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ORIGINAL PAPER

An Integrated Model of Suicidal Ideation in Transcultural Populations of Chinese Adolescents

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Abstract This study tested the model of suicidal ideation, incorporating family and personal factors to predict suicidal ideation with hopelessness as a mediating factor in the Hong Kong sample, to a sample in Shanghai. Using MGSEM, the study aims to investigate the personal correlates and the family correlates of suicidal ideation in Hong Kong and Shanghai adolescents. We integrated the family ecological and diathesis-stress-hopelessness models of suicidal ideation in connecting the correlates. A cross-sectional design was used. The full model achieved metric invariance and partial path-loading invariance. Family functioning and social problem solving negatively predicted hopelessness or suicidal ideation in both the Hong Kong and Shanghai adolescents. The results supported an integrative approach in facilitating parent-adolescent communication and strengthening family functioning, and reducing the use of negative social problem-solving styles in adolescent suicide prevention.

Keywords Suicidal ideation · Family functioning · Social problem solving · Emotional competence · Hopelessness · Chinese adolescents

Introduction

Suicide has become a leading cause of death among adolescents in many Asian countries (World Health Organization 2014), of which the Asian region has accounted for half of the annual global cases of suicide. With reference to the global suicide rate of around 11.4 per 100,000 (World Health Organization 2014), Hong Kong has a comparable rate of 12.3 per 100,000 in the year 2013 (HKJC Centre for Suicide Research and Prevention 2010), while the mean suicide rate of China in the years 2009–2011 was 9.8 per 100,000 (Wang et al. 2014). Although we can observed a significant decrease in the suicide rate in China over the past decade (from 23.2 per 100,000 in the late 1990s), suicide is still the second most common cause of death among people in emerging adulthood, and the attention and research on suicide in China is far from adequate. Shanghai is China's economic centre and rivals Hong Kong as major financial and trade hub in the greater China region. People from both Shanghai and Hong Kong, who are mainly ethnically Chinese, are still under the significant influence of Confucian values, of which self-harm is prohibited for violating the virtue of filial piety. With a similar cultural and economic environment, we tested the same model of suicidal ideation in students from Hong Kong and Shanghai.

A Model for Suicidal Ideation in Adolescents from the Family Ecological Perspective

It is commonly acknowledged that suicidal ideation, planning, suicidal attempts, and eventual suicide occurs on a continuum, with severity and risk increasing and prevalence decreasing from the first to the last (Yip et al. 2004).

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Intervention efforts in the early and less severe stages may prevent more life-threatening events from happening. It is thus crucial to identify predictors of suicidal ideation, so that early detection and prevention can take place. We use the ecological systems theory as the framework to embrace the elements in the current model of suicidal ideation.

From the ecological systems perspective (Bronfenbrenner 1979), personal attributes and family correlates are the main factors influencing behaviors at the ontogenic and micro-systemic levels, and these are regarded as salient factors in suicide-related research. For instance, Ellis and Bernard (2006) have stressed the impact of emotional competence, social problem solving, and hopelessness on the individual's suicidal ideation. Other research using family-centered theories emphasizes how family processes, such as family functioning and parent-adolescent communication, exert an influence on suicidal ideation (Epstein et al. 1993). Only a limited number of studies have considered cognitive and familial correlates of suicidal ideation in Chinese communities (Kwok and Shek 2010).

Personal factors of interest are emotional competence and social problem solving. Various models of suicidal behavior, for instance Schotte and Clum (1982)'s diathesis-stress-hopelessness model of suicidal behavior or Clum et al. (1979)'s model of parasuicidal behavior, have posited that the inability to figure out alternatives to solve problems when encountering high life stress increase the potential for suicide. Studies have reported that the social problem-solving style of an individual is significantly related to hopelessness and suicidal risk (D'Zurilla et al. 1998).

Another personal factor of concern is emotional competence, which is believed to protect individuals from suicidal behavior under stressful situations (Cha and Nock 2009). Past studies have revealed that people with lower emotional competence, and hence a poorer ability to tolerate or modulate negative affect, are more likely to engage in suicidal behavior (Zlotnick et al. 1997). On the other hand, people with better emotional competence, with a better ability in understanding and deriving meaning from their emotions and in utilizing emotions as a guide for their behavior, are less affected by severe stress and have lower levels of suicidal ideation when compared with those poorer in this domain (Cha and Nock 2009). These two factors serve as potent correlates towards stressful situations and suicidal behaviors, yet studies on these two factors are limited in suicide-related research having Chinese samples. Along with the findings from the previous studies, *we posit that social problem-solving and emotional competence have negative associations with suicidal ideation and hopelessness.*

Hopelessness is a potent predictor of suicidal risk, from suicidal ideation to actual suicide, and is thus of crucial relevance for studies on suicidal ideation. A hopeless person's constantly negative outlook on life, and the misconception of having inevitable and irreversible dreadful consequences for one's problem, can easily draw the individual to the idea of suicide as the only way out (Beck et al. 1974). Past research has shown that hopelessness mediates the effect of other cognitive variables (Abramson et al. 1998) as well as family factors on suicide (Kwok and Shek 2010). Though the role of hopelessness is well studied in suicide research, the inclusion of hopelessness in our model would clarify the effect of personal and familial correlates. Even though these predictors may not exert a direct effect on suicidal ideation, they may have an influence indirectly through hopelessness.

Family members, especially parents, act as role models for their children. Past research, from a family ecological systems perspective, supports the notion that family functioning and parent–child communication are vital in predicting an adolescent's risk of suicide (Epstein et al. 1993). These are prominent factors in predicting suicide in Chinese culture (Chan et al. 2009; Qin and Mortensen 2001), of which is characterized by its hierarchical nature and family-centered orientation (Kwok and Shek 2009). With such interdependent relationships and salient hierarchy in family-oriented Chinese families, disruption in family structure and dynamics may lead to profound disturbance in family members (Qin and Mortensen 2001), and as such, familial influence deserves particular attention in suicide behavior studies of Chinese adolescents. Kwok and Shek's (2010) work has found a negative correlation of family factors, i.e., family communication and functioning, with suicidal ideation and hopelessness. *We would posit that family functioning would have negative association with hopelessness and suicidal ideation in our current samples.*

Our goal is to test the current model in the Chinese students from Hong Kong and Shanghai. Despite the similarities in the aforementioned aspects, we have to be cautious about the potential regional differences found across Hong Kong and Shanghai samples. The different historical background of Shanghai and Hong Kong may imbue them with distinctive cultural features. Hong Kong was once a British colony but it is now a Special Administrative Region of China with a capitalist culture; Shanghai, on the other hand, is a large commercially oriented city under the direct control of the one-party Communist government. We should be cautious in generalizing our model from one sample to another. In our data analysis, we have used multiple-group structure equation modeling (multiple-group SEM) as generalizability check of the current model.

To summarize, this study aimed to test the model of suicidal ideation, incorporating family and personal factors to predict suicidal ideation with hopelessness as a mediating factor in the Hong Kong sample, to a sample in Shanghai. Using multiple-group SEM, we would examine

the existence of regional differences when adopting the current model in samples from Hong Kong and Shanghai.

Methods

Sample and Procedure

The project was approved by the internal research review board of the affiliated university before it was implemented. The data were collected between January and February in 2012 adopting a convenience sampling method. The sample from Shanghai was collected from local government-run schools after having obtained consent from the principals of the schools and parents of the participants. In Hong Kong, we successfully approached local secondary schools with the help of agencies that were providing social work service to the schools. Participants and their parents were requested to complete consent forms before they filled in the questionnaires anonymously. It was stressed that participation in the study was voluntary, and nonparticipation would have no effect on grades. The objective of the study and the confidentiality issue were explained on the consent form and by the research assistants who were present during the data collection sessions.

A sample of 567 secondary school students from Shanghai, ranging from pre-secondary to year three of junior secondary school (equivalent to Grade 6–9 in the US education system) was finally obtained, of which 527 questionnaires collected from this group of students were considered valid after discarding questionnaires with no answer provided (total missing). A total of 557 questionnaires were collected in the sample from Hong Kong, with the respondents ranging from secondary school year 1–4 (equivalent to Grade 7–10 in the US education system). After discarding questionnaires with no answer provided (total missing), 536 valid questionnaires remained.

More than half of the participants were male in Hong Kong (58.4 %) and Shanghai (52.4 %) students, with the others were female. All students were in the age range of 11–18. The age and the gender composition of the two groups did not shown significant difference. The questionnaire comprised the following measures.

Measures

Emotional Competence

We used the 12-item short form of the Chinese Emotional Intelligence Scale (C-EIS-R, Chan 2003) to assess participants' emotional competence in four sub-domains, namely self-management of emotions, social skills, empathy, and utilization of emotions. Participants were asked to indicate their extent of agreement towards the statement on a 5-point Likert scale, with 1 being "Strongly disagree" and 5 to "Strongly agree". A higher item-average score indicates higher level of emotional competence. Overall, the C-EIS-R demonstrated a moderate reliability in this study in both the samples from Shanghai and Hong Kong, with $\alpha = .738$ and $\alpha = .783$, respectively.

Social Problem Solving

The 25-item abridged Chinese version of the Social Problem Solving Inventory (C-SPSI-R, Siu and Shek 2005) was used to assess participants' social problem-solving styles. The four factors in the scale include rational problem solving, negative problem orientation, impulsiveness/carelessness, and avoidance, of which the latter three indicate a maladaptive orientation (Siu and Shek 2005). Participants were asked to reveal the extent of agreement between the statements and their self-perception regarding their problem-solving style on a 5-point Likert scale, ranging from 1 "Not at all true of me" to 5 "Extremely true of me". The averaged item scores resulted in sub-scale scores, with higher score indicating a higher inclination towards a particular problem solving style. C-SPSI-R showed moderate to high reliability in the present study with $\alpha = .740$ and .838 for participants from Shanghai and Hong Kong, respectively.

Family Functioning

Scales from three instruments were employed in the present study: We assessed participants' perception of family functioning using an indigenous measuring instrument for family functioning in the Chinese family, the Chinese Family Assessment Instrument (C-FAI) developed by Shek (2002), as well as the Father-Adolescents Communication Scale (FACS) and Mother-Adolescent Communication Scale (MACS) devised by Shek et al. (2006). We selected four of the sub-scales, namely: Mutuality, conflict and harmony, parental concern, and parental control from C-FAI. Participants were asked to rate the similarity between the statements and their real life situations on a 5-point Likert scale ranging from 1 "Very much not similar" to 5 "Very similar". Items of the FACS and the MACS allowed answer options on a 4-point Likert scale with 1 being to "Strongly disagree" and 4 to "Strongly agree". Participants were asked to rate their level of agreement to the statements. The sub-scale scores were obtained by averaging the item scores, and a higher score was taken as indicating a higher level of perceived family functioning in that domain. Overall, these scales obtained high reliability for both participant groups in the study (C-FAI: $\alpha = .908$ for Shanghai and .943 for Hong Kong;

FACS: $\alpha = .892$ for Shanghai and .936 for Hong Kong; MACS: $\alpha = .899$ for Shanghai and .937 for Hong Kong).

Hopelessness

The 10-item hopelessness sub-scale of Chinese version of the Hopelessness Scale (C-HOPE, Shek 1993) was used to assess the level of hopelessness of the participants. The participants were asked to indicate how much they agreed with the statements on a 4-point Likert scale, ranging from 1 "Strongly disagree" to 5 "Strongly agree". A higher score indicated a higher level of hopelessness. The scale generally showed good internal consistency for Shanghai ($\alpha = .835$) and the Hong Kong group ($\alpha = .884$).

Suicidal Ideation

The 13-item suicidal ideation sub-scale (C-SIS) of the Suicidal Risk Scale for Hong Kong students (Tse and Bagley 2002) was adopted to assess the suicidal ideation of our adolescent participants. Participants gave their ratings on a 4-point Likert scale to indicate their extent of agreement to the statements, with 1 being to "Strongly disagree" and 5 to "Strongly agree". A higher score was taken as suggesting a higher level of suicidal ideation in the participants. The reliability of the scale was good for both Shanghai ($\alpha = .910$) and Hong Kong group ($\alpha = .925$).

Data Analysis

Multiple-Group Analysis

IBM SPSS Amos 20.0 was used to perform structural equation modeling (SEM) in evaluating the models. Overall, the confirmatory factor analysis (CFA) was first conducted to check for the adequacy of the factor loadings and the model fits of the measurement model. Then the structural model was tested with structural paths included. Both the measurement and structural models were tested for both the Hong Kong and Shanghai groups using multiple group analysis. The overall model fit was determined by the comparative fit index (CFI), root-mean-square error of approximation (RMSEA), and standardized root mean square residual (SRMR); that with CFI higher than .90 (Bentler 1992), while RMSEA and SRMR lower than .08 indicate good model fit. In our model, we specified three latent variables, namely family functioning; emotional competence and social problem solving. The latent variables here were the scale scores, while the indicators were represented by the parcels consisted of the items in the sub-scales.

Results

Intercorrelation Among Predictors in Hong Kong and Shanghai Sample

All family functioning indicators were intercorrelated in both the Hong Kong and Shanghai samples, with coefficients ranging from moderate to high (.40–.70). All indicators related to emotional competence significantly correlated with each other in both samples, with coefficients between .04 and .30. Among the four social problem-solving indicators, the three maladaptive problem-solving styles correlated with each other (coefficients ranging from .30 to .50), whilst, as expected, rational problem solving did not correlate with the other three maladaptive counterparts in both samples. We examined the correlations of the indicators of hopelessness and suicidal ideation in both samples. Family functioning generally showed significantly negative relationships with both variables in both the Hong Kong and Shanghai samples in a moderate range (.30 to .50). All indicators of emotional competence except empathy, were significantly and negatively correlated with both suicidal ideation and hopelessness in the Hong Kong sample, but that held true only for social skills in the Shanghai sample, whilst other indicators correlated either non-significantly or marginally significantly at the .05 level. Indicators of social problem solving showed significant correlations with suicidal ideation and hopelessness in both samples with moderate strength (with coefficients ranging from .10 to .30).

Multiple-Group Structural Equation Modeling

For the sake of testing the generalizability of the current model, a multiple-group structural equation modeling (multiple-group SEM) analysis was conducted to examine the invariance across groups. The following six types of invariance that were basically adopted from the suggestion by Vandenberg and Lance (2000), were tested for our model. These models are configural invariance (pattern of factor and factor loadings invariance), metric invariance (factor loading invariance), path-loading invariance, scalar invariance (intercept of indicators invariance), residual invariance, and structural invariance models (factor variance and covariance invariance). The constraints in the former models were retained in the latter, and hence more constraints were imposed in the model than in the former. The least constrained model, hence the configural invariance model, moderately fit the data as revealed by the model fit indices, with CFI = .92, RMSEA = .05, and SRMR = .07, though χ^2 (250) = 831.62, $p < .001$. The configural invariance supports that there is a similar pattern

of factor loadings across two groups. Metric invariance was also established for the model showing a statistically indifferent fit to the data as the configural invariance model, $\Delta\chi^2$ (13) = 22.29, *ns*, and this indicated the invariance of factor loadings across two groups.

The path-loading invariance model fit the data adequately, and produced CFI = .92, RMSEA = .05, and SRMR = .07, though χ^2 (270) = 872.44, $p < .001$, yet it showed significant differences with the metric invariance model, $\Delta\chi^2$ (7) = 18.53, $p < .05$, suggesting that the complete path-loading invariance was significant poorer than the less-constrained metric invariance model and cannot be supported. Since the model fit was satisfactory, we tested for the partial path-loading invariance and would report it in the subsequent part. The scalar invariance model and those models with more constraints, however, fit the data poorly and showed significant differences with the path-loading invariance model, $\Delta\chi^2$ (18) = 1960.68, $p < .001$. The scalar non-invariance across groups suggested differences in the meaning of the scores across groups, and therefore mean response comparison across the two regional samples became impossible. The sequential test for the more constrained models (i.e. residual and structural invariance) was dropped as scalar invariance was not established.

Difference in Path Loadings Across Groups

To investigate the plausible existence of partial path-loading invariance and the paths that showed variance across groups, seven comparison models were examined to compare with the metric invariance model. A different path was constrained to be equal across groups in each of the partial path-loading invariance groups. Two of the models showed a significant difference in the Chi square difference test with the metric invariance model. They were the models with the path from emotional competence to hopelessness, $\Delta\chi^2$ (1) = 7.39, $p < .01$, and the path from hopelessness to suicidal ideation, $\Delta\chi^2$ (1) = 4.65, $p < .05$, being constrained. The difference suggested that the explanatory strength of these paths were different. When these paths were allowed to vary freely across groups, the partial path-loading invariance model showed comparable and statistically non-different Chi square with the metric invariance model, $\Delta\chi^2$ (5) = 5.59, *ns*, and thus the partial path-loading invariance was supported.

Our data supported that hopelessness, being the most prominent predictor of suicidal ideation, mediated the effect of most of the diatheses under study, yet we observed different mediational patterns between the two groups. We followed Baron and Kenny (1986)'s three criteria in assessing the validity of an indirect effect to be a mediating effect: (a) the path between the predicting variable (i.e., family functioning, emotional competence, and social problem solving) and the mediator (i.e., hopelessness) should be significant; (b) the path between the mediator and the outcome (i.e., suicidal ideation) should be significant; and (c) the total effect of the predicting variable and the outcome should be significant. Full mediation was found with social problem solving as the predicting variable in both the Hong Kong sample, 95 % CI .06, .22, $p < .01$, and the Shanghai sample, 95 % CI .13, .35, $p < .01$, yet different mediational patterns can be observed for another two predicting variables. For instance, family functioning was completely mediated by hopelessness in the Shanghai group, 95 % CI −.63, −.38, $p < .01$, but was only partially mediated in the Hong Kong group, 95 % CI −.47, −.29, $p < .001$; emotional competence was fully mediated by hopelessness in predicting suicidal ideation in the Hong Kong sample, 95 % CI −.19, −.03, $p < .05$, but no indirect effect between emotional competence and suicidal ideation was observed in the Shanghai sample, 95 % CI −.07, .17, $p = .38$.

Family functioning and social problem-solving significantly and negatively predicted hopelessness or suicidal ideation (or both) in both the Hong Kong and Shanghai groups (see Fig. 1), and hence supported our hypotheses about family functioning and social problem-solving in negatively predicting the outcome variables. Among the three diatheses of concern, family functioning was the strongest predictor of hopelessness in both samples (in the Hong Kong group, $\beta_{FF} = -.51 > \beta_{SPS} = -.19 > \beta_{EQ} = -.14$; in the Shanghai group, $\beta_{FF} = -.56 > \beta_{SPS} = -.26 > \beta_{EQ} = .06$, in direct effect). Although the effect of family functioning on suicidal ideation was mediated by hopelessness, it was still exerting marginally significant or significant direct effect on suicidal ideation in both the Shanghai ($b = -.11$, $p = .08$) and the Hong Kong group ($b = -.13$, $p < .01$). However, something intriguing was observed in emotional competence when a significant yet positive direct effect was found from emotional competence to suicidal ideation in the Shanghai group ($b = .13$, $p < .05$) with no significant effect found from emotional competence to hopelessness ($b = .08$, *ns*); hence the hypothesis about negative prediction of emotional competence on the outcomes variables was not supported in Shanghai sample.

Discussion

This study corroborates previous studies in supporting that the familial factors (i.e., family functioning and communication) and cognitive factors (i.e., social problem solving) are playing vital roles as diatheses in influencing suicidal ideation in adolescent with their effect being

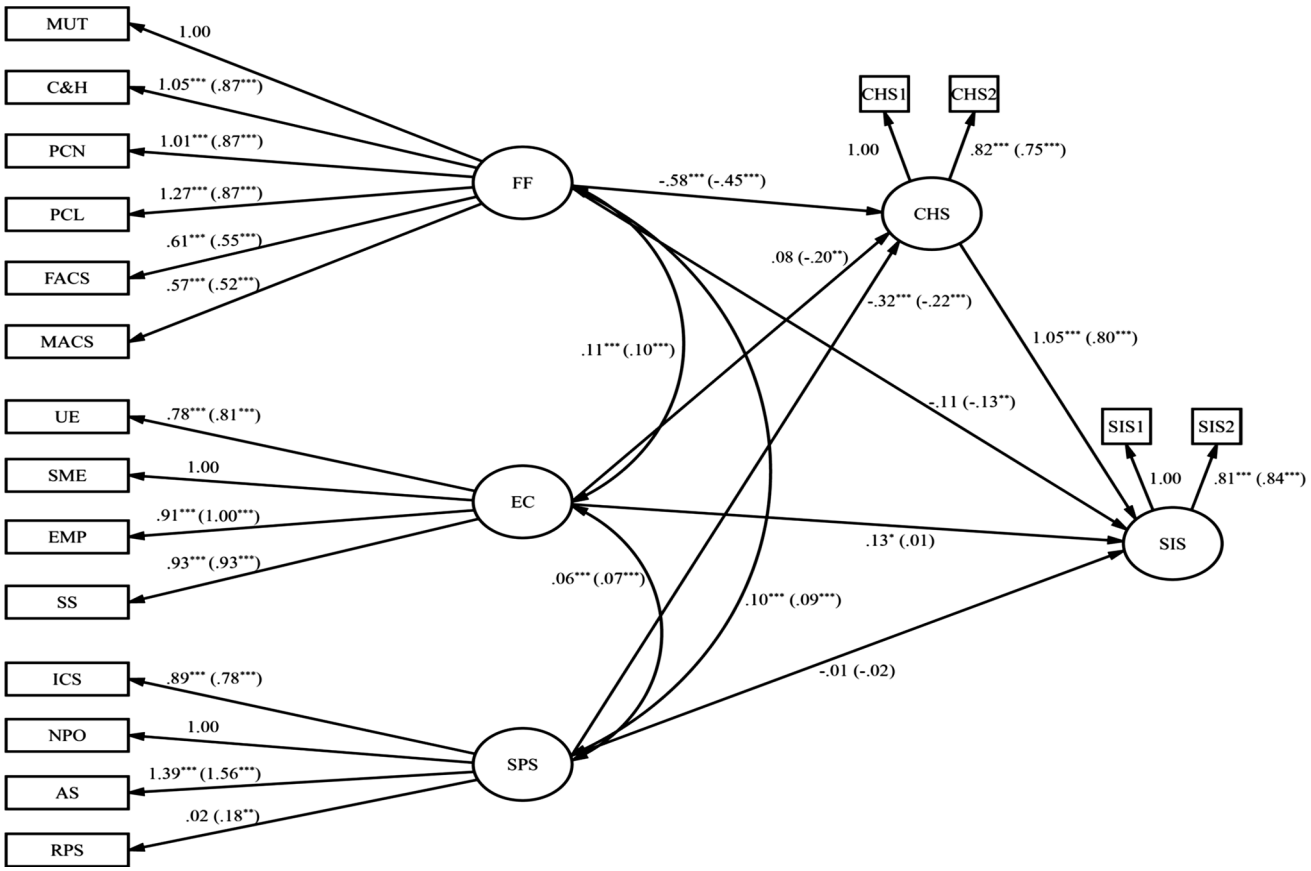

Fig. 1 Testing the invariance of the model of suicidal ideation with hopelessness mediating the association between the diatheses and suicidal ideation across Hong Kong and Shanghai adolescents. *Note* Coefficients showed are the unstandardized regression weights for Shanghai group (with the unstandardized regression weights for Hong Kong group showed in the parentheses). ***$p < .001$, **$p < .01$, *$p < .05$

mediated by hopelessness. The result supported our conjectures that the family functioning and social problem-solving were negatively associated with hopelessness and suicidal ideation. Overall, the MGSEM analysis supported that our model of suicidal ideation can be generalized across the two samples from different Chinese regions, yet discrepancy lay on the predictive linkage from the emotive factor and hopelessness and suicidal ideation across the samples.

Generalization of the Current Model Across Two Chinese Regions

Our model of suicidal ideation seems to be applicable to both the Hong Kong and Shanghai samples, as supported by the adequate model fit. This echoed our rationale in incorporating family-related factors in the model of suicidal ideation. Chinese families are generally characterized by a strong interdependence between family members, and the family forms a basic unit of support. It is of crucial importance in studies relating to suicidal ideation, especially one pinpointing Chinese culture, of which family serves as a prominent protective factor towards one's psychological health and plays a more important role in predicting suicide than in Western culture (Chan et al. 2009; Qin and Mortensen 2001). This study also echoes D'Zurilla et al. (1998) that orientation to a more adaptive social problem-solving style can negatively predict one's level of hopelessness and have an indirect effect on inclination to suicidal thought.

Emotional competence was found to be significantly stronger in predicting hopelessness in the Hong Kong sample than in the Shanghai sample; and more intriguingly, a significant and positive prediction was observed in the Shanghai group from emotional competence to suicidal ideation. We suspect it is a reflection of the difference in the use of emotion regulation strategy. In traditional Chinese culture, the expression of emotion is discouraged (Shek 2002), and emotion suppression is utilized as an emotion-regulation strategy (Soto et al. 2011). This contrasts with the conventional notion of the linkage between inhibited emotions and poor mental health. Hence, emotion

suppression may not necessarily lead to adverse psychological consequences in Chinese. In addition, Shanghai adolescents with a higher emotional competence may be more empathic and sensitive to others' emotional expression. Being empathic and sensitive to others' needs and emotions, they may take others' emotion as their own and be too emotionally involved in others' sorrow and misery. This may increase their emotional burden, contributing to their negative feelings and unhealthy functioning (Kwok and Shek 2010). Hence, having higher emotional competence may contribute to higher suicidal ideation in Shanghai adolescents.

Our homogeneity test of the current model was dropped after failing to establish scalar invariance. Either systematic response bias or response threshold differences that revealed group differences can contribute to the invariance of intercept (Schmitt and Kuljanin 2008). Since the focus of the current paper is not on comparing the mean response of the scale items, the invariance of intercept would not hamper the insightfulness of the current model providing a directional outline on the interplay of emotional, cognitive, and familial factors with hopelessness and suicidal ideation.

Practical Implications

Our model of suicidal ideation provides further support that the embracement of protective factors is vital in the detection of individuals at risk of suicide. Besides paying attention to risk factors, such as a high level of hopelessness and maladaptive ways of social problem-solving, health-care professionals should also keep track of the inadequacy of protective factors, for example a lack of mutuality and communication with other family members or adaptive social problem-solving.

Beyond detection of suicide ideators, the promotion of positive living may make much practical sense in suicide prevention efforts. As Gutierrez (2006) has said, suicidal risk, being a fluid construct, is difficult to detect because it can change from one moment to the next, thus suicide prevention effort on adolescents should focus on the familial, emotive, and cognitive factors of the population as a whole, instead of solely considering the high-risk adolescents. The incorporation of cognitive and familial protective factors provides health-care professionals with easy mechanisms to employ. These mechanisms for suicide prevention can be generalized to the Chinese population at large in promoting positive living, rather than being taken as a remedial measure in dealing with ideators, who have already showed significant pathological symptoms. The results of the current study supports the integration of elements in enhancing parent-adolescent communication and strengthening family cohesiveness, and facilitating the use of adaptive social problem-solving styles and reducing sense of hopelessness in the interventional efforts, as suggested in past research (Kwok and Shek 2010). The approach to enhancing emotional competence through the promotion of social skills, empathy, self-management and utilization of emotions may work for Hong Kong adolescents, yet it would take further efforts to explore what the appropriate measures would be for Shanghai adolescents, as well as for adolescents from other mainland cities.

Limitations of the Current Study and Suggestions for Future Research

The current study has several drawbacks. Firstly, differences were observed between samples from two regions, yet the underlying attributes that contribute to the differences between them has not yet been explored. These attributes can be the level of westernization or individualistic inclination, the extent of influence of Confucian teaching in that particular culture or collectivistic inclination, or a combination of both. We have attempted to explain the differences observed across our sample, yet future research should try to determine the underlying cultural attributes and account for them in the model to increase the power of generalization of the model.

Secondly, past research has suggested that the correlates of suicidal behavior may be different across the clinical and non-clinical population (D'Zurilla et al. 1998), yet the clinical variables have not been assessed and controlled in the current study. The incorporation of measurement in depression and anxiety would help to control for this in future research. What comes next is our choice of indicators for the variable of emotional competence, as different cultures may deviate in their utilization of emotion regulation strategy. This point is worth further investigation and validation.

The connection between emotional competence with hopelessness and suicidal ideation was equivocal, as revealed by the difference across the Shanghai and Hong Kong sample. Further research may wish to take a closer look on the impact of emotive factor on suicidal behavior, and again the incorporation of the cultural variables may help to resolve the issue.

Conclusion

The current model of suicidal ideation aims to contribute to the practice of suicide prevention in two respects. First, we would like to offer a more positive perspective for intervention and prevention by integrating protective factors. Conventional practice focuses solely on medical and environmental risk factors that put the prediction of future

suicide behavior in a remedial and incomprehensive manner. Second, the model provides health-care professionals with theoretical and empirical variables that can be put into practice as part of their suicide prevention efforts. The result of the current study revealed the generalizability of the current model, yet the equivocal association between the emotive factor and suicidal behavior found in the current study may need to be addressed with cultural elements taken into account.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Standard All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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