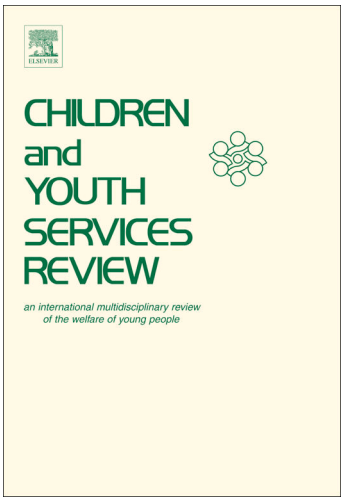

The relationship between parent-child triangulation and early adolescent depression in Hong Kong: the mediating roles of self-acceptance, positive relations and personal growth

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ABSTRACT

This study aims to (1) investigate the relationship between parent-child triangulation and early adolescents' depressive symptoms, and (2) examine whether such relationship was mediated by early adolescents' protective factors, i.e. self-acceptance, positive relation, and personal growth. A cross-sectional survey employing convenience sampling was conducted, which recruited 618 Grade 5 and 8 students from three primary schools and two secondary schools in Hong Kong, China. Parent-child triangulation was positively correlated with adolescents' depressive symptoms while self-acceptance, positive relation, and personal growth were negatively correlated with early adolescents' depressive symptoms. Only positive relation mediated the relationship between parent-child triangulation and adolescents' depressive symptoms, and this mediating pathway existed for the female sample only. The results of this study imply that although exposure to parent-child triangulation adversely impacts adolescents' interpersonal relationships, even the decreased level of the positive relation to some extent protects them against the negative consequences of parent-child triangulation. More research is called for to explicate how protective factors might constitute additional mediating mechanisms for the relationship between parent-child triangulation and child development.

Keywords: Parent-child triangulation, Adolescent depression, Protective factors, Mediating mechanisms, Chinese

1. Introduction

1.1 Parent-child triangulation and early adolescents' depressive symptoms

Ample evidence exists indicating that interparental conflict poses risk for adolescents (Bradford, Vaughn, & Barber, 2008). Interparental conflict could be overt, expressed by hostile verbal or physical behaviours or be covert, characterized by passive-aggressive tactics (Krishnakumar & Buehler, 2000). One main form of covert interparental conflict is parent-child triangulation, which is defined as a situation in which children becomes involved in parents' conflictual interactions (Minuchin, 1974). Identifying characteristics of the parent-child triangulation include allying the child with one parent against the other, making the child act as a messenger between the parents, and denigrating the other parent in the presence of the child (Stone, Buehler, & Barber, 2002). There is a small but growing body of literature that examines the relationship between parent-child triangulation and child depression. Wang and Crane (2001)'s study included 74 couples with school-age children (aged 6 to 16) and found that parents' report of parent-child triangulation was strongly linked to children's depressive symptoms. Kerig and Swanson (2010) reported similar relationship between experiences of being triangulated and depressive symptoms for a sample of 680 emerging adults.

Researchers have paid particular attention to the relationship between parent-child triangulation and child adjustment in early adolescents (Franck & Buehler, 2007; Buehler & Welsh, 2009). Early adolescents are more likely to be pulled into triangulation as they are more emotionally and verbally competent than younger children (Davies & Forman, 2002), but they are not mature enough to protect themselves from the harmful effects of interparental conflict (Shelton & Harold, 2008). Moreover, early adolescents have the developmental task of striving for autonomy (Steinberg, 2001; Chai, Kwok, & Gu, 2018). Yet, when being triangulated,

they have to devote a lot of psychological resources taking care of their parents (Kerig & Swanson, 2010). This struggle creates additional demands on early adolescents, which, combined with other physical and psychological challenges related to puberty, may place them at higher risk for depression. Hence, early adolescence is a salient development period for us to investigate the relationship between parent-child triangulation and offspring adjustment.

The current study was conducted in the Chinese society of Hong Kong. Derived from Confucianism, Chinese culture strongly upholds family values. As the saying goes ''*jia he wan shi xing*'' (harmony in the family is the basis for success in any undertaking), which suggests that all family members are obliged to devote their time and efforts to maintain family harmony (Shek & Sun, 2014; Kwok & Gu, 2019a). Hence, it is speculated that Chinese children not only assume responsibility for the parental conflicts, but also blame themselves when they cannot solve the conflicts. Worse still, the triangulated Chinese children are very unlikely to raise this issue out or seek for help from outside for fear of breaking the family harmony, which make them at higher risk of becoming depressed (Shek, 2004). Previous Chinese studies have shown that parent-child triangulation predicts children's behavior problems (Li, Putallaz, & Su, 2011). Chinese children also reported a high level of stress from witnessing parental conflict (Xin, Chi, & Yu, 2009). Hence, this study expects to find a strong association between parent-child triangulation and early adolescents' depressive symptoms.

1.2 Self-acceptance, positive relation, and personal growth as potential mediators

In addition to accumulating evidence on the direct effect of parent-child triangulation, this study sought to investigate protective factors that mediate the relationship between parent-child triangulation and offspring's adjustment. Protective factor is an

umbrella term referring to attributes, assets, and resources that may reduce a problem or disorder or buffer the impact of risk factors (Fraser, Galinsky, & Richman, 1999). A traditional approach to studying protective factors is to model them as moderators for the relationship between risk factors and mental health. In this line of research, protective factors are considered as protecting people from developing psychological problems despite significant risks. (Luthar, 1993) Recently, Philippe and colleagues (Philippe, Laventure, Beaulieu-Pelletier, Lecours, & Lekes, 2011) proposed another approach which investigates whether protective factors mediate the relationship between risk factors and psychological problems. This approach has four main assumptions. First, protective factors may be present in all people, with or without prior experience of significant risks. Second, protective factors would reduce psychological symptoms at all levels of risks experienced. Third, when protective factors are controlled, the relationship between risks and poor adaptation would be significantly reduced. Fourth, while risk factors result in decreases in protective factors, the decreased protective factors could still reduce the likelihood of developing psychological problems. This approach takes a new direction in examining the role of protective factors and thus is adopted as the conceptual framework of this study.

Empirically, research on protective factors that mediate the relationship between parent-child triangulation (or interparental conflict) and offspring's adjustment is relatively scarce. Previous studies have mostly focused on the risk factors such as self-blame (Shelton & Harold, 2008), emotional dysfunction (Buehler & Welsh, 2009), and parent-child conflict (Fosco & Grych, 2010). Yet some preliminary findings suggest that protective factors might constitute additional mediating mechanisms. For instance, supportive parent-child relationships are found to mediate the relationships between exposure to interparental conflict and adolescents' coping (Figge, Martinez-Torteya, Bogat, & Levendosky; 2018). Another research showed

that dispositional optimism mediated the relationship between interparental conflict and children's internalizing and externalizing symptoms (Robinson, 2009). To the best of our knowledge, the current study would be the first to investigate whether self-acceptance, positive relation, and personal growth would mediate the relationship between parent-child triangulation and early adolescents' depressive symptoms. Self-acceptance is defined as a positive evaluation of oneself, positive relation refers to quality relationships with others, and personal growth is a sense of continued growth and development as a person (Ryff & Keyes, 1995). These three constructs are key components of wellbeing (Ryff & Keyes, 1995) and were found to be closely related to parent-child triangulation and adolescent depression.

On the one hand, it is very likely that parent-child triangulation might lead to lower self-acceptance, positive relation, and personal growth. First, triangulated youth may have heightened self-blame, which compromises their self-acceptance. Self-blame is common when an adolescent feels that he is responsible for causing the parental conflict (Gerard, Buehler, Franck, & Anderson, 2005) or when an adolescent assumes the responsibility for resolving the parental conflict but fails (Fosco & Grych, 2010). Second, parent-child triangulation jeopardizes the likelihood of developing positive relationships for affected youth. A triangulated adolescent is forced to choose to side with one parent and is vulnerable to the anger and hostility of the other parent (Cox, Paley, & Harter, 2001). Moreover, by observing their parents' interactions, a triangulated adolescent may develop a tendency of involving others in dyadic disputes which increases the likelihood of being misunderstood and decreases the likelihood of developing intimate friendships (Bueler, Franck, & Cook, 2009). Finally, parent-child triangulation may defer or interfere with personal growth in triangulated youth. Previous studies have consistently shown that triangulated youth report lower levels of ego or identity development (Bell, Bell, & Nakata, 2001; Fullinwider-Bush &

Jacobvitz, 1993). Apparently when an adolescent devotes too much energy to the family, there is less energy left for him or her to invest in his own personal and developmental interests (Bell et al., 2001). On the other hand, the extant literature has generally supported the assertion that self-acceptance, positive relation, and personal growth are negatively related to depressive symptoms. Ruini et al. (2003) recruited 450 subjects (aged 15 to 85) and found that self-acceptance, positive relation, and personal growth were significantly and negatively correlated with depressive symptoms. Edmondson & MacLeod (2015) found that a depressed group (N=26, age range 18-60 years) reported more than two standard deviations below the non-depressed group baseline in self-acceptance, and more than one standard deviation below the control group baseline in positive relation and personal growth.

To sum up, although no study explicitly investigated the mediating effects of these three protective factors, a review of literature indicated that such effects might exist. Tentative hypotheses were made that self-acceptance, positive relation, and personal growth would mediate the relationship between parent-child triangulation and early adolescents' depressive symptoms.

1.3 The present study

The present study builds on the existing literature by assessing self-acceptance, positive relation, and personal growth as potential mediators of the relationship between parent-child triangulation and depressive symptoms in early adolescents in a Chinese society of Hong Kong. Seven hypotheses were made as follows:

Hypothesis 1: Parent-child triangulation would be positively associated with adolescents' depressive symptoms.

Hypothesis 2: Self-acceptance would be negatively associated with adolescents' depressive symptoms.

Hypothesis 3: Positive relations would be negatively associated with adolescents' depressive symptoms.

Hypothesis 4: Personal growth would be negatively associated with adolescents' depressive symptoms.

Hypothesis 5: Self-acceptance would mediate the relationship between parent-child triangulation and adolescents' depressive symptoms.

Hypothesis 6: Positive relations would mediate the relationship between parent-child triangulation and adolescents' depressive symptoms.

Hypothesis 7: Personal growth would mediate the relationship between parent-child triangulation and adolescents' depressive symptoms.

2. Method

2.1 Sampling and participants

Convenience sampling was adopted in this study. Grade 5 to 8 students were recruited from three primary schools and two secondary schools. Participants' demographics were shown in Table 1.The age range was between 9 and 14 years old (Mean=11.73, SD=1.98). There were 428 boys (69.3%) and 172 girls (27.8%). The most frequently reported monthly family income was between $10,001 and $30,000 (n=296, 47.9%), followed by below $10,000(n=133, 21.5%), between $30,001 and $50,000 (n=75, and 12.1%), and above $50,000(n=34, 5.5%). Around seventy percent (69.7%) of the participants lived with married parents, followed by divorced or separated parents (10.5%), cohabiting parents (10.4%), and remarried parents (2.3%).

2.2 Measures

Parent-Child Triangulation. Parent-child triangulation was assessed using the triangulation subscale of the Children's Perceptions of Interparental Conflict (CPIC)

(Grych, Seid, & Fincham, 1992). Sample items included "When my parents argue I end up getting involved somehow" and "I feel caught in the middle when my parents argue". Participants rated on a three-point Likert scale (0=false, 1=sometimes true, and 2=true).The scores were summed with higher scores indicating higher level of triangulation. Adequate reliability, concurrent validity, and construct validity of CPIC have been demonstrated with adolescent samples (Bickham & Fiese, 1997). The triangulation subscale has been used with adolescent samples and has demonstrated high internal consistency (Ponappa, Bartle, Haring, Holowacz, & Ferriby, 2017). The triangulation subscale was translated, back-translated, and validated in the Chinese context by the first author (Kwok, 2014). Reliability of this instrument in this sample was $\alpha = .68$.

Self-Acceptance, Positive Relations, and Personal Growth. Self-acceptance, positive relation, and personal growth were measured by the respective subscales of the Ryff's Scales of Psychological Well-being (RPWB), 12-item version (Springer & Hauser, 2006). Each subscale consisted of two items. The example items were "I like most aspects of my personality" (self-acceptance)," People would describe me as a giving person, willing to share my time with others" (positive relation), and "For me, life has been a continuous process of learning, changing, and growth" (personal growth). The items were rated in a six-point Likert scale that ranges from 1 (strongly disagree) to 6 (strongly agree). The scores were summed yielding a possible score range of 3–18. The 12-item RPWB has demonstrated adequate reliability and factorial validity (Henn, Hill, & Jorgensen, 2016). The items were translated and back-translated to ensure conceptual equivalency in Chinese by the first author (Kwok, 2014). In this study the Cronbach's alphas for self-acceptance, positive relation, and personal growth were 0.45, 0.57, and 0.45, respectively.

Depressive Symptoms. Adolescents' depressive symptoms were measured by the Chinese version of the depression subscale of the Hospital Anxiety and Depression Scale (HADS; Leung, Ho, Kan, Hung, & Chen, 1993). The depression subscale consisted of seven items, with items summed to form a total score. An example item is "I feel as if I am slowed down". The items were rated on 4-point scales ranging from 0 (absence of symptoms) to 3 (severe symptoms). The Chinese version of HADS displayed good convergent validity with the Hamilton Rating Scale of Depression (HRSD) (Leung, Wing, Kwong, Lo, & Shum, 1999). In the present study the Cronbach's alpha was 0.67.

2.3 Data collection

As this study involves adolescents under 18 years old, parental consents in a written form were obtained. Both parents and students were assured that student's participation was voluntary and would in no way affect students' grades at school. Ethics approval was obtained from the Research Ethics Committee of the affiliated university before the study was implemented. The students who consented to participate in the study completed the self-administered questionnaires in class, which took them around 30 minutes. The research assistants were present to explain the questionnaires and answer queries raised by the students.

2.4 Data analyses

Little's missing completely at random (MCAR) test indicated that missing values were randomly distributed ($p > 0.5$). Missing data were handled using listwise deletion. Descriptive statistics (means, standard deviations) and bivariate correlations were analyzed first. Then a multiple mediation analysis was performed using the Process Macro for SPSS (Hayes, 2013). The analysis produces traditional direct effects (i.e.,

paths a, b, c and c'), as well as indirect effects (i.e., total indirect effect of the mediators and specific indirect effect of each mediator, or ab paths). Bootstrapping was used to examine the total and specific indirect effects (ab paths) of the mediators using point estimates and 95% percentile and bias corrected confidence intervals (CI). All analyses were conducted with the Statistical Package for the Social Sciences (SPSS) version 25.

3. Results

3.1 Preliminary analyses

Means, standard deviations, and correlations of the study variables were shown in Table 2. Parent-child triangulation was positively correlated with adolescent depressive symptoms (r=0.15, p<0.01) while self-acceptance, positive relation, and personal growth were negatively correlated with adolescent depressive symptoms(r=-0.33, -0.29, and -0.31, ps<0.01). With regard to demographic variables, adolescent gender (r_s=-0.12, p<0.05), adolescent age (r=-0.08, p<0.05), and parents' marital status (r_s=0.11, p<0.05) were significantly correlated with adolescents' depressive symptoms. Hence, the three variables were entered as covariates in all subsequent analyses.

Multicollinearity testing (Table 3) shows that tolerance values of the independent variables (parent-child triangulation, self-acceptance, positive relation, and personal growth) are close to 1 (between 0.820 and 0.985) and variance inflation factors (VIFs) lower than 2 (between 1.015 and 1.219). These values fell well below the threshold of problematic multicollinearity (Belsley, 1991). However, the variance proportion between self-acceptance and positive relation was 0.90, where variance proportion greater than 0.50 indicates significant collinearity (Belsley, 1991). Since we believe that positive relation and self-acceptance are conceptually overlapped and that in

Chinese culture self-acceptance is influenced by positive relation (which will be elaborated in the discussion), we dropped self-acceptance from the model.

3.2 The multiple-mediator model

Three mediators, self-acceptance, positive relation, and personal growth, were tested in one model with parent-child triangulation as the predictor and adolescents' depressive symptoms as the outcome. The left column of Table 4 presents results of the multiple-mediator model (whole sample). Only positive relation was the significant mediator. Parent-child triangulation was significantly related to positive relation (β=-0.10, p<0.05), which in turn was significantly related to adolescents' depressive symptoms (β =-0.25, p<0.001). The indirect effect was 0.027, bias-corrected CIs (0.005–0.057). On the other hand, parent-child triangulation was marginally related to personal growth (β=-0.07, p=0.06), and the bias-corrected CIs contained zero. The remaining direct effect of parent-child triangulation was 0.10, p=0.01. Overall, the model explained 23.20% of the variance in adolescents' depressive symptoms.

3.3 Gender-specific analyses

Given that gender was significantly associated with the dependent variable (adolescent depressive symptoms, r=-0.12, p<0.05) and potential mediators (self-acceptance, positive relation, and personal growth, r=0.11, p<0.01, r=0.12, p<0.01, and r=0.10, p<0.05, respectively), multiple-mediation analyses were run for both genders. The results were shown in the middle and right columns of Table 4. Same as the results of the whole-sample analysis, personal growth was not a significant mediator in both females and males. For the female sample, positive relation continued to be a significant mediator and the indirect effect was slightly higher than

that of the whole-sample analysis [0.043, bias-corrected CIs (0.005–0.119)]. The direct effect of parent-child triangulation was no longer significant (β=0.13, *n.s.*). Overall, the model explained 23.40% of the variance in girls' depressive symptoms (Figure 1). In contrast, for the male sample, the path from parent-child triangulation to PR is statistically insignificant (β=-0.08, *n.s.*) and hence positive relation did not mediate the effect of parent-child triangulation on depressive symptoms. Meanwhile, parent-child triangulation had significant direct effects on boys' depressive symptoms (β=0.10, p<0.05. The variance of boys' depressive symptoms explained by the model was 22.85% (Figure 2).

As a supplementary to the gender-specific analyses, a moderated mediation model which hypothesizes positive relation as the mediator and gender as the moderator was then tested (Table 5). Similar to the above analyses, the indirect effect via positive relation is only significant for girls [0.052, bias-corrected CIs (0.002–0.113)].

4. Discussion

The goal of the current study was to broaden our understanding of the link between parent-child triangulation and early adolescent depression. First, this study replicated previous Western finding that parent-child triangulation is an important risk factor for offspring's maladjustment. In accordance with previous work (Franck & Buehler, 2007; Buehler & Welsh, 2009), this study found that parent-child triangulation was significantly associated with depressive symptoms in early adolescents. Early adolescence is a life stage with particularly great biological as well as psychosocial changes. Early adolescence is also a period of heightened vulnerability for the onset of depression (Thapar, Collishaw, Pine, & Thapar, 2012; Kwok & Gu, 2019b), which may cause wide and long-lasting consequences (Verboom, Sijtsema, Verhulst, Penninx, & Ormel, 2014). Findings of this study indicate that parent-child

triangulation would lead to heightened risk of becoming depressed across different cultural contexts.

The second aim of this study was to investigate whether self-acceptance, positive relation, and personal growth mediated the effect of parent-child triangulation on adolescents' depressive symptoms. In line with Philippe and colleagues (Philippe et al., 2011), this study adopted a mediating approach in studying protective factors. Our findings indicated that positive relation was the only significant mediator. Positive relation refers to the satisfying relationships with others, and relationships with parents and peers are most important for adolescents (Nakkula & Toshalis, 2006). Existing studies have shown that supportive relationships with parents or peers moderated the relationship between interparental conflicts and adolescent coping in both Western (Grych, Raynor, & Fosco, 2004) and Chinese context (Xin, Chi, & Yu, 2009). Furthermore, one Western study found that positive parent-child relationships mediated the relationships between exposure to interparental conflict and adolescents' coping (Figge et al., 2018). Following this line of inquiry, the current study demonstrated that positive relation mediated the link between parent-child triangulation and adolescents' depressive symptoms. As hypothesized, positive relation reduces adolescents' depressive symptoms at all levels of parent-child triangulation. When positive relation is controlled, the relationship between parent-child triangulation and adolescents' depressive symptoms are significantly reduced. Although parent-child triangulation results in decreases in adolescents' positive relation, the decreased positive relation could still alleviate the development of depressive symptoms in adolescents. Hence, results of this study supported the proposed mediating mechanism of protective factors (Philippe et al., 2011), which expand our understanding on how triangulated children could be protected from poor adaptation.

Further analyses revealed that while positive relation was negatively and significantly related to depressive symptoms for both girls and boys, the significant path from parent-child triangulation to positive relation was largely driven by girls rather than boys. In other words, the negative impact of parent-child triangulation seemed to be more pronounced for girls than for boys. This may be explained by the greater affiliation orientation in females (Lengua & Stormshak, 2000). Previous studies have noted that females attach more value to close interpersonal relationships and experience negative emotions for a longer duration as a result of interpersonal disruptions (Charbonneau, Mezulis, & Hyde, 2009; Fischer & Manstead, 2000).

Contrary to our hypothesis, personal growth was not significantly related to parent-child triangulation. One possible explanation is that the Chinese early adolescents in this study have just entered the stage of developing personal identity, and thus the impact of familial risk on their personal growth have not appeared. Chinese collective culture tends to emphasize interdependence, group goals and group cohesion rather than individual development and growth (Matsumoto & Kupperbusch, 2001). Several studies have shown that Chinese adolescents start identity exploration and reach identity achievement status later than Western adolescents do (Berman, You, Schwartz, Teo, & Mochizuk, 2011; Lee, Beckert, & Goodrich, 2010). Hence, it is likely that the early adolescents in this study, unlike their Western counterparts, have not developed a clear sense of self and thus could not accurately reflect on the impact of parent-child triangulation on their personal growth.

Finally, collinearity was found between self-acceptance and positive relation. This finding could also be explained by the Chinese collective culture. According to Triandis and Gelfand (1998), in individualistic cultural contexts, people like to see themselves as self-reliant and establish their uniqueness by competing with others; in collectivistic cultural contexts, people focus on preserving interdependence of social

members and harmonious relationships and evaluate themselves in terms of their sociability and relationships with others. Thus, it is very likely that Chinese adolescents' self-acceptance is more or less determined by their perceived quantity and quality of interpersonal relationships.

4.1 Practice implications

Results of this study calls for a shift in practice from the preoccupation with remedying weaknesses to the enhancement of strengths (Seligman & Csikszentimihalyi, 2000). Given that the link between parent-child triangulation and early adolescent depression was mediated by adolescents' quality relationship with others, prevention and intervention programs could be designed to enhance early adolescents' interpersonal skills. For example, the Collaborative for Academic, Social, and Emotional Learning (CASEL) offers universal prevention programs as well as targeted intervention programs for youth experiencing social, emotional, and behavioural difficulties. During the program, social skills in interacting with peers and parents are taught, modelled, practiced, and applied to diverse situations, so that young people can use them as part of their daily repertoires of behaviours (Weissberg, Durlak, Domitrovich, & Gullotta, 2015). In addition, enhancing parent–child relationships can reduce the adverse effects of parent-child triangulation.

Psycho-educational programs for parents could be designed to enhance the quality of parenting and reduce parent-child triangulation (Goodman, Bonds, Sandler & Braver, 2004; Grych, 2005). At the most fundamental level, parents should be educated about the negative impact of parent-child triangulation. In addition, prevention programs can be helpful in sensitizing parents to subtle ways that they may triangulate their children, e.g. making complaints of the other parent through their children. The programs can also help parents to distinguish their needs from their children's needs,

and teach them positive parenting skills. Last but not the least, the preventive programs need to teach parents problem-solving and communication skills that will help them resolve their conflict, such as direct expression of feelings, wishes and needs, understanding the partner, accepting responsibility, and compromise.

4.2 Limitations and directions for future research

Several limitations of this study must be noted and thus the results should be interpreted with caution. First, our sample was not recruited randomly and thus the results cannot be generalized to the adolescent population in Hong Kong. Second, this study used cross-sectional data to conduct mediation analysis, which may generate substantially biased estimates of the directional relationships implied by the mediation model. Third, all the measures were self-reported by early adolescents and thus common method bias may be a concern. Fourth, measures for self-acceptance, positive relation, and personal growth had only moderate reliability. It is likely that two-item scales decrease the likelihood of adequately capturing the construct of interest. True-score theory delineates that, all other things being equal, more items lead to better reliability and construct validity (Eisinga, Te Grotenhuis, & Pelzer, 2013). Yet it is not uncommon to use short scales in surveys with children and young adolescents given their limited attention span. The moderate reliability statistics indicate that the items are relatively homogenous but there is need for further improvement. Fifth, measures for self-acceptance and personal growth may not capture cultural-specific meanings of these two constructs. Zhang and colleagues (Zhang et al., 2010) argue that identity foreclosure, which is considered as a less well developed identity status in Western theories, is an optimal personal growth which shows the integration of self and society in Chinese culture. Similarly, the conceptual overlap between self-acceptance and positive relation, as discussed earlier, calls for a

new measure for interpersonal-oriented self-acceptance in Chinese culture. Sixth, this study failed to take into account the interaction between parent and child gender that may also determine the impact of parent-child triangulation (Margolin, Gordis, & John, 2001). Seventh, this study did not explore the differential effects of parent-child triangulation within families with one more child. It is possible that the effect of parent-child triangulation will be different for the siblings. When one child was pulled into marital conflict, that child's sibling might be left free (Bell et al., 2001). Finally, we cannot exclude the possibility that other factors, not measured in this study, may impact the relationships examined in this study. For example, parental warmth was found to moderate the relationship between parent-child triangulation and adolescent externalizing problems (Etkin, Koss, Cummings, & Davies, 2014). For another example, parental depressive affect could be an important confounder that is related to both parent-child triangulation and adolescents' depressive symptoms (Franck & Buehler, 2007).

In view of the above limitations, several directions for future research are proposed. First, a longitudinal design and random sampling can be used in future studies. Second, future research could collect data from multiple informants (e.g. parents and teachers). Third, longer, more reliable and culturally appropriate measures should be used in assessing wellbeing. Fourth, an adequate and equal number of fathers and mothers should be recruited, so that future research could examine how parent gender and child gender may interact and determine the impact of parent-child triangulation. Fifth, future work should strive to include all the siblings within a family when examining the impact of parent-child triangulation. Finally, future research is called for to investigate how parent-child triangulation might interact with other individual and contextual variables in predicting depression risk.

4.3 Conclusion

Despite the limitations, this study is novel by providing empirical evidence on the mediating role of positive relationship for the association between parent-child triangulation and adolescents' depressive symptoms. Few studies have investigated protective factors that might constitute mediation mechanism. Results of this study show that it is worthy of further investigation, which will not only contribute to our understanding of the development of adolescents' depressive symptoms, but also imply new directions that help triangulated youth to enhance their strength in the face of adversity.

Conflicts of interest

We declare we have no conflicts of interest in relation to this article.

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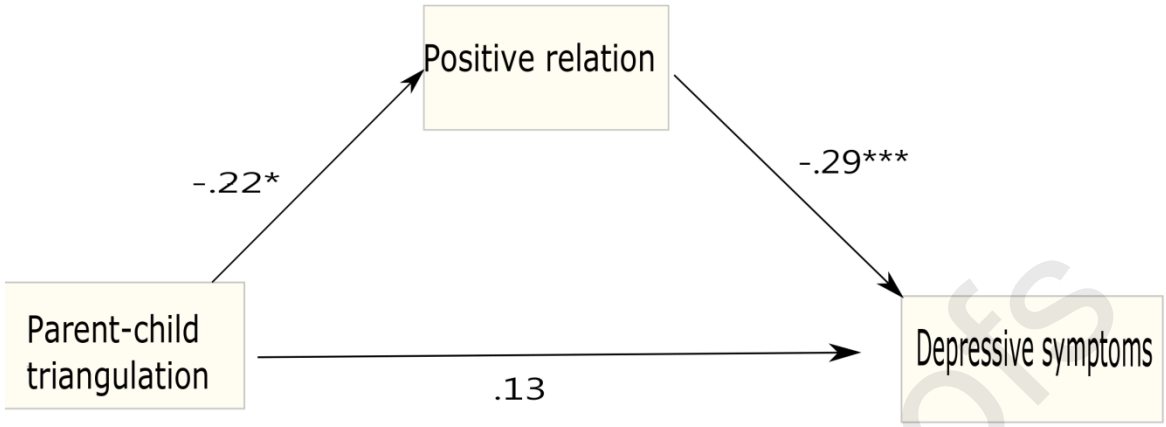

Figure 1. A mediation model predicting adolescent girls' depressive symptoms (n=154)

R^2=.2387

*** p<.001, *p<.05

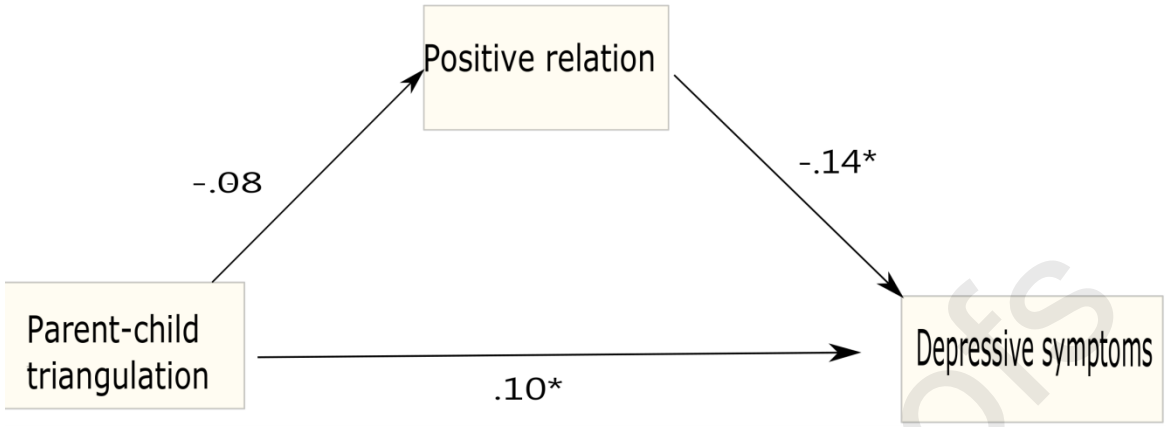

Figure 2. A mediation model predicting adolescent boys' depressive symptoms (n=397)

R^2=.2301

* p<.05

Table 1. Sample demographics (N = 618)

		Frequency (n)	Percent (%)
Gender	Male	428	69.3
	Female	172	27.8
	Missing	18	2.9
Age	9	60	9.7
	10	125	20.3
	11	124	20.1
	12	84	13.6
	13	123	19.9
	14	86	13.8
	Missing	16	2.6
Family income	below $10,000	133	21.5
	$10,001 - $30,000	296	47.9
	$30,001 - $50,000	75	12.1
	above $50,000	34	5.5
	Missing	80	13

Parent's marital status	Married	431	69.7
	Remarried	14	2.3
	Cohabiting	64	10.4
	Divorced or separated	65	10.5
	Missing	44	7.1

Table 2. Means, standard deviations, and correlations of the study variables (N = 609)

		1	2	3	4	5	6	7	8	9
1	Adolescent gender	-								
2	Adolescent Age	-.38**	-							
3	Family income	-.11*	-.01	-						
4	Parents' marital status	-.01	-.03	-.09*	-					
5	Parent-child triangulation	-.05	-.06	-.03	.03	-				
6	Self-Acceptance	.13**	-.14**	.07	-.09	-.14**	-			
7	Personal Growth	.16**	-.16**	.08	-.12**	-.12*	.13*	-		
8	Positive Relation	.19*	-.10*	.06	-.10*	-.14**	.40**	.15**	-	
9	Depressive symptoms	-.13*	-.08*	-.04	.12*	.15**	-.33**	-.29**	-.31**	-
	Mean	/	/	/	/	.63	4.26	4.40	4.54	6.41
	SD	/	/	/	/	.36	1.10	1.27	1.04	3.72
	Cronbach's α	/	/	/	/	.68	.45	.45	.57	.67

Note: Gender: 1=male, 2=female; Family income: 1= below $10,000, 2= $10,001 - $30,000, 3=$30,001 - $50,000, 4= above $50,000. Parents' marital status: 1=married, remarried, or cohabiting, 2= divorced or separated.

The relationships between ordinal variables (gender, family income and parents' marital status) and other study variables were assessed by a series of Spearman's correlation tests.

** $p < 0.01$; * $p < 0.05$

Table 3. Collinearity statistics of independent variables

	Tolerance	VIF	Variance Proportions			
			1	2	3	4
1.Parent-child triangulation	.98	1.02	.17	.01	.01	.01
2.Self-Acceptance	.82	1.22	.00	.30	.06	.90
3.Personal Growth	.83	1.21	.00	.21	.22	.05
4.Positive Relation	.82	1.21	.12	.08	.24	.04

Table 4. Multiple mediation results for the relationship between parent-child triangulation and adolescent depressive symptoms

	Whole sample (N=551)			Female (n=154)			Male (397)		
	β	*t*	*p*	*β*	*t*	*p*	*β*	*t*	*p*
Parent-child triangulation to mediators									
Positive relation	-.10	-2.42	.02	-.22	-2.33	.02	-.08	-1.67	.09
Personal growth	-.07	-1.94	.06	-.09	-1.03	.31	-.03	-.52	.60
Mediators to adolescent depressive symptoms									
Positive relation	-.25	-6.64	<.001	-.29	-6.17	<.001	-.14	-2.12	.03
Personal growth	-.18	-4.50	<.001	-.15	-2.15	.03	-.19	-3.87	<.001
Remaining direct effect									
Parent-child triangulation	.10	2.71	.01	.13	1.67	.10	.10	2.30	.02
Partial effect of control variable									
Adolescent gender	.05	1.86	.06	/	/	/	/	/	/
Adolescent age	-.02	-.93	-.35	-.05	-1.52	.13	-.01	-.38	.70
Parents' marital status	-.12	-1.40	.16	.02	.66	.51	.05	1.62	.11
Indirect effects-Bootstrap results	*β*	LLCI	ULCI	*β*	LLCI	ULCI	*β*	LLCI	ULCI
Positive relation	.027	.005	.057	.043	.005	.119	.023	-.001	.053
Personal growth	.013	-.009	.029	.014	-.005	.066	.005	-.014	.030

Note. Gender: 1=male, 2=female; Parents' marital status: 1=married, remarried, or cohabiting, 2= divorced or separated.

Table 5. Results of a moderated mediation model with adolescents' depressive symptoms as the dependent variable (N=551)

	β	*t*	*p*
DV=Positive relation (mediator)			
Parent-child triangulation (predictor)	-.12	-2.47	.04
Gender (moderator)	.33	3.63	<.01
Parent-child triangulation * gender	-.10	-1.02	.31
Adolescent age (control variable)	-.05	-2.44	.02
Parents' marital status (control variable)	-.07	-2.44	.02
DV=Depressive symptoms			
Parent-child triangulation (predictor)	.12	3.10	<.01
Positive relation (mediator)	-.28	-7.47	<.001
Gender (moderator)	.06	1.59	.07
Parent-child triangulation * gender	.01	.13	.89
Adolescent age (control variable)	-.03	-.52	-.61
Parents' marital status(control variable)	-.12	-1.27	-.14
	β	LLCI	ULCI
Direct effect	.12	.04	.19
Conditional indirect effect (Gender=female)	.015	-.019	.048
Conditional indirect effect (Gender=male)	.052	.002	.113

Note. Gender: 1=male, 2=female; Parents' marital status: 1=married, remarried, or cohabiting, 2= divorced or separated.

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Conflicts of interest

We declare we have no conflicts of interest in relation to this article.

- A cross-sectional survey was conducted with early adolescents in Hong Kong, China.
- Parent-child triangulation was positively correlated with adolescents' depressive symptoms
- Self-acceptance, positive relation, and personal growth were negatively correlated with early adolescents' depressive symptoms.
- Only positive relation mediated the relationship between parent-child triangulation and adolescents' depressive symptoms
- This mediating pathway existed for the female sample only.