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Material Well-being, Social Relationships and Children's Overall Life Satisfaction in Hong Kong

Maggie Lau¹  · Jonathan Bradshaw²

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Abstract There has been growing research interest into child poverty and child well-being in Asia. However the development of qualitative and quantitative data in the field predominately adopts 'expert-led' or adult-derived measures of child poverty. This article aims to explore variations in children's overall life satisfaction by their socio-demographic characteristics and social relationships in Hong Kong. Data used in this article is drawn from the first wave of the Strategic Public Policy Research (SPPR) project— 'Trends and Implications of Poverty and Social Disadvantages in Hong Kong: A Multi-disciplinary and Longitudinal Study'. This article reports, for the first time evidence based on a child-derived material deprivation index - thereby addressing the limitations in traditional adult-derived child poverty measures. The study found that child deprivation explained more of the variation in children's overall life satisfaction than traditional adult-reported income poverty. Further analyses showed that children's perceived positive relationships with family and teachers, perceived strong social support from family, and experience of being bullied were associated with their life satisfaction.

Keywords Children · Material deprivation · Social relationships · Life satisfaction · Hong Kong

✉ Maggie Lau
maggielau98@gmail.com

¹ Department of Public Policy, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Hong Kong

² Department of Social Policy and Social Work, University of York, Heslington, York, YO10 5DD, UK

1 Introduction

The importance of a multi-dimensional measure of child well-being is now widely recognized. It not only encompasses material well-being (measured by income poverty and deprivation indicators) but also includes relationships, child education, child physical and mental health, housing and living environment, risk and safety, and subjective well-being (Ben-Arieh et al. 2014; Bradshaw 2015; Guio et al. 2012; Main and Bradshaw 2012; UNICEF 2007, 2016). There has been growing interest in child deprivation indicators in the Asian context. But the development of the deprivation indicators continues to be ‘expert-led’ (Wong et al. 2015) and presumes parents to be the representatives of children’s needs in quantitative studies (Abe and Pantazis 2014; Hong Kong Council of Social Service 2012; Lau et al. 2015a; Qi and Wu 2014). There has been only limited evidence of child-derived deprivation indicators (Saunders and Chen 2015). Empirical evidence has shown that deprivation is a better indicator of child well-being than traditional child poverty measures (Bradshaw and Finch 2003; Goswami 2014; Main and Pople 2012). It is recognised that it is important to incorporate children’s perspectives into studies of child poverty and child well-being to increase the creditability of the findings (Lee and Yoo 2015; Lietz et al. 2014; Main and Bradshaw 2012; Pople et al. 2015).

Increases in GDP in the developed countries are no longer related to positive subjective well-being (Stiglitz et al. 2010; Wilkinson and Pickett 2009). Studies provided evidence that incorporating objective indicators of well-being and subjective measures of the quality of life contribute to a better understanding of its determinants, moving beyond family income and material deprivation (Ben-Arieh et al. 2014; Currie et al. 2012; Goswami 2014; Pople et al. 2015; Stiglitz et al. 2010).

Comparative evidence has shown that the social context of children’s lives are associated with variation in children’s health and well-being (Bradshaw et al. 2013; Currie et al. 2012; Klocke et al. 2014). Social relationships with family, peers and school played a significant role in explaining variations in their health and well-being, including quality of parent-children relationships (e.g. shared activities) (Ferguson 2006; Raley 2014), perception of relationships with parents and teachers (e.g. being respected and treated fairly at home and school) (Goswami 2012; McAuley and Rose 2014; Rees and Main 2015), norms of reciprocity and trust at home and school (McPherson et al. 2014), feeling of safety at home and school (Dufur et al. 2015; Huebner et al. 2014), and experience of being bullied (Klocke et al. 2014). However, the existing evidence might have limited generalisability as most factors contributing to positive and negative child well-being so far identified in the field were based on western societies (with some exceptions, Kim and Main 2016; Rees et al. 2016; Rees and Main 2015, See also: www.isciweb.org).

The primary aim of this article is to explore variations in children’s overall life satisfaction by socio-demographic characteristics and social relationships in Hong Kong, by drawing from the main findings from the first wave of the Strategic Public Policy Research (SPPR) project.¹ Specifically, this study has two objectives: (1) to present, for the first time evidence based on child-reported material deprivation index

¹ Further discussion is provided in the Section 2 below.

derived from survey data – thereby addressing the limitations in traditional approach to adult-derived child poverty measures; and (2) to examine relative effects of socio-demographic characteristics, and positive and negative qualities of relationships on children's life satisfaction.

2 Methods

2.1 Procedure and Sample

Data used in this article is drawn from the first wave of the Strategic Public Policy Research (SPPR) project – ‘Trends and Implications of Poverty and Social Disadvantages in Hong Kong: A Multi-disciplinary and Longitudinal Study’ (<http://www.poverty.hk>). The primary objective of the SPPR project is to measure and gauge the current trends and implications of poverty and social disadvantages in Hong Kong. Specifically, this project has three main objectives: (1) to measure the extent and nature of poverty, deprivation and exclusion in Hong Kong (i.e. Poverty, Social Disadvantages and Exclusion, **PSDE**); (2) to assess the interaction between poverty and health inequalities (i.e. Poverty, Disadvantages and Health Inequality, **PDHI**); and, (3) to investigate the impacts of poverty, inequality and social disadvantages on children's health and well-being (i.e. Poverty, Disadvantages and Children's Well-Being, **PDCW**).

The data from the PDCW stream is derived from school-aged children between 10 and 17. Data collection of the PDCW stream involves two stages. Stage one used focus groups to generate qualitative data which helped to develop indicators for the second stage of the study, involving a random household survey in Hong Kong, designed to assess the relationship between poverty, deprivation, and children's well-being from their own perspectives. Stage two involved administering a questionnaire to obtain quantitative information on children's living standards and related circumstances (i.e. The Hong Kong Standard of Living Survey - ‘The Living Standards Survey’). This article focuses on the associations between child-reported deprivation, social relationships and children's life satisfaction by drawing upon the results from PDCW survey data. Household income and adults in paid work within the household is obtained from the adult-reported PSDE survey data.

The first wave of the Living Standards Survey was conducted between May 2014 and July 2015 by the Policy 21 Limited. Face-to-face interviews were undertaken with 2282 individuals aged 18 or over. The sample was drawn from two sources:

- (1). A re-interviewing of respondents to the HKCSS 2011 and PSEHK 2012 surveys ($n=195$); and respondents to the PSEHK 2012 survey ($n=107$) who had provided re-contact permission (Hong Kong Council of Social Service 2012; Lau et al. 2015b); and
- (2). A new random sample addresses taken from the 2011 Population Census ($n=1980$).

A two-stage stratified systematic sample design was used to obtain the new sample. A random sample of quarters was selected and then one adult (aged 18 or over) was

selected at random from each sampled household. The response rate from the three samples combined was 60.2 %.²

All children aged 10 to 17 from each sampled household were invited for the completion of the PDCW questionnaire. There was a total of 911 children aged 10 to 17 (including working youth on part-time or full-time basis) in the 690 sampled households. Face-to-face interviews were conducted with 805 children aged 10 to 17 in the sampled household (i.e. 'Poverty, Social Disadvantages and Child Well-Being' (PDCW) survey). The response rate was 88.4%. This article used a sample of 793 full-time students aged 10 to 17 for further analyses. The PDCW survey included questions about child-derived necessary items and activities, time spent with family and friends, perceived social supports from family, friends and school teachers, well-being at school (e.g. experience of being bullied), health behaviours (e.g. dietary behaviour), health conditions (e.g. physical and mental health), perceptions of social relationships, feeling of safety at home and school, and satisfaction with life as a whole and domain specific satisfaction.

2.2 Measures

2.2.1 Material Well-Being

Material Deprivation A child-derived index of material deprivation was used to identify *poor* and *non-poor* groups of children. Compared to traditional adult-derived measures of child poverty (i.e. income-based and multiple deprivation measures), the child-derived index could distinguish poor children from poor families. The material deprivation index was created based on qualitative and quantitative research with children. The material deprivation index was created based on qualitative and quantitative research with children.³ Children were asked, from a list of 21 child items and activities, to indicate whether they thought the items and activities were 'necessary' which all children should have to do without. Items and activities attracting 50% or more children were considered consensually agreed and thus categorized as socially perceived 'necessities'. Then, children were asked whether they 'had', 'didn't have but

² Adult-reported data on the PSDE and PDHI streams aims to collect information on people's living conditions and circumstances. The re-interviewing of respondents were asked, from a list of 41 adult and child items, covering various domains (e.g. food, clothing, health, housing and social and family activities), to indicate whether they thought these items and activities were 'necessary' which all adults /children should have to do without. Items and activities attracting 50 % or more public support were considered consensually agreed and thus classified as socially perceived 'necessities'. Then, all respondents were asked to indicate whether they had an item or did an activity and, if they did not, to distinguish if this was due to a lack of money (affordability) or choice (personal preference). The survey included questions about a number of other topics such as income, subjective poverty, housing and living environment, public and private services, social networks and support, health behaviours (e.g. dietary behaviour, physical activity and exercise), and health conditions (e.g. physical and mental health, anxiety and depression) and healthcare utilization, to obtain contextual information about people's wider circumstances.

³ The focus group methodology aims to address two key questions from children's own perspectives: (1) what are the conditions for a good life?; and (2) which life dimensions (e.g. material situation and social relationships) do children think are important in their lives? To help stimulate focus group discussion, a list of necessities for children adapted from past studies was provided. Children were encouraged to add to, or delete from this list or to amend them as they see fit. A list of 21 child items and activities was informed by this qualitative work with children.

would like', or 'didn't have and didn't want' each item. The child deprivation index encompasses 14 items and activities which allow for children's social participation and development of relationships with family, friends and teachers. Scalability of the items was tested using Cronbach's Alpha, with a coefficient of .744. A scale was computed by summing the number of items which children lacked and wanted such that a higher score indicating a greater degree of deprivation. The items and activities in the index include (Table 1):

- Enough warm clothes for cold weather (*Enough warm clothes*)⁴
- Your own mobile phone (*Mobile phone*)
- A computer device with internet connection at home (*A home computer*)
- A meal out with friends at least once a month (*A meal out with friends*)
- Somewhere nearby where you can safely spend time with your friends (*A safe place with friends*)
- Some pocket money each week to spend on yourself (*Pocket money*)
- Some money that you can save each month (*Saving money*)
- Access to public transport like the railway networks or bus services (*Access to public transport*)
- Go out with friends or family for leisure activities at least once a month (*Leisure activities with friends/family*)
- School uniform of correct size (*School uniform*)
- Educational games (*Educational games*)
- Books at home suitable for your ages (*Books for suitable ages*)
- A suitable place at home to study or do homework (*A suitable place to study*)
- Participation in extra-curricular activities (*Extra-curricular activities*)

Income Poverty and Children in Jobless Households Data derived from the PSDE household survey was used to identify whether children living in households experiencing income poverty and/or having no adults in paid work (i.e. jobless households).⁵ Income poverty was measured by equivalised household income quintile from the subsample of families with children⁶. Children were defined as poor if they were living in families in the bottom quintile. Both the child-derived deprivation index and the adult-derived income poverty measure were used to ascertain how these material well-being indicators influenced child life satisfaction (Table 1).

2.2.2 Relationships with Family, Friends and Teachers

This article focuses on the effects of positive and negative aspects of relationships with family, friends and teachers on children's life satisfaction.

⁴ Abbreviation are shown in bracket at the end of each item.

⁵ Children in jobless households are more likely to be experienced income poverty (Lietz et al. 2015; UNICEF 2007).

⁶ This study uses an equivalence scale which divides household income by the square root of household size (OECD 2013).

Table 1 Material well-being, social relationships and children's overall life satisfaction measures

| Domain | Components | Indicators | Response range |
|---|---|---|--|
| Material well-being | Child deprivation index <i>14-item: $\alpha = .744$</i> | Enough warm clothes | Enforced lack of item: Yes (1), No (0) |
| | | Mobile phone | A deprivation score: Sum of 14-item [@] |
| | | A home computer | |
| | | A meal out with friends | |
| | | A safe place with friends | |
| | | Pocket money | |
| | | Saving money | |
| | | Access to public transport | |
| | | Leisure activities with friends/family | |
| | | School uniform | |
| | | Educational games | |
| | | Books for suitable ages | |
| | | A suitable place to study | |
| | | Extra-curricular activities | |
| Household income [#] | Equivalent household income quintiles | 1 st quintile (lowest) (1) to 5 th quintile (highest) (5) | |
| Jobless household ^{##} | Number of adults in paid work within the household | None (0) to 3+ (3) | |
| Home and family | Time spent with family | Talking together | Not at all (1) to Every day (4) <i>Mean of 4-item</i> |
| | | Having fun together | |
| | | Having meals together | |
| | | Learning together | |
| | Perception of parent-child relationships | Your parents (or the people who look after you) respect your opinions | Never (1) to Most of the time (5) <i>Mean of 2-item</i> |
| | | Your parents (or the people who look after you) treat you fairly | |
| | Perceived social support from family | Support you would get if you needed practical help* | A lot (1) to None at all (4) <i>Mean of 3-item</i> |
| | | Support you would get if you could talk to your parents* | |
| Support you would get if you could needed someone to give advice* | | | |
| Feeling of safety | Feel safe at home* | Very safe (1) to Very unsafe (5) | |
| Friends | Time spent with your friends | Talking together | Not at all (1) to Every day (4) <i>Mean of 4-item</i> |
| | | Having fun together | |
| | | Meeting to study (apart from at school) | |
| | | Hanging out with friends | |
| | Experience of being bullied | Whether you have been bullied in the past couple of months* | I have not been bullied (1) to Several time a week (5) |

Table 1 (continued)

| Domain | Components | Indicators | Response range |
|--------------------------------------|---|--|--|
| School and teachers | Perceived social support from friends | Support you would get if you could talk to your friends* | A lot (1) to None at all (4) |
| | Perception of peer relationship | You feel your friends are nice to you | Never (1) to Most of the time (5) |
| | Perceived social support from teachers | Support you would get if you can talk to your teachers* | A lot (1) to None at all (4) |
| | Perception of connectedness to teachers | Your teachers respect your opinions | Never (1) to Most of the time (5) <i>Mean of 2-item</i> |
| | | Your teachers treat you fairly | |
| Feeling of safety | Feel safe at school* | Very safe (1) to Very unsafe (5) | |
| Children's overall life satisfaction | Life satisfaction | Your life as a whole* | Very satisfied (1) to Very dissatisfied (5) |

Adult-reported items

*Negatively worded item (reverse coded). Higher scores on the scales indicate better performance in each component

@ A deprivation score from 0 to 5+ where a higher score indicates a greater degree of deprivation

Home and family Family relationships encompasses four components and eleven indicators measuring interpersonal interactions between parents and children, perception of child-parent relationships, feeling of reciprocity and trust, and feeling of safety at home (Table 1).

'*Time spent with family*' component included four items of frequency of activities did with family ('talking together'; 'having fun together'; 'having meals together'; and 'learning together'). They were assessed using a 4-point scale with 1 = 'Not at all' and 4 = 'Every day'. The mean of the four items was computed such that a higher score indicating a close parent-child relationship.

'*Perception of parent-child relationships*' component was measured by two items - frequency of parents (or the people who look after you) 'respect your opinions' and 'treat you fairly'. The questions were assessed using a 5-point scale (1 = 'Never', 2 = 'Rarely', 3 = 'Occasionally', 4 = 'Often', 5 = 'Most of the time'). The mean of the two items was computed such that a higher score indicating positive child-parent relationships.

'*Perceived social support from family*' component refers to three items of the amount of support would get if children 'needed practical help', 'could talk to parents', and 'needed someone to give advice'. They were assessed using a 4-point scale with 1 = 'A lot' and 4 = 'None at all'. The responses were reversely coded. The mean of the three items was computed such that a higher score indicating a strong reciprocity norm between parents and children.

'Feeling of safety at home' component was measured by one indicator - 'feel safe at home'. It was assessed by a 5-point scale with 1 = 'Very safe' and 5 = 'Very unsafe'. The responses were reversely coded such that a lower score indicating a lower level of family relationships.

Friends The measure of peer relationships consists of four components and seven indicators measuring interpersonal interactions with friends, perception of connectedness to friends, and positive and negative affect friendship (Table 1).

'Time spent with friends' component was measured by four items of frequency of activities did with friends ('talking together'; 'having fun together'; 'meeting to study (apart from at school)' and 'hanging out with friends'). The questions were assessed using a 4-point with 1 = 'Not at all' and 4 = 'Every day'. The mean of the four items was computed such that a higher score indicating positive peer relationships.

'Experience of being bullied' component was measured by a single question - 'have you been bullied in the past couple of months?' This question was assessed using a 5-point scale with 1 = 'I have not been bullied' and 5 = 'Several time a week'. The responses were reversely coded such that a lower score indicating negative affect friendship.

'Perceived social support from friends' component was assessed by a single question - 'the amount of support you would get if you could talk to your friends'. This question was assessed using a 4-point scale with 1 = 'A lot' and 4 = 'None at all'. The responses were reversely coded such that a higher score indicating positive affect friendship.

'Perception of peer relationships' component was assessed by a single item - 'how often do you feel your friends are nice to you?' using a 5-point scale with 1 = 'Never' and 5 = 'Most of the time' such that a higher score indicating positive peer relationships.

School and teachers Relationships with teachers encompasses three components and four indicators measuring perception of student-teacher relationships, feeling of reciprocity and trust, and feeling of safety at school (Table 1).

'Perceived social support from teachers' component was assessed by a single item - 'the amount of support would get if you can talk to your teachers', using a 4-point scale with 1 = 'A lot' and 4 = 'None at all'. The responses were reversely coded such that a lower score indicating a weak norm of reciprocity between student-teacher relationships.

'Perception of connectedness to teachers' component was measured by two indicators: frequency of your teachers 'respect your opinions' and 'treat you fairly'. The questions were assessed using a 5-point scale with 1 = 'Never' and 5 = 'Most of the time' such that a higher score indicating positive student-teacher relationships.

'Feeling of safety at school' component was measured by one single item - 'feel safe at school'. This question was assessed by a 5-point scale with 1 = 'Very safe' and 5 = 'Very unsafe'. The responses were reversely coded such that a lower score indicating a lower level of social relationships at school.

2.2.3 Child Subjective Well-Being

The components of self-reported well-being consists of ‘eudaimonic’ (or psychological well-being) and ‘hedonic’ well-being (or subjective well-being). The psychological well-being concerns with people’s mastery, purpose in life and autonomy. The subjective well-being consists of two main elements, including cognitive evaluations of one’s life (i.e. satisfaction with life as a whole and domain specific satisfaction), and positive (e.g. joy and pride) and negative (e.g. pain and worry) emotions (or affects) at a particular point in time (Rees et al. 2013, 2016; Stiglitz et al. 2010).

Due to data availability from the SPPR project, the current study is limited to the children’s subjective well-being measure. ‘Life satisfaction’ component was assessed by a single item – ‘satisfaction with your life as a whole’ (i.e. ‘children’s overall life satisfaction’), using a 5-point scale with 1 = ‘Very satisfied’ and 5 = ‘Very dissatisfied’. The responses were reversely coded such that a lower score indicating a lower level of overall life satisfaction (Table 1). The ‘children’s overall life satisfaction’ indicator which is part of child subjective well-being is used as the dependent variable for the regression analysis to examine the relative effects of socio-demographic characteristics and social relationships on children’s overall life satisfaction.

2.2.4 Socio-Demographic Characteristics: Control Variables

All children were asked where they were born. Since children in each of non-Hong Kong born groups (including ‘Mainland China’, ‘Macau’, ‘Taiwan’ and ‘elsewhere outside Hong Kong’) consisted of only a small proportion of the study sample, this group was combined as ‘non-Hong Kong born children’ and the rest as ‘Hong Kong born children’.

Age (in years), gender (male vs. female) and migrant status (non-Hong Kong born children vs. Hong Kong born children) were used as control variables for regression analysis.

All domains, components and indicators measuring children’s life satisfaction by socio-demographics and social relationships are summarized in Table 1.

3 Results

The socio-demographic characteristics of children aged 10 to 17 in this study was presented in Table 2. Among the 793 participants included in the analysis, 54.5 % were boys and 45.5 % were girls. The average age was 13.8 (SD = 2.3) for boys and girls. 15.1 % of the participants were non-Hong Kong born children. A majority of children are studying either at government (4.8 %) or aided school (87.1 %). A higher proportion of boys (38.6 %) lacked but wanted at least 2 or more child items compared to 32.6 % for girls.

Table 3 presents the relationship between family income and child deprivation which distinguishes poor children from poor families. The proportion deprived of five or more items was higher among children in the bottom quintile whilst 71 % of children in the highest quintile families were deprived of 1 or fewer items. However, there were about one-third non deprived children in families in the lowest

quintile (30.7 %). These children may be protected from deprivation by their parents who sacrifice their own needs. On the other hand, there was children in the highest quintile families deprived of 3 to 4 items (10.1 %); and 29 % deprived of two or more items. These results show that level of income is not a perfect indicator of a child's material circumstances. Not all poor children are deprived and some non-poor children are deprived. Hence the value of child derived deprivation measures.

Table 4 summarizes relationships with family, friends and school teachers and life satisfaction among children with differing socio-demographic characteristics. Boys had relatively weaker interpersonal interactions with their parents and friends than girls. Girls perceived that they would get more support from family and friends than boys. Younger children spent more time with their families compared to their seniors. Older children had a lower level of life satisfaction than the younger ones. Children in families with low material well-being (i.e. experienced income poverty and/or multiple deprivation) were more likely to be bullied in the past couple of months. Children who were more deprived were more likely to have negative perceptions of relationships with their parents and teachers, to perceive a lower level of social support from their family, friends and teachers, and to have a lower level of life satisfaction than the non-deprived children.

Table 5 shows the association between children's life satisfaction and positive and negative qualities of relationships. The social context of children's lives, such as 'perceived parent-child relationship' and 'feeling safe at home'; 'perception of peer relationships' and 'experience of being bullied'; and 'perceived connectedness to teachers' and 'feeling safe at school', were significantly associated with children's life satisfaction.

Table 6 reports the results of the ordinal regression analysis. It is observed that children's age, material deprivation, perceived positive relationships with family and teachers, perceived strong social support from family, and experience of being bullied all contributed statistically significant in explaining variations in life satisfaction. Older children had a lower level of life satisfaction (Odds ratio = .82, Wald = 16.837, $p = .000$) than the younger ones. Unlike the traditional adult reported income poverty measures, child deprivation played a significant role in explaining variation in children's overall life satisfaction. Children who had experience of being bullied had a lower level of life satisfaction (Odds ratio = .50, Wald = 5.936, $p = .015$). On the contrary, children who perceived a positive relationships with family (Odds ratio = 2.47, Wald = 26.844, $p = .000$), perceived a high level of social support from family (Odds ratio = 2.28, Wald = 15.804, $p = .000$), and perceived a close connection to teachers (Odds ratio = 1.80, Wald = 12.726, $p = .000$) had a higher level of life satisfaction.

4 Discussion

This article has explored the extent to which socio-demographics and supportive social relationships explained variations in children's life satisfaction. The evidence on children's life satisfaction might inform efforts to improve the quality of children's lives. Results indicate the relative effects of socio-demographic characteristics and social

Table 2 Socioeconomic and demographic characteristics of the study sample ($N = 793$)

| | Boys | Girls | Total |
|--|-------------------|-------------------|-------------------|
| Total | 54.5 % (432) | 45.5 % (361) | 793 |
| Age^a | | | |
| 10 | 11.3 % (49) | 12.5 % (45) | 11.9 % (94) |
| 11 | 9.3 % (40) | 10.2 % (37) | 9.7 % (77) |
| 12 | 13.7 % (59) | 10.2 % (37) | 12.1 % (96) |
| 13 | 9.0 % (39) | 10.5 % (38) | 9.7 % (77) |
| 14 | 13.9 % (60) | 12.5 % (45) | 13.2 % (105) |
| 15 | 13.7 % (59) | 13.3 % (48) | 13.5 % (107) |
| 16 | 12.5 % (54) | 13.3 % (48) | 12.9 % (102) |
| 17 | 16.7 % (72) | 17.5 % (63) | 17.0 % (135) |
| <i>Mean (SD)</i> | <i>13.8 (2.3)</i> | <i>13.8 (2.4)</i> | <i>13.8 (2.3)</i> |
| Place of birth^a | | | |
| Mainland China or elsewhere | 13.9 % (58) | 16.5 % (58) | 15.1 % (116) |
| Hong Kong | 86.1 % (360) | 83.5 % (293) | 84.9 % (653) |
| School type | | | |
| Government school | 4.2 % (17) | 5.6 % (19) | 4.8 % (36) |
| Aided school | 85.1 % (342) | 89.5 % (306) | 87.1 % (648) |
| Private school | 3.5 % (14) | 1.5 % (5) | 2.6 % (19) |
| School under the Direct Subsidy Scheme | 6.5 % (26) | 2.6 % (9) | 4.7 % (35) |
| International school | 0.5 % (2) | 0.6 % (2) | 0.5 % (4) |
| Caput school | 0.2 % (1) | 0.3 % (1) | 0.3 % (2) |
| Number of working adults in the household^a | | | |
| 0 | 9.0 % (39) | 8.3 % (30) | 8.7 % (69) |
| 1 | 38.4 % (166) | 41.8 % (151) | 40.0 % (317) |
| 2 | 42.8 % (185) | 39.6 % (143) | 41.4 % (328) |
| 3+ | 9.7 % (42) | 10.2 % (37) | 10.0 % (79) |
| Equivalent household income^a | | | |
| 1st quintile (lowest) | 19.4 % (81) | 21.2 % (74) | 20.2 % (155) |
| 2nd quintile | 18.7 % (78) | 21.2 % (74) | 19.8 % (152) |
| 3rd quintile | 22.8 % (95) | 23.5 % (82) | 23.1 % (177) |
| 4th quintile | 17.0 % (71) | 16.6 % (58) | 16.8 % (129) |
| 5th quintile (highest) | 22.1 % (92) | 17.5 % (61) | 20.0 % (153) |
| Enforced lack of child items | | | |
| 0 | 41.3 % (160) | 46.2 % (146) | 43.5 % (306) |
| 1 | 20.2 % (78) | 21.2 % (67) | 20.6 % (145) |
| 2 | 11.9 % (46) | 15.8 % (50) | 13.7 % (96) |
| 3–4 | 14.0 % (54) | 10.8 % (34) | 12.5 % (88) |
| 5+ | 12.7 % (49) | 6.0 % (19) | 9.7 % (68) |

^a Adult-reported items^b Number of cases are shown in bracket^c Figures may not be add up to total N due to missing data^d All percentages are column percentages except for total gender

Table 3 Percentage of deprived children in each quintile of family income

| | Deprived items | | | | | N |
|------------------------|----------------|--------------|-------------|-------------|-------------|-----|
| | 0 | 1 | 2 | 3–4 | 5+ | |
| 1st quintile (lowest) | 30.7 % (39) | 18.1 % (23) | 15.7 % (20) | 17.3 % (22) | 18.1 % (23) | 127 |
| 2nd quintile | 39.4 % (56) | 24.6 % (35) | 11.3 % (16) | 14.1 % (20) | 10.6 % (15) | 142 |
| 3rd quintile | 42.9 % (67) | 26.3 % (41) | 15.4 % (24) | 9.0 % (14) | 6.4 % (10) | 156 |
| 4th quintile | 49.1 % (57) | 19.8 % (23) | 10.3 % (12) | 12.9 % (15) | 7.8 % (9) | 116 |
| 5th quintile (highest) | 58.0 % (80) | 13.0 % (18) | 13.8 % (19) | 10.1 % (14) | 5.1 % (7) | 138 |
| Total | 44.0 % (299) | 20.6 % (140) | 13.4 % (91) | 12.5 % (85) | 9.4 % (64) | 679 |

^a Number of cases are shown in bracket

^b All percentages are row percentages

relationships on life satisfaction. The pattern of variations were similar to those seen among children in other developed countries.

This study produced evidence that child-reported indicators of material deprivation contributed more to explaining variations in children's life satisfaction compared to adult-reported income poverty measures (Main 2014; Pople et al. 2015). In line with previous studies, there was a downward trend in children's life satisfaction with age (Moore et al. 2014; Pople et al. 2015; Rees and Main 2015). This raises interesting questions for future research to explore the extent to which its relevance to the pressure to fulfil expectations when children grow up (Leung and Shek 2011).

Perceived positive relationships with family and teachers (e.g. being respected and treated fairly at home and school) (Goswami 2012; McAuley and Rose 2014; Rees and Main 2015), and supportive environments (e.g. experience of being bullied) (Currie et al. 2012; Dufur et al. 2015; Huebner et al. 2014; Klocke et al. 2014) appeared to have significant effects on children's life satisfaction (Goswami 2014; Pople et al. 2015).

The empirical findings of this study have important implications for current policy and future research development. First, the link between children's experience of material deprivation and their life satisfaction appears to be amenable to policy initiatives. The material deprivation index was useful to differentiate poor children from poor families. Results supported previous studies that some parents who were experiencing income poverty might sacrifice their own needs to provide for children (Main and Bradshaw 2016; Middleton et al. 1997; Ridge 2009). Financial and social support should be prioritized to children who are in disadvantaged socioeconomic positions. Second, it is important that future research explores the reasons why some parents in the highest income quintile may restrict their children to have items enabling them to conform to the norms of their peers. Research findings from adults and children's perspectives on what the conditions are good for children's lives clearly have policy implications. Findings imply the prominence of children's voices for services and programmes developed for children which can better suit their needs. Third, there were links between children with low life satisfaction and negative perceived quality of relationships; experience of being bullied; perceived a lower level of social support. Children's low life satisfaction associated with these risk factors are

Table 4 Relationships with family, friends and school teachers, and life satisfaction by socio-demographics

| | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. |
|------------------------------|------------------------|-----------|------|---|-----------|------|--------------------------------------|-----------|------|---------------------------|-----------|------|------------------------------|-----------|------|-----------------------------|-----------|------|---------------------------------------|-----------|------|
| | Time spent with family | | | Perception of parent-child relationship | | | Perceived social support from family | | | Feeling of safety at home | | | Time spent with your friends | | | Experience of being bullied | | | Perceived social support from friends | | |
| Gender | | | | | | | | | | | | | | | | | | | | | |
| Male | 393 | 341.51 | .002 | 431 | 392.47 | .624 | 432 | 375.08 | .004 | 429 | 382.26 | .105 | 395 | 345.56 | .011 | 429 | 386.71 | .089 | 432 | 377.68 | .006 |
| Female | 333 | 389.45 | | 360 | 400.22 | | 359 | 421.18 | | 356 | 405.95 | | 331 | 384.90 | | 358 | 402.73 | | 360 | 419.09 | |
| Age | | | | | | | | | | | | | | | | | | | | | |
| 10.00 | 87 | 414.01 | .000 | 93 | 391.82 | .062 | 94 | 418.29 | .711 | 92 | 441.52 | .267 | 87 | 282.74 | .003 | 93 | 364.11 | .077 | 94 | 372.02 | .290 |
| 11.00 | 66 | 391.26 | | 77 | 445.35 | | 77 | 417.23 | | 77 | 402.65 | | 67 | 361.69 | | 76 | 372.01 | | 77 | 362.09 | |
| 12.00 | 88 | 391.31 | | 96 | 368.88 | | 96 | 417.40 | | 96 | 382.54 | | 90 | 371.49 | | 95 | 382.37 | | 96 | 397.19 | |
| 13.00 | 70 | 417.19 | | 77 | 457.25 | | 77 | 400.58 | | 77 | 408.49 | | 70 | 419.23 | | 76 | 392.72 | | 77 | 432.40 | |
| 14.00 | 99 | 333.78 | | 105 | 366.86 | | 104 | 371.38 | | 103 | 367.86 | | 95 | 391.23 | | 105 | 403.28 | | 104 | 406.38 | |
| 15.00 | 101 | 378.35 | | 107 | 389.31 | | 107 | 380.27 | | 107 | 375.70 | | 96 | 382.58 | | 107 | 400.37 | | 107 | 373.72 | |
| 16.00 | 89 | 343.42 | | 102 | 383.50 | | 102 | 385.58 | | 102 | 396.97 | | 90 | 368.24 | | 102 | 417.50 | | 102 | 400.97 | |
| 17.00 | 126 | 290.47 | | 134 | 392.47 | | 134 | 389.81 | | 131 | 382.62 | | 131 | 345.44 | | 133 | 406.04 | | 135 | 419.27 | |
| Place of birth | | | | | | | | | | | | | | | | | | | | | |
| Mainland China /elsewhere | 106 | 329.06 | .204 | 116 | 368.56 | .401 | 116 | 346.34 | .044 | 116 | 368.67 | .465 | 110 | 349.30 | .813 | 114 | 395.14 | .254 | 116 | 370.75 | .436 |
| Hong Kong | 597 | 356.07 | | 651 | 386.75 | | 651 | 390.71 | | 645 | 383.22 | | 596 | 354.28 | | 650 | 380.28 | | 652 | 386.95 | |

Table 4 (continued)

| | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. |
|------------------------------------|------------------------|-----------|------|---|-----------|------|--------------------------------------|-----------|------|---------------------------|-----------|------|------------------------------|-----------|------|-----------------------------|-----------|------|---------------------------------------|-----------|------|
| | Time spent with family | | | Perception of parent–child relationship | | | Perceived social support from family | | | Feeling of safety at home | | | Time spent with your friends | | | Experience of being bullied | | | Perceived social support from friends | | |
| Whether having adults in paid work | | | | | | | | | | | | | | | | | | | | | |
| No adults | 62 | 326.41 | .143 | 69 | 297.20 | .000 | 69 | 358.74 | .151 | 69 | 420.30 | .244 | 63 | 312.95 | .044 | 68 | 340.34 | .000 | 69 | 398.24 | .943 |
| At least one adult | 664 | 366.96 | | 722 | 405.44 | | 722 | 399.56 | | 716 | 390.37 | | 663 | 368.30 | | 719 | 399.08 | | 723 | 396.33 | |
| Equivalised household income | | | | | | | | | | | | | | | | | | | | | |
| 1st quintile (lowest) | 138 | 339.17 | .603 | 154 | 327.10 | .002 | 155 | 362.05 | .432 | 154 | 383.89 | .525 | 142 | 303.63 | .005 | 154 | 351.54 | .036 | 155 | 394.62 | .567 |
| 2nd quintile | 139 | 362.69 | | 151 | 379.33 | | 152 | 380.15 | | 149 | 369.58 | | 140 | 349.26 | | 150 | 392.50 | | 152 | 367.84 | |
| 3rd quintile | 158 | 367.76 | | 177 | 389.76 | | 177 | 372.85 | | 175 | 363.69 | | 161 | 380.80 | | 176 | 389.48 | | 177 | 378.95 | |
| 4th quintile | 120 | 343.99 | | 129 | 391.56 | | 128 | 403.05 | | 127 | 383.85 | | 116 | 386.75 | | 128 | 385.97 | | 128 | 372.41 | |
| 5th quintile (highest) | 146 | 338.68 | | 153 | 425.35 | | 152 | 399.62 | | 153 | 399.22 | | 145 | 344.67 | | 152 | 383.00 | | 153 | 399.84 | |
| Enforced lack of child items | | | | | | | | | | | | | | | | | | | | | |
| 0 | 286 | 338.47 | .482 | 306 | 395.78 | .000 | 306 | 379.44 | .000 | 302 | 361.41 | .010 | 281 | 361.28 | .000 | 303 | 359.15 | .000 | 306 | 368.08 | .004 |
| 1 | 132 | 319.19 | | 145 | 339.01 | | 145 | 370.11 | | 145 | 353.89 | | 137 | 319.58 | | 142 | 350.78 | | 145 | 376.86 | |
| 2 | 89 | 336.98 | | 96 | 332.63 | | 95 | 335.78 | | 95 | 366.40 | | 92 | 292.75 | | 96 | 370.72 | | 96 | 342.96 | |
| 3–4 | 83 | 305.90 | | 86 | 300.65 | | 88 | 290.56 | | 85 | 320.39 | | 81 | 301.99 | | 88 | 329.14 | | 88 | 301.02 | |
| 5+ | 63 | 305.03 | | 68 | 264.65 | | 68 | 286.89 | | 68 | 284.70 | | 61 | 265.25 | | 68 | 295.13 | | 68 | 305.39 | |

Table 4 (continued)

| | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. |
|---------------------------|---------------------------------|-----------|------|--|-----------|------|---|-----------|------|-----------------------------|-----------|------|---------------------------|-----------|------|
| | Perception of peer relationship | | | Perceived social support from teachers | | | Perception of connectedness to teachers | | | Feeling of safety at school | | | Overall life satisfaction | | |
| Gender | | | | | | | | | | | | | | | |
| Male | 430 | 382.28 | .070 | 432 | 402.25 | .414 | 431 | 380.09 | .031 | 431 | 396.49 | .942 | 432 | 390.96 | .367 |
| Female | 358 | 409.18 | | 360 | 389.60 | | 359 | 414.00 | | 360 | 395.41 | | 361 | 404.23 | |
| Age | | | | | | | | | | | | | | | |
| 10.00 | 91 | 374.23 | .242 | 94 | 409.77 | .891 | 93 | 401.73 | .256 | 94 | 434.80 | .229 | 94 | 455.13 | .000 |
| 11.00 | 77 | 381.05 | | 77 | 383.45 | | 77 | 382.04 | | 76 | 399.76 | | 77 | 443.99 | |
| 12.00 | 95 | 364.63 | | 96 | 411.60 | | 96 | 362.09 | | 96 | 389.09 | | 96 | 384.61 | |
| 13.00 | 77 | 418.99 | | 77 | 382.97 | | 77 | 432.70 | | 77 | 432.69 | | 77 | 437.68 | |
| 14.00 | 104 | 370.46 | | 104 | 405.67 | | 105 | 365.24 | | 105 | 361.62 | | 105 | 379.00 | |
| 15.00 | 107 | 406.71 | | 107 | 379.94 | | 107 | 408.97 | | 107 | 393.05 | | 107 | 408.84 | |
| 16.00 | 102 | 402.99 | | 102 | 383.48 | | 100 | 424.46 | | 101 | 393.67 | | 102 | 376.21 | |
| 17.00 | 135 | 425.32 | | 135 | 407.59 | | 135 | 392.83 | | 135 | 381.66 | | 135 | 335.66 | |
| Place of birth | | | | | | | | | | | | | | | |
| Mainland China /elsewhere | 116 | 357.72 | .149 | 116 | 360.96 | .190 | 115 | 368.88 | .424 | 116 | 369.38 | .397 | 116 | 362.38 | .186 |
| Hong Kong | 648 | 386.94 | | 652 | 388.69 | | 651 | 386.08 | | 651 | 386.60 | | 653 | 389.02 | |

Table 4 (continued)

| | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. | N | Mean rank | Sig. |
|------------------------------------|---------------------------------|-----------|------|--|-----------|------|---|-----------|------|-----------------------------|-----------|------|---------------------------|-----------|------|
| | Perception of peer relationship | | | Perceived social support from teachers | | | Perception of connectedness to teachers | | | Feeling of safety at school | | | Overall life satisfaction | | |
| Whether having adults in paid work | | | | | | | | | | | | | | | |
| No adults | 68 | 357.17 | .120 | 69 | 386.97 | .702 | 68 | 355.71 | .118 | 68 | 381.43 | .546 | 69 | 362.07 | .141 |
| At least one adult | 720 | 398.03 | | 723 | 397.41 | | 722 | 399.25 | | 723 | 397.37 | | 724 | 400.33 | |
| Equivalised household income | | | | | | | | | | | | | | | |
| 1st quintile (lowest) | 154 | 372.53 | .823 | 155 | 396.62 | .496 | 154 | 374.13 | .447 | 154 | 377.71 | .122 | 155 | 359.37 | .397 |
| 2nd quintile | 150 | 382.63 | | 152 | 359.32 | | 151 | 364.81 | | 152 | 359.37 | | 152 | 377.79 | |
| 3rd quintile | 177 | 391.82 | | 177 | 376.71 | | 177 | 406.81 | | 177 | 408.12 | | 177 | 398.08 | |
| 4th quintile | 128 | 368.34 | | 128 | 395.80 | | 128 | 383.31 | | 128 | 361.70 | | 129 | 383.12 | |
| 5th quintile (highest) | 153 | 388.49 | | 153 | 389.29 | | 153 | 377.09 | | 153 | 398.07 | | 153 | 397.08 | |
| Enforced lack of child items | | | | | | | | | | | | | | | |
| 0 | 305 | 369.07 | .000 | 306 | 380.67 | .002 | 305 | 365.82 | .020 | 306 | 354.67 | .325 | 306 | 368.27 | .004 |
| 1 | 145 | 372.28 | | 145 | 350.20 | | 145 | 374.29 | | 145 | 352.89 | | 145 | 365.57 | |
| 2 | 95 | 362.97 | | 96 | 338.73 | | 96 | 339.01 | | 96 | 377.44 | | 96 | 353.64 | |
| 3–4 | 87 | 322.90 | | 88 | 299.10 | | 88 | 320.45 | | 87 | 324.57 | | 88 | 327.11 | |
| 5+ | 67 | 231.77 | | 68 | 314.01 | | 68 | 296.47 | | 68 | 332.12 | | 68 | 279.74 | |

Note: Kruskai Wallis Test

Table 5 Correlations between children's overall life satisfaction and relationships with family, friends and teachers

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|--|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 Overall life satisfaction | 1 | .221** | .375** | .238** | .330** | .112** | .106** | .124** | .217** | .158** | .294** | .295** |
| 2 Time spent with family | | 1 | .299** | .229** | .191** | .308** | .061 | .120** | .092* | .124** | .101** | .110** |
| 3 Perception of parent-child relationship | | | 1 | .303** | .346** | .101** | .154** | .125** | .251** | .160** | .391** | .278** |
| 4 Perceived social support from family | | | | 1 | .207** | .151** | .048 | .539** | .135** | .547** | .115** | .108** |
| 5 Feeling of safety at home | | | | | 1 | .014 | .121** | .176** | .186** | .103** | .218** | .315** |
| 6 Time spent with friends | | | | | | 1 | .085* | .273** | .244** | .131** | .031 | .057 |
| 7 Experience of being bullied | | | | | | | 1 | .079* | .236** | -.020 | .099** | .146** |
| 8 Perceived social support from friends | | | | | | | | 1 | .188** | .418** | .069 | .090* |
| 9 Perception of peer relationships | | | | | | | | | 1 | .053 | .212** | .177** |
| 10 Perceived social support from teachers | | | | | | | | | | 1 | .169** | .103** |
| 11 Perception of connectedness to teachers | | | | | | | | | | | 1 | .420** |
| 12 Feeling of safety at school | | | | | | | | | | | | 1 |

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 6 Ordinal regression: children's overall life satisfaction, socio-demographics and social Relationships

| | N | Estimate | Std. Error | Wald | df | Exp B | 95% Confidence Interval | | Sig |
|--|-----|----------|------------|--------|----|-------|-------------------------|-------|------|
| | | | | | | | Lower | Upper | |
| Threshold – Overall life satisfaction | | | | | | | | | |
| 1 = dissatisfied /very dissatisfied | 16 | -1.015 | .955 | 1.128 | 1 | .36 | .06 | 2.36 | .288 |
| 2 = neither satisfied nor dissatisfied | 131 | 1.854 | .942 | 3.875 | 1 | 6.39 | 1.01 | 40.46 | .049 |
| Factors | | | | | | | | | |
| Gender | | | | | | | | | |
| 1 = Male | 369 | -.015 | .212 | .005 | 1 | .98 | .65 | 1.49 | .942 |
| 2 = Female | 300 | 0 | . | . | 0 | 1.00 | . | . | . |
| Equivalised household income | | | | | | | | | |
| 1 = 1st quintile (lowest) | 125 | -.188 | .350 | .291 | 1 | .83 | .42 | 1.64 | .590 |
| 2 = 2nd quintile | 138 | -.581 | .335 | 3.004 | 1 | .56 | .29 | 1.08 | .083 |
| 3 = 3rd quintile | 155 | -.265 | .333 | .634 | 1 | .77 | .40 | 1.47 | .426 |
| 4 = 4th quintile | 115 | -.226 | .359 | .396 | 1 | .80 | .39 | 1.61 | .529 |
| 5 = 5th quintile (highest) | 136 | 0 | . | . | 0 | 1.00 | . | . | . |
| Enforced lack of child items | | | | | | | | | |
| 0 = 0 | 295 | .929 | .341 | 7.430 | 1 | 2.53 | 1.30 | 4.94 | .006 |
| 1 = 1 | 137 | .971 | .373 | 6.779 | 1 | 2.64 | 1.27 | 5.49 | .009 |
| 2 = 2 | 90 | 1.146 | .410 | 7.819 | 1 | 3.15 | 1.41 | 7.02 | .005 |
| 3 = 3-4 | 83 | 1.076 | .398 | 7.300 | 1 | 2.93 | 1.34 | 6.41 | .007 |
| 4 = 5+ | 64 | 0 | . | . | 0 | 1.00 | . | . | . |
| Experience of being bullied | | | | | | | | | |
| 1 = Yes | 84 | -.693 | .284 | 5.936 | 1 | .50 | .29 | .87 | .015 |
| 2 = No | 585 | 0 | . | . | 0 | 1.00 | . | . | . |
| Covariates | | | | | | | | | |
| Age | 669 | -.198 | .048 | 16.837 | 1 | .82 | .75 | .90 | .000 |
| Perception of parent-child relationships | 669 | .904 | .174 | 26.844 | 1 | 2.47 | 1.75 | 3.47 | .000 |
| Perceived social support from family | 669 | .823 | .207 | 15.804 | 1 | 2.28 | 1.52 | 3.41 | .000 |
| Perception of connectedness to teachers | 669 | .588 | .165 | 12.726 | 1 | 1.80 | 1.30 | 2.49 | .000 |

Dependent Variable: Children's overall life satisfaction (OLS)

significantly important for policy interventions. Finally, this research produced a reliable child-derived index of deprivation index which is socially and cultural relevant to the Chinese context. This study will benefit researchers who work on child poverty related issues in the other regions.

There are limitations to this study. Data used for this analysis are cross-sectional in nature. The identified associations in this analysis can be verified using the second wave of the SPPR survey data in order to draw any causal conclusion. The current

study is limited to the children's subjective wellbeing measure because of data availability. Given the limitations, this article reports, for the first time evidence based on a child-derived material deprivation index - thereby addressing the limitations in traditional adult-derived child poverty measures. The findings can advance our understanding of variations in children's overall life satisfaction in Hong Kong, and provide evidence for policy and practice.

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