



Childhood Neglect and Adolescent Suicidal Ideation: a Moderated Mediation Model of Hope and Depression

Sylvia Y. C. L. Kwok¹ · Minmin Gu¹

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Abstract

Using data collected on a two-wave longitudinal sample of 910 adolescents with mean age of 13.68 years in Hong Kong, China, this survey aimed to test a moderated mediation model to account for the developmental pathway from childhood experiences of neglect to suicidal ideation in adolescents. Results showed that adolescents who were neglected as children had higher levels of suicidal ideation; furthermore, this relation was mediated by adolescents' depressive symptoms, while the path between adolescents' depressive symptoms and suicidal ideation was moderated by adolescents' sense of hope. Findings of this study imply that intervention and services that help prevent childhood neglect, alleviate depression, and promote hope are potentially important to decrease adolescent suicidal ideation.

Keywords Childhood neglect · Adolescent suicidal ideation · Adolescent depression · Adolescent hope · Chinese adolescents · Positive psychology

Introduction

The occurrence of suicidal phenomenon increases dramatically from childhood to adolescence. The suicide mortality rate for 5 to 14-year-old was lower than 5 per 100,000 across different nations but increased to an average of 10 per 100,000 for 15 to 29 years old (World Health Organization 2014). Studying suicidal ideation may provide important clues to understanding actual suicide, as suicidal ideation is an important predictor of suicide attempt and completed suicide (Thompson et al. 2012). Risk factors identified for suicidal phenomenon were childhood sexual and physical abuse, family dysfunction or discord, parents' psychopathology, mental health problems, substance abuse, and low socio-economic status (Evans et al. 2005; Kwok et al. 2013; Kwok et al. 2015).

Childhood neglect (CN) is defined as a type of child maltreatment that the caregiver fails to provide sufficient age-appropriate physical, educational, emotional, or medical care

to meet a child's basic needs (U.S. Department of Health and Human Services 2009). Preliminary evidence suggests that CN poses threat to children's well-being and growth (Bennett et al. 2010) and is an important predictor of later developmental problems (Hildyard and Wolfe 2002). Yet previous research on the relationship between CN and adolescent depression has yielded inconsistent results (Miller et al. 2013; Thompson et al. 2012). This study would examine the relation between self-reported CN and adolescent suicidal ideation with a sample of secondary school students in the Chinese context. Furthermore, this study intended to investigate the mediating effect of adolescent depressive symptoms between CN and adolescent suicidal ideation and whether hope moderates the mediating effect of adolescents' depressive symptoms on the link between CN and adolescent suicidal ideation.

Childhood Neglect and Adolescent Suicidal Ideation

The neglectful behavior of parents recalled by university students in 17 nations was estimated to be 3.2 to 3.6% (Straus and Savage 2005). A substantial body of research examined CN together with other forms of child maltreatment (e.g., physical and emotional abuse) and found that each form of child maltreatment contributes a unique variance to suicidal ideation and suicide attempts in later developmental stages (Miller et al. 2013). Two more recent studies (Barbosa et al.

✉ Sylvia Y. C. L. Kwok
scyckwok@cityu.edu.hk

Minmin Gu
minmingu@cityu.edu.hk

¹ Department of Social and Behavioral Sciences, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong

2014; Springe et al. 2016) also provided evidence that CN posed a higher risk for suicidal attempt for young adults. Yet other studies reported that physical and emotional abuses, rather than neglect, were associated with suicidal ideation in adolescents (e.g., Thompson et al. 2012). Hence, the present study aimed to further investigate the relation between CN and adolescent suicidal ideation with a community sample of secondary school students. Since CN often coexists with child abuse (Evans et al. 2005), it is of interest to investigate the unique effects of CN on suicidal ideation when the effects of childhood abuse were taken into account.

The Mediating Role of Depressive Symptoms on Childhood Neglect and Suicidal Ideation

A large body of literature documenting co-occurrence between depressive symptoms and suicidal ideation, such that suicidality is one symptom of major depressive disorder in DSM-5 (American Psychiatric Association 2013). Specifically, depression has been found to be an important predictor of suicidal ideation. Research of high school students in Korea and the USA demonstrated that depression was the strong and consistent predictor of suicidal ideation and behaviors (Juon et al. 1994; Mazza and Reynolds 1998). Meanwhile, depression has been identified as an outcome affected by CN (Hildyard and Wolfe 2002). Studies showed that CN predicted an increased risk for current major depressive disorder in adults (e.g., Widom et al. 2007). Although depression has been identified as an important predictor of suicidal ideation and an outcome affected by CN, the role of depressive symptoms as a mediator for the link between CN and adolescent depressive symptoms remains unclear. Studies supported depressive symptoms as a mediator between emotional abuse in childhood and suicidality in adulthood (e.g. Lee 2015). This study would extend previous research by investigating whether adolescent depressive symptoms at baseline mediate the relation between CN at baseline and adolescent suicidal ideation at follow-up.

The Moderating Role of Hope on Depressive Symptoms and Suicidal Ideation

Nevertheless, not all depressed people have suicidal ideation. Johnson and colleagues (Johnson et al. 2011) introduced the buffering hypothesis, which asserts that psychological resilience factors should be understood as an alternative dimension to risk factors which act to moderate the impact of risk factors on suicidality. In line with the buffering hypothesis and Snyder's theory of hope, this study investigates the moderating role of hope (Snyder, 2000). Hope is a psychological resilience factor consisting of three components: goal, agency, and pathway. To attain their goals, a person must engage in pathway thinking and agency thinking. Pathway thinking signifies one's perceived capabilities to generate plausible routes

to goals. Agency thinking reflects one's goal-directed determination.

Hope and hopelessness are two distinct constructs with different conceptual foundations. Snyder (2000)'s hope is a goal-directed construct which reflects the belief that one can find pathways to desired goals and become motivated to use these pathways. On the other hand, hopelessness is a general anticipation of future negative circumstances that is beyond one's control, without any concern for goals and goal-pursuits (Beck et al. 1990). A person who holds negative future expectations (i.e., high hopelessness) can be capable of generating pathway and agency to achieve goals (i.e., high hope). While hopelessness is believed to be a proximal cause (Handin et al. 2001) and even a core feature of a distinct depression subtype (i.e. hopelessness depression) (Joiner et al. 2001), hope is linked to lower suicidal ideation and might buffer against the effects of risk factors on adolescent suicidal ideation by enhancing one's coping ability (Tucker et al. 2013).

The moderating effect of hope has been shown in a study that the effect of hopelessness on suicidal ideation was lower in individuals with higher hope than individuals with lower hope (Huen et al. 2015). Yet no study has been carried out to examine whether hope would moderate the link between depressive symptoms and suicidal ideation. In this study, we hypothesized that hope would be protective against the effect of depression on suicidal ideation.

This study was conducted in a Chinese context of Hong Kong, a special administration region of China. Below is a summary of the current research progress concerned with the studied variables in the Chinese context.

First, the suicide mortality rate for 15 to 29-year-olds in China was comparatively lower than that of their counterparts in the USA (USA 12.7 per 100,000 vs China 4.2 per 100,000) (WHO 2014). Nevertheless, Asian adolescents reported a higher prevalence of suicidal ideation (Evans et al. 2005) when compared to Western adolescents. A Hong Kong study with Chinese adolescents showed that 26.8% had thought about suicide in their life (Chan et al. 2009).

Second, CN by parents is not uncommon among Chinese parent. A household survey by Chan (2005) showed that 27% of the child respondents expressed being physically neglected by the parents in the past 12 months. Nevertheless, few studies have assessed the impact of CN on adolescents' mental health problems. Third, depression is a major mental health problem in Chinese adolescents. Prevalence rates of current and life-long diagnosis of major depressive disorder in Hong Kong adolescents were estimated to be 2.2 and 11.0%, respectively (Stewart et al. 2002). Depressive symptoms have been found to be an important predictor of suicidal ideation for Chinese adolescents (Lee et al. 2006). A number of studies have shown that depression mediates the link between current life stress (family conflicts or low family cohesion, peer relationship problems, academic stress) and suicidal ideation for

adolescents (Lee et al. 2006; Sun et al. 2006). To the best of our knowledge, no study has been made to investigate whether depression mediates the relation between CN and adolescent suicidal ideation.

Finally, no study has been conducted to examine the link between hope and suicidal ideation for Chinese adolescents, nor is there any research exploring hope as a moderator in relation to adolescents' depressive symptoms and suicidal ideation. Nevertheless, one study found that hope was positively related to subjective well-being for college students (Xu 2010). Another study found that hope moderated the relation between frequency of parent-adolescent communication and adolescents' problem behavior (Yang et al. 2014).

To summarize, childhood experiences of neglect and adolescent suicidal ideation were higher among Chinese adolescents than their counterparts in Western societies. Findings of Chinese studies suggested that depression is an important risk factor to be considered for understanding adolescent suicidal ideation, while hope may have a direct or buffering effect against adolescents' psychopathology.

The Present Study

Five hypotheses are formulated in the present study: (1) CN would be positively associated with adolescent suicidal ideation. (2) Depressive symptoms would be positively associated with adolescent suicidal ideation. (3) Depressive symptoms would mediate the relationship between CN and adolescent suicidal ideation. (4) Hope would be negatively associated with adolescent suicidal ideation. (5) Hope would moderate the mediated relationship between adolescent depressive symptoms and adolescent suicidal ideation.

Method

Sample

A two-wave longitudinal design was adopted. Participants were recruited from eight secondary schools with different levels of academic performances by stratified random sampling in Hong Kong. Principals of the schools were invited and agreed to join the survey. All grade 8 and grade 9 students of the participating schools were invited to fill in the questionnaire. A total of 1709 students participated in the study for the first time (Time 1, T1), and 1326 of them participated in the follow up study 1 year later (Time 2, T2). Excluding unidentified questionnaires, the final sample consisted of 331 girls and 579 boys aged from 10 to 18, with the mean age of 13.86 ($SD = .94$). Thirty-six percent of the participants were girls. Seventy-one percent (71.8%) are from two-parent families. Seventy-four percent of the participants' fathers and 48.4% of the mothers were full-time employed. Seventeen percent

of the participants reported the family income of HKD 10,000 (US\$1,250) or below, 57.2% reported the family income of HKD 10,001–30,000 (US\$3,750), 17.9% reported the family income of HKD 30,001–50,000 (US\$6,250), and 7.9% reported the family income of HKD 50,000 or above.

Measures

All of the measures administered were in Chinese and have been validated with Chinese samples.

Eligible Participants Childhood neglect were administered the 14-item neglect subscale of Child Abuse and Trauma Scale (CATS; Sanders and Becker-Lausen 1995). An example item is "As a child, did you feel unwanted or emotionally neglected". The 5-point Likert scale ranges from *never (scored 1)* to *always (scored 5)*. The CATS has been used with adolescents to solicit their subjective reports of childhood emotional abuse, physical abuse, and neglect (Mohammadkhani et al. 2013). Validity of the CATS has been demonstrated by previous studies, while the Chinese version of CATS demonstrated high internal consistency and test-retest reliability (He et al. 2008; Sanders and Becker-Lausen 1995). Cronbach's alpha of the scale in the present study was 0.85.

Depressive Symptoms Depressive symptoms were measured by the depression subscale of the Hospital Anxiety and Depression Scale (HADS) (Leung et al. 1993), which consists of seven items (e.g., "I feel as if I am slowed down") rated on a 4-point Likert scale ranging from 0 (*absence of symptoms*) to 3 (*severe symptoms*). The HADS has adequate test-retest reliability and discriminant validity for early adolescents (White et al. 1999). The Chinese version of HADS displayed good convergent validity with the Hamilton Rating Scale of Depression (HRSD) (Leung et al. 1999). Cronbach's alpha of the scale for the current sample was 0.82.

Hope Hope was measured by the Children's Hope Scale (Snyder et al. 1997), a six-item self-report measure (e.g., "I can think of many ways to get the things in life that are most important to me"). The 6-point Likert scale ranges from 1 (*none of the time*) to 6 (*all of the time*). The Children's Hope scale has shown good convergent validity by being positively associated with self-competence and self-worth (Snyder et al. 1997). The Chinese version of the Children's Hope Scale demonstrated high levels of internal consistency and temporal reliability (Chow 2010). Cronbach's alpha of the scale in the present study was 0.78.

Suicidal Ideation Suicidal ideation was assessed using the Chinese Suicidal Ideation Subscale (C-SIS), a well-established measure for measuring suicidal ideation in

Chinese context with high reliability and validity (Tse and Bagley 2002). The C-SIS comprises 13 items (e.g., “I really want to put an end to all this so that I don’t have to continue to bear the pain”) rated on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Cronbach’s alpha of the scale for the current sample was 0.84.

Control Variables We controlled for participants’ childhood experiences of abuse, which was measured by the subscale of child abuse of the Chinese version of Child Abuse and Trauma Scale (CATS; Sanders and Becker-Lausen 1995). Psychometric properties of the scale have been reported above. In addition, participating adolescents were asked to report their gender, age, parents’ employment status (full-time employed or not), family type (two-parent family or not), and monthly family income.

Data Collection

Before the commencement of the study, students and their parents signed the consent forms. The consent forms clearly explained the purposes of the study and emphasized that the students’ participation was voluntary and their non-participation would not affect their grades. For data matching purpose, we collected participants’ names, class numbers, and affiliated schools. These personal data were deleted from the data file after the data has been successfully matched. Further data analysis and results presented will not involve any personal identifiers. We also clearly notified the schools that the identified students at high risk for depression or suicidal ideation will be referred to school social workers to follow up. Participants filled in the questionnaires in class, which took about 20 min. The research assistants were present in the classroom to answer queries raised by the participants and reassure the participants that their participation was anonymous and voluntary. Ethics approval was obtained from the Research Ethics Committee of the affiliated university before the study was implemented.

Data Analysis

The means, standard deviations, and Cronbach’s alpha of the scales were calculated. Pearson correlation analyses were conducted. Following the recommendations by Preacher et al (2007), a moderated mediation model where hope T1 served as a moderator and depression T1 served as a mediator between CN T1 and suicidal ideation T2 was tested. Moderated mediation is expressed by an interaction between hope T1 and depressive symptoms T1 (moderator * mediator) on suicidal ideation T2. Another moderated mediation model was tested with gender as additional moderator to test whether the moderated mediation model differ by gender. In all of the models, demographic variables and suicidal ideation T1 were included

as covariates. A model based on two measurement points controls baseline level of the outcome variable and thus offers some indication of the presence of a potential indirect process (Little 2013). Statistical analyses were carried out using SPSS 24.0.

Results

Attrition Analyses

Follow-up measures were available from 910 adolescents, which was 53.25% of the baseline sample. Attrition was examined using a logistic regression by regressing follow-up participation on all studied variables (gender, age, parents’ employment status, family type, family income, childhood abuse T1, CN T1, depressive symptoms T1, hope T1, suicidal ideation T2). No significant predictors of attrition were identified (all $ps > .05$), indicating that the longitudinal sample is representative of the total sample.

Preliminary Analyses

Means, SD, and inter-correlations between studied variables are presented (Table 1). On a scale of 1–4, the average levels of suicidal ideation were 1.78 at baseline and 1.80 at follow-up. On a scale of 0–3, the average levels of depressive symptoms were 0.95 at baseline and 0.96 at follow-up. All studied variables had relatively high stability between baseline and follow-up (r ranged from .42 to .52, all $ps < .01$). CN at baseline was moderately correlated with suicidal ideation and depressive symptoms at both baseline and follow-up (r ranged from .26 to .54, all $ps < .01$). Hope at baseline was negatively associated with suicidal ideation at both baseline ($r = -.37$, $p < .01$) and follow-up ($r = -.20$, $p < .01$).

Regarding the control variables, childhood abuse, adolescents’ gender, family type, and family income were positively associated with depressive symptoms and suicidal ideation at both baseline and follow up. Hence, childhood abuse, gender, family type, and family income were entered in the follow-up analyses.

Tests of Hypotheses in Prospective Data

We first analyzed the model for the potential mediation effect of adolescent depressive symptoms T1 with covariates and suicidal ideation T1 controlled. CN T1 was significantly associated with adolescent depressive symptoms T1 ($\beta = 0.20$, $p < .01$). Moreover, when depressive symptoms were included in the same regression model, both CN T1 and adolescent depressive symptoms T1 positively predicted suicidal ideation T2 ($\beta = 0.22$, $p < .001$, and $\beta = 0.15$, $p < .01$ respectively), supporting hypotheses 1 and 2. Hence, adolescent depressive

Table 1 Means, standard deviations, and bivariate correlations of study variables

	1	2	3	4	5	6	7	8
1.Suicidal ideation T1	–							
2. Suicidal ideation T2	0.50**	–						
3.Depressive symptoms T1	0.45**	0.25**	–					
4.Depressive symptoms T2	0.35**	0.44**	0.49**	–				
5.Hope T1	–0.37**	–.20**	–0.42**	–0.34**	–			
6. Hope T2	–0.26**	–.31**	–.31**	–0.41**	0.42**	–		
7. Childhood neglect T1	0.54**	0.34**	0.34**	0.26**	–0.14**	–0.13**	–	
8. Childhood neglect T2	0.31**	0.54**	0.22**	0.35**	–0.10**	–0.14**	0.52**	–
Range	1–4	1–4	0–3	0–3	1–6	1–6	1–4	1–4
Mean	1.78	1.80	0.95	0.96	2.62	2.73	1.03	1.06
SD000	0.65	0.68	0.51	0.53	1.00	1.04	0.78	0.82
36					–+0			

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

symptoms were also found to partially mediate the relation between CN and adolescent suicidal ideation, supporting hypothesis 3. Further, we tested the moderated mediation model while controlling for all covariates and suicidal ideation T1 (Table 2) by using model 14 of PROCESS macro (Hayes 2013). CN T1 and adolescent depressive symptoms T1 positively predicted adolescent suicidal ideation T2 ($\beta = 0.22$, $p < .001$ and $\beta = 0.15$, $p < .01$, respectively). Adolescent hope T1 negatively predicted adolescent suicidal ideation T2 ($\beta = -0.11$, $p < .01$), supporting hypothesis 4. Moreover, the interaction term of the mediator (adolescents' depressive symptoms) and moderator (adolescents' hope) reached significance ($\beta = -0.05$, $p < .05$), supporting hypothesis 5. The overall model accounted for 52.45% variance of adolescent suicidal ideation, $F(11, 1315) = 105.16$, $p < .001$. The indirect effects through depressive symptoms were conditional at different levels of moderator hope. All the conditional indirect effects were significant, decreasing from 0.10 for -1 SD hope over 0.07 for mean hope to 0.05 for $+1$ SD hope (Table 2). Figure 1 displays the interaction of depressive symptoms and hope in predicting suicidal ideation and shows that depressive symptoms predicted suicidal ideation better with lower hope.

Gender-Specific Analyses

Given that the sample in this study has a greater proportion of male participants and that the male participants reported more depressive symptoms than females ($\beta = -0.25$, $p < .01$), we further tested the moderated mediation model with gender as an additional moderator by using model 19 of PROCESS macro (Hayes, 2013). There were five two-way interactions (Hope*Gender, Depressive symptoms* Gender, Depressive symptoms*Hope, CN*Gender, CN*Hope) and two three-way interactions (Depressive symptoms*Hope*Gender, CN*Hope*Gender). Only the interaction of depressive

symptoms and hope were significant ($\beta = -0.05$, $p < .05$). Hence, the paths of the moderated mediation model did not vary by gender (Table 3).

An Alternative Model

An alternative model which specifies hope T1 as the mediator and depressive symptoms T1 as the moderator was tested. Results showed that CN T1 negatively predicted hope T1 ($\beta = -0.10$, $p < .05$) while hope T1 negatively predicted suicidal ideation T2 ($\beta = -0.11$, $p < .01$), providing evidence for the indirect association between CN and suicidal ideation through hope. Hope can be a mediator in a simple regression model. Yet, depressive symptoms did not moderate this association ($\beta = -0.04$, $p = .11$). Hence, the alternative moderated mediation model with hope as the mediator and depression as the moderator between mediated hope and suicidal ideation is not supported.

Discussion

In general, findings of this study indicate that adolescents who had childhood experience of neglect reported greater levels of suicidal ideation; furthermore, this relation was mediated by adolescents' depressive symptoms, and the path between depressive symptoms and suicidal ideation was moderated by adolescents' sense of hope.

The Effects of Childhood Neglect on Adolescents' Depression and Suicidal Ideation

The present study found that CN T1 was significantly related to adolescent suicidal ideation T2 after demographic variables and childhood abuse were controlled. This corroborates

Table 2 Regression analyses for testing the moderated mediation effects

	β	SE	$t(\text{Sig.})/CI$
DV = depressive symptoms T1			
Childhood neglect T1 (predictor)	0.20	0.04	7.24**
Suicidal ideation T1 (covariate)	0.15	0.04	3.34**
Childhood abuse T1 (covariate)	0.31	0.04	8.17***
Gender (covariate)	-0.25	0.07	-3.60**
Family income (covariate)	0.04	0.04	1.01
Family type (covariate)	-0.04	0.03	-1.18
R^2	0.228		
DV = suicidal ideation T2			
Childhood neglect T1 (predictor)	0.22	0.04	10.27***
Depressive symptoms Time 1 (mediator)	0.15	0.03	6.55**
Hope T1 (moderator)	-0.11	0.03	-3.78**
Depressive symptoms Time 1* Hope T1	-0.05	0.03	-2.58*
Suicidal ideation T1 (covariate)	0.30	0.04	9.07***
Childhood abuse T1 (covariate)	0.30	0.03	6.96**
Gender (covariate)	-0.04	0.02	-1.63
Family income (covariate)	0.01	0.03	0.25
Family type (covariate)	-0.02	0.06	-0.04
R^2	0.525		
Direct effect and indirect effect of childhood neglect T1 on adolescents suicidal ideation T2 as mediated through depressive symptoms T1			
Direct effect	0.22	0.0320	[0.19, 0.27]
Conditional indirect effect at different values of Hope	- 1 SD below mean	0.10	0.0154 [0.07, 0.12]
	Mean Hope	0.07	0.0120 [0.06, 0.09]
	+ 1 SD above mean	0.05	0.0139 [0.03, 0.09]

Gender: 1 = male, 2 = female; Family type: 0 = Single-parent family, 1 = Two-parent family; Family Income: 1 = HKD 30,000 (US\$6250) or below, 2 = HKD 30,001 (US\$6250) or above

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

Fig. 1 Interaction between depression and adolescent suicidal ideation as moderated by hope. *Note.* All of the three slopes are significant at the 0.05 level

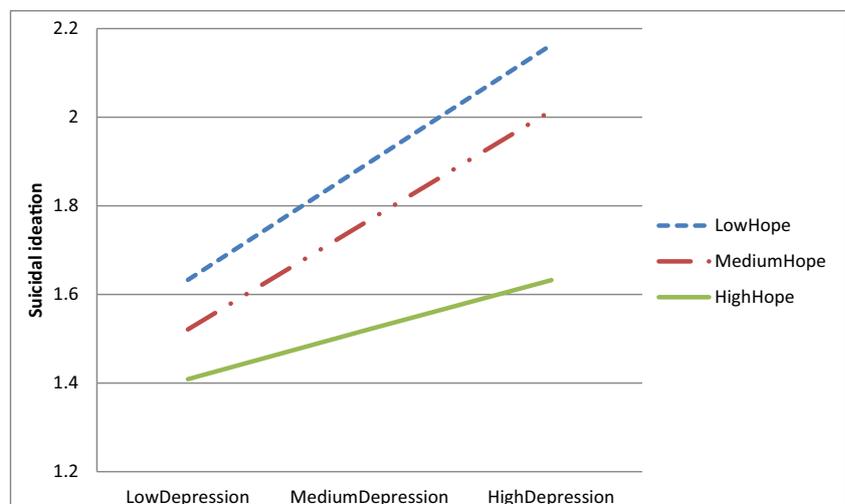


Table 3 Regression analyses for testing the moderated mediation effects with gender as an additional moderator

	β	SE	<i>t</i> (Sig.)
DV = depressive symptoms T1			
Childhood neglect T1 (predictor)	0.22	0.02	8.35**
Gender (predictor)	-0.22	0.08	-3.11**
Suicidal ideation T1 (covariate)	0.13	0.04	2.91**
Childhood abuse T1 (covariate)	0.19	0.04	8.03***
Family income (covariate)	0.03	0.02	0.99
Family type (covariate)	-0.04	0.04	-1.29
R^2	0.225		
DV = suicidal ideation T2			
Childhood neglect T1 (predictor)	0.24	0.05	8.79**
Depressive symptoms Time 1 (mediator)	0.18	0.08	3.63**
Hope T1 (moderator)	-0.10	0.03	-2.26*
Gender (moderator)	-0.04	0.02	-1.77
Hope* gender	-0.02	0.09	-0.19
Depressive symptoms* gender	0.06	0.10	0.56
Depressive symptoms* hope	-0.09	0.07	-1.39*
CN* gender	0.22	0.21	1.04
CN* hope	0.02	0.07	0.39
Depressive symptoms * hope* gender	-0.02	0.14	-0.13
CN* hope* gender	-0.001	0.05	-0.17
Suicidal ideation T1 (covariate)	0.30	0.04	9.13***
Childhood abuse T1 (covariate)	0.30	0.03	6.02**
Family income (covariate)	0.01	0.02	0.63
Family type (covariate)	-0.01	0.02	-0.93
R^2	0.526		

Gender: 1 = male, 2 = female; Family type: 0 = Single-parent family, 1 = Two-parent family; Family Income: 1 = HKD 30,000 (US\$6250) or below, 2 = HKD 30,001 (US\$6250) or above

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

previous research (Barbosa et al. 2014; Springe et al. 2016) which suggests that CN has a strong and direct relation with adolescent suicidal ideation, independent of other forms of child maltreatment. In addition, consistent with previous research (Hildyard and Wolfe 2002; Widom et al. 2007), the present study found that CN is a significant predictor of depression.

Two possible reasons may explain the long-lasting impacts of CN. First, from an attachment perspective, neglected children who learnt from their relationship with the primary caregivers that their needs cannot be met by others may form negative internal representations (Toth et al. 1997), which interfered with their abilities to establish close relationship and receive emotional support from others (Bolger et al. 1998).

Another possible explanation is that neglected children might encounter multiple psychological and social challenges and were less competent in facing such challenges as they enter adolescence, contributing to the development of

depression and suicidal ideation. At 24 months of age, neglected children were found to be less developed in cognitive competence, more frustrated in problem-solving tasks, and more socially withdrawn, and these cognitive and social problems will continue into middle and late childhood (Hildyard and Wolfe 2002). School-aged children with a history of neglect were also found to report difficulty in solving problems, to be socially withdrawn and unpopular with peers (Chen et al. 2011).

Depressive Symptoms as a Mediator

Findings of this study supported the mediating role of depression. Previous findings have demonstrated that depression mediates the relation between current life adversities and suicidality for adolescents (Lee 2015). This study provides further evidence that depression is a mediator on the impact of CN on adolescent suicidal ideation.

Early experiences in the parent-child relationship form the foundation upon which much of emotional development is based (Berzenski et al. 2014). As discussed above, CN leads to multiple consequences (e.g., low self-esteem, low problem-solving ability, interpersonal difficulties) and places neglected children in a jeopardy of emotional harm in later developmental stages (Brodsky and Stanley 2008). Hence, it is likely that CN poses a significant risk for depression for adolescents, which in turn may lead to higher probability for the occurrence of suicidal thoughts.

Hope as a Moderator

Consistent with previous research (Vincent et al. 2004), the present study found that hope is negatively related to suicidal ideation. In addition, this study demonstrates that hope moderates the indirect effect of CN on adolescent suicidal ideation mediated through adolescents' depressive symptoms. The modest incremental increase in variance explained by the interaction effect may be accounted for by the great proportion of variance that has already explained the main effects of the studied variables. This finding provides evidence for hope as a resilience factor against adolescent suicidal ideation, hence supporting the buffering hypothesis and Synder's theory of hope.

Three possible reasons might explain how hope works as a buffer against suicidal ideation for depressed adolescents who were neglected as children. First, hopeful adolescents are goal-oriented and strive for improvement through the attainment of personal goals. The positive experiences of goal achievement create a new sense of meaning and well-being, cultivate the belief that change can occur, and help individuals develop positive expectation towards their future (Carmel et al. 2015). Second, hopeful adolescents maintain hope for the future, take adversities as a challenge, and find meaning in

life even though being depressed (Huen et al. 2015). Hence, a hopeful attitude helps an adolescent persevere through times of crises and adversities by projecting a future with alternatives and possibilities (Roswarski and Dunn 2009). Third, hope promotes active coping strategies under stress (Chang 1998). Hopeful individuals can design new goals or transform the goals, formulate alternative pathways to redirect their motivation to work through the issues that are occupying their thoughts even when they feel depressed. Individuals who are more hopeful may have higher survival and coping beliefs even when depressed (Range and Penton 1994), which discourages the development of suicidal thoughts.

A Life Course Perspective of Childhood Neglect and Adolescent Suicidal Ideation

The present study provided support to the life course perspective of child maltreatment (Elder 1998). The major assertion of life course perspective is that the impact of childhood experiences is contingent upon changes across the lives of affected individuals. Child maltreatment is not an isolated event and should be considered within the developmental context of risk and protective factors. Both risk and protective factors that occur in this developmental context are important in affecting outcomes in later developmental periods. This study suggests that adolescents' depression is a risk factor that mediates the pathway from childhood neglect to adolescent suicidal ideation, while adolescents' hope is a protective factor that buffers the negative indirect impact of childhood neglect via depression on suicidal ideation. Future research is expected to take into account the life course perspective, explore other risk and protective factors and their interaction over time that influence the outcome of child adversity.

Limitations

The present study has several limitations that are noteworthy. First, the longitudinal design with data of two time points adopted in this study facilitated us to establish the temporal precedence between the mediator and the outcome, which is a sufficient criterion for establishing the causal mechanism. Yet, it should be noted that two-wave prospective data tends to underestimate or bias the indirect associations when compared with three-wave data (Little 2013).

Second, due to a large amount of unidentified questionnaires in Time 2, the final sample consisted of 910 adolescents (53.25% of the baseline sample) and consisted of a greater proportion of male participants. The questionnaires were unidentified because some participants did not write their names or the names were not matched with that of Time 1 data. Future research should more explicitly instruct participants to write down their names in a clear and correct manner. On the other hand, the attrition analyses showed that the T2

sample and the T1 sample did not differ significantly in the main variables (gender, age, parents' employment status, family type, family income, childhood abuse T1, CN T1, depressive symptoms T1, hope T1, suicidal ideation T2) in this study. In other words, the Time 1 sample is not representative of the adolescent population in terms of gender distribution.

Third, the use of retrospective self-report of CN introduces several limitations, such as biased or non-disclosed report due to lost memory. Recent reviews suggest that although retrospective systematic review of childhood events can provide useful and fairly accurate data; there is a tendency to under-report instances of maltreatment (Hardt and Rutter 2004). The tendency to under-report the experiences of CN may reduce the effect sizes of the relations in this study.

Finally, while this study controlled for children's gender, age, family's socio-economic status (indicated by parent's educational level and family income), and childhood abuse to determine the unique effects of CN, there might still be other important co-occurring risk factors whose effects are not dealt with statistically, such as parental psychopathology. Thus, the reported effects of CN on adolescent suicidal ideation might be biased. It is important to control for the effects of other multiple risk factors that tend to occur together when examining the effects of CN.

Implications

Findings of this study imply several directions to address risk and protective factors that could shift the odds of reducing adolescent suicidal ideation. Measures to strengthen household financial security can reduce CN by improving parents' ability to satisfy children's basic needs (e.g., food, shelter, medical care) and to provide developmentally appropriate childcare (Fortson et al. 2016). Approaches to enhance parenting skills could provide parents and caregivers with assistance and support, teach positive parenting knowledge, skills, and attitudes to build healthy and harmonious families, and thus promote secure, stable, and nurturing parent-child relationships (Fortson et al. 2016).

This study also implied that adolescents' depressive symptoms mediate the pathway from CN to adolescent suicidal ideation. Hence, early identification and treatment of depression should be helpful in preventing adolescent suicidality. More mental health literacy programs aiming to enhance knowledge of mental health issues and develop non-stigmatizing attitudes towards help-seeking should be promoted in adolescents, parents, and teachers (Jorm et al. 1997). One Chinese study showed that less than 20% of the adolescents had adequate mental health literacy (Lam 2014). This indicates that there is a large room for improving mental health literacy in the Chinese context. In Hong Kong, an innovative mental education program incorporated online games with school-based activities and was shown to be effective in

enhancing learning motivation and mental health knowledge in the participating students (Li et al. 2013). In addition, positive psychology programs have been found to effectively alleviate depressive symptoms in both Western and Chinese context (Kwok et al. 2016; Yu and Seligman 2002).

Finally, this study implied that hope can have an “immunization” effect that protects an adolescent against suicidal ideation, even when he or she is depressed. A number of intervention protocols have been designed to improve goal setting and planning skills, foster hopeful thinking, and enhance goal pursuit activities in children and adolescents (Cheavens et al. 2006; Snyder 2000). In addition, hopeful thinking can be infused into the school and family environment (Snyder 2000). Hopeful parents can exhibit resilience and can be role models for their children by demonstrating how they set goals and accept challenges in a positive rather than a negative manner. Parents can also give support and provide opportunities to encourage their children to set goals and overcome the problems encountered by using pathway and agency thinking (Snyder 2000).

Conclusion

Results of this study demonstrated that adolescents’ depressive symptoms mediated the link between childhood experiences of neglect and adolescents’ suicidal ideation, and this mediation was moderated by adolescents’ hope. This is the first study to provide support for the potential mediator (depressive symptoms) and moderator (hope) in the progression from childhood experiences of neglect to suicidality in adolescence. Hence, intervention and services that aim to prevent CN, alleviate depression, and promote hope are potentially important to decrease adolescent suicidal ideation.

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Compliance with Ethical Standards

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

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional 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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