risk factors account for variation in problem behavior involvement in both the Chinese and the U.S. samples?
3. Do protective factors moderate, or buffer, the impact of risk factors on adolescent problem behavior in both the Chinese and the U.S. samples?
4. Does the same explanatory model account for problem behavior involvement across genders within each country sample?

Method

Study Design, Participants, and Procedures

Analyses presented in this article employed questionnaire survey data from a sample of adolescents in Beijing, China, and a sample in a large urban area in the Rocky Mountain region of the United States. The 36-page Adolescent Health and Development Questionnaire (AHDQ) was used to assess a broad range of behaviors, as well as protective and risk factors, in five domains: the individual

(including beliefs, attitudes, and expectations) and four key social contexts of adolescent life—the family, the peer group, the school, and the neighborhood or community. The AHDQ is the most recent version of a questionnaire developed for use over the past several decades in both local and national sample studies (e.g., Jessor et al., 1995), with its content theoretically derived from the constructs in Problem Behavior Theory.

Members of the Chinese research team translated the AHDQ into Chinese and then back-translated it into English. Both the translation into Chinese and the back-translation were then reviewed in detail by a Chinese social scientist fluent in English at the University of North Carolina. His suggestions for revisions to the Chinese translation were forwarded to the Chinese team, and the Chinese-language version of the AHDQ was revised accordingly. In addition, the translation into Chinese was reviewed by a native Chinese student, also fluent in English, at the University of Colorado at Boulder; and the back-translation was reviewed by the U.S. team. On the basis of these multiple reviews, a few instances where the meaning may have been compromised in translation were communicated to the Chinese team. It is important to note that both of the Chinese-speaking reviewers found the Chinese team's translation of the AHDQ to be very well done, and the agreed-on equivalence of the two versions undergirds the validity of comparisons between the United States and China.

Participants in the study were 3335 students in Grades 7, 8, and 9: 1739 from China and 1596 from the United States. In each country, the sample was drawn from schools chosen in collaboration with the school district administration to best represent variation in the socioeconomic backgrounds of the students and, in the United States, to reflect the racial and ethnic composition of students in the district. In Beijing, schools were selected from two districts—one within the city and the other in the suburbs. In each district, schools known to vary in educational quality were selected to represent institutions described as above average, average, and below average. In each of the seven schools selected in Beijing and the nine schools selected in the United States, students were randomly sampled within grade for participation in the study.[1]

Active parental and personal consent was required. Letters describing the study to the parents and the students were distributed to the sampled students, and signed consent forms were returned to teachers. In the United States, all contact and consent materials were written in both English and Spanish. Questionnaires were filled out at school in large-group administration sessions proctored by research staff. In the United States, a bilingual version of the questionnaire was available for students who preferred to work in Spanish. Confidentiality was guaranteed and a Certificate of Confidentiality was obtained from the National Institutes of Health to safeguard further the privacy of responses. Each student received a token payment for filling out the questionnaire: $5 in the United States; $2, plus a gift to each school, in China.

[1] To address a possible problem of nonindependence of observations on the criterion measure within schools, we computed the intraclass correlation, which is negligible: .03 in the U.S. sample and .02 in the Chinese sample. Hence, the students' responses can be treated as independent observations.

Questionnaires were filled out by 98 % of the Chinese sample and by 74 % of the U.S. sample. In both countries, about half the participants are male (51 % in China, 47 % in the United States) and about one third were in Grades 7 (31 % and 30 %, respectively), 8 (34 %), and 9 (35 %). With respect to race and ethnicity, 45 % of the U.S. sample self-described as Hispanic, 30 % as African American, 19 % as White, 4 % as Asian American, and 2 % as American Indian. Nearly all (96 %) of the Chinese participants were of Han descent. Obviously, these local samples in both China and the United States cannot represent those countries as a whole. In what follows, use of the terms *China* and *United States* is elliptical for these specific samples of Chinese adolescents and U.S. adolescents.

Measurement of Protective Factors and Risk Factors

To keep the primary focus on assessing the applicability of the theoretical model and its major constructs, we constructed composite measures of the three types of protection (models, controls, supports) and the three types of risk (models, opportunity, and vulnerability). Each composite measure is the average of all the items in its component subscales, standardized in the combined sample and equally weighted with a mean of zero. The internal coherence of the composite protection and risk measures was established by a confirmatory factor analysis, for each measure, that showed all of its component subscales loading on a single factor. The exception was opportunity risk, which required two composite measures (see the following discussion). The proportion of variance accounted for by the various single factors ranged between .23 and .44.

The models protection composite includes the items in four multi-item component subscales (see Table 10.1) that assess parental and peer models for conventional behavior (e.g., "Does either of your parents go to church or religious services pretty regularly?" "How many of your friends do volunteer work in the community?"), and parental and peer models for health-enhancing behavior (e.g., "Do your parents [or the adults you live with] pay attention to eating a healthy diet themselves?" "How many of your friends make sure they get enough exercise?"). The controls protection composite is composed of the items in nine multiple-item subscales that assess personal and social regulation, including attitudinal intolerance of deviance (e.g., "How wrong do you think it is to cheat on tests or homework?"), parent sanctions (e.g., "If your parents knew that you had shoplifted something from a store, would you get in trouble for it?"), family controls (e.g., "Do your parents make sure they know who you're spending your time with?"), peer controls (e.g., "If you were going to do something people think is wrong, would your friends try to stop you?"), friends' disapproval (e.g., "How do most of your friends feel about someone your age drinking alcohol?"), school controls (e.g., "In your school, how strict are the rules about student behavior in class, in the halls, and on the school grounds?"), student disapproval (e.g., "What do most of the students at your school think about kids who damage school property?"), neighborhood controls (e.g., "If adults in your neighborhood saw kids doing something wrong or getting in

Table 10.1 Protective and risk factor composite measures, component subscales, and alpha reliabilities

	α	
Measure (Number of Items)	U. S. sample	Chinese sample
Protective Factors		
Models Protection (21)	.85	.82
Parent Models for Conventional Behavior (4)	.57	.58
Parent Models for Health Behavior (8)	.78	.77
Friends Models for Conventional Behavior (5)	.74	.69
Friends Models for Health Behavior (4)	.73	.67
Controls Protection (41)	.91	.91
Attitudinal Intolerance of Deviance (10)	.92	.93
Parent Sanctions (4)	.74	.53
Family Controls (8)	.78	.73
Peer Controls (4)	.81	.78
Friends Disapproval (2)	.56	.58
School Controls (3)	.64	.51
Student Disapproval (4)	.82	.84
Neighborhood Controls (3)	.72	.64
Neighborhood Disapproval (3)	.90	.81
Support Protection (16)	.85	.86
Family Support (7)	.86	.85
Friends Support (2)	.78	.62
Teacher Support (4)	.83	.78
Neighborhood Support (3)	.86	.85
Risk Factors		
Models Risk (14)	.76	.77
Family Models for Risk Behavior (2)	.22	.06
Peer Models for Risk Behavior (5)	.48	.48
School Models for Risk Behavior (5)	.88	.79
Neighborhood Models for Substance Use (2)	.56	.64
Opportunity Risk-Availability (3)	.54	.65
Availability of Cigarettes at Home (1)	–	–
Availability of Alcohol at Home (1)	–	–
Availability of Alcohol in the Neighborhood (1)	–	–
Opportunity Risk-Gangs (2)	.86	.80
Vulnerability Risk (22)	.87	.85
Felt Stress (3)	.74	.68
Depression (3)	.85	.78
Low Expectations for Success (9)	.88	.89
Low Self-Esteem (7)	.68	.68

Note: Example items of each subscale are presented in the text

trouble, would they tell the parents about it?"), and neighborhood disapproval (e.g., "How do you think most of the adults in your neighborhood feel about someone your age drinking alcohol?"). Support protection was measured by items about

family support (e.g., "When you are having problems, can you talk them over with your parents?" "Are your parents interested in what you think and how you feel?"), friends' support (e.g., "When you have personal problems, do your friends try to understand and let you know they care?"), teacher support (e.g., "Do teachers at your school treat students with respect?"), and neighborhood support (e.g., "In your neighborhood, do people help each other out and look after each other?"). The alpha reliabilities of the three composite protective factors measures shown in Table 10.1 are good: .85, .91, and .85 (United States) and .82, .91, and .86 (China), respectively, in the order presented. The alphas of the subscales are also generally satisfactory, as can be seen in Table 10.1 as well.

The models risk composite is composed of the items in four multiple-item subscales that assess social models for a variety of risk behaviors (e.g., cigarette smoking, alcohol use, poor dietary habits) across the four social contexts of family, peers, school, and neighborhood (e.g., "Does anyone in your close family smoke cigarettes?" "How many of your friends use marijuana?" "How many of the students at your school get into fights?" "How much drinking is there among adults in your neighborhood, as far as you know?"). As noted earlier, opportunity risk was divided into two separate composite scales on the basis of the confirmatory factor analysis findings. Opportunity risk-availability is measured by three items that ask about perceived availability of cigarettes in the home, of alcohol in the home, and of alcohol in the neighborhood (e.g., "If you wanted to get some alcohol to drink, would you be able to get some at home?"). Opportunity risk-gangs is composed of two items that assess perceived gang activity in the neighborhood and neighborhood youths' involvement in gangs (e.g., "Do any of the kids in your neighborhood belong to gangs?"). Vulnerability risk includes the items from four multi-item component subscales, all of which measure personal vulnerability to risk, including felt stress (e.g., "In the past six months, how much stress or pressure have you felt at school?"), depression (e.g., "In the past six months, have you just felt really down about things?"), limited perceived chances for success in life (e.g., "What are the chances that you will have a happy family life?"), and low self-esteem (e.g., "On the whole, how satisfied are you with yourself?"). The alpha reliability of opportunity risk-availability is low: .54 (United States) and .65 (China); alpha reliabilities of the other three composite risk measures are all satisfactory, as can be seen in Table 10.1. Although the alphas for a few of the models risk subscales were too low to be deemed acceptable, those measures were nevertheless retained to maintain the theoretical comprehensiveness of protection and risk assessment across the multiple contexts.

Correlations among the three protective factor composites are about the same in the China sample (ranging from .46 to .61) as in the United States sample (ranging from .45 to .61). Correlations among the four composite risk factors are also similar between China (.04 to .32) and the United States (.13 to .35). Correlations between the three protective factor composites and the four risk factor composites range from .06 to -.51 in China, and from -.03 to -.52 in the United States, negative as expected (with that one exception). Although protection and risk measures do share as much as 25 % of variance, they are not opposite ends of the same dimension, and they relate differently to various criterion measures (Jessor et al., 1995). Overall, the correlations are of similar magnitude in the two country samples.

Measurement of Adolescent Problem Behavior Involvement

The composite Multiple Problem Behavior Index (MPBI) criterion used in this report is an average of *T*-scored (M = 50, *SD* = 10 in the combined sample) measures of adolescents' involvement in three different types of problem behavior: (a) delinquent behavior, including theft, vandalism, and physical aggression (alpha = .84 United States, .82 China); (b) cigarette smoking, based on respondents' reports of frequency and amount of smoking in the past month and the past year (alpha = .79 United States, .84 China); and (c) problem drinking, based on self-reports of frequency of drunkenness, frequency of high-volume drinking (four or more drinks per occasion), and negative consequences of drinking, such as getting into trouble with parents or having problems with friends or at school because of drinking (alpha = .69 United States, .64 China). Alpha reliability of this three-component MPBI is .69 in the United States and .64 in China, with an average interitem correlation of .42 (United States) and .37 (China). Sexual intercourse experience was measured in the United States but not in China. Although marijuana use was measured in both countries, almost no Chinese participants reported using the drug. These latter two component behaviors, therefore, have been omitted from the composite MPBI for these comparative analyses. Although the MPBI is the key criterion measure of adolescent problem behavior in the following analyses, analyses of each of its three components are also presented.

Analytic Procedure

The primary analytic procedure used to examine the applicability of the explanatory model to variation in adolescent problem behavior is hierarchical multiple regression, carried out on the sample data from each country. Hierarchical regression lends itself to estimating interaction or moderator effects (Cohen & Cohen, 1983). Sociodemographic measures (gender, grade in school, intact family, socioeconomic status, and school attended) were entered at the first step of the regression.[2] The theoretical predictors—the three composite protective and the four composite risk factor measures—were entered, in that order, in the next two steps to examine their association with problem behavior involvement.[3] At Step 4, cross-products of all protective and risk factors were entered to examine whether protective factors were, indeed, moderators of the effects of risk factors and to determine whether those moderator effects provided a significant additional increment in variance accounted for. At Step 5, the model was tested for gender differences by entering all cross-products of

[2] There is essentially no ethnic variation in the Chinese sample, but we examined ethnic variation in the U.S. sample and found it virtually uncorrelated with problem behavior involvement. No measure of ethnicity would have been significant in the regression analyses; therefore, it was omitted.

[3] The order of entry of the protective factors and risk factors is, of course, arbitrary in testing the explanatory model. We have chosen to enter protection before risk to draw attention to protection in contrast to the more general preoccupation with risk. By reversing the order of entry in an additional hierarchical regression, it is possible to establish the unique variance contributed by each.

gender with each of the protective and risk factors and with their interactions. After all interaction terms were tested for significance in the last two steps of the regression, the equation was reestimated, omitting the nonsignificant interactions unless they were components of significant three-way (Gender × Protection × Risk) interactions.

Results

Presentation of the results is organized in the order of the research questions posed in the introduction. First, we examine descriptive differences between the Chinese and the U.S. samples on various measures, including the theoretical predictor measures of protective and risk factors, and the criterion measures of problem behavior involvement. Next, we explore the multivariate account of problem behavior involvement provided by the theoretical measures, the protective factors, and risk factors in the two samples separately. Third, we assess whether moderating effects of protective factors on the relation of risk factors to problem behavior are evident in the data. Fourth, we examine the generality of the explanatory model across genders within each sample. Next, we "unpack" the multiple problem behavior criterion measure and analyze its components to assess how well the model applies to each problem behavior in each sample. Finally, we unpack the composite protective and risk factor measures to see whether their component subscales have differential importance across the two samples.

Differences Between the Chinese Sample and the U.S. Sample on Descriptive and Theoretical Measures

With regard to descriptive differences, the impact of China's one-child policy is evident in the finding that the median number of children in the families in the Chinese sample is 1, compared with a median of 2 in the U.S. sample. Of the Chinese students, 83 % were from families with both biological parents in the home, whereas the corresponding figure for U.S. students was only 45 %. The average level of parental education in the Chinese sample was high school completion, whereas in the U.S. sample it was at least some education beyond high school (all mean differences reported in this section are significant at $p < .001$). Most of the Chinese participants (77 %) do not attend religious services, and only 5 % reported that their parents attend services pretty regularly; in the U.S. sample, most participants (55 %) reported attending religious services at least two or three times a month, and 54 % reported that their parents attend services pretty regularly. In China, the great majority of study participants (about 75 %) reported having a father who smokes cigarettes and 6 % reported a mother who smokes; in the United States, about 25 % reported having a father who smokes and 25 % reported having a mother who smokes.

Only 27 % of the Chinese students had missed 1 or more days of school in the previous semester, compared with 80 % of the U.S. students. Chinese students

reported spending twice as much time doing homework as the U.S. students. Most participants in China (57 %) study 6 hr a week or more, with 36 % reporting 8 or more hr, whereas most U.S. participants (62 %) study 3 hr a week or less, with only 8 % reporting 8 or more hr. Chinese participants reported fewer models for student-to-student harassment in school than did U.S. participants. The latter three differences are consistent with the characterization of Chinese social structure as having a greater level of social controls in the schools.

On a self-rating of general health from poor to excellent, the average response among the Chinese students was good, whereas the average response for the U.S. students was very good. Fewer of the Chinese adolescents said they had been taught about AIDS and HIV in school (57 % vs. 72 % in the United States), fewer reported knowing how to prevent AIDS and HIV (59 % vs. 78 %), and fewer indicated willingness to be in a class with a student with AIDS/HIV (18 % vs. 50 %).

At the descriptive level, then, the Chinese participants come from smaller, intact families, whose backgrounds involve less formal education, different religious traditions, and more conventional behavior, compared with U.S. adolescents. In regard to problem behavior—as indicated by their scores on the MPBI and on each of its components—Chinese students, especially girls, reported lower levels of involvement than American students. Theoretically consistent with the Chinese adolescents' lower levels of problem behavior, they also have higher means scores on protective factors and lower mean scores on two of the risk factors than the U.S. adolescents (see Table 10.2). From what has been reported about Chinese soci-

Table 10.2 Group means on protective factors, risk factors, and problem behavior measures

	U.S. sample		Chinese sample	
Measure	Boys ($n=753$)	Girls ($n=843$)	Boys ($n=883$)	Girls ($n=856$)
Protective Factors				
Models Protection	49.72[a]	49.05[a]	51.40[b]	49.71[a]
Controls Protection	45.40[a]	48.75[b]	50.95[c]	54.24[d]
Support Protection	48.51[a]	50.09[b]	50.29[b]	50.91[b]
Risk Factors				
Models Risk	50.66[ab]	51.52[a]	49.50[bc]	48.48[c]
Opportunity Risk-Availability	49.73[ab]	49.23[a]	50.65[b]	50.31[ab]
Opportunity Risk-Gangs	52.09[a]	51.99[a]	49.15[b]	47.23[c]
Vulnerability Risk	48.21[a]	48.60[a]	51.16[b]	51.74[b]
Problem Behaviors				
Multiple Problem Behavior Index	51.84[a]	51.24[a]	49.87[b]	47.27[c]
Delinquent Behavior	53.48[a]	51.16[b]	49.48[c]	46.40[d]
Smoking Involvement	50.80[a]	51.17[a]	50.38[a]	47.63[b]
Problem Drinking	51.28[a]	51.41[a]	49.60[b]	47.76[b]

Note: For consistency in comparing group means in this table, each measure is transformed to a *T* score with overall mean of 50

[a, b, c, d]Superscripts not shared by group means indicate significant differences by Scheffé multiple-range test with "experimentwise" alpha set at .05

ety—that there is more concern for conventionality and more control against normative transgression—these differences are as expected. On the other two risk factors, Chinese participants reported greater opportunity availability, reflecting the greater availability of cigarettes and alcohol in the home (use of alcohol and tobacco by adolescents is not prohibited in China, but heavy use is discouraged by parents) and greater vulnerability, reflecting lower expectations for success and lower self-esteem in the Chinese sample. With these two exceptions, the mean differences in reported levels of protection and risk are theoretically consonant with the differences in reported involvement in problem behavior between the Chinese and the U.S. samples, providing initial support for the relationships specified by the explanatory framework.

Testing the Explanatory Model of Adolescent Problem Behavior Involvement in the Chinese and U.S. Samples

To examine whether the explanatory model of problem behavior involvement applies across the two samples, we regressed the MPBI on the theoretical measures—the three protective factors and four risk factors—in a hierarchical multiple regression analysis for each sample. The final regression model, representing the influence of each variable with all other variables (including interaction terms) present in the equation, is shown in Table 10.3. The final model accounts for a substantial proportion of the variance in adolescent problem behavior involvement in both samples: 46% in the United States and 44% in China. Despite the use of composite measures—a conservative approach that limits the number of measures employed and weights each component item equally—nearly half the variance is accounted for.

In Table 10.3 we present both standardized regression coefficients (betas) and unstandardized regression coefficients (B-weights). This permits us to compare betas at Step 3 before the interaction terms are entered and to examine interactions, at Steps 4 and 5, that require use of unstandardized regression coefficients (Aiken & West, 1991, pp. 40–47). The bivariate correlations in Table 10.3 show that all of the composite protective factor measures have the expected negative relations with the MPBI, and that all of the composite risk factor measures have the expected positive relations with the MPBI; their absolute magnitudes range from .18 to .54, and all are significant. Thus, at the bivariate level, each protective and risk factor is associated, as expected, with problem behavior involvement in each sample.

Sociodemographic measures, entered at Step 1 of the regression analysis, accounted for 6% of the variance in problem behavior involvement in the U.S. sample and 9% in the Chinese sample. The three composite measures of protective factors, entered at Step 2, accounted for an additional 25% of the variance in the U.S. sample and 17% in the Chinese sample. The four composite measures of risk factors, entered at Step 3, accounted uniquely for another 8% (United States) and 6% (China) of variance beyond the variance accounted for by the already-entered protective factors and sociodemographic measures. (Because the protective and risk factors share common variance, their order of entry was reversed in additional analyses to establish

Table 10.3 Hierarchical regression of multiple problem behavior involvement on composite protective factors and risk factors in the U.S. and Chinese samples

		U.S. Sample					Chinese Sample				
Step		*r*	*β,*[a] *Step 3*	*B,*[b] *Final Step*	ΔR^2	R^2	*r*	*β,*[a] *Step 3*	*B,*[b] *Final Step*	ΔR^2	R^2
1	Sociodemographic background				.06	.06				.09	.09
	Gender	−.03	.01	.20			−.21***	−.13***	−.59***		
	Grade in school	.17***	.03	.65			.15***	.01	.32*		
	Intact family	−.09***	−.04	−.65			−.08***	−.03	−.76*		
	Socioeconomic status	−.04	.02	.04			−.04*	.02	.16		
	School attended[c]										
2	Protective factors[d]				.25	.31				.17	.27
	Models protection	−.24***	.09**	1.40**			−.21***	.05*	.44		
	Controls protection	−.54***	−.39***	−6.25***			−.49***	−.35***	−3.64***		
	Support protection	−.35***	.05	.73			−.32***	.04	.24		
3	Risk factors				.08	.38				.06	.32
	Models risk	.46***	.23***	3.33***			.40***	.22***	3.17***		
	Opportunity risk—availability	.29***	.05*	.59*			.18***	.01	.27		
	Opportunity risk—gangs	.29***	.11***	.69**			.18***	.07**	.50***		
	Vulnerability risk	.35***	.14***	1.83***			.29***	.15***	1.88***		
4	Protection × Risk interactions[e]				.07	.45				.09	.41
	Controls Protection × Models Risk			−4.60***					−5.88***		
	Controls Protection × Opportunity Risk–Availability			−1.77**							
	Controls Protection × Opportunity Risk–Gangs			−1.14**							
	Controls Protection × Vulnerability Risk			−3.69***					−2.81***		
5	Gender interactions[e]				.01	.46				.03	.44
	Gender × Controls Protection			1.62***					.86**		
	Gender × Support Protection			−1.50***							
	Gender × Models Risk								−.98***		
	Gender × Vulnerability Risk								−.78**		
	Gender × Controls Protection × Models Risk								1.77***		
	Gender × Controls Protection × Vulnerability Risk								1.84***		

Notes. $N = 1{,}352$ (U.S.), 1,630 (China).

[a]Standardized regression weights at Step 3, before interaction terms are entered.

[b]Unstandardized regression weights are displayed; standardized weights are deemed inappropriate with interaction terms (see Aiken & West, 1991, pp. 40–47).

[c]Dummy variables for nine schools in the United States, seven in China; only one, in China, has a significant regression weight.

[d]When protective factors are entered after risk factors—that is, when the order of entry is reversed—variance accounted for uniquely by protective factors = .08*** (United States), .07*** (China).

[e]Only significant interactions are included.

*$p \leq .05$;

**$p \leq .01$.

***$p \leq .001$. All ΔR^2 and R^2 values are significant at $p \leq .001$.

the unique variance accounted for by each. When the order of entry of protective and risk factors was reversed, protective factors accounted uniquely for 8 % of variance in the U.S. sample and 7 % in the Chinese sample, about the same as the unique influence, 8 % and 6 %, shown at Step 3 in Table 10.3 for the risk factors.)

The composite protective factor of controls protection has a significant coefficient in the final regression model in both samples. All four composite risk factors are significant in the U.S. sample, and three of the four are significant in the Chinese sample. The standardized coefficients, second column for each sample, show that controls protection is the most powerful measure and that models risk is next in both of the samples. Vulnerability risk follows in importance in both samples. In the U.S. sample only, models protection has a significant positive weight, although its bivariate correlation is negative, indicating its role as a suppressor variable, improving the overall model by subtracting irrelevant variance from the other predictors (Cohen & Cohen, 1983). The apparent importance of any particular

protective or risk factor is, of course, affected by the presence or absence of other measures in the regression model. In light of the fact that the bivariate correlations of the protective and risk factors with the criterion measure are all statistically significant, it is possible that the nonsignificance of some of the partial regression weights generated by the multivariate analyses may be due to their shared variance with the other predictors.

In terms of amount of variance accounted for, and in terms of which composite protective and risk factors are most important in the account, the explanatory model appears essentially the same across the two samples.

Testing for the Moderator Effect of Protection on the Relation of Risk to Problem Behavior

The moderating effect of protective factors on the relation of risk factors to problem behavior was evaluated at Step 4 with the entry of all 12 of the Protection × Risk cross-products. When all of these interaction terms were added at Step 4, the increase in R^2 was significant at $p < .05$. The model was then recomputed, omitting the nonsignificant interaction terms. The unstandardized regression coefficients for this final model are shown in Table 10.3 in the third column for each sample. The significant interactions accounted for an additional 7 % of variance in the U.S. sample and 9 % in the Chinese sample. This is a large moderator effect for a nonexperimental field study, according to McClelland and Judd (1993), as large as the direct effect of either protection or risk. Controls protection not only has a strong direct protective effect with regard to problem behavior involvement, as shown in Step 2, but it also buffers the impact of all four of the risk factors in the U.S. sample and of two of the risk factors—models risk and vulnerability risk—in the Chinese sample, as shown in Step 4. That is, when controls protection is high, the influence of those risk factors is attenuated. These are the first data to our knowledge to show that moderator effects obtain in a Chinese sample as well, and the magnitude of these effects in both samples is impressive. These similar moderator results add further evidence for the generality of the model across the two country samples.

The moderator effect in each sample is illustrated in Fig. 10.2, which shows the interaction of controls protection with a combined risk factors score for each sample. The combined score is the mean of the risk factor measures with which controls protection has significant interactions, four measures in the United States and two in China. The distributions of controls protection and of the combined risk score were trichotomized within each sample to define groups as low, medium, and high on those measures. The figure shows the mean MPBI score for groups of participants in the lowest third of protection scores (top two lines) and the highest third of protection scores (bottom two lines) who had low, medium, or high combined risk scores, respectively. As the figure shows, the relation of risk to problem behavior involvement within each sample (United States, dashed lines; China, solid lines) is

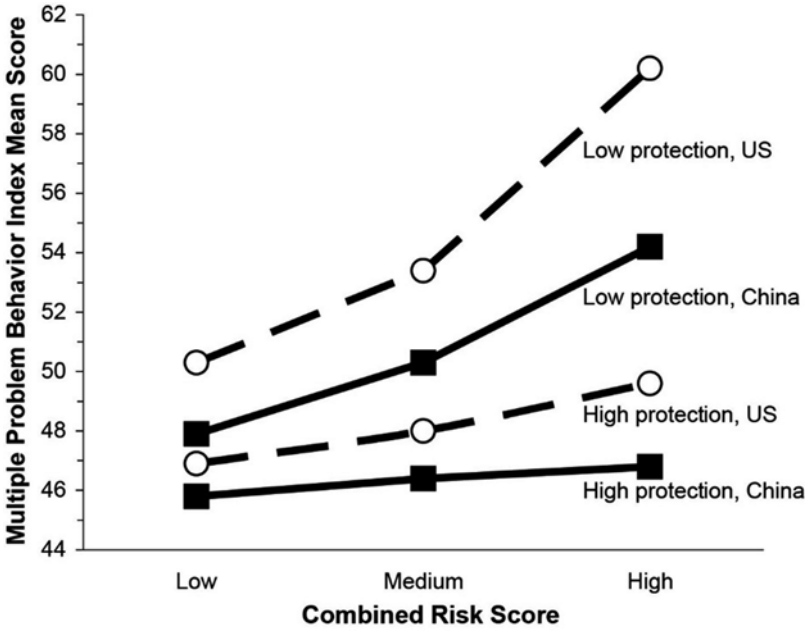

Fig. 10.2 Moderation of Combined Risk Score × Controls Protection: U.S. Sample and Chinese Sample

stronger (steeper) at low levels of protection, and it diminishes when protection is high. In other words, when protection is high, the impact of risk is attenuated. Conversely, for each sample, the difference in problem behavior involvement between low and high protection is greatest when risk is high; when risk is low, the influence of protection is less important. The figure also indicates that the lower problem behavior involvement of Chinese participants compared with U.S. participants, noted earlier, obtains at all levels of protection and risk.

Testing the Generality of the Model Across Genders

The regression models for both samples that best fit the data when boys and girls were combined are nearly the same. Because there is a substantial difference between boys and girls in mean problem behavior involvement in the Chinese sample (girls significantly lower), we tested whether the same regression model fits the data for each gender within each sample. At Step 5, we tested whether protection and risk measures had significant interactions with gender (coded -1 for boys, 1 for girls) and whether each measure was significant for both genders. All of the significant effects of protective factors, risk factors, and Protection × Risk interactions,

noted in Steps 2,3, and 4, are significant for both genders in both samples.[4] Although the gender interactions shown at Step 5 in Table 10.3 indicate that six effects are stronger for one gender than for the other in at least one sample, the magnitude of all the gender interactions is small, with *t* values around 3.

In short, the same protective factors and most of the same risk factors are significantly associated with problem behavior involvement for both boys and girls in both samples. In both samples, also, controls protection moderates the impact of risk factors for both genders. Each set of composite theoretical predictors accounts uniquely for 6 % to 8 % of variance in each sample for both genders. The strength of the effects of the protective and risk factors differs little between genders. Overall, the model is similar across samples, and now across genders within each sample. And the overall model accounts for a substantial proportion (about 45 %) of the variance in adolescent problem behavior involvement in both samples.[5]

Unpacking the Composite Measure of Multiple Problem Behavior Involvement (MPBI)

Although the primary focus of this study is on the higher order construct of multiple problem behavior involvement, the MPBI, it is important to examine the applicability of the explanatory model to the component behaviors included in the overall index. As noted earlier, their interrelations averaged .42 (United States) and .37 (China). The regression analysis described earlier was repeated for each of the three components of the MPBI separately: delinquent behavior, cigarette smoking, and problem drinking (not tabled; tables are available from the authors). The protection-risk model accounts for 41 % of the variance in delinquent behavior in the U.S. sample and 36 % in the Chinese sample, and there are significant increments of 2 % (United States) and 3 % (China) of variance accounted for by Protection × Risk interactions. In the analysis of cigarette smoking, results are similar to the previous analyses, despite lower bivariate correlations between the predictors and the criterion (.08 to .35) and less total variance accounted for: 27 % (United States) and 23 % (China). Protection × Risk interactions are relatively strong, accounting for a

[4] To determine whether the coefficient for each gender is significantly different from zero, each significant regression weight for a gender interaction at Step 5 in Table 3 (e.g., for Gender × Controls Protection: 1.62 for the U.S. sample, .86 for the Chinese sample) was added to (for girls) or subtracted from (for boys) the tabled coefficient for the relevant predictor (for controls prediction: — 6.25 for the U.S. sample, — 3.64 for the Chinese sample) to yield the coefficient representing the effect within each gender. Dividing that coefficient by its standard error gives a *t* statistic for testing its significance for that gender.

[5] A broader criterion measure of multiple problem behavior involvement that includes two more components—marijuana use and sexual activity—is available in the U.S. data. In supplementary analyses of the U.S. sample data, using the broader criterion measure, the same protective and risk factors, along with their interaction effects, account for an even greater amount—51 %—of variance.

significant increment of 7 % in each sample. Finally, in the analysis of problem drinking, despite lower bivariate correlations of the theoretical predictors with this criterion (.08 to .38) than with the MPBI, results are similar, and the protection-risk model accounts for 27 % (United States) and 26 % (China) of the variance. Protection × Risk interactions account for a significant increment of 5 % (United States) and 8 % (China) of the variance in problem drinking.

In summary, results from analyses of the three component problem behaviors in the MPBI are consistent with the earlier analysis of the composite MPBI itself. The pattern of significant protective and risk factors is nearly the same, and controls protection continues to be a consistent moderator of the various risk factors for each component behavior in each country sample.

Unpacking the Composite Measures of Protection and Risk

Each composite measure of protection or risk used in the present study summarizes influences from the individual and from the different social contexts. Composite measures, although best representing the theoretical constructs, may obscure possible differences in the relative importance of the protection components or the risk components. In an auxiliary hierarchical regression analysis, we unpacked the 7 composite predictor measures shown in Table 10.1 and entered the 29 separate protective and risk factor component subscales instead. This alternative approach permits each protective or risk factor subscale to be optimally weighted in the regression equation to maximize the criterion variance accounted for, in contrast to the equal weighting that each protective or risk factor item had in its composite measure. Now the relationship between each specific protective or risk factor subscale and the MPBI criterion measure can be seen.

In these results (not tabled; tables are available from the authors), total variance accounted for in multiple problem behavior involvement is substantially increased as would be expected—to 68 % (from 46 %) in the U.S. sample and to 62 % (from 44 %) in the Chinese sample. Increases of 11 % (United States) and 7 % (China) are due to the main effects of protection and risk, and the remaining increases are accounted for by numerous Protection × Risk interactions. (Because the ratio of sample size to number of predictor variables is small, about 5 to 1, some portion of that account is probably due to capitalization on random sampling error.) With respect to protection, in both samples, the strongest predictor (based on comparison of t values) in this unpacked, subscale analysis is an individual-level protection measure—attitudinal intolerance of deviance, a measure of controls protection. The measure of support from teachers is the next strongest protective factor in both samples. In the Chinese sample, disapproval of problem behavior by adults in the neighborhood is a strongly significant protective factor, and family controls and friends models for conventional behavior are also significant. In the U.S. sample, family support is a significant protective factor. With respect to risk, the two most important risk factors for both samples in this unpacked analysis are friends models

for risk behavior and school models for risk behavior; this is consistent with the relative strength of models risk in the main analyses. In the Chinese sample, an individual-level measure of vulnerability risk—depression—is also a strongly significant risk factor, and family models for risk behavior and neighborhood gang activity are also significant risk factors. In both samples, then, the most important component protective factors are individual-level controls and teacher support, and the most important component risk factors are models provided by friends and by peers at school.

When each of the three component behaviors of the MPBI was then analyzed with these unpacked subscale predictors, similarly high proportions of variance are accounted for in delinquent behavior (64 % in the U.S. sample, 53 % in the Chinese sample), cigarette smoking (55 % and 47 %), and problem drinking (53 % and 54 %), with many of the same protective and risk factors being significant.

Discussion

A theory-derived explanatory model of psychosocial protection and risk has been shown to provide a substantial account of variation in problem behavior involvement among adolescent samples in both the People's Republic of China and the United States. Not only was the magnitude of the account similar in both samples, but the same measures of protection and risk were related to problem behavior in the same way in both. In addition, protection was shown to serve as a moderator, or buffer, of risk in both the Chinese and the U.S. adolescent samples. Overall, the findings provide support for the generality of the explanatory model across these samples of adolescents from two very different societies.

The articulation of three types of protection—models, controls, and supports—and three types of risk—models, opportunity, and vulnerability—proved to be a useful and illuminating systematization. Assessment of those constructs, at both the individual level and in the key contexts of adolescent life, yielded theoretically relevant measures that were internally coherent, relatively independent, and significantly related to the multiple problem behavior criterion. Most important, perhaps, is that the employment of such differentiated measures in this study made it possible to determine which types of protection and which types of risk were most important in accounting for variation in adolescent problem behavior, and which types of protection moderated which types of risk. This kind of theory-based differentiation should have salutary implications for future research on risk and protective factors.

The explanatory model and its construct-relevant measures also make it possible to examine the relative importance of protection versus risk as influences or determinants of adolescent problem behavior. The data from the hierarchical regression analyses in Table 10.3 indicate that the composite measures of protection accounted for 8 % (United States) and 7 % (China) unique variance, and the composite measures of risk accounted for 8 % (United States) and 6 % (China) unique variance. In terms of their direct effects, protection and risk are essentially equivalent influences

on adolescent problem behavior in these samples. It is important to note, however, that protection also has an indirect effect on adolescent problem behavior, through its moderation of the impact of risk. The moderator effect of protection, as shown at Step 4 in Table 10.3, adds an additional increment of 7 % (United States) and 9 % (China) to the explained variance. Obviously, these findings reflect the particular measures used in this study and the particular criterion involved, but they do make a compelling case for rethinking the preoccupation with risk (and risk reduction) among researchers and interventionists in this field, and for giving greater attention to protection (and promotion) in efforts to understand and influence adolescent involvement in problem behavior.

Beyond the important role played by protection in general, it is a key finding of this study that the type of protection that is most influential in regard to adolescent involvement in problem behavior has to do with the regulation of transgression, that is, what we have called controls protection. Compared with models protection and support protection, it not only has the strongest direct effect in both country samples, but when all measures are in the final regression equation, it is the only type of protection that moderates risk, indeed, all the types of risk that were measured in the U.S. sample and both models risk and vulnerability risk in the Chinese sample (see Table 10.3).

Among the significant component subscales of controls protection, when the construct was unpacked, were attitudinal intolerance of deviance at the individual level and, in the Chinese sample only, two social context subscales—family controls and neighborhood disapproval. Historically, attitudinal intolerance of deviance has been a strong and consistent individual-level predictor of adolescent problem behavior involvement (e.g., Jessor et al., 1991; Jessor & Jessor, 1977). The greater relevance of family controls to adolescent problem behavior in the Chinese sample versus the U.S. sample appears consistent with Chinese "cultural expectations of filial piety and kin obligation" (Wong, 1995, p. 53), with numerous studies showing that Chinese parents are more controlling and authoritarian compared with Western parents (Dornbusch et al., 1987; Kelley, 1992; Lin & Fu, 1990) and that parental authoritarianism may have a positive effect on social adjustment and academic achievement in Chinese children (Chen et al., 1997; Ho, 1986); also, there may be in Chinese society "strong neighborhood organizations" (Rojek, 2001, p. 89) and, more generally, a "long tradition of social organization and social control" (Rojek, 2001, p. 101).

Although support protection was not a significant predictor in the final regression equation for the main analysis of multiple problem behavior involvement, component subscales of that construct were shown to account for problem behavior involvement when the composite measure was unpacked. Among the four support protection subscales, perceived teacher support was a significant protective factor in both the Chinese and the U.S. samples, and in the United States, but not in China, perceived family support was also protective against problem behavior. The importance of "the behavior and attitudes of teachers" (Greenberger et al., 2000, p. 385) and of the role of teachers in adolescent development in China (Chen et al., 2003) is consonant with the teacher support subscale finding in the Chinese sample.

In the contemporary literature on adolescent socialization, emphasis has been placed on two protection constructs similar to those we have specified in our explanatory model: connectedness and regulation (Barber, 1997; Barber & Olsen, 1997); the former is related to our support protection construct, and the latter to our controls protection construct. With regard to controls protection, Barber and Olsen (1997) noted that "regulation experienced in the family and/or in other social contexts would be protective against externalized problem behaviors" (p. 290), a comment consistent with our own findings. What the present study adds is a demonstration of the relatively greater importance of controls protection, compared with support protection, in regulating problem behavior involvement in these adolescent samples.

In contrast to the relatively weak role of models protection as protective against problem behavior involvement, models risk emerges as the most important type of risk for involvement in problem behavior in both country samples. Peer models for risk behavior and schoolmate models for risk behavior have significant weights in the unpacked analyses of subscales, as would have been expected from the large literature on peer models as a key risk factor for adolescent problem behavior in the United States (e.g., Costa et al., 1999; Greenberger et al., 2000; Jessor et al., 1998b; Jessor et al., 1995; Kandel, 1985; Oetting & Beauvais, 1987) and among Chinese adolescents (e.g., Greenberger et al., 2000).

This effort to examine the reach of an explanatory model has engaged adolescents from a society markedly different from the United States in economic system, social organization, cultural traditions, family structure, and so on—a severe challenge to demonstrating the generality of a theoretical framework. Data from the AHDQ documented numerous mean differences between the sample of Chinese adolescents and the sample of U.S. adolescents, and many of those were described at the outset of the Results section. In addition to this eclectic approach to describing differences between the two samples, the samples were also described in the language of the theoretical framework, that is, in terms of its constructs of protective factors, risk factors, and problem behavior. That description showed in Table 10.2 that problem behavior was less prevalent in the Chinese sample than in the U.S. sample, as expected, and that, as would then be expected from the theory, protection was higher in the Chinese sample and, with some exceptions, risk was lower. This latter theory-based approach to description made clear not only that the two samples came from social contexts that differed markedly on a variety of obvious characteristics, but that the samples differed significantly in mean levels of the theoretical constructs, posing a further challenge to demonstrating generality. That the explanatory model was in many ways invariant across the two samples, despite these differences, strengthens the claim for its generality.

It is obvious, however, that the complexity of the two societies and the broad differences between them in traditional values and culture cannot be fully captured by a selected set of measures of protection and risk, nor should the emphasis on the explanatory model having generality across the samples obscure important issues that require further analysis. For example, the sociodemographic measures—gender, grade in school, and intact family—were all significant in the final regression model

in the Chinese sample but not in the U.S. sample, and the increment in variance explained by the measures of protection and risk was larger in the U.S. sample (40 %) than in the Chinese sample (32 %). Such issues deserve additional attention.

The inferences that can be drawn from the findings we have presented are constrained by several of the study's limitations. First, as we pointed out in the Methods section, it is essential to emphasize that our samples were drawn from local, urban settings in each country, and they do not represent China or the United States as nations. We have tried throughout to refer to the "Chinese sample" and the "U.S. sample" to forestall unwarranted conclusions about Chinese and U.S. societies as a whole. The data are appropriate only for inferences about the samples assessed and the limited, urban, school-based populations they may represent. A further limitation inherent in all cross-national research is the possibility that, despite the care taken with the translation process, some of the measures could have different meanings for the Chinese and the U.S. adolescent respondents. This issue of the meaning equivalence of measurement across groups is a refractory one (see Knight & Hill, 1998) that resists easy resolution (and indeed is one that obtains even between any two individuals in the same group), and it cannot be ruled out entirely. Knight and Hill (1998) urged that evidence in support of equivalence be provided by comparison across groups of the reliability coefficients of measures, as well as of their validity coefficients. The similarity across the U.S. and Chinese samples of the alpha reliability coefficients, shown in Table 10.1, for both the composite and the subscale measures, and of the bivariate "validity" coefficients for the composite measures, shown in Table 10.3, is supportive in that regard. In addition, the congruent pattern of explanatory findings in both country samples, and for both genders, is a source of further reassurance about meaning equivalence.

A third limitation stems from the fact that the measures of both the predictor and criterion variables are based on self-reports, and the obtained relationships could have been influenced by common method variance. With regard to this limitation, we were able to compare participants' self-reports with independent parent reports on similar measures. Parents of a subsample of the adolescent participants ($n = 316$, United States; $n = 347$, China) completed a short questionnaire assessing protective factors and risk factors in their children's social contexts—family, school, peers, and neighborhood. Measures parallel to the measures from the child's AHDQ could be constructed for three protective factors and three risk factors. Correlations of student self-reports and the corresponding parent reports revealed a significant degree of consistency, with most of the correlations ranging between .15 and .34 in both the U.S. and Chinese samples. To that extent, they constitute some indication of external validity of the self-reports.

It is possible, also, to argue that the veridicality of the self-reports might differ between the two samples given the Chinese cultural emphasis on conformity and normative adherence and, hence, the greater social undesirability of acknowledging normative transgressions such as problem behavior. In this regard, every effort was made to assure participants about the confidentiality of their questionnaire responses and the privacy of the data. In addition, the parent substudy indicated that the

parent-child correlations were similar in both China and the United States. Furthermore, it could be counterargued that the same Chinese cultural tradition of normative adherence would militate against giving deceptive responses on a questionnaire, a normative transgression in itself. Although it is not possible to rule out differential veridicality in the Chinese-U.S. samples' self-reports of problem behavior, it needs reminding that the fundamental concern of the study is with relations among variables rather than with their absolute mean levels, and in that regard the findings are compellingly similar in both samples.

With respect to the analytic method used, ordinary least squares (OLS), the substantial skewness of the problem behavior criterion measure could raise a question about whether OLS is appropriate, and especially whether its application might yield interactions that are in fact spurious. A log transformation of the criterion measure did reduce the skewness, and a further OLS analysis yielded the same interactions. Beyond this, we also undertook a tobit analysis, considered more appropriate for use with skewed outcome measures. The results of the tobit analysis continued to show significance for three of the four Protection × Risk interactions in the U.S. sample; the fourth had a significance level of $p = .06$. In the Chinese sample, one of the two significant Protection × Risk interactions retained significance in the tobit analysis. These findings strengthen conviction that moderator effects do indeed obtain in both samples and cannot be considered spurious.

Note should be taken of the differential participation rates of the two samples: 98 % for the Chinese sample and 74 % for the U.S. sample. Although this difference could suggest a possible source of differential bias, the rate for the Chinese sample is what is extraordinary, and the U.S. sample's participation rate is generally accepted as satisfactory for urban, school-based samples requiring signed parental permission. Finally, of course, this is a report of a cross-sectional study; a longitudinal design will be required for more compelling inference about the influence of protection and risk on adolescent involvement in problem behavior.

Each of these limitations is important to acknowledge as a possible constraint on the inferences that can be drawn from the findings reported. Nevertheless, the study—an exemplification of theory-based cross-national research—has yielded compelling support for the cross-national generality of the protection-risk explanatory model in accounting for adolescent problem behavior. It has also drawn attention to the important role of protective factors as both direct and indirect regulators of problem behavior involvement. A greater focus on the delineation and assessment of protection in future research in this field would be a salutary outcome of the present effort and a significant contribution to the design of more effective intervention initiatives.

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