



The Significance of Family Structure in Internalizing (Anxious/Depressed) and Externalizing (Aggressive/Delinquent) Problems among Chinese Adolescents

Annis Lai Chu Fung¹

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Abstract

The present pioneering study investigated the differences across various types of family structure among Chinese adolescents with proactive and reactive aggression. It aimed at providing frontline social workers and family therapists with inspirations for designing suitable interventions for adolescents with specific subtypes of aggressive behavior from different family structure backgrounds. After completing an online survey including the Reactive and Proactive Aggression Questionnaire (RPQ) and the subscales of the Child Behavior Checklist – Youth Self-report (CBCL-YSR) on aggressive behavior, delinquent behavior, and anxious/depressed symptom, 520 out of 13,338 Chinese adolescents aged 11 to 18 were randomly selected and stratified based on the types of family structure (intact family, single father family, single mother family, stepfather family, and stepmother family). Expectedly, boys elicited more proactive aggression, delinquent behaviors, and aggressive behaviors than girls. Besides, significant cross-structural differences were found between children from stepmother family, who showed more proactive aggression, anxious/depressed symptoms, aggressive behaviors, and delinquent behaviors, and those from intact family regardless of gender. The interaction effects between gender and family structure were significant for reactive aggression, anxious/depressed behavior, and aggressive behavior. An interaction effect showed boys from stepmother families were more reactively aggressive than those from intact families. In addition, more anxious/depressed symptoms were found in boys from stepmother family than those from intact and single mother families. In conclusion, the impacts of family structure on proactive aggression and delinquent behavior are not gender specific, but the impacts on reactive aggression and anxious/depressed behavior are only specific to boys.

Keywords Family structure · Gender · Reactive aggression · Proactive aggression · Delinquent · Anxious/depressed

✉ Annis Lai Chu Fung
annis.fung@cityu.edu.hk

Extended author information available on the last page of the article

Family structure has been identified as a high-risk factor for children in developing externalizing behavior problems (Demuth & Brown, 2004) and aggressive behavior (Griffin Botvin, Scheier, Diaz, & Miller, 2000; Ram & Hou, 2005; Vaden-Kiernan, Ialongo, Pearson, & Kellam, 1995). To the best of the author's knowledge, however, no study to date has investigated into the correlations between the types of family structure and children with reactive and proactive aggression although the differentiation of the subtypes of aggression has been scrutinized for the past three decades (Cima & Raine, 2009; Dodge & Coie, 1987; Fontaine, 2006; Fung, Raine, & Gao, 2009; Poulin & Boivin, 2000). The aim of the study herein was to fill up this research gap as well as highlight the significance of the family configuration for children exhibiting reactive and proactive aggressive behaviors and hence assist helping professions to design intervention strategies accordingly.

Reactive and proactive aggression can be developed as early as 4.4 and 6.8-years-old respectively (Dodge, Lochman, Harnish, Bates, & Pettit, 1997) and both peaked at the age of 15 (Barker, Tremblay, Nagin, Vitaro, & Lacourse, 2006). Reactive aggressors are characterized as having a high degree of impulsivity and poor problem-solving ability with proceeding hostile attribution to others' intent, resulting in impetuous behavior while being provoked (Crick & Dodge, 1994, 1996; Raine et al., 2006), whereas proactive aggressors are associated with psychopathy and characterized as narcissistic, callous-unemotional, and cold-blooded, engaging in aggressive instrumental behaviors driven by personal goals and intentions (Brendgen, Vitaro, Boivin, Dionne, & Pérusse, 2006; Vitaro, Brendgen, & Tremblay, 2002).

Based on the ecological perspective, child development does not occur universally but interacts with biological and environmental influences that shape the child's behavior. Common ecological risk factors that contribute to problem behaviors in Hong Kong children include problematic life values, neglect of holistic development, hopelessness, academic excellence orientation, uneven income distribution, parenting problems, and unhealthy family development (Shek & Siu, 2019). Specifically, children's gender and their corresponding type of family structure, including intact family, single-parent family, and step-parent family, create interactions that serve as mediators on affecting their problem outcomes (Clingempeel & Segal, 1986). Yet, no previous studies examined the correlation between family structures and the subtypes of aggression, except a single study which briefly mentioned the reactive-proactive aggression model and reported single-parent status at age 7 could predict proactive aggression in schoolboys at age 16 (Raine et al., 2006). According to Ram and Hou (2005), boys who live with a stepparent or a lone parent tend to have more externalizing problems, but there was limited evidence that boys had more negative behavioral outcomes than girls when they live with their lone mother.

To date, stepfamily literature has well-documented that divorce and remarriage of parents put stepchildren at risk for behavioral and emotional problems (Hetherington & Clingempeel, 1992). However, contradicting findings were found on the severity of stepfamilies' effect on boys and girls, respectively. Some results revealed that step-girls would demonstrate more problems than step-boys (Jensen & Shafer, 2013; Needle, Su, & Doherty, 1990), whereas the others showed the opposite (Coleman, Ganong, & Fine, 2000; Sweeney, 2010). Thus, the current research constituted a pioneering and vital investigation on family structures (intact, single-mother, single-father, stepfather, and

stepmother families) and gender differences in schoolchildren with reactive and proactive aggression.

It was hypothesized that family structure had a main effect on child aggression. A previous study regarding the aggressive behavior across three generations found that the aggressive parenting not only transmitted the aggressive behavior from one generation to the next but also the non-optical parenting style, which ended up a negative circular relationship (Conger, Nepl, Kim & Scaramella, 2003). Children from the four types of non-intact families, which are single-father, single-mother, stepfather, and stepmother families, were expected to report more reactively and proactively aggressive behaviors compared with those living in an intact family (i.e., a family with both biological parents). Proactive and reactive aggression (and their corresponding characteristics) were to be manifested differently across the family structures. Moreover, an interaction between the effects of gender and family structure was posited, with boys expected to be affected by family structure to a greater extent than girls.

Method

Participants and Procedure

A formal recruitment was conducted to openly recruit all middle schools in Hong Kong (approximately 500) to join a study on school violence, resulting in positive responses from 154 schools. Eventually, thirty schools were randomly selected. All grade 7 to grade 9 students in the 30 shortlisted schools were invited to participate in the study. Written parental consent was obtained before study commencement, and ethical approval was obtained from the Research Committee of the university. Both the participating children and their parents were informed that the study aimed to better understand the behavior and needs of adolescents in Hong Kong.

A total of 13,338 Chinese adolescents (7589 boys, 5722 girls, and 27 unreported), aged 11 to 18 ($M=13.4$, $SD=1.22$), conducted an online demographic survey at school. Items included age, gender, family members in the household, biological parents' marital status, the area of residence, and family income. The adolescents completed the survey in batches of 30 to 40 at a time in their school's computer room. A research assistant was on hand to maintain discipline and answer inquiries.

The adolescents were then categorized into five mutually exclusive groups based on the biological parents' marital status and guardians with whom they lived most of the time in the past three months: (i) a biological father and a biological mother, (ii) a biological father only, (iii) a biological mother only, (iv) a biological mother and a stepfather, and (v) a biological father and a stepmother. Details of the categorization are provided in Table 1. About 100 Chinese adolescents were selected from each family structure group by quota sampling with IBM SPSS, giving a total of 520 Chinese adolescents (298 boys and 222 girls, aged 11 to 18 [$M=13.5$, $SD=1.23$]), and were asked to complete an online behavioral questionnaire in their schools (approximately 3 months after the demographic survey). Details of the selection are presented in Table 2.

Table 1 Properties of the demographic survey respondents after categorization

Guardians Living Together	<i>n</i>			Age	
	All	Boy	Girl	<i>M</i>	<i>SD</i>
Biological Father and Biological Mother	10,728	6056	4654	13.4	1.21
Biological Father	446	297	165	13.4	1.19
Biological Mother	1247	721	523	13.5	1.31
Stepfather and Biological Mother	177	91	85	13.8	1.34
Stepmother and Biological Father	144	87	57	13.3	1.08
Other	580	337	238	13.4	1.27
Total	13,338	7589	5722	13.4	1.22

Note. Gender Missing = 27

Measures

The behavioral questionnaire comprised the Reactive and Proactive Aggression Questionnaire (RPQ; Raine et al., 2006) and the Child Behavior Checklist-Youth Self-report (CBCL-YSR; Achenbach, 1991).

RPQ The RPQ (Raine et al., 2006) is self-report measuring children's reactive aggression and proactive aggression. It comprises 23 behavioral items rated on a 3-point Likert scale (0 = never; 1 = sometimes; 2 = often), with 11 items assessing reactive aggression (e.g., “*reacts angrily when provoked by others*”) and 12 assessing proactive aggression (e.g., “*would hurt others to win a game*”). A Chinese version of the RPQ (Fung et al., 2009) was adopted in this study. The Cronbach's alpha of the Chinese RPQ was .83 for the reactive aggression scale, .91 for the proactive aggression scale, and .91 for the full RPQ.

CBCL-YSR The CBCL-YSR (Achenbach, 1991) is a checklist that is widely used to assess eight types of internalizing and externalizing problems in youth aged 11 to 18. Respondents rate themselves at that moment or within the past three months on a 3-point Likert scale that ranges from 0 (inaccurate) to 2 (very accurate). Three of the CBCL-YSR's eight scales were applied in this study, namely, aggressive behavior (19 items, e.g., “*I destroy things belonging to others*”), anxious/depressed symptom (16 items, e.g., “*I cry a lot*”), and delinquent behavior (11 items, e.g., “*I lie or cheat*”). The higher the summed scores, the severer is the condition. The Chinese translation was adopted considering the language differences (Leung et al., 2006). The Cronbach's alpha values were .89 for aggressive behavior, .89 for anxious/depressed symptom, and .80 for delinquent behavior.

Design

The study adopted a 2 × 5 factorial design, with gender and family structure as independent variables. Family structure was operationalized by the guardians the

Table 2 Properties of the selected and unselected respondents

		Selected	Unselected
Age	<i>M</i>	13.5	13.4
	<i>SD</i>	1.23	1.22
<i>n</i>		520	12,818
Gender	Boy	298	7291
	Girl	222	5500
Guardians Living Together	Biological Father and Biological Mother	100	10,628
	Biological Father	105	357
	Biological Mother	104	1143
	Stepfather and Biological Mother	101	76
	Stepmother and Biological Father	110	34
	Other	0	580
Area of Residence	Hong Kong Island	30	1276
	Kowloon West	70	1746
	Kowloon East	49	1390
	New Territories West	122	2929
	New Territories East	203	5107
	Islands and Mainland	10	224
Monthly Family Income	≤ HK \$10,000	143	3237
	HK\$10001–20,000	93	2783
	HK\$20001–30,000	23	822
	> HK\$30000	17	551

Note. Some respondents did not report all demographic factors

respondent lived with, and hence categorized into five family types: (i) intact (biological father and biological mother), (ii) single father (biological father alone), (iii) single mother (biological mother alone), (iv) stepfather (biological mother and stepfather), and (v) stepmother (biological father and stepmother). The dependent variables were behavioral problems, namely reactive aggression, and proactive aggression, measured by the RPQ (Raine et al., 2006), and aggressive behavior, anxious/depressed symptom, and delinquent behavior measured by the CBCL-YSR (Achenbach, 1991).

Data were analyzed with Linear Mixed Models (LMMs). The author entered Gender, Family, and Gender x Family interaction as fixed factors. As random effects, we had intercepts for School, with identity chosen as the covariance structure. Restricted maximum likelihood estimation was used. In the models, the score of a dependent measure Y is represented as:

$$Y = \gamma_0 + b_1\text{Gender} + b_2\text{Family} + b_3(\text{Gender} \times \text{Family}) + u + r$$

where γ_0 refers to the overall intercept; b_1 , b_2 , and b_3 are the coefficients of the fixed factors (i.e., Gender, Family, and Gender x Family interaction); u represents the random intercept (i.e., School-specific random effect); and r is the residual.

As both Gender and Family are categorical, the actual model consisted of dummy coded variables. Boy and the intact family condition were treated as the baseline.

Cohen's *d* was used as the effect size of the pairwise comparison. Cohen (1988) suggested a guideline to interpret effect sizes: .2 as small, .5 as medium and .8 as large.

Results

Regarding the sampling, there were no significant differences between the selected and unselected Chinese adolescents in terms of age [$t(13115) = 1.95, p = .051$], gender distribution [$\chi^2(1) = .019, p = .89$], area of residence [$\chi^2(5) = 8.93, p = .11$], or family income [$\chi^2(3) = 7.47, p = .058$]. The participants' distribution in terms of gender and family structure is reported in Table 3. The results of a chi-square test showed that gender was not significantly associated with family structure [$\chi^2(4) = 4.29, p = .37$].

Family income could be one of the confounding variables that contribute to the children's behavioral problems. Due to a large proportion of missing values (only 276 participants reported family income), it was not included in the models. Nevertheless, results from ANOVAs indicated that there were no significant effects of family income on reactive aggression, $F(3, 272) = .61, p = .61$, proactive aggression, $F(3, 272) = .27, p = .85$, aggressive behavior, $F(3, 272) = .25, p = .86$, anxious/depressed symptom, $F(3, 272) = .79, p = .50$, and delinquent behavior, $F(3, 272) = .02, p = 1.0$.

Table 3 Means and standard errors of the independent variables by gender and family structure

Gender	Family	<i>n</i>	Reactive Aggression		Proactive Aggression		Aggressive Behavior		Anxious/Depressed		Delinquent Behavior	
			<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Boy	Intact	61	4.64 ^a	.51	1.18	.44	7.24 ^a	.85	5.22 ^a	.82	2.59	.44
	Single father	63	5.09 ^{ab}	.50	2.52	.43	8.48 ^{ab}	.83	7.57 ^{ab}	.80	3.97	.43
	Single mother	62	4.77 ^{ab}	.50	1.79	.43	6.97 ^a	.84	5.40 ^a	.81	2.88	.43
	Stepfather	49	6.70 ^{ab}	.56	2.19	.48	9.19 ^{ab}	.94	7.74 ^{ab}	.91	3.69	.48
	Stepmother	63	6.63 ^b	.50	4.20	.43	11.59 ^b	.83	10.45 ^b	.80	5.32	.43
Girl	Intact	39	4.49	.63	.55	.54	6.44	1.04	7.69	1.01	2.33	.54
	Single father	42	5.35	.61	.99	.52	7.39	1.01	8.32	.98	3.50	.52
	Single mother	42	5.41	.61	1.01	.52	8.52	1.01	8.03	.98	3.21	.52
	Stepfather	52	4.89	.55	1.00	.47	6.65	.91	7.24	.88	3.16	.47
	Stepmother	47	4.73	.57	1.16	.49	7.59	.95	7.29	.92	3.24	.49
All	Intact	100	4.57	.41	.87 ^e	.35	6.84 ^e	.68	6.45 ^e	.66	2.46 ^a	.35
	Single father	105	5.22	.40	1.76 ^{ef}	.34	7.93 ^{ef}	.66	7.95 ^{ef}	.64	3.73 ^{ab}	.34
	Single mother	104	5.09	.40	1.40 ^{ef}	.35	7.74 ^{ef}	.67	6.71 ^{ef}	.64	3.05 ^{ab}	.34
	Stepfather	101	5.79	.40	1.60 ^{ef}	.35	7.92 ^{ef}	.67	7.49 ^{ef}	.64	3.43 ^{ab}	.34
	Stepmother	110	5.68	.39	2.68 ^f	.33	9.59 ^f	.65	8.87 ^f	.62	4.28 ^b	.33

Note. Means with differing superscripts within column of the same gender are significantly different at $p < .05$. Post-hoc pairwise comparisons: Bonferroni

Table 4 presented the Pearson correlation matrix of the dependent variables. There were significant and positive correlations among aggressive behavior, delinquent behavior, anxious/depressed symptom, reactive aggression, and proactive aggression.

RPQ Details of the models are presented in Table 5. The results from LMMs indicated that random intercepts of both models were not significant, $p > .05$, suggesting there were no differences among children from different schools. On the other hand, boys had significantly more proactive aggression than girls, $F(1, 509.93) = 23.39$, $p < .001$. There was also a significant fixed effect of family structure on proactive aggression, $F(4, 506.25) = 4.07$, $p = .003$. However, both fixed effects on reactive aggression were insignificant. The Gender x Family interaction effect on reactive aggression was significant, $F(4, 507.96) = 2.41$, $p = .049$, while that on proactive aggression was insignificant, $F(4, 508.00) = 2.20$, $p = .068$.

The Bonferroni post-hoc test results were shown in Table 3. Children, regardless of gender, in stepmother family had significantly more proactive aggression than children in intact family ($d = .15$). Moreover, only boys, but not girls, in stepmother family had significantly more reactive aggression than those in intact family ($d = .44$).

CBCL-YSR Results from LMMs indicated that random intercepts of all the three models were insignificant, $p > .05$. Regarding fixed effects, boys had significantly more aggressive behavior, $F(1, 509.91) = 5.77$, $p = .017$, and delinquent behavior $F(1, 509.94) = 4.10$, $p = .043$. There were also significant fixed effects of family structure on aggressive behavior, $F(4, 506.07) = 2.49$, $p = .042$, anxious/depressed symptom, $F(4, 506.11) = 2.51$, $p = .041$, and delinquent behavior, $F(4, 506.84) = 4.29$, $p = .002$. However, there were significant Gender x Family interaction effects on aggressive behavior, $F(4, 507.89) = 2.70$, $p = .030$, and anxious/depressed symptom only, $F(4, 508.06) = 3.79$, $p = .005$.

The Bonferroni post-hoc test results were shown in Table 3. Consistently to the findings in the RPQ, only boys, but not girls in stepmother families had significantly more aggressive behavior and anxious/depressed symptom than those in intact family ($d = .52$ and $.77$ respectively) and single mother family ($d = .60$ and $.73$ respectively). In addition, children, regardless of gender, in stepmother family had significantly more delinquent behavior than those in intact family ($d = .52$).

Table 4 Correlation matrix of dependent variables

Variables	1	2	3	4
1. Reactive Aggression				
2. Proactive Aggression	.63*			
3. Aggressive Behavior	.69*	.61*		
4. Anxious/Depressed	.57*	.41*	.69*	
5. Delinquent Behavior	.56*	.68*	.75*	.62*

Note. * $p < .05$

Table 5 Estimates of fixed effects on behavioral problems

Parameter	Reactive			Proactive			Aggressive			Anxious			Delinquent		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept (γ_0)	4.64	.51	9.11*	1.18	.44	2.69*	7.24	.85	8.56*	5.22	.82	6.37*	2.59	.44	5.94*
Gender (b_1)															
Girl	-.15	.79	-.19	-.63	.68	-.92	-.8	1.32	-.61	2.47	1.28	1.93*	-.26	.69	-.39
Family (b_2)															
Single father	.44	.69	.64	1.34	.6	2.25*	1.24	1.15	1.08	2.36	1.12	2.11*	1.38	.6	2.29*
Single mother	.13	.7	.19	.61	.6	1.02	-.27	1.16	-.23	.18	1.13	.16	.29	.6	.48
Stepfather	2.05	.74	2.77*	1.01	.64	1.58	1.96	1.23	1.59	2.53	1.2	2.11*	1.1	.64	1.71
Stepmother	1.99	.7	2.86*	3.02	.6	5.05*	4.35	1.15	3.78*	5.23	1.12	4.67*	2.72	.6	4.53*
Gender \times Family (b_3)															
Girl \times Single father	.42	1.11	.38	-.9	.95	-.95	-.28	1.83	-.16	-1.73	1.78	-.97	-.21	.96	-.22
Girl \times Single mother	.79	1.11	.72	-.16	.95	-.17	2.35	1.83	1.28	.16	1.78	.9	.59	.96	.62
Girl \times Stepfather	-1.65	1.11	-1.5	-.56	.95	-.59	-1.74	1.84	-.95	-2.98	1.78	-1.67	-.27	.96	-.28
Girl \times Stepmother	-1.74	1.09	-1.6	-2.42	.94	-2.58*	-3.2	1.81	-1.77	-5.63	1.76	-3.21*	-1.81	.94	-1.93*

Note. * $p < .05$. Reactive = Reactive Aggression. Proactive = Proactive Aggression. Aggressive = Aggressive Behavior. Anxious = Anxious/Depressed. Delinquent = Delinquent Behavior

Discussion

The statistically significant findings of this study strengthen the understanding of the relationship between family structure and reactive-proactive aggression. Unexpectedly, only adolescents from stepmother families reported more proactive aggression, anxious/depressed symptoms, aggressive behaviors, and delinquent behaviors than those from intact families, regardless of gender. Adolescents from single-parent and stepfather families showed no such differences. It seems that stepmother families are at the highest risk of having children with externalizing and internalizing problems, even though such families consist of a biological father and a non-biological mother. Proactive aggression is positively associated with externalizing problems, including delinquency, anti-social behaviors, and psychopathic behaviors (Brendgen, Vitaro, Tremblay, & Lavoie, 2001; Fite, Raine, Stouthamer-Loeber, Loeber, & Pardini, 2010; Nas, Castro, & Koops, 2005; Pulkkinen, 1996; Raine et al., 2006; Vahl et al., 2016; Vitaro, Gendreau, Tremblay, & Oligny, 1998). It is difficult for stepmothers to establish a close relationship, as similar to biological mothers, with their non-biological children (Kurdek & Fine, 1993). Furthermore, without the opportunity for bonding an attachment during childhood, non-biological mothers find it very difficult to exercise discipline and correction (Fine & Kurdek, 1994), which may cause the children's superiority and dominance in bullying others because of weak associative learning about negative outcomes and consequences. These adolescents tend to overestimate themselves and adopt aggressive and bullying behaviors toward others, as a means of obtaining their personal goals and rewards with a strong expectation on positive outcomes. The same occurs if the biological father takes charge of all disciplinary matters among the children, but the stepmother is not involved. Proactive aggression in children is strongly associated with inconsistent parenting styles between two parents, harsh parenting, insufficient parental guidance and supervision, and insufficient parental monitoring and disciplinary training (Curtner-Smith, 2000; Dodge, Pettit, Bates, & Valente, 1995). Children who experienced familial adversity may also be more prone to developing proactively aggressive behavior than those who do not (Brendgen et al., 2001; Haapasalo & Tremblay, 1994).

The results of this study are consistent with the previous findings in the literature that boys showed more aggressive behaviors, especially proactive aggression, and delinquent behaviors, than girls (Fung et al., 2009; Baldry & Farrington, 2000). However, the Gender x Family interaction effect showed that boys, but not girls, in stepmother families had more reactive aggression than those from intact families, and more anxiety/depression symptoms than those in intact and single-mother families. Boys in stepmother family suffered from internalizing problems more than externalizing problems and showed more anxious/depressed symptoms than delinquent behaviors. In previous studies, reactive aggression was shown to be positively related to internalizing more than externalizing problems (Vitaro et al., 1998). Adolescents with reactive aggression tend to display inattention, depression, impulsivity, and anger traits and temperament (Fite et al., 2010; Raine et al., 2006). Boys may find it more difficult to establish a relationship with stepmother than girls, especially in adolescents (King, 2007). They may have an insecure relationship and hide their anxiety from their stepmother, which could affect their emotional stability and cause poor emotion regulation (Love & Murdock, 2004). Reactive aggression is positively associated with

hostile attributional bias, which may easily trigger anger and temper when the adolescents perceive a threat or provocation (Crick & Dodge, 1994). Parents of children with reactive aggression are reported to be more controlling and punitive (Vitaro, Barker, Boivin, Brendgen, & Tremblay, 2006) and show a higher prevalence of physical abuse and harsh and coercive parenting (Dodge et al., 1997; Dodge et al., 1995). Chinese parents tend to use physical punishment to boys more than girls (Lansford et al., 2010); and Chinese culture treats boys more stringently and strictly (Shek, 2007a). Boys also have to suppress their emotions and are not allowed to cry and express themselves (Ross & Mirowsky, 1984).

In sum, living in a stepmother family is the most significant risk factor for proactive aggression among children and reactive aggression among boys. It is consistent with the previous studies which found this familial factor played an influential role in the development of aggressive behaviors in children (Orpinas, Murray, & Kelder, 1999). According to Orpian et al. (1999), schoolchildren who lived with both parents scored significantly lower on aggression than those in other family structures, and children living with a stepmother were the most likely to get into fights at school, be injured in a fight, and carry handguns or other weapons. However, the study focused only on general aggressive behaviors without investigating the subtypes of aggression or gender differences. The current study fills this research gap by examining gender differences in the development of reactive and proactive aggression in the family environment. The findings thus offer a new perspective for social workers, school counselors, family therapists, and other helping professionals on the need for distinct interventions for reactive and proactive aggression, and for boys and girls, in their practical clinical work.

There is also a need for helping professionals in alerting the rapid change in family structure that have taken place in recent years. In Hong Kong, fewer married couples were in their first marriage in 2013 compared with two decades earlier. The number of marriages in which both parties were marrying for the first time was 41,190 in 1981 and 35,703 in 2013. Remarriages for one or both parties constituted 35.3% of all marriages in 2013, an eightfold increase over 1981 (4.3%), with the number rising from 2196 to 19,508 over the 22-year period (Census and Statistics Department, 2012, 2015a). Furthermore, the number of marriages that were remarriages for both parties also increased significantly over the period from 305 in 1981 to 8676 in 2013 (a 2745% increase). The number of marriages that were the first marriage for the bridegroom and remarriage for the bride and vice versa rose from 850 and 1041 to 4399 and 6433, respectively over the period (Census and Statistics Department, 2012, 2015b). A similar trend of soaring divorce and remarriage rates can be seen in North America and Europe. For instance, the number of divorces and annulments in the U.S. skyrocketed from 385,000 in 1950 to 813,862 in 2014 (Hamilton, Martin, Osterman, Curtin, & Mathews, 2015; Norton & Miller, 1992). It is estimated that approximately two-thirds of separated women will remarry (Norton & Miller, 1992). Some researchers estimated that the prevalence of remarriages in the U.S. has already achieved equity with that of first marriages (Bumpass, Sweet, & Martin, 1990). The number of single-mother households in the U.S. has also increased exponentially, rising from 3.6 million in 1950 to 10.9 million in 1989 (Wetzel, 1990). According to the findings presented herein, the number of children, boys, in particular, exhibiting reactive and proactive

aggression is likely to grow along with this alarming rise in the number of non-intact families.

Other family processes may mediate the relationship between family structure and child aggression in Hong Kong, such as traditional parenting practices, working parents, cross-border marriage, and child abuse (Shek & Siu, 2019). First, traditional Chinese parenting beliefs involve *guan* or “training” which stresses on positive involvement (i.e., deep concern and care) and close supervision (i.e., firm control and governance of child’s behavior), and high involvement of the mother (Chan, Bowes, & Wyver, 2009). Low *guan* is associated with high parent-reported proactive aggression in both boys and girls (Gao, Zhang, & Fung, 2015). Integrating with current findings, stepmothers may find it more challenging to exercise *guan*, which results in an increased risk of proactive aggression in their child.

Moreover, there are increasing rates of working parents, cross-border marriage, and child abuse (especially in cross-border families) in Hong Kong (Shek & Siu, 2019). Parents who work for long hours or across the border may experience high work and parenting stress, and problems with disciplining and interacting with their child. Particularly, fathers are more detached in non-intact families, which mediates poorer parental control, parent-child relationship, and child psychological wellbeing in non-intact families, compared to intact families (Shek, 2007b; Shek, 2008). Fathers’ behavioral control and mother-child relationship have been shown as robust predictors of child delinquency (Shek & Zhu, 2019). Children with an unstable emotional state can be easily triggered by perceived provocations and engage in revengeful behavior. These further explain why children in stepmother families showed a higher risk for externalizing (i.e., aggressive and delinquent behaviors) and internalizing problems (i.e., anxious/depressed symptoms).

In children with reactive aggression, aggressive behavior is driven by emotion, anger arousal, hot-temper, and impulsivity owing to the hostile attributional bias of cognitive distortion. They easily get involved in fights and assaults when they encounter ambiguous situations and selectively pick up on negative cues, and then they misinterpret them as signs of being provoked and victimized by others. They thus tend to be captured and prosecuted by the police more often, with witnesses offering evidence of their violence-related crimes, and to be sent to jail and acquired a criminal record in adulthood (Walters, Frederick, & Schlauch, 2007). Most children with proactive aggression exhibit delinquency and antisocial personality traits in adolescence and are widely recognized as being predisposed to both significant mental health problems and crime and violence, including homicide, in adulthood (Fung & Lam, 2011).

These horrendous outcomes in adulthood impose an enormous burden on society in terms of economic costs, and they also reduced occupational and social functioning and quality of life for both victims and perpetrators (Foster & Jones, 2005). Thus, the current study has targeted a very important international research area, and its findings have significant implication for preventing and reducing the overall level of proactive aggression in childhood, with the potential for long-term benefits to families and considerable saving for society.

It is essential to help children in non-intact families develop emotional competence and resilience to protect them against externalizing and internalizing problems. Front-line professionals should pay specific attention to children in stepmother families and consider adopting Positive Youth Development programs such as the Project

P.A.T.H.S. which has shown longitudinal effectiveness in improving cognitive, emotional, behavioral, and moral competencies, as well as resilience and bonding with others, targeting children in non-intact families in Hong Kong (Shek & Ma, 2012). Positive psychosocial development can prevent children from engaging in delinquent behaviors, lower depression levels, and improve their life satisfaction (Zhu & Shek, 2020).

Limitations and Directions for Future Research

This study has a number of limitations. First, as it was a cross-sectional study, causality cannot be inferred from the results. We can at most conclude that there are significant family structure-related differences in behavioral problems, but unable to pinpoint the exact factors responsible for those differences. Second, as multiple studies have demonstrated, it is not the family structure itself but rather the dynamics within the family that affect child development (e.g., Bowers, Smith, & Binney, 1994; Peterson & Zill, 1986). In other words, this study finding could not serve as a model to explain the formation of aggressive behavior from their family structure but intended for specific professions to draw attention on high-risk children, such as boys in stepmother family structure. Third, we asked the children to identify their cohabitating guardians and were thus restricted to assume that the children were most affected by the custodial parent and to ignore the influence of non-custodial parents (and thus to ignoring the effects of genes on emotional and behavioral problems). Also, shared custody may happen, for example, children who live in father/step-mother family could live in single mother or mother/step-father family. We categorized the subjects based on the guardians with whom they lived most of the time in the past three months, but the proportion of custody was not addressed, which increased the variance within the conditions. Forth, the participants in this study are from age 11 to 18. However, the comparisons among different ages were not included in this study. Fifth, children living in families with non-biological parents, or living without parents (i.e., orphans) were excluded from the study. These types of family structure should be included in future research to examine their distinct effects on the development of aggression in children. Finally, only 154 middle schools (about 30%) in Hong Kong were interested in joining the study, of which 30 schools were randomly selected to participate. The representativeness of the sample and the external validity of the study are thus affected. It is uncertain whether schools having more students with behavioral problems are more likely to participate. This study can provide a reference for comparison with similar Western studies, but an interesting direction for future research would be to investigate cultural differences in the quality of relationships among individual family members.

Conclusion

This pioneering and original study reported herein provides further evidence of the associations between reactive and proactive aggression among diverse family structures. An intact family is the most protective factor for preventing internalizing and externalizing problems as well as reactive and proactive aggression among Chinese

adolescents. Among the family structures investigated, stepmother families have the highest risk of having children with proactive aggression, anxiety/depression, and delinquent behaviors, regardless of gender. Regarding gender specificity, stepmother families also have a higher risk of having reactively aggressive and anxious/depressed boys. The implication is that helping professionals should provide additional support to non-intact families, particularly stepmother families with boys, with a focus on developing those families' parental disciplinary and monitoring skills, parental efficacy, boundary refinement, and relationship-building skills. It is also recommended that they work at reducing hostile attributional bias in children with reactive aggression, as well as narcissism in the affective domain of psychopathy, and enhance empathy competence in children with proactive aggression. The findings offer a new perspective for family therapists, encouraging them to consider family structure when counseling and treating children who exhibit reactive and proactive aggression, which could in turn help to reduce violent crimes, including murder. A future direction is aimed at exploring the mechanism behind having higher aggressive behaviors and depression in stepmother families.

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Affiliations

Annis Lai Chu Fung¹

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