Abstract

Cross-border students are a population born out of the unique geo-political context in Hong Kong. Given the complexity of their citizenship status, they reside in the border city of mainland China but attend school in Hong Kong, commuting between two cities daily. This special arrangement creates many challenges for their health and well-being. This study aimed to investigate the health and wellbeing of cross-border students as compared to new immigrant students (those born in mainland China but have resided in Hong Kong for less than seven years) and local students, and in relation to a range of family and school factors. Drawing upon data from a cross-sectional survey with 2,180 4^{th}-9^{th} grade students, the results of regression analyses suggested that residency status did matter for the health and wellbeing of students, as reflected by the nuanced differences in their self-rated health status, happiness and mental wellbeing. The study also identified a series of family and school factors which were positively associated with various outcome measures, and showed different strength of effects across the three groups of cross-border, new immigrant and local students. Implications of these research findings for service development and future research were also discussed.

Key words: Cross-border students; new immigrant students; health and wellbeing; family and school factors; Hong Kong

Contribution of Family and School Factors to the Health and Wellbeing of Cross-border, New Immigrant and Local Students in Hong Kong

1. Introduction

The *one country two systems* geopolitical context of Hong Kong has shaped a unique educational setting with school-age children from diverse residential backgrounds. Although the majority of students are Chinese, their life experiences could significantly vary depending on one's residential background. Besides those local students who are born and raised in Hong Kong, there are at least two other student groups – new immigrant students (NIS) and cross-border students (CBS). According to the 2016 Hong Kong Population By-census, a total of 26,368 new immigrant minors aged below 15 live in Hong Kong (Hong Kong Census and Statistics Department, 2018), where new immigrants refer to people who report to be born in the Mainland, of Chinese nationality and have stayed in Hong Kong for less than seven years. To obtain permanent residency (right of abode) eventually, new immigrants must have resided in Hong Kong for a continuous period of at least seven years (Hong Kong Immigration Department, 2020). Meanwhile, known as cross-border students or cross-boundary students (CBS), children who hold Hong Kong permanent residency, reside in Mainland China, but attend school in Hong Kong and commute on a daily basis have become a noticeable group among Hong Kong school-age children (Yuen, 2011). Official statistics released in 2016 shows that the number of CBS has increased more than twice in the past five years, rising from 12,865 in 2011-2012 to 28,106 in 2015-2016, and the trend is expected to continue in the years to follow.

The soaring number of children living in immigrant or cross-border families gives it special prominence in understanding and safeguarding the health and wellbeing of Hong Kong

children. As is known, health and wellbeing in childhood lay the foundation of vital developmental tasks of adolescence, affect lifetime health trajectories and future generations profoundly (Patton et al., 2016). Findings of existing research on the health and wellbeing of different children and youth groups in Hong Kong are inconsistent and inconclusive (Wong, Yan, Lo, & Hung, 2003). Some research reported that new immigrant children perceived more stress and worse mental health than local children due to the migration process (Chan, 1999). Other studies found that locally born children and youth had poorer mental health than their immigrant counterparts (Wong et al., 2003; Lam, Tsoi, & Chan, 2005). Studies on cross-border children are scarce to date, providing little evidence about their health and wellbeing.

Developmental theorists have asserted that social contexts shape the development and wellbeing of children and youths, and family and school are particularly critical for the positive growth of this population (e.g., Bronfenbrenner, 1979; Parcel, Dufur, & Cornell Zito, 2010). As summarized in an extensive global review on the social determinants of health in young people aged 10–24, safe and supportive families and schools are essential for children and youth to realize their full potential and to achieve ideal health conditions (Viner et al., 2012). In contrast, ample evidence suggests that undesirable relationships in family and school probably hinder children's wellbeing and development, reflected in problematic behaviours (e.g., suicide attempts) and mental health issues (e.g., depression, mental disorder) (Colarossi & Eccles, 2003; Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000; Kidd et al., 2006). For new immigrant and cross-border students in Hon Kong, they are faced with unique challenges while adjusting to changed family structure and relationship dynamics following family reunion, adapting to new school curriculum and environment, and moving between two different sociocultural systems on a frequent basis (especially for cross-border

students), which all constitute risk factors that may impede their healthy development. Although all raised in Chinese families, cross-border, new immigrant and local students vary greatly in their experiences of living and educational settings given their different residency status. However, we have little knowledge about these differences and their corresponding impacts on the health and well-being of youths in Hong Kong given the dearth of previous studies that cover all three groups. We have also yet to understand how various protective factors in the family and school contexts may play a role in promoting the health and wellbeing of students with different residential backgrounds, presumably in different ways. With the growing population size of new immigrant and cross-border students in Hong Kong, and to fill the gap in literature, this study aims to examine the effects of family and school factors on the health and wellbeing of youths living and/or studying in Hong Kong with different residential backgrounds, namely, cross-border students (CBS), new immigrant students (NIS), and local students (LS). The research questions guiding the study are: how do students with different residential backgrounds (i.e., local, new immigrant, and cross-border) in Hong Kong differ in their health and wellbeing, and how do various family and school factors show different effects on the health and wellbeing across the three groups of students.

2. Literature review

2.1. Diverse residential backgrounds of students in Hong Kong

The phenomenon of cross-border students is legally generated by the 'Right of Abode' in Hong Kong law (Hong Kong Immigrant Department, 2020). Children born out of mainland Chinese couples are entitled to the "Right of Abode" and issued permanent residency automatically via cross-border birth. Therefore, they are also called "double-no children", meaning that their parents are both not Hong Kong residents. As legitimate citizens of Hong

Kong, these children are entitled to all social welfare and services, including public education. However, their parents are not eligible for local social benefits as outsider and non-citizens of Hong Kong (Chan, Ngan, Wong, & Chan, 2017). On the other hand, given the household registration (*hukou)* system in China, cross-border children cannot attend public school in the mainland without a local *hukou.* Therefore, attending school in Hong Kong becomes a reasonable educational option for CBS families. It should be noted that within the CBS group, children may come from diverse family configurations. That is, not all CBS are the so called "double-no children". There is a proportion of CBS coming from cross-border families wherein one parent is the local citizen of Hong Kong and the other is mainland Chinese, but they choose to live in Shenzhen and let their children commute for education (Nancy, 2012).

Given the rapid growth of this population, cross-border children have received increasing attention in the media in recent years, yet only a handful of studies have focused on this group to date. Within the limited studies, scholars mainly discussed the causes and implication of CBS phenomenon, with some pointing out the challenges faced by cross-border children such as long-time daily transportation, language barriers in Cantonese and English, limited knowledge of Hong Kong education system, weaker sense of belonging, fewer opportunities to participate in extra-curricular activities, confused identity, and the like (Chan & Ngan, 2018; Chan et al., 2017; Chan & Kabir, 2014; Nancy, 2012; Yuen, 2011). However, these studies fail to investigate the health and well-being of cross-border children as well as the contextual factors that contribute to their health and well-being. Particularly, the subjective experiences of cross-border children remain largely unexplored.

On the other hand, new immigrant students form another sizable proportion of school-age children in Hong Kong. The Hong Kong Immigrant Ordinance grants a daily quota of 150 Mainland Chinese to migrate to Hong Kong via an arrangement called "one-way permit" (The Hong Kong Legal Information Institute, HKLII). Migration per se is an extremely stressful process involving changes in various domains including social, cultural and psychological transitions. The migration and integration process poses many threats to the health and wellbeing of children from new immigrant families (Chan & Chan, 2004; Rao & Yuen, 2001; Wong, Chou, & Chow, 2012). Besides many discrepancies in social norm and lifestyle, cultural differences also manifest in educational settings across the border. For instance, the official language in mainland China is Mandarin, whereas Hong Kong residents mainly speak Cantonese, which creates language barriers for the newly arrived. Findings of existing research on the wellbeing of new immigrant children are ambiguous and inconclusive. Some studies reported more unsatisfactory performances of new immigrant children as compared to their local counterparts, such as lower levels of self-esteem, self-rated health status and life satisfaction, higher rates of child poverty and more stress (Chou, Cheung, Lau, & Sin, 2014; Kwan, 2010; Wong, 2006). Meanwhile, other studies reached contrasting conclusions or showed no significant difference in perceived stress, self-esteem and delinquent behaviour between new immigrant students and their local counterparts (Tam & Lam, 2005; Wong, 2006).

2.2 Effects of family and school factors on youths' health and wellbeing

Family and school are imperative contexts that influence the well-being of children and youths according to the ecological model of child development (Bronfenbrenner, 1979). It is an overarching understanding that family and school provide resources essential for the positive growth of children and adolescents (Parcel et al., 2010). Among all the factors in the

family and school contexts, interpersonal relationships have proven to be most important for the wellbeing of children regardless of cultural differences (Ravens-Sieberer, Erhart, Gosch, Wille, & Group, 2008). This is no exception in Hong Kong. Relationships with parents, teachers and peers are demonstrated to be influential for children's life. In a survey of 745 Chinese teenagers from six secondary schools in Hong Kong, the results suggested that stressful life events of Hong Kong children and youths were generally related to interpersonal issues in the family, school and peer groups. Moreover, the impact of these stressful/undesirable events was twice as great as that of desirable events on the participants' life (Chan, 1998). Therefore, in this study, we mainly focus on factors related to social relationships and interpersonal interactions embedded in the family and school contexts.

Family factors are consistently found to positively associate with the wellbeing of children and youths. Numerous studies have indicated that the bonds between parents and children are associated with a variety of developmental outcomes, including better social adjustment, lower depression, and higher self-esteem (Colarossi & Eccles, 2003; Dufur, Parcel, & McKune, 2008; Newman et al., 2007). When it comes to Chinese families, it has been noted that Chinese culture often intensifies the significance of family and school for children. Grounded in traditional culture, Chinese families usually highlight family values and emphasize the fundamental role of harmonious relationships within family members in achieving happiness (Ho, 1986). For children from immigrant families, family factors may have even greater impacts on their health and wellbeing (de Leon & Lou, 1997). As shown in the literature, supportive family relationships might buffer the stressors generated in the migration process thus becoming a protective factor for the positive adjustment and development of immigrant children (Leidy, Guerra, & Toro, 2010). In the case of new immigrant children in Hong Kong, they encounter difficulties in communicating effectively

with their teachers and peers, which render interactions within their families even more important for their life. Likewise, it is reasonable to infer that family relationships are important for the well-being of cross-border children as well. Moreover, numerous studies have suggested that children's relationship with mother and father are both influential for their health and wellbeing, yet findings on which one is more important is mixed. Traditionally, mother-child relationship is believed to be more critical since mothers often act as primary caregivers (Bowlby, 1988). However, later studies reveal that father-child relation has an independent impact on adolescents' psychological well-being beyond mother-child relationship, and even plays a more significant role in children's overall psychological wellbeing (Amato, 1994; Veneziano, 2000; Videon, 2005). Parental involvement also contributes to children's happiness. An empirical study of 2,722 British teenagers suggests that both father's and mother's involvement impact significantly and independently on children's psychosocial wellbeing, and father involvement has a stronger effect regardless of children's gender and maternal involvement (Flouri & Buchanan, 2003). Additionally, parental monitoring has a potential influence on children's health and wellbeing. Prior findings suggest that weaker perceived parental monitoring is related to higher participation rates in antisocial and problem behaviours, which are likely to lead to adverse health outcomes (DiClemente et al., 2001; Dishion & McMahon, 1998). In line with overseas findings, two recent local empirical studies with longitudinal data also highlight that parent-child relationship and parental control play significant yet distinct roles in delinquency and internet addiction among Hong Kong Chinese adolescents (Shek & Zhu, 2019; Shek, Zhu, & Ma, 2018). Taken together, family factors are likely to be positive predictors of Hong Kong youths' health and wellbeing with differentiated influence on specific outcomes.

In the school context, numerous studies suggest that relationship with teachers and peers are critical for students' health and wellbeing (e.g., school outcomes, mental health, problematic behaviours) (e.g., Armsden & Greenberg, 1987; Baker, Grant, & Morlock, 2008; Bond et al., 2007). Influenced by Confucianism, Chinese families value academic achievement and thus pay much attention to educational settings (Ho, 1981; Lin & Fu, 1990). However, Hong Kong Chinese youths with different residential backgrounds may view school and relationships embedded in this context differently. For new immigrant and cross-border students in Hong Kong, school factors might be especially important since school plays a critical role in their acculturation and adaptation (Coll, Szalach, & Natalia, 2005). Perception of a caring and supportive relationship with teachers is associated with better school adjustment and positive school outcome (Baker, 2006; Baker et al., 2008). On the other hand, positive relationship with peers has been suggested to have a unique influence on migrant children. Wong (2006) found that peer support had a significant positive impact on the mental health of immigrant youths, yet it did not influence the mental health of local youths. It appears that perceived peer support might considerably buffer the stresses stemming from acculturation experiences for immigrant youths, whereas local youths are naturally free of such pressure. Given that cross-border students share the acculturation process of new immigrant students more or less, peer relationship is presumed to function similarly on the mental well-being of cross-border students.

In sum, family and school factors have proven to be influential for the health and wellbeing of children and youth, but probably play different roles for children and youth with different residential backgrounds in Hong Kong. Therefore, it is worthy of examining how family and school factors function on the health and wellbeing of cross-border, new immigrant, and local

students in Hong Kong in order to better understand the development of these various youth groups.

3. Methods

3.1. Participants and procedure

Data for this study came from a large-scale cross-sectional survey in Hong Kong. A school-based multi-stage cluster sampling was employed. First, three districts were chosen from the New Territories and Kowloon areas, where new immigrant and cross-border children are geographically concentrated. In Hong Kong, cross-border students attend schools in certain districts that are relatively closer to the HK-mainland border for easier transportation. New immigrant families are also concentrated in certain geographical areas according to the population distribution in the census report (Hong Kong Census and Statistic Department, 2016). The three districts were selected according to these documented demographic backgrounds. Second, within each district, two primary schools and two secondary schools were randomly selected based on the full list of registered schools provided by the Education Bureau of the Hong Kong Government. Third, within each selected school, two classes from each of the 4^{th}-6^{th} grades in primary schools and from each of the 7^{th}-9^{th} grades in secondary schools were randomly selected, and all students in the selected classes were invited to complete the survey. This sampling strategy has yielded a total of 2,180 students from twelve schools located in three districts of Hong Kong in the final sample, including cross-border students (N=445), new immigrant students (N=348), and local students (N=1387).

Participants completed the questionnaire in their classrooms with members of the research team being present to answer any question they might have about the survey. Informed

consent was obtained from the students and their parents before the survey. This study was approved by the Ethics Review Committee of the first author's institution.

3.2. Measures

3.2.1 Health and wellbeing outcomes

Outcome variables of health and wellbeing included self-rated health-status, happiness and mental wellbeing. *Self-rated health status* was measured by a classic single-item question. Respondents were asked to rate their health status on a five-point scale ranging from "1= extremely unhealthy" to "5= extremely healthy". *Happiness* was also measured by a single-item question. Respondents were asked to rate their happiness at the moment on a five-point scale ranging from "1=not happy at all" to "5=extremely happy". Although the measures of self-rated health status and happiness are both single-item questions, a consensus is that these questions are able to reflect individuals' health and happiness (Bowling, 2005; Frey & Stutzer, 2002). *Mental well-being* was measured by the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al., 2007), a 14-item scale including both eudemonic and hedonic aspects of wellbeing. The scale was originally designed for measuring mental wellbeing in adult population, but has been confirmed to be suitable for assessing psychological wellbeing of children and youth, and the Chinese version of this scale has been validated in previous studies with Chinese population in Hong Kong and mainland China (Clarke et al., 2011; Ng et al., 2014; Wu et al., 2018). Each item was rated on a 5-point scale and the sum score of the scale was used in analysis. The Cronbach's alpha for WEMWBS in this study was 0.961.

3.2.2 Family factors

In this study, family factors comprise four dimensions, namely, relationship with mother, relationship with father, parent-child interaction and parental monitoring.

Relationship with mother/ father was measured by parent subscale of a short version of Inventory of Parent and Peer Attachment Scale (IPPAS, Raja, McGee, & Stanton, 1992). It is a 12-item scale covering three relational constructs-trust, communication and alienation, thus effectively reflects one's relationship with mother or father. Respondents were asked to evaluate their relationship with mother or father on a five-point scale ranging from never to always. Sample items include "I tell my mother/father about my problems and troubles", "My mother/father respects my feelings", etc. The Chinese version of the IPPAS has been validated in a previous study with Chinese adolescents (Zhang et al., 2011), and the Cronbach's alpha for the IPPAS for assessing child's relationship with mothers and fathers in this study were 0.818 and 0.834 respectively.

Parent-child interaction was measured by a set of questions on activities did together with parents in the past month, including shopping, exercising, watching TV, playing, discussing things happened in school, discussing sad things, discussing people known together, visiting friends or relatives. Each activity scored one point, and the higher of the total score indicated better parent-child interaction. The Cronbach's alpha for the parent-child interaction scale in this study was 0.750.

Parental monitoring was assessed with an eight-item scale on parental involvement (Strayhorn, 2010), including four items measuring parental attendance at school and four items on parental supervision at home. Respondents were asked to rate each item on a four-

point scale (1=never, 4=often). Higher sum scores implied better quality of parental monitoring. The Cronbach's alpha for the parental monitoring scale in this study was 0.731. Both the parent-child interaction and parental monitoring measures have been used in previous studies of Chinese children and youths with their validity and reliability well established (Wu et al., 2010; Wu, Palinkas & He, 2011).

3.2.3 School factors

School factors comprised two dimensions in this study – relationship with teachers and with peers. *Relationship with teacher* was measured by a 7-item scale which had been used in Croninger and Lee's (2001) study. The Chinese version of this scale has been used in previous research with the Chinese youth population and proved valid in that cultural context (Wu, 2017). Participants rated each item of description about their experience in their relationships with teacher on a 5-point scale ranging from not true at all (=1) to very true (=5). *Peer relationship* was measured by the 12-item peer subscale of the short version of the Inventory of Parent and Peer Attachment Scale (IPPAS, Armsden & Greenberg, 1987; Lodder, Scholte, Goossens, & Verhagen, 2015; Raja et al., 1992). Respondents were asked to rate their attachment to peers on a five-point scale (1=completely appropriate, 5=completely inappropriate). The Chinese version of the IPPAS peer subscale has been validated in a previous study with Chinese adolescents (Zhang et al., 2011). The Cronbach's alpha for the relationship with teacher scale and the peer relationship subscale in this study were 0.881 and 0.852 respectively.

3.2.4 Sociodemographic variables

Previous studies have identified socio-demographic characteristics as common predictors of children's health and wellbeing, such as gender, age, number of siblings, socioeconomic status, etc. (Currie et al., 2009; Masten & Reed, 2002; McMunn, Nazroo, Marmot, Boreham, & Goodman, 2001; Michel, Bisegger, Fuhr, & Abel, 2009). These factors were also controlled in our investigation. Main socio-demographic variables included in analysis were residency status, parents' educational attainments, and relative family economic status. *Residency status* was coded based on the residential background of respondents: local students, new immigrant students, and cross-border students. *Educational level of father/mother* was coded as a continuous variable ranging from never attended a school/primary school without graduation (=1) to university or above (=7). Respondents were asked to report their father's and mother's educational level separately. *Relative family economic status* was assessed by perceived relative family economic status as compared with that of their classmates on a five-point scale: 1= much worse, 2= a little worse, 3=more or less the same, 4=a little better, 5= much better. Other socio-demographic variables in the model estimation included: 1) *gender* (0=male, 1=female); 2) *number of siblings*; 3) *age* (in years); 4) *family living condition* (1= one room only, 2=one bedroom, 3=two bedrooms, 4=three bedrooms, 5= four bedrooms or above); 5) *whether having a room of own* (0=no, 1=yes); and 6) *number of household equipment from a list of ten* (e.g., TV, air-conditioner, car, etc.).

3.3 Data analysis

Data analysis was performed using SPSS Version 21. First, descriptive analysis was conducted to gain a general picture of the sample and key variables. Next, One-way ANOVA

and Tukey post-hoc tests were conducted to determine if there were significant differences in the health and wellbeing outcomes across the three groups of students with different residential backgrounds, as well as where the differences resided. Third, using the whole sample, a series of hierarchical linear regression analyses were performed to examine the effects of residency status, family factors, school factor and socio-demographic characteristics on each health and wellbeing outcome of students. Last, based on residency status, the full sample was divided into three subsamples of local students, new immigrant students and cross-border students. Within the full sample and each subsample, multiple linear regression was performed to examine the predictive power of independent variables on the health and wellbeing outcomes across different residential groups. Worthy of noting, although hierarchical linear modelling could be a better strategy for data analysis considering the structure of data with students nested within schools, the study still chose to use multiple linear regression because the number of higher level units (i.e. schools) were limited, which would compromise the legitimacy and results of multilevel modelling. It was conceivable that there might be cluster effects with the data structure and the analytical method employed, but the efforts made in the sampling procedure would have reduced that effects to a minimal level. The schools in the sample were selected randomly with an effort to avoid any systematic differences in school characteristics and in the sociodemographic backgrounds of students across the schools. We also conducted additional analyses and identified no significant difference in any of the sociodemographic variables between students from different schools. Within each school, two average classes (neither the elite nor the low performance classes) were selected from each grade, which also avoided systematic differences in student backgrounds across classes.

4. Results

4.1. Descriptive statistics

Table 1 presents the descriptive characteristics of the full sample and subsamples of students. Frequency distributions, means, and standard deviations for continuous variables and proportion distribution for categorical variables are presented respectively. Female students accounted for 42.8% of the sample, and the average age of the participants was 12.25 years old, with a standard deviation of 2.13. Cross-border students presented relatively better family economic status than the other two groups as reflected by household equipment, living condition, and perceived economic status in comparison with classmates.

Table 1. Descriptive characteristics of full sample and subsamples

[Insert Table 1 about here]

4.2 Results of ANOVA

One-way ANOVA wad conducted to determine if there were significant differences across the three groups of students with different residential backgrounds in any of these health and wellbeing outcomes. The results suggested that the three youth groups did differ in all outcome measures ($F=6.45$, $p<.01$ for self-rated health status; $F=16.05$, $p<.001$ for happiness; and $F=8.56$, $p<.001$ for mental wellbeing). Turkey post-hoc tests were then performed to locate where the differences existed, and the results showed that, compared to local students, cross-border students exhibited significantly better health and wellbeing on all the three outcome measures, whereas new immigrant students presented lower levels of happiness, but no significant differences in self-rated health status and mental wellbeing.

4.3 Results of regression analyses

4.3.1 Comparison of health and wellbeing outcomes in the full sample

Regarding self-rated health status, results of hierarchical linear regressions (Table 2) suggested that residency status was not associated with it throughout the models. Model 3 and 4 suggested that family factors exerted stronger effects on health status perceived by respondents than school factors (Model 3:ΔR^2=0.053, Model 4: ΔR^2 =0.011). Among the family factors, parent-child interaction (β =0.145, p<0.001) and parental monitoring (β=0.107, p<0.01) were positively associated with self-rated health status. Within the school factors, relationship with teacher had a positive impact on students' self-rated health status (β =0.103, p<0.01).

Table 2. Regression of self-rated health status on socio-demographic characteristics, family and school factors

[Insert Table 2 about here]

As for happiness, results of hierarchical linear regressions (Table 3) suggested that new immigrant students were more likely to report lower levels of happiness (Model 4: β =-0.096, p<0.01). Although all the family factors were associated with happiness in Model 3, after adding school factors, no statistical association between parental monitoring and happiness existed (Model 4). In the end, relationship with either parent and parent-child interaction were suggested to have positive influence on happiness (relationship with mother: β =0.098, p<0.001; relationship with father: β =0.148, p<0.001; parent-child interaction: β =0.090, p<0.01; parent-child interaction: β=0.107, p<0.01). Moreover, both school factors were positively associated with self-perceived happiness of students (relationship with teacher: β =0.198, p<0.001; peer relationship: β =0.142, p<0.001).

Table 3 Regression of happiness on socio-demographic characteristics, family and school factors

[Insert Table 3 about here]

In terms of mental wellbeing, although cross-border students reported higher levels of mental wellbeing in the initial model, no statistical association was found after entering family and school factors (Table 4). Within family factors, relationship with mother had positive impact on mental wellbeing (β=0.120, $p<0.001$), while relationship with father did not exert any effect on mental wellbeing. Meanwhile, parent-child interaction was positively associated with mental wellbeing (β=0.129, $p<0.001$). In the school context, both factors influenced children's mental being significantly (relationship with teacher: β =0.260, $p<0.001$; peer relationship: β =0.203, $p<0.001$).

Table 4 Regression of mental wellbeing on socio-demographic characteristics, family and school factors

[Insert Table 4 about here]

4.3.2 Predictors of self-rated health status, happiness, and mental wellbeing in subsamples

In general, predictors of each health and wellbeing outcome varied greatly among subsamples of cross-border, new immigrant and local students. In terms of self-rated health status, family factors more or less had positive influences in the group of local and cross-border students, yet school factors only exerted effects for local students. Specifically, in the group of cross-border students, parent-child interaction was a significant positive predictor of health status (β= 0.087, $p<0.05$). Yet for local students, better relationship with father (β= 0.014, $p<0.01$) and teacher (β=0.018, $p<0.01$) were associated with elevated health status. Notably, better

relative family economic status was associated with enhanced health status across all the three groups. Gender differences were only observed in the subsamples of new immigrant and cross-border students. In these two subsamples, compared with male students, female students tended to report lower levels of health-status (β=-0.260，$p<0.05$; β=-0.399，$p<0.01$, respectively).

Table 5 Predictors of self-rated health status across different groups

[Insert Table 5 about here]

Regarding happiness, school factors were more or less associated with happiness across all the three groups, while family factors exerted no effects for cross-border students. For cross-border students, peer relationship was a positive predictor of happiness (β=0.027, $p<0.01$). In the group of new immigrant students, better relationship with father (β= 0.043, $p<0.001$) and better parent-child interaction (β=0.026, $p<0.05$) were associated with higher levels of happiness. As for local students, relationship with mother or father, and parent-child interaction were positively associated with happiness (β= 0.012, $p<0.05$; β=0.016, $p<0.01$; β = 0.019, $p<0.05$, respectively). Moreover, both peer relationship (β= 0.029, $p<0.001$) and relationship with teacher (β=0.020, $p<0.001$) were positive predictors of happiness among local students. Among socio-demographic factors, relative family economic status was associated with higher levels of happiness in all groups except the new immigrant group. Gender difference was observed in the cross-border group. Among cross-border students, female students reported lower levels of happiness than male students (β=-0.329, $p<0.05$). In addition, age was negatively associated with happiness in the new immigrant group (β=-0.074, $p<0.05$).

Table 6 Predictors of happiness across different groups

[Insert Table 6 about here]

As for mental wellbeing, family factors were associated with mental wellbeing across all the three groups, whereas school factors exerted no effects within the group of new immigrant students (Table 7). In the group of cross-border students, better relationships with mother, teacher and peers were associated with better mental wellbeing (β= 0.245, $p<0.05$; β=0.376, $p<0.01$; β=0.318, $p<0.01$, respectively). In the group of new immigrant students, only better relationship with father predicted better mental wellbeing (β= 0.269, $p<0.05$). In the subsample of local students, relationship with mother (β= 0.138, $p<0.05$) and parent-child interaction (β=0.684, $p<0.01$) were positively associated with mental wellbeing. Meanwhile, both relationships with teacher (β= 0.456, $p<0.001$) and peers (β=0.368, $p<0.001$) were significant predictors of mental wellbeing among local students. Among the socio-demographic factors, relative family economic status and gender remained as significant predictors of mental wellbeing in most subsamples. In the new immigrant and local student groups, female students tended to report worse mental wellbeing compared to their male counterparts (β= -3.035, $p<0.05$; β=-2.470, $p<0.01$, respectively). In the subsamples of cross-border and local students, students perceiving higher levels of relative family economic status tended to report better mental wellbeing (β= 2.769, $p<0.01$; β=1.549, $p<0.01$, respectively). In addition, family living condition was negatively associated with mental wellbeing in the subsample of cross-border and new immigrant students (β = -2.367, $p<0.05$; β=-2.678, $p<0.001$, respectively).

Table 7 Predictors of mental wellbeing across different groups

[Insert Table 7 about here]

4.3.3 Summary

Overall, the results suggested that residency status did matter for the health and wellbeing of Chinese youths in Hong Kong. Analyses with the full sample suggested that nuanced

differences existed among different residential groups. There were subtle differences in happiness and mental wellbeing among different residential groups initially, though differences concerning mental wellbeing did not achieve statistical significance after model adjustment. Later analyses of subsamples further suggested family and school factors functioned differently among cross-border, new immigrant and local students.

The results of hierarchical linear regressions (Table 2-4) suggested that one or more factors in the family or school contexts were always associated with youths' health and wellbeing outcomes despite residency status. In the family context, parent-child interaction was constantly a positive predictor of all the three health and wellbeing outcomes, yet other family factors did not show such a constant and stable influence. Perceived relationships with parents worked differently on youths' health outcomes. Relationship with mother was positively associated with happiness and mental wellbeing, whereas relationship with father was positively associated with happiness and self-rated health status. However, parental monitoring did not associate with any outcome variable. In the school context, relationship with teachers was continuously positively associated with all three outcomes. In contrast, relationship with peers was associated with happiness and mental wellbeing, but not related to self-rated health status.

The results of cross-sample comparison (Table 5-7) showed that the predictors of health and wellbeing outcomes varied significantly among different residential groups of students. For cross-border students, parent-child interaction predicted their self-rated health status, and both school factors were positively associated with their perceived happiness and mental wellbeing. As for new immigrant students, parent-child interaction, relationship with father and with teacher were associated with their perceived happiness, while only relationship with

father was associated with their mental wellbeing. Regarding local students, the only effective predictor of self-rated health status was relationship with teacher. Moreover, relationship with mother, teacher and peers were significant predictors of their happiness and mental wellbeing. In addition, relationship with father and parental monitoring only predicted their perceived happiness, whereas parent-child interaction only predicted their mental wellbeing.

It is notable that gender and relative family economic status stood out among socio-demographic characteristics in predicting health and wellbeing outcomes. Regarding gender, it seemed that girls tended to report lower levels of health and wellbeing outcomes than boys throughout the models. The other remarkable predictor - relative family economic status - mostly had positive impacts on youths' health and wellbeing across all residential groups.

5. Discussion

5.1 Discussion

This study provides a comprehensive picture of youths' health and wellbeing in Hong Kong across student groups with different residential backgrounds. It contributes to the field of literature by identifying the influential relational factors embedded in the family and school contexts on health and wellbeing of cross-border, new immigrant and local students. It is one of the pioneer empirical studies focusing on the comparison across the three youth groups in terms of their health and wellbeing as well as the various contributing factors.

As expected, residency status matters in understanding the health and wellbeing of Hong Kong youths. On the one hand, subtle differences are observed in the health outcome of students from diverse residential backgrounds. In particular, new immigrant students tend to

report lower levels of happiness than their local counterparts. It might be because new immigrant students experience more acculturation stresses than other students due to more exposure to discriminable environment (Wong, Lam, Yan, & Hung, 2004). It also could be influenced by the undesirable living condition they usually face. As shown in Table 1, compared with other two residential groups, new immigrant students have relatively worse living condition (e.g., fewer private spaces and poorer family economic status). On the other hand, the associations between family and school factors and youths' health and wellbeing outcomes vary greatly depending on residency status. One family or school factor may exert influence within certain residential groups but not another. For instance, parental monitoring only appears to be influential for the wellbeing of local students. One plausible reason could be that local parents have relatively more time with their children and more knowledge of local educational system, which allow them to be more effective in parental involvement and parent-school interaction. These involvements and interactions have been suggested to impact the subjective well-being of children in Chinese population (Lv et al., 2016). In addition, some family or school factors may have impact for all the residential groups, yet on different aspects of health and wellbeing. A typical factor is parent-child interaction, which is associated with health status of cross-border students, happiness of new immigrant students and mental wellbeing of local students. Although such findings need to be further replicated in future empirical studies before confirmation, they definitely remind us of the importance to identify specific effects of intervening factors among targeted populations.

Congruent with previous findings, the results suggest family and school factors are influential for the health and wellbeing outcomes of Hong Kong Chinese youths (Viner et al., 2012). In general, family and school factors are more associated with happiness and mental wellbeing than self-rated health status. This is understandable since health status might be more

associated with physical conditions than interpersonal relationships. In the family context, a major finding is surrounding parent-child relationship. As expected, perceived mother-child relationship and father-child relationship affect children's wellbeing in different dimensions (Amato, 1994; Videon, 2005). Furthermore, the results suggest that they may function differently depending on residency status – relationship with mother is an effective factor for cross-border and local students, while relationship with father is a significant factor for new immigrant students. One reason might be gender role changes in differentiated family configuration. Children from new immigrant families usually have the experience of living with mother in the mainland and later reuniting with father in Hong Kong (Chan & Ngan, 2018), which renders the relationship with father an especially influential factor for their wellbeing, either a risk or protective factor depending on how it goes. This explains why relationship with father acts as a significant family factor for the wellbeing of new immigrant students. In the school context, both relationships with teachers and peers are shown to play salient roles in predicting overall health and wellbeing of Hong Kong youths across all residential groups. In particular, relationship with the teacher has shown the broadest influence on youth' health and wellbeing outcomes, which echoes previous findings on the indisputably key function that teachers play in educational settings (Baker et al., 2008).

Moreover, the results suggest that gender and relative family economic status are the most distinct sociodemographic characteristics in determining health and wellbeing outcomes of youths. There is a general trend that female students report worse health and wellbeing as compared with male students regardless of residency status. Such trend reflects the disadvantaged conditions in reality commonly shared by girls across cultures (Michel, Bisegger, Fuhr, & Abel, 2009).This is also consistent with other self-report studies on psychopathic results (e.g. social anxiety) outside Hong Kong (Klimidis, Stuart, Minas, & Ata,

1994). Moreover, in line with previous findings, family affluence is found to have significant impacts on the health and wellbeing of children and youth (Currie et al., 2009).

There are also several unexpected findings revealed by the current study that deserve special attention. First, cross-border students seem to be fairly resilient despite the fact that they face multiple challenges and stresses. It might be because of their relatively better-off living conditions that buffer the adverse circumstances and stresses they face. As shown in Table 1, compared with local students, they have more personal space (as indicated by room of own) and higher likelihood of living in wealthier families (as indicated by relative family economic status). It would be intriguing to explore the protective factors against difficulties and barriers in their daily cross-border life. Second, relationship with father appears to be particularly crucial for the mental wellbeing of new immigrant students. As Amato (1994) argues, father plays a pivotal role in the development of children and youth; father's emotional closeness and involvement are associated with children's positive wellbeing outcomes (e.g., psychological adjustment, reduced antisocial behaviour). Similarly, our results suggest that love and care from fathers have some unique influence on new immigrant youths, although the underlying mechanism has yet to be explored. Third, the results somehow disagree with Wong's (2006) findings on the protective role of peer relationship for new immigrant students. Unlike the findings that peer relationship is predictive of mental health among new immigrant youths rather than local youths in Wong's study, no significant influence is observed within new immigrant student group in this study. In contrast, our results suggest that peer relationship acts as a significant predictor of happiness and mental wellbeing for cross-border and local students. Such findings on new immigrant youths need further replication and exploration in future studies.

5.2 Limitations

The study results need to be interpreted with caution due to several limitations. First, as a cross-sectional study, it is not possible to establish causal links between the predictor and outcome variables. Our findings indicate that relational factors in the family and school contexts influence the health and wellbeing of Hong Kong youths, but cannot rule out the possibility that the reverse relationships may also exist. It is plausible that youths with higher levels of health status, happiness and mental wellbeing would like to communicate with parents and teachers, which in turn lead to better interpersonal relationships in families or schools. Future work with longitudinal research design is necessary to further clarify the causal relationship. Second, the study used self-reported measures of health and wellbeing, therefore variations in participants' understanding and perception of "health" and "happiness" may result in issues of accuracy in these measures. More objective and structured measures could be used in future studies to ensure the robustness of results. Third, the study used perceived relative family economic status as a proxy measure to assess family affluence instead of objective measures such as family income, given the concern that students at this age might not be able to report accurately their family income. Future research is also expected to collect more objective information about family wealth so as to better understand its impact on youths' health and wellbeing. Last, generalizability of the research findings may be relatively constrained by the sampling strategy employed in the study. To ensure that the student composition in the selected schools would be diverse enough to include all three groups of students with different residential backgrounds, which was the focus of this study, the sampling procedure started with selecting three districts of Hong Kong where new immigrant and cross-border children are geographically concentrated. Therefore, for schools outside the three districts where few immigrant or cross-border

students live and receive education, findings of this research may not apply and cautions should be taken while making such generalizations.

5.3 Implications

Despite the above limitations, findings of this research have a few notably important implications. First, the results call for attention to the role that residency status plays in the health and wellbeing of Hong Kong youths and for the need of more future studies in this line of inquiry. To systematically understand the role of residency status, more studies covering a full sample of cross-border, new immigrant and local students are needed. The resilience manifested among cross-border students should be further investigated to identify protective factors, which may eventually benefit the broader young population for their healthy development. Moreover, there is a need to understand the reason why parental roles have such complex influences on the health and wellbeing of cross-border, immigrant and local students.

Second, the various associations between each family or school factor and health and wellbeing outcome underscore the importance of tailored health-related interventions towards youths coming from different residential backgrounds. It is impossible for a one-size-for-all approach to meet the diverse needs concerning youths' positive growth in various aspects. Policymakers and helping professionals should be sensitive to the diverse impacts of family and school factors on targeted youth population. Identifying the most effective factors for the targeted group with targeted outcome is critical in policy making and intervention design. Specifically, knowing which factor is more important for which group will help allocate resources and design programs in a more strategic way. For instance, given the research finding that relationship with father is a notably protective factor for the health and wellbeing

of new immigrant students, policy and professional services may consider diverting more resources into the development of appropriate parent education programs targeting fathers in new immigrant families, which allow them to be better prepared for building a healthy father-child relationship upon family reunion.

Third, the findings address the importance of school environment (relationship with teachers and peers) for youths' wellbeing. The results suggest that teachers have profound influences on students' health and wellbeing regardless of their residential backgrounds. For promotion and implementation of intervention programs towards school-age children and youths, schools should serve as a core field and teachers should play the key role.

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Table 1 Descriptive characteristics of full sample and subsamples

	Total	Local students	Cross-border students	New immigrant students
Gender (female, %)	42.8	40.5	47.1	46.1
Age Mean (SD)	12.25 (2.13)	12.15 (1.97)	11.11 (1.60)	14.16 (2.08)
Number of siblings Mean (SD)	1.23 (1.40)	1.22 (1.35)	1.34 (1.57)	1.12 (1.34)
Whether having a room of own (yes, %)	48.3	45.6	66.0	36.1
Household equipment Mean (SD)	5.94 (2.02)	5.98 (1.98)	6.44 (2.10)	5.17 (1.85)
Family living condition (%):				
one room only	8.6	7.2	3.2	20.9
one bedroom	9.7	8.8	5.3	19.1
two bedrooms	42.5	46.0	30.6	43.8
three bedrooms	25.7	26.1	34.0	13.2
four bedrooms or more	13.5	11.9	26.9	2.9
Relative family economic status (%)				
much worse	6.4	6.2	4.8	9.1
a little worse	16.8	16.1	12.8	24.7
more or less the same	54.2	53.9	53.8	55.9
a little better	15.2	16.2	17.8	8.2
much better	7.4	7.7	10.8	2.1
Self-rated health status Mean (SD)	3.77 (1.00)	3.74 (1.02)	3.92 (1.01)	3.70 (0.89)
Happiness Mean (SD)	3.64 (1.05)	3.64 (1.07)	3.83 (1.00)	3.40 (0.97)
Mental wellbeing Mean (SD)	45.44 (12.29)	44.89 (12.50)	47.59 (12.56)	44.93 (10.75)
N	2180	1387	445	348

Table 2 Regression of self-rated health status on sociodemographic characteristics, family and school factors

	Model 1		Model 2		Model 3		Model 4	
	β	SE	β	SE	β	SE	β	SE
Residential status (ref: local students)								
cross-border student	.049	.086	.033	.087	.029	.085	.030	.084
new immigrant student	-.021	.080	.056	0.88	.023	.086	.004	.086
Gender (ref: male)								
female			-.052	.063	-.059	.061	-.074*	.062
Age			-.135***	.017	-.062	.017	-.065	.017
Number of siblings			-.019	.032	-.019	.031	-.016	.031
Educational level of father			-.055	.022	-.053	.022	-.053	.022
Educational level of mother			.068	.025	.053	.024	.054	.024
Family living condition			-.052	.034	-.057	.033	-.058	.033
Whether having a room of own (ref: no)								
yes			-.010	.069	-.011	.068	-.007	.067
Household equipment			.007	.017	-.007	.016	-.010	.016
Relative family economic status			.190***	.035	.149***	.035	.147***	.035
Relationship with mother					.076	.004	.046	.005
Relationship with father					.145***	.004	.115**	.004
Parent-child interaction					.107**	.016	.100**	.016
Parental monitoring					-.020	.008	-.033	.008
Relationship with teacher							.103**	.005
Peer relationship							.047	.004
N	2180		2180		2180		2180	
Adj. R^2	.001		.048		.101		.112	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.

Table 3 Regression of happiness on sociodemographic characteristics, family and school factors

	Model 1		Model 2		Model 3		Model 4	
	β	SE	β	SE	β	SE	β	SE
Residential status (ref: local students)								
cross-border student	.053	.092	.020	.093	.013	.085	.015	.082
new immigrant student	-.090**	.086	.017	.093	-.036	.085	-.075*	.083
Gender (ref: male)								
female			-.043	.066	-.055	.061	-.096**	.060
Age			-.201***	.018	-.073*	.017	-.076*	.016
Number of siblings			-.005	.034	-.006	.031	.001	.030
Educational level of father			-.021	.024	-.020	.022	-.021	.021
Educational level of mother			.088*	.026	.057	.024	.060	.023
Family living condition			-.040	.036	-.049	.033	-.048	.032
Whether having a room of own (ref: no)								
yes			-.023	.074	-.024	.068	-.022	.065
Household equipment			-.008	.018	-.032	.016	-.035	.016
Relative family economic status			.199***	.038	.130***	.035	.125***	.034
Relationship with mother					.167***	.004	.098**	.004
Relationship with father					.215***	.004	.148***	.004
Parent-child interaction					.106**	.016	.090**	.015
Parental monitoring					.067*	.008	.038	.007
Relationship with teacher							.198***	.004
Peer relationship							.142***	.004
N	2180		2180		2180		2180	
Adj. R^2	.011		.083		.239		.296	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.

Table 4 Regression of mental wellbeing on sociodemographic characteristics, family and school factors

	Model 1		Model 2		Model 3		Model 4	
	β	SE	β	SE	β	SE	β	SE
Residential status (ref: local students)								
cross-border student	.073*	1.054	.045	1.060	.042	.956	.047	.886
new immigrant student	-.017	.992	.086*	1.072	.031	.974	-.020	.913
Gender (ref: male)								
female			-.029	.763	-.047	.694	-.104***	.656
Age			-.197***	.202	-.053	.191	-.060	.177
Number of siblings			.007	.388	.013	.351	.021	.325
Educational level of father			-.011	.275	-.007	.248	-.010	.229
Educational level of mother			.042	.301	.001	.273	.004	.253
Family living condition			-.089*	.413	-.092**	.373	-.095**	.345
Whether having a room of own (ref: no)								
yes			-.009	.844	-.006	.764	.002	.708
Household equipment			.048	.204	.026	.184	.021	.171
Relative family economic status			.209***	.431	.137***	.394	.130***	.364
Relationship with mother					.212***	.050	.120***	.048
Relationship with father					.147***	.047	.057	.045
Parent-child interaction					.150***	.179	.129***	.166
Parental monitoring					.083*	.086	.040	.080
Relationship with teacher							.260***	.048
Peer relationship							.203***	.047
N	2180		2180		2180		2180	
Adj. R^2	.004		.076		.249		.357	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.

Table 5 Predictors of self-rated health status across different student groups

	Total		Cross-border students		New immigrant students		Local students	
	β	SE	β	SE	β	SE	β	SE
Gender (ref: male)								
female	-.142*	.062	-.399**	.149	-.260*	.131	-.024	.082
Age	-.031*	.015	-.082	.048	-.038	.035	-.024	.022
Number of siblings	-.016	.031	-.055	.093	-.029	.061	-.009	.041
Educational level of father	-.031	.022	.004	.048	.023	.052	-.071*	.028
Educational level of mother	.034	.024	-.070	.058	.030	.052	.069*	.031
Family living condition	-.047	.032	.008	.088	-.067	.072	-.057	.042
Whether having a room of own (ref: no)								
yes	-.008	.067	.004	.172	-.240	.153	.082	.085
Household equipment	-.005	.016	-.022	.037	.008	.039	-.001	.021
Relative family economic status	.149***	.034	.186*	.091	.135*	.084	.153***	.043
Relationship with mother	.005	.005	.009	.011	.006	.011	.002	.006
Relationship with father	.013**	.004	.005	.010	.018	.011	.014**	.005
Parent-child interaction	.042**	.016	.087*	.035	.037	.039	.019	.020
Parental monitoring	-.007	.008	.002	.020	-.009	.017	-.004	.010
Relationship with teacher	.013**	.004	.019	.011	-.008	.012	.018**	.006
Peer relationship	.006	.004	.011	.011	-.001	.010	.006	.006
N	2180		445		348		1387	
Adj. R^2	.113		.169		.047		.115	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.

Table 6 Predictors of happiness across different student groups

	Total		Cross-border students		New immigrant students		Local students	
	β	SE	β	SE	β	SE	β	SE
Gender (ref: male)								
female	-.209***	.060	-.329*	.139	-.176	.125	-.150	.080
Age	-.052***	.015	-.027	.046	-.074*	.034	-.029	.021
Number of siblings	.000	.030	.113	.089	-.052	.057	.007	.040
Educational level of father	-.013	.021	.045	.045	-.006	.049	-.038	.027
Educational level of mother	.041	.023	-.026	.055	.021	.050	.071*	.030
Family living condition	-.033	.032	-.114	.085	-.037	.068	-.036	.041
Whether having a room of own (ref: no)								
yes	-.041	.065	-.143	.160	-.036	.146	-.005	.084
Household equipment	-.015	.016	.001	.035	-.038	.038	-.021	.021
Relative family economic status	.142***	.033	.238**	.085	.052	.081	.135**	.042
Relationship with mother	.012**	.004	.016	.010	-.006	.010	.012*	.006
Relationship with father	.017***	.004	.008	.010	.043***	.010	.016**	.005
Parent-child interaction	.038*	.015	.055	.033	.111**	.038	.020	.020
Parental monitoring	.009	.007	.000	.019	-.023	.016	.019*	.009
Relationship with teacher	.025***	.004	.025*	.010	.026*	.012	.029***	.006
Peer relationship	.019***	.004	.027**	.010	.007	.010	.020***	.006
N	2180		445		348		1387	
Adj. R^2	.293		.307		.257		.292	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.

Table 7 Predictors of mental wellbeing across different student groups

	Total		Cross-border students		New immigrant students		Local students	
	β	SE	β	SE	β	SE	β	SE
Gender (ref: male)								
female	-2.494***	.653	-1.566	1.565	-3.035*	1.349	-2.470**	.860
Age	-.442**	.161	-.398	.494	-.600	.358	-.218	.228
Number of siblings	.247	.325	1.956*	.970	1.186	.617	-.497	.427
Educational level of father	-.064	.230	.075	.502	-.750	.537	.052	.298
Educational level of mother	.020	.253	-.355	.612	.591	.537	.067	.332
Family living condition	-.932**	.339	-2.367*	.932	-2.678***	.737	-.331	.438
Whether having a room of own (ref: no)								
yes	.176	.705	3.418	1.807	1.368	1.574	-1.214	.900
Household equipment	.136	.170	.295	.389	-.118	.406	.149	.221
Relative family economic status	1.649***	.363	2.769**	.951	1.161	.870	1.549**	.454
Relationship with mother	.170***	.048	.245*	.115	.136	.109	.138*	.061
Relationship with father	.080	.045	-.061	.107	.269*	.111	.076	.057
Parent-child interaction	.666***	.166	.680	.370	.708	.406	.684**	.213
Parental monitoring	.106	.080	.295	.210	.095	.179	.086	.101
Relationship with teacher	.402***	.047	.376**	.112	.208	.126	.456***	.060
Peer relationship	.313***	.047	.318**	.113	.203	.104	.368***	.061
N	2180		445		348		1387	
Adj. R^2	.356		.359		.268		.380	

Note: ref: reference group; * p< .05; ** p < .01; *** p < .001.