

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/107552/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

KIm, Eunju and Nandy, Shailen 2018. Multidimensional child poverty in Korea: developing child-specific indicators for the sustainable development goals. *Child Indicators Research* 11 , pp. 1029-1050. 10.1007/s12187-017-9517-0

Publishers page: <https://doi.org/10.1007/s12187-017-9517-0>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



Online Research @ Cardiff

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <http://orca.cf.ac.uk/107552/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Kim, Eunju and Nandy, Shailen 2018. Multidimensional child poverty in Korea: developing child-specific indicators for the sustainable development goals. *Child Indicators Research* 11 , pp. 1029-1050. 10.1007/s12187-017-9517-0 file

Publishers page: <https://doi.org/10.1007/s12187-017-9517-0> <<https://doi.org/10.1007/s12187-017-9517-0>>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



Multidimensional Child Poverty in Korea: Developing child-specific indicators for the Sustainable Development Goals

Eunju Kim* and Shailen Nandy**

Abstract

This paper aims to examine child poverty in Korea by constructing a multidimensional child poverty index. The Sustainable Development Goals (hereafter SDGs) recommends producing children-specific poverty statistics based on the concept of multidimensional poverty. Responding to such global norms and trends, in Korea, there is an increasing need to define and measure multidimensional poverty among children, focusing on the individual rather than the household as a whole. Drawing on the Poverty and Social Exclusion methodology, we established a Child Deprivation Index and combined it with household income to estimate multidimensional child poverty, using data from the 2013 Korean National Child Survey. The findings show that the number of children in poverty are in fact around 10% of the child population, as measured by material deprivation and income combined, which is two times higher than the official Korean child poverty rate. This indicates that conventional measurements, based only on household income, not only insufficiently identifies poor children, but also excludes more than half of the potential recipients from the social assistance system. In addition, our logit analysis offers strong evidence that deprived children are mostly living in working-poor and single-parent households. These findings lead to the conclusion that various support for the working poor should be considered as important child policy agenda. In this respect, the child-focused poverty measurement produced in this study has more significant implications for practical policy objectives than the income-based approach, as well as a higher theoretical and methodological accuracy.

[Key Word] Child Poverty, Multidimensional Poverty, Material Deprivation, Korea

* Korea Institute of Public Administration, eunjukim@kipa.re.kr, ORCID ID: 0000-0003-2158-9398

** Cardiff University, NandyS1@cardiff.ac.uk

Multidimensional Child Poverty in South Korea: Developing child-specific indicator for the Sustainable Development Goals

1. Introduction

The new international Sustainable Development Goals (SDGs) call for enhanced efforts to combat poverty in all dimensions. Within Goal 1 of the SDGs which addresses poverty, Target 1.2 commits countries *by 2030, to reduce, at least by half, the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions* (UN 2015). In addition, it is recommended that each country develops national indicators to measure the level of achievement, using gender disaggregated statistics and children specific statistics based on the concept of multidimensional poverty. In recognising the multidimensional nature of poverty, and explicitly mentioning the poverty of children as well as adults, *and highlighting that definitions accord with national definitions*, this one target fundamentally changes the way national and international poverty will be assessed in coming years. However, in many countries there is little data on child poverty or poverty indicators specific to child population (Gordon and Nandy 2012). Thus, there is an increasing need to define and measure multidimensional poverty among children, focusing on individual rather than the household as a whole (Hjelm 2016; Ferrone and Chzhen 2017). Responding to this global norm and trend, a recent study on national SDGs indicators of Korea National Statistical Office also includes recommendations to develop multidimensional poverty indicators and disaggregated statistics for specific target groups, such as children (Statistical Research Institute 2016).

The need to define and measure multidimensional poverty is important not only in the international, but also domestic context for Korean welfare states. In South Korea, the policy debate on universal welfare has recently become active since the 2008 global financial crisis (Kwon and Kim 2010), and children have been at its frontline. To move forward towards a universal welfare state, away from the so-called developmental welfare state, or productivist welfare state in Korea (Kwon 1997; Holliday 2000), the debate on ‘universal welfare’ versus ‘selective welfare’ has become a fuse of welfare policy debate in connection with ideological controversies and political logic (Kwon 2017). Nonetheless, various welfare systems have been pledged at recent presidential and general elections by both conservative and liberal governments. As a result, policy efforts have been made to strengthen the welfare system, such as an introduction of basic pensions for the elderly, and reform of public pensions and the health insurance system. The most notable of these is the introduction of a universal welfare system for children. Because children are the future of our society, the claim that welfare systems should be expanded to protect and support them through “universal” coverage is generally accepted without much resistance. As the

1
2 population declines, low fertility rates have become a serious problem in one of the world's most rapidly
3 aging societies, the Korean government has introduced a policy to subsidize and encourage childbirth. In
4 addition, universal free meals for primary school students, and universal childcare allowance for 3 to 5
5 year-olds have also been established. Moreover, in 2018, a universal child allowance will be introduced
6 for children aged 0-5 for the first time following prolonged discussions.
7
8

9
10 However, despite the recent introduction of welfare systems that target children, paradoxically,
11 about 1 million children, or 10% of all children live in vulnerable residential environments in South
12 Korea, and about 0.4 million, or 4% of the child population are still exposed to risks of skipping meals
13 (Kim 2015). This leaves many thousands of children outside formal systems of social protection.
14
15

16 An important first step to establishing any anti-poverty policy for children is to make a critical
17 assessment of previous methodologies and ensure that target groups are accurately identified to meet
18 policy needs. Nevertheless, formal assessments of poverty in South Korea still rely on the concept of
19 absolute poverty, only using income standards, with child poverty defined as "a child of a household that
20 lives under the minimum cost of living." (Kim 2008) Moreover, national statistical data on child poverty
21 are still in its early stages, with a lack of specialized statistics on child poverty¹. In addition, there are
22 only a few studies of child poverty which have been conducted on a national scale using household
23 survey data (Jung 2015). Fortunately, however, the 2011 Prevention of Child Poverty and Support of
24 Children Act defines a poor child as one "who needs support to reduce disparities for welfare, education
25 and cultural aspect", and this can form a baseline for assessing multidimensional child poverty. In
26 alignment with the legal frame, further elaboration of the concept is needed, in addition to valid and
27 reliable measures of multidimensional child poverty. For this reason, the Korean National Statistical
28 Office recently announced plans to develop poverty statistics for children in 2018, considering absolute
29 poverty, relative poverty, as well as multi-dimensional poverty for the first time. Therefore, the
30 development of new definitions and methods to assess multi-dimensional child poverty will be of interest
31 not only among academics, but also to government authorities in South Korea.
32
33

34 In this line, this paper presents the results of a study on multidimensional child poverty in South
35 Korea which applies one of the few methods that will make monitoring progress of SDGs possible in a
36 reliable and comparative fashion across low, middle and high income countries. It examines
37 multidimensional child poverty in Korea by constructing an index which combines data on household
38 income with material deprivation among children. The dynamics of child poverty are also examined, by
39 analyzing different domains of material deprivation and comparing the socio-economic status of
40 households using logit regression. Based on this analysis, a series of policy implications are suggested as
41 a response to growing concerns about child poverty in South Korea.
42
43
44
45
46
47
48
49
50
51
52
53
54
55

56 ¹ For example, even though the Ministry of Health and Welfare investigates the poverty status of children
57 through a comprehensive survey of children, the survey is not focused on poor children, but on the entire
58 child population. The approach of the Ministry of Gender Equality and Family is from the standpoint of
59 women's policies, such as single-parent family surveys and multicultural family surveys.
60
61
62
63
64
65

2. Multidimensional Child Poverty Measurement in the Korean Context

Although a child focused perspective towards poverty has gained increased attention during the last few decades (Gordon et al. 2003; Minujin and Nandy 2012; Roelen et al. 2009), most countries still define child poverty as children living in households below the national poverty line, using only the monetary approach. Traditional measures using household income make households the unit of analysis, rather than children as individuals. In addition, the monetary approach fails to reflect the various needs of children at developmental stages.

To overcome these limitations, efforts have been made to study child poverty through multidimensional poverty definitions and measurements. Among these is the approach taken by UNICEF, which uses a rights-based framework (Gordon et al. 2003). It constructs seven dimensions of material deprivation based on the 1989 UN Convention on the Rights of the Child, to reflect severe deprivation of children's basic needs for food, safe drinking water, sanitation, health, shelter, education and information – needs identified by the Copenhagen World Summit for Social Development in 1995. The study laid the foundation for UNICEF's Multiple Overlapping Deprivation Analysis (hereafter MODA). MODA is also a conceptual framework constructed based on the children's rights framework. It measures material deprivation in each domain using household data, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) in low and middle income countries (De Neubourg et al. 2012; de Miliano and Playgo 2017). As with Gordon et al. (2003) it too measures material deprivation with survey questionnaires which relate to seven dimensions including child-level measures of education, nutrition, health, and protection from violence, and household-level measures of housing, water, sanitation, and information access. The difference between MODA and previous studies is that it defines and measures poverty by taking children's age groups into account, in order to consider the needs which vary according to different development stages of the child (Chzhen et al. 2016).

Another common approach with regards multi-dimensional poverty is that of the Global Multidimensional Poverty Index (hereafter MPI), which is based on Amartya Sen's Capability theory (Alkire and Santos 2010; Alkire and Foster 2011). The MPI also defines poverty as a multidimensional concept and applies this to international child poverty comparative studies. It reflects various aspects of poverty by constructing indicators for the following dimensions: health, education, and living standards. However, the MPI approach does not refer directly to children, and instead has traditionally defined child poverty as children living in MPI poor households. Although it includes items for children, taken from DHS and MICS surveys, there are limitations in using measures at household level.

Many of previous studies of multidimensional child poverty aim to make international comparisons, focusing on absolute poverty in low and middle income countries. As such, they use indicators like whether a child has ever been vaccinated or attended primary school, which are not appropriate for reflecting deprivation in higher income countries, given much higher levels of coverage and service provision. Although EU-MODA research confirmed that the same dimensions can apply for

1 assessing child poverty in developed countries, as well as EU countries using 2009 EU-SILC data
2 (Chzhen et al. 2016), the deprivation indicators selected and thresholds used may need adapting, to be
3 appropriate and valid reflections of multi-dimensional poverty in a high-income country context. Most
4 children are not subjected to living conditions associated with the depth of poverty familiar to too
5 many children in low income countries. Any such index or measure would therefore need to reflect living
6 standards relevant to the context of advanced countries.
7

8
9
10
11
12
13 In addition, when it comes to child poverty, it is important to take into account the specific needs
14 of goods and services according to a child's developmental stage. The needs of children in pre-school or
15 under the age of 5 are different to those of 17 or 18-year-old adolescents. Children's basic needs for an
16 acceptable standard of living are universal, but how they are met is dependent on the context in which
17 they live, and these differ considerably between developing and developed countries.
18

19
20 One study which has developed methods to cope with these challenges is the UK Poverty and
21 Social Exclusion (hereafter PSE) study. The PSE approach defines and measures multidimensional
22 poverty by combining both living and income standards. Child poverty can be measured in a child-
23 specific manner by selecting indicators for each dimension according to each age group, taking into
24 account the needs relevant to each developmental stage (Main and Bradshaw 2014; Pantazis et al. 2006).
25 This study applies the PSE method to explore material deprivation in South Korea, using the concept of
26 relative deprivation and combining it with income information to construct a new measure of
27 multidimensional child poverty.
28

29
30
31
32 The PSE approach draws upon the legacy of Peter Townsend, who defined poverty as the state in
33 which individuals, families and groups in society "lack the resources to obtain the types of diet,
34 participate in the activities and have the living conditions and amenities which are customary, or are at
35 least widely encouraged or approved, in the societies to which they belong (Townsend 1979:31)." In
36 other words, poverty can be determined relatively according to the society in which the individual
37 belongs. Townsend's definition of relative deprivation further emphasised the perception of ordinary
38 people, such as how people live, what they purchase, and how much they spend on various items or
39 activities, rather than experts' understanding of how much people need or how they should spend their
40 money (Townsend 1979). Thus, poverty can be understood more precisely when income information is
41 combined with information on living standards, that is to say, living standards that are produced as a
42 consequence of poverty, as well as low income that functions as the cause of poverty.
43

44
45
46
47 Following his emphasis on a socially-defined standard of living, Mack and Lansley (1985)
48 developed the Consensual Approach to identify an acceptable way of life based on the opinion of society
49 as a whole. It asked the general public what should be the necessary items for an acceptable minimum
50 standard of living and considers whether more than half of the society's population thinks that it is a
51 necessity. Drawing on Townsends' relative deprivation and Mack and Lansley's Consensual Approach,
52 subsequent studies have been developed to define and measure multi-dimensional poverty by combining
53 multiple material deprivations and low income (Gordon and Pantazis 1997; Pantazis et al. 2006; Dermott
54
55
56
57
58
59
60
61
62
63
64
65

and Main, 2017; Bramley and Bailey 2017). The items or activities that a majority of people in society perceived as necessities were used as the basis of a deprivation index. They defined deprivation as lacking resources due to affordability, by separating people who could afford certain items or activities but did not want to (i.e. due to personal preference), from those who could not afford them although they wanted to. Using two dimensions—income and standard of living—the objective poverty line can be set as the point “that maximises differences between the poor and not poor, and minimises the differences within the two groups (Gordon 2006: 44).” By combining income and standard of living, multidimensional poverty can present the dynamics of poverty. In other words, it identifies not only the ‘poor’ (i.e. those with both a low income and a low standard of living) and the ‘not poor’ (i.e. those with a high income and a high standard of living), but also those who are at risk of poverty. This group is comprised of the so-called “vulnerable” (i.e. those with a low income but a acceptable standard of living) and also those escaping from poverty, the so-called “rising” (i.e. those with a high income but a low standard of living) (Gordon and Nandy 2012).

The PSE methods are increasingly being used, and not only in high income countries such as the UK (Gordon and Pantazis 1997; Pantazis et al. 2006), Belgium, Sweden, Finland, and across all 27 EU member states (Guio et al. 2009; Guio et al. 2012; Guio et al 2017), but also in Japan, Australia and Hong Kong (Lau et al. 2014; Abe and Pantazis 2014). This method has also been applied to middle and low-income countries, such as Mexico, Bangladesh, Vietnam, South Africa and sub-Saharan African countries such as Benin (Nandy and Pomati 2015), and more recently across countries in the South Pacific (Tonga, Solomon Islands, and Vanuatu).

Nonetheless, as previously mentioned in the introduction, child poverty in Korea is still measured by only a single dimension with household income (Kim 2008). This conventional method cannot capture the lives of children who are suffering from material deprivation in terms of basic needs, education, health and social participation, according to each stages of the life cycle. Therefore, critics have pointed out that income is an unreliable measure of child poverty in Korea. For instance, household income does not provide sufficient information about children’s actual living conditions. As such, this results in an underestimation of the overall child poverty rate in Korea (Jung 2014).

There have been recent attempts to overcome these shortcomings, with researchers using multidimensional measurements that take non-income measures into account (Jung 2015). However, this line of research has yet to be developed into a consensual method focusing on each individual child. The measurement of material deprivation has been limited to proxy variables based on household data from the Korea Welfare Panel Survey, for example, including housing, dietary, health, parents’ employment status, working ability and financial status and so on (Jung 2015). Other recent work has involved comparative research on Korean children’s wellbeing and happiness. It is notable in that a child’s level of happiness has recently been measured and compared against international relative living standards (Lee et al. 2013). According to this research, the official national child poverty rate in Korea based on income standards has decreased steadily, but Korean children remain the most deprived with regards in dietary, educational resources, and social activities among all OECD countries (Lee 2013; Lee et al. 2013). Such

1
2 mixed messages from the research suggests a more refined measurement of multidimensional child
3 poverty in Korea, one which also considers income, material and social deprivation.
4

5 To this end, this study applies the conception of relative deprivation and measurement for
6 multidimensional poverty on the child population in Korea, by analysing household level deprivations of
7 items and activities for children, and combining this with information on low household income.
8
9

10 11 12 13 **3. Data and Methods**

14 15 16 **3.1. Data and sampling**

17
18 To measure children's material deprivation and multi-dimensional child poverty in South Korea, this
19 study used the 2013 Korean National Children Survey². The survey data were derived from a two-stage
20 stratified systematic sample design. First, a random sample of regions was selected based on population
21 census data in 2010. Secondly, households and respondents within households were selected in the
22 sample region. Children's age was considered as well, by sampling households according to each age
23 group (0 to 2 years old, 3 to 5 years old, 6 to 8 years old, 9 to 11 years old, 12 to 14 years old, 15 to 17
24 years old). In order to acquire a sufficient number of low income families in the sample, low-income
25 households were oversampled based on the list of beneficiaries of the national social assistance
26 programme, the Minimum Living Standard Guarantee (hereafter MLSG), and information on households
27 situated at the near-poverty line. To accurately represent child populations by region, age group and
28 income distribution, weights for analysis are provided in the data which was calculated based on
29 population census. In total, a sample of 4,007 children was selected and then reduced to 3,990 children
30 for the analysis who reliably answered questions on material deprivation.
31
32

33 The survey consisted of two questionnaires: the Household Questionnaire collecting information
34 on family demographic and socioeconomic characteristics was answered by parents of the household.
35 Parents also answered the Child Questionnaire if the child was under 8 years old. Children between ages
36 9 to 17 answered Child Questionnaires themselves³. Children's items and activities referred to one chosen
37 child in the household, specifically directed at the eldest child⁴.
38
39
40
41
42
43
44
45
46
47
48
49

50 ² This survey was conducted based on the legal obligations of the government to conduct nationally
51 representative surveys for child policies every five years to understand the status of children's welfare
52 and development. The survey questionnaires include many questions on child physical and psychological
53 development as well as child deprivations. It was undertaken by the Korean Institute of Health and Social
54 Affairs and commissioned by the Department of Health and Social Welfare in Korea. The authors
55 obtained permission from the national research institute for data analysis.
56

57 ³ It is interesting that in Korea children aged 9-17 answered the survey themselves, which is different to
58 EU-SILC which is similar in content but is answered by the parent or caregiver. Future research could
59 examine if there are systematic differences in reporting deprivation between children and parents. We
60

3.2. Constructing Child Deprivation Index in Korea

The survey asked about 14 items and activities for children following similar questionnaires used by the UNICEF research in rich countries (UNICEF Office of Research 2013). The items and activities for children are presented in Table 1; they are grouped into four dimensions—Food/Nutrition, Clothing, Development/Education and Participation. Each item and activity was analysed taking the relevant age group into consideration in order to reflect the different needs for child development according to each stage of the life cycle. We followed the analytical methodology of Poverty and Social Exclusion Study on Child Poverty (Main and Bradshaw 2014) in order to determine items and activities for each age group. For example, items in the food and clothing dimensions are applied to all children from age 0 to 18, whereas some items and activities of development/education and participation dimensions, such as room for homework, money for school trips, internet connection, regular leisure, inviting friends over to play, only applied to school-aged children from ages over 6 to 18⁵. In addition, suitable books for child applied children over age 3. In this sense, this paper is the first to apply the concept of multidimensional poverty which considers various age-specific needs in Korea.

A 14-item-based Child Deprivation Index was constructed, which was then tested for reliability and validity. To test validity, each item/activity was compared with disposable household income (equivalised OECD modified scale), where we expected to see statistically significant correlation with income. Each of 14 items have significant negative correlation with disposable income, demonstrating that those who were deprived of an item also had much lower average equivalised incomes than those

know that parents may under-report the extent of deprivation in order to follow social norms as parents (Gabos et al, 2001).

⁴ If there are more than two children in the household, the survey asked only for the eldest child. The question specifically asks for items and activities only for the designated child in each household. This does not allow analysis for intra household differences, which can be another interesting area for future research.

⁵ The first stage of the consensual approach asks whether respondents think certain items are necessary, and then asks affordability in the final answer sheet. However, the Korean survey did not ask whether respondents think the items are necessary or whether respondents ‘don’t have necessities because they don’t want them’. It only asked whether respondents own them or not. This can be a limitation to the analysis of material deprivation, because deprivation genuinely can be identified as lacking an item or activity because of economic constraints. However, Townsend constructed a valid and reliable deprivation index with just a ‘yes’ or ‘no’ criteria in the beginning stage (Townsend 1979). We initially drew on Townsend’s original method due to limited data availability. In addition, other research on multidimensional child poverty by UNICEF (De Neubourg et al. 2014; Chzhen et al. 2016) also considers a child deprived if he or she has particular items for other reasons, even though responses were presented into three categories—have; do not have due to affordability; and do not have due to other reasons. Its rationale is that children should not be excluded from the goods and services which are important for their well-being and development because of the preferences of their parents, while considering the fact that children do not make decisions or acquire resources by themselves.

who are not deprived. Reliability of the Child Deprivation Index was assessed using Cronbach's Alpha. Alpha was 0.740 for a scale containing all fourteen items, which is above the recommended standard 0.7 (Nunnally 1981) and there was no item whose exclusion would increase Alpha if the item were retained in the final index (See Appendix Table 1 and Appendix Figure 1).

<Table 1 about here>

3.3. Correlates of Multidimensional Child Poverty

To measure multidimensional poverty, household disposable income was equivalised using the OECD modified scale⁶. However, we excluded individuals presenting missing values for all 14 deprivation items and some of respondents who reported invalid income information. To find out the patterns of multiple deprivation and effects of household characteristics on child poverty, the study also used socioeconomic variables, including region (i.e. whether the household is in rural or urban area), as well as the sex, education and economic activity of the head of the household, number of children and adults in the home, and family type.

4. Multidimensional Deprivation of Children in South Korea

4.1. Multidimensional deprivation

We first examine how many Korean children are deprived of any of the 14 items. As shown in Figure 1, the domain of greatest deprivation was with regards social activities and participation, such as a lack of regular leisure activities (35%), a lack of equipment for outside activities (26%), and not being able to attend or hold birthday parties with friends (22%).

Next we analysed a re-grouping of items into 4 dimensions: food/nutrition, clothing, development/education, and social participation. In this study, the survey did not ask for the enforced lack of item and activities. As explained before, this may produce higher deprivation counts (Chzhen, 2016). Therefore, the threshold for severe material deprivation in each dimension was identified where between-

⁶ According to the study that compared how different equivalence scales—the OECD original scale, OECD modified scale, and Square root scale—affect the relative poverty rate in Korea, it was suggested that the relative poverty rate (below 60% of median income) was the lowest when the OECD original scale was applied, followed by the OECD modified scale and root square scale which recorded the highest poverty rate. Based on the results, this study applied the OECD modified scale which represents the middle of three equivalence scales.

within differences are clearly discerned, using the ANOVA test. For example, a child was identified as severely deprived when he or she lacked two of the three items in the food/nutrition dimension. In the clothing dimension, severe deprivation was identified when both of the items were deprived. The same principle was applied to the development/education dimension, where deprivation was defined as a lack of three of the five items or activities, and three of four items and activities in the participation dimension, respectively.

Results indicate that basic needs, such as clothing and food, were being met to a certain extent among most children in South Korea. However, many were still experiencing deprivation in terms of social participation, as shown in Figure 2. An interesting comparison can be made with the EU-MODA study, which applies the multidimensional poverty approach to developed countries such as Finland and the UK using EU-SILC 2009 data (Chzhen et al., 2016). Our analysis differs in that EU-MODA uses the union approach to measure deprivation, while ours sets the threshold for severe deprivation for all age groups under 18. Nonetheless, South Korea has similarities with Finland and UK, where basic needs such as nutrition and clothing are satisfied. Differences are revealed, however, in terms of the Education dimension. South Korea shows a relatively low deprivation rate of 5%, which is significantly lower compared to Finland (15.8%) and the UK (8.9%). This may be caused by high fervor of education in South Korea, where private education cost for children is one of the highest among OECD countries (OECD, 2014). However, there is national a tendency to emphasize school education directed only towards university entrance exams in South Korea, and therefore, the deprivation of Participation dimension which includes leisure and social activities for children is higher than European Countries.

<Figure 1 about here>

<Figure 2 about here>

4.2. Child Poverty measured by Child Deprivation Index

The optimum poverty threshold was estimated combining income and material deprivation according to the methodology of the PSE study (Gordon and Nandy, 2012:91-92). We determined the objective combined poverty line at the point where differences between the ‘poor’ and the ‘not poor’ group are maximised and differences within two groups are minimized, using ANOVA and Logistic Regression.

Both the ANOVA and Logistic Regression models in this study show the same results: a score of 5 or more on the deprivation index was the optimum position for the poverty line. A summary of the results is presented in Table 2. The income poverty threshold can be determined as the upper bound of the 95% Confidence Interval of the mean income of households that scored 5 on the material deprivation index. The results of identifying the OECD equivalised income poverty threshold is shown in Figure 3.

<Table 2 about here>

<Figure 3 about here>

Children deprived of 5 or more of the 14 items and activities, were classed as materially deprived; these accounted for approximately 13.5% of the entire child population in South Korea – around 1.29 million children (See Table 3). The child deprivation rate is lower than the average of the EU countries, according to the recent study of child deprivation of EU countries using 2014 EU-SILC data which include similar items and activities of this study. The average child deprivation rate of the EU countries which measured with threshold at 3 out of 17 deprivations is over 20%, while the proportions of deprived children is varying across countries from 5% to around 70%. The child deprivation rate of South Korea in this study is similar with Netherlands, Germany, Austria, France and Belgium which shows 10 to 15%, although it is higher than 5 to 10% of Nordic countries, such as Sweden, Finland, Denmark, Luxembourg (Guio et al. 2017)

<Table 3 about here>

In order to analyse the dynamics of child poverty, we divided children into four groups—Poor, Rising, Vulnerable, and Not Poor—using the combined income and deprivation poverty line (See Table 4). Based on the material deprivation and the income poverty threshold combined, the proportion of children in the ‘Poor Group’ was estimated to be at 9.8%, which accounts for 944,000 children in total. The ‘Rising Group’, whose income is relatively higher than the ‘Poor Group’, but still maintains a low standard of living while rising out of poverty, accounted for 3.2% (or 308,000 children). The results of this study using the combined income and material deprivation poverty line show that around 10% of the child population are found to be in poverty, or 13% when accounting for ‘Rising Groups’, comprised of families with increasing income but poor living conditions.

The 'Not Poor Group' whose income and standard of living are both high accounted for 50.5% in South Korea. Another group of children at risk of poverty are those in the 'Vulnerable Group'. This group, estimated to be around 37% children, is those children in households with a low income, whose living standards (for the moment) are acceptable (i.e. they experience fewer than five deprivations). If household income remains low, it is likely the living standards for children in this group will fall, pushing them into poverty. The fact that one-third of children in South Korea are in this precarious position should be acknowledged by policy makers.

<Table 4 about here>

As stated above, currently child poverty rates in South Korea are estimated using the share of households that live on less than the minimum cost of living, which is the national poverty line. That is, children from recipient households of the national social assistance programme, the Minimum Living Standard Guarantee (MLSG), are defined as being in poverty. This definition has left many children in welfare blind spots, especially those in near poverty groups, or those from households which have a low income, but are ineligible for MLSG. As of 2013, the year in which the data was collected, the official child poverty rate was 4.7% according to national statistics. This figure was based on the absolute poverty line. On the other hand, the rate rose to 8.4% when based on the relative poverty line, which is defined as 50% of median-equivalised disposable income in the official statistics in Korea (Lim and Lee 2014), illustrating just how low the threshold is for families to qualify for MLSG assistance.

The result of this study using a multidimensional measure combining low income and material deprivation indicate that around 10% of children are found to be in poverty. It is twice that of the official child poverty rate of South Korea in 2013. Even if we apply the definition of relative poverty of South Korea, or 50% of median-equivalised disposable income, the comparison still reveals a 1.5% gap between estimates – amounting to roughly 150 thousand children.

The results of this study are consistent with previous research on child poverty in South Korea, which states that two out of three children in poverty are estimated to be in the blind spot of the national social assistance programme (Hur 2016; Jung 2015). Using data from the Korea Welfare Panel Survey, it found that the number of poor children was estimated to be between 670,000 and 960,000 considering children in near poverty groups, as well as those below the relative poverty line (Hur 2016). Among these, the number of children in poverty, that is, those in MLSG recipient households, was around 280,000. This suggests that the number of poor children overlooked by the official social protection system in Korea could be between 390,000 and 680,000.

Jung (2015) also found that large numbers of children were being missed by the social protection system in South Korea. Using income data from Korean National Children Survey in 2013, Jung estimated that the absolute child poverty rate to be around 9.5% and the relative child poverty rate to be

1
2 around 10.6%. Here, with income data, the absolute child poverty rate includes children from households
3 below the minimum cost of living line, and relative poverty is based on 50% of median-equivalised
4 disposable income. Assuming that the poverty rate is around 10.6% in her study, as measured by the
5 relative poverty line, about 5.6 to 6.7 percent of the child population of Korea is in poverty but lacking
6 government support, because MLSG recipients accounted for only 4 percent of the entire child population.
7 If this rate is calculated as the number of children, 540,000 to 650,000 children are still left in welfare
8 blind spot (Jung 2015).
9

10
11
12 Similar, if not more serious results were found in this research by measuring poverty based on a
13 combination of income and living conditions. If we assume that around 370,000 children as of 2013 are
14 covered by the national social assistance programme which uses the income standard, about 570,000
15 children are not protected by the Korean government. In addition, if we consider the 'Rising Group' as
16 like 'near-poverty line households' because their standard of living is still low despite efforts to escape
17 poverty, about 13% of the child population are at risk of poverty in South Korea. This is estimated to be
18 about 1.25 million children with population weight in this study. Therefore, more than 880,000 children
19 among the 1.25 million children, identified as 'Poor' or 'Rising Groups', are left outside the official
20 social protection programme.
21
22

23
24
25 The results of this study indicate that the current monetary approach to measuring child poverty by
26 using only the household income has significant limitations in that it excludes children who are in need.
27 The number of children in the welfare blind spot increases despite the fact that welfare policies for
28 children are being introduced (Hur & Lee, 2012, Hur 2016). This leads to an urgent need to introduce a
29 new child poverty measurement, which can capture necessary living conditions for children by focusing
30 on individual needs of children as suggested in this study.
31
32
33
34
35
36
37
38

39 **4.3. Poor children in working families**

40
41
42 As the next step of analysis, a range of socioeconomic correlates of child poverty were analysed. Cause
43 and effect relationships were examined using logit regression to find the main factors driving child to
44 poverty in Korean context. Among the variables tested are the numbers of adults and children in the home,
45 the education level, economic activity, or reported disability of the head of household, family type and
46 region of residence. Dependent variables for the analysis is membership of the 'Poor Group', whose
47 income and standard of living is below the identified income and material deprivation line.
48
49
50
51
52
53

54 **<Table 5 about here>**
55
56
57
58
59
60
61
62
63
64
65

Table 5 shows the odds of children being poor, according to different household characteristics. The odds of being poor were greater for children in households with a higher number of children (OR 1.5, 95% CI 1.2-1.8). Children were much more likely to be subject to poverty if the household head had a low level of education (OR 9.7, 95% CI 5.5-17.1). Child poverty was more prevalent among households where the head was not employed (OR 2.9, 95% CI 1.7-4.9). Interestingly, employment per se was not a guarantee of protection from poverty, since even if the head of household was employed, children were twice as much likely to be in poverty if the household head's employment status was unstable, in an irregular or precarious job, compared to children where the head of household reported being employed full-time (OR 2.2, 95% CI 1.5-3.2).

As results of the analysis confirm, it is not only children from workless households at risk of poverty, but also those where the head of household is in precarious employment. Thus, there are grounds to suggest that anti-poverty policies should be extended to cover not only workless households, but also those in precarious employment.

Another interesting observation is that children from single parent households were 5 times more likely to experience poverty than those living with both parents. The odds of being poor was also 2.5 times higher for children placed under the care of their grandparents. As recent trends have shown, a growing number of children in South Korea are being raised by their grandparents after parental separation and divorce (Jang and Kwon 2010). With this change in care, the child becomes more likely to experience poverty. Such results obviate the need for increased policy support for single-parent households and grandparent-grandchildren household.

When comparing rural and urban areas, with small and medium-sized cities set as the referent, children living in major cities, where population is over 1 million, were more likely to fall into poverty, suggesting more attention needs to be focused on child poverty issues among urban poor households in major cities, which accounts for around 45% of total population of South Korea (Ministry of Land, Infrastructure and Transportation 2013)⁷.

5. Conclusion: Discussion and Policy Implications

This paper developed to apply an index of multidimensional child poverty for use in the context of South Korea, in response to the SDGs call for countries to assess poverty in all dimensions for children and adults, according to national definitions. Our results of the analysis suggest that previous official estimates of child poverty, based only on income significantly underestimated the actual extent of child poverty. We estimate around 10% of children in South Korea were living in poverty, when we account for both low income and material deprivation. However, the national social assistance programme, MLSG

⁷ According to the government statistics, 45% of the population in South Korea is living in major cities where population is over 1 million. Another 45% live in small and medium sized city where population is over 100 thousand to 1 million. Rural areas accounts for 10% of the total population in South Korea.

programme, only supports around 3% of the entire child population. Even when extending support to near poverty groups, only around 4% of children in South Korea receive government benefits. In other words, the remaining 6%, around 570,000 are still placed outside the government welfare system. The rate of children left behind goes up to 9%, around 880,000 if we include children in the 'Rising Group' those whose living conditions are still poor in spite of increased income.

This problem arises due to an inaccurate understanding of the dynamic aspects of poverty. Even if the Korean government decides to increase the national poverty line, from absolute poverty (minimum cost of living) to relative poverty (50% of median income), it still cannot cover poor children who are escaping from poverty, that is, those with a low standard of living and increasing income. Children who are sinking into poverty, with high standard of living and decreasing income, are still excluded. Defining and measuring child poverty with only household income may lead to an ineffective child poverty reduction strategy which does not consider the actual needs of children according to developmental stages at the individual level.

In addition, an inaccurate understanding of poverty dynamics leads to exclusion of policy target groups in practice. There are cases where a certain household is falling into poverty, although their standard of living remains high. A household who owns a house as an asset cannot be identified as beneficiaries of the social assistance programme in South Korea, even though his or her income is decreasing due to unemployment.

Therefore, efforts should be made in order to understand the dynamics of poverty by using a combined income and material deprivation standard to define and measure child poverty. This will determine who is at the so-called "near-poverty line", or those who are in need of government welfare benefits in spite of being classified as the 'Not Poor'. In this respect, the child-focused poverty measurement in this study has more significant implications in terms of practical policy objectives, as well as theoretical and methodological accuracy than the income-based approach.

Government action, therefore, should be taken towards identifying and including those in need of welfare support for children. Relevant policy implications can be derived from the analysis of factors that drive children to poverty. For example, a closer observation of parents' working status revealed that while some were out of work, some had jobs, but were employed in precarious terms. This confirms that one way to tackle or prevent child poverty in South Korea would be through the provision of assistance not to children from workless families, but also those where parental employment is precarious and insecure. In South Korea, securing a stable and well-paid job remains a challenge with more than 32% (by National Statistical Office) or up to 45% (by Labour Union) of the working population in precarious employment, or the so-called "irregular labour" or "zero-hour" contracts (Kim 2016). Measures should be taken, therefore, to support children from families that are in work, but have insecure jobs. They can be included in the 'Rising Group' or 'Vulnerable Group' as categorised in this study. These are households that still need welfare benefits when considering material deprivation and income standard at the same time, but are categorised as the 'Not Poor' when based only on the income poverty threshold.

1
2 Welfare support should also take account of underprivileged children living with their grandparents,
3 who are more likely to fall into poverty than those living with their parents. Under the current criteria for
4 social assistance, children who live with their grandparents are not eligible for MLSG, if the grandparents
5 are owners of property or have an income. However, our analysis shows that living standards of older
6 people after retirement could leave them vulnerable to poverty, given their low income although their
7 living standards remain high due to previous life styles. When we consider income and living standards
8 simultaneously, there is a need for reform of criteria regarding caregivers.
9

10
11 Thirdly, our results indicate that children living in major cities are more likely to fall into poverty.
12 Nevertheless, income-based criteria are still more unfavourable for poor households in larger cities. The
13 minimum cost of living is currently defined based on small and medium cities. However, those who live
14 in major cities face higher housing and living costs, which could lead to complications in identifying
15 eligible recipients and the actual level of benefits. Children living in major cities are thus more likely to
16 be placed in welfare blind spots, calling for improved standards which take regional differences into
17 consideration.
18

19
20 In conclusion, there is a need to emphasize the importance of introducing a new child poverty
21 measurement in South Korea. The traditional monetary poverty approach has taken account of income
22 only, due to data availability, whereas a more desirable measurement includes both material deprivation
23 and income. This would enable a more accurate assessment of the current status and consequences of
24 poverty, along with preventive measures for its causes and child poverty reduction strategies. It would
25 also be in line with Sustainable Development Goals require.
26

27
28 Finally, we would recommend modifications to the Korea National Children Survey which is
29 conducted every 5 years as part of the Act on Prevention of Child Poverty, Support of Children. If the
30 next survey will be conducted in 2018. One priority should be to develop an accurate measure of material
31 deprivation for children. The list of necessities and activities should be agreed upon through social
32 consensus, to ensure they align with cultural norms in South Korea, not simply following items set out in
33 previous studies which was constructed based on European countries (Guio et al. 2009; Guio et al. 2012;
34 UNICEF Office of Research 2013). In addition, improvements to the methodology need to be made in
35 order to accurately measure enforced lack of item and activities and discern the reasons for deprivations.
36 Consideration also needs to be given to policy efforts to more actively engage with child-focused poverty
37 approaches when deciding a new child poverty measurement in South Korea, in order to ensure that it
38 responds not only to the global norms such as requirement of the SDGs, but also to the demands of the
39 future generation.
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

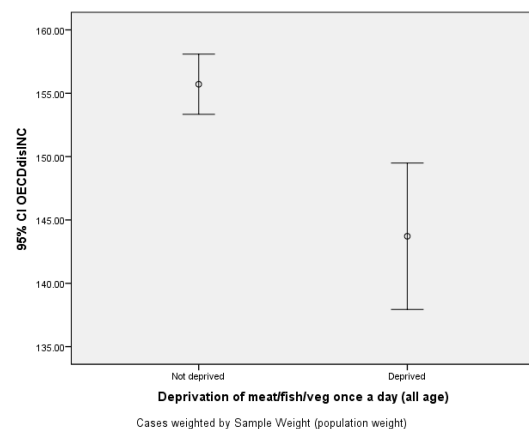
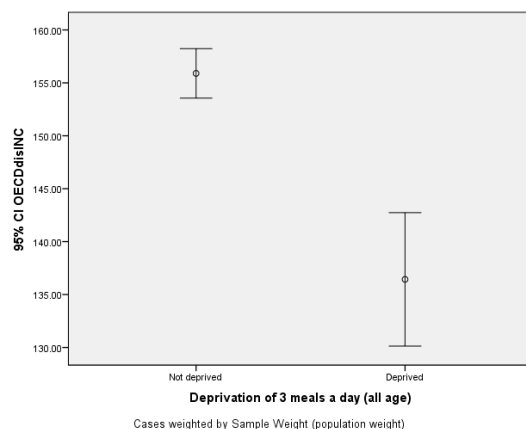
APPENDIX

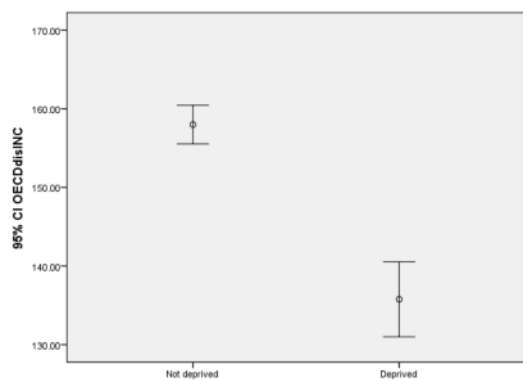
Appendix A1. Reliability Test

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Deprivation of 3 meals a day	1.90	4.720	.256	.735
Deprivation of meat/fish/veg once a day	1.86	4.609	.288	.733
Deprivation of fruits a day	1.82	4.297	.446	.714
Deprivation of Books	1.89	4.422	.464	.713
Deprivation of Outdoor leisure equipment	1.76	4.387	.331	.730
Deprivation of regular Leisure/Sports	1.67	4.235	.368	.727
Deprivation of indoor games	1.87	4.501	.373	.723
Deprivation of School trips	1.94	4.612	.424	.720
Deprivation of place for study	1.93	4.519	.493	.713
Deprivation of internet	2.00	5.020	.228	.738
Deprivation of new clothes	1.96	4.787	.325	.729
Deprivation of two shoes	1.97	4.867	.306	.732
Deprivation of playing with friends	1.87	4.449	.414	.719
Deprivation of celebration	1.79	4.435	.329	.730

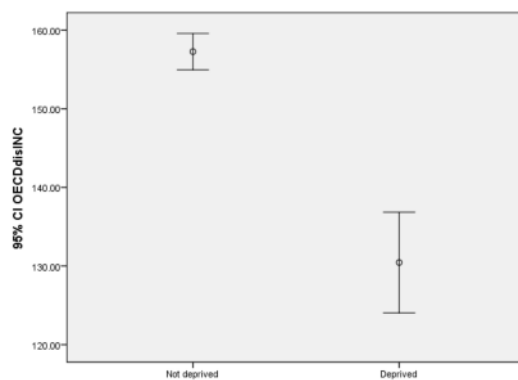
No of case = 3,990, No of items=14, Cronbach's Alpha=.740

Appendix A2. Validity Test





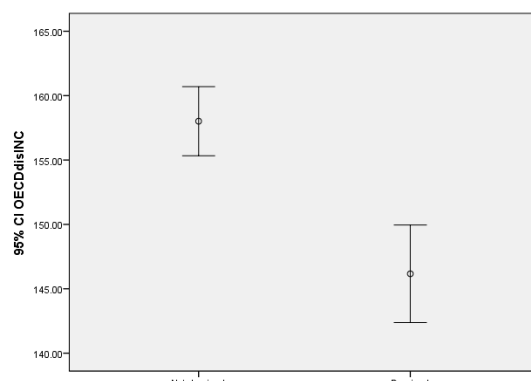
Deprivation of fruits a day (all age)
Cases weighted by Sample Weight (population weight)



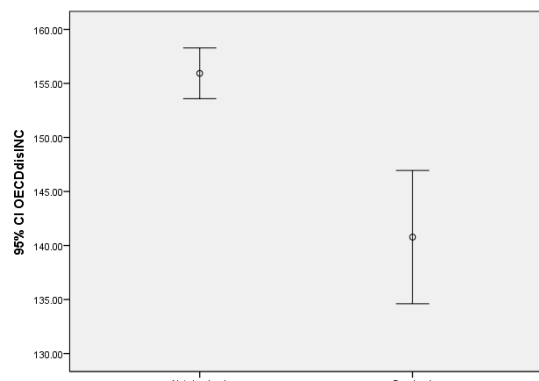
Deprivation of Books (over age 3)
Cases weighted by Sample Weight (population weight)



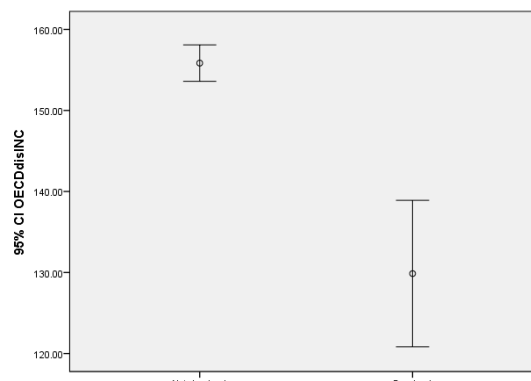
Deprivation of Outdoor leisure equipment (all age)
Cases weighted by Sample Weight (population weight)



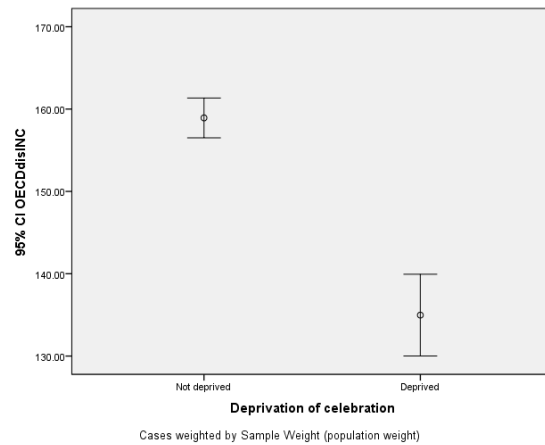
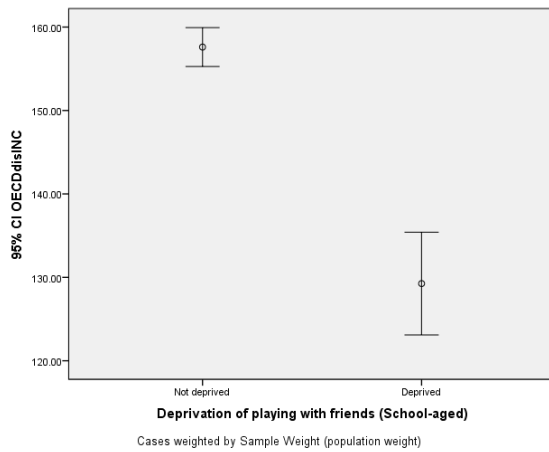
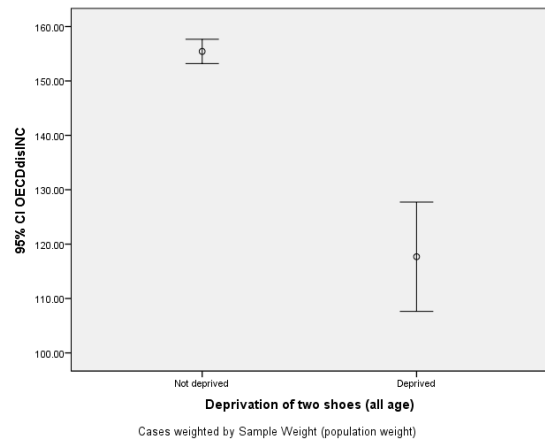
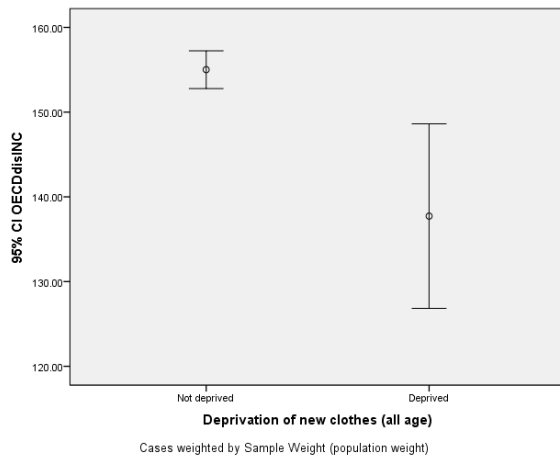
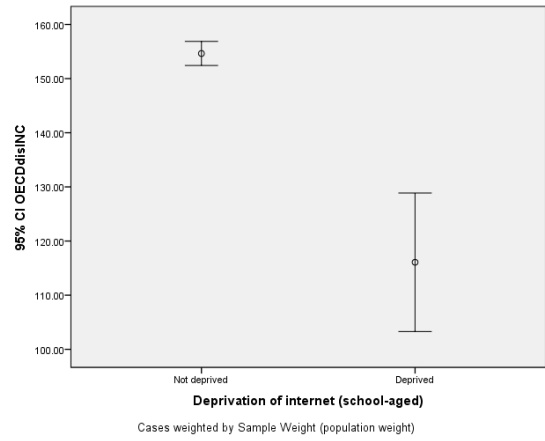
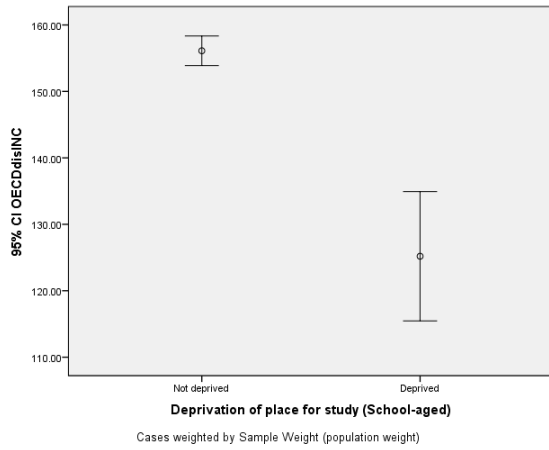
Deprivation of regular Leisure/Sports (School-aged)
Cases weighted by Sample Weight (population weight)



Deprivation of indoor games (all age)
Cases weighted by Sample Weight (population weight)



Deprivation of School trips (School-aged)
Cases weighted by Sample Weight (population weight)



References

- Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7), 476-487
- Alkire, S., & Santos, M. E. (2010). *Acute Multidimensional Poverty: A New Index for Developing Countries*. Human Development Research Paper, 2010/11, University of Oxford.
- Abe, A., & Pantazis, C. (2014). Comparing Public Perceptions of the Necessities of Life across Two Societies: Japan and the United Kingdom. *Social Policy and Society*, 13, 69-88.
- Bramley, G. & Bailey, N., (2017), *Poverty and social exclusion in the UK: Volume 2 - The dimensions of disadvantage*, Bristol: The Policy Press.
- Chzhen, Y., de Neubourg, C., Plavgo, I., & de Milliano, M. (2016). Child Poverty in the European Union: the Multiple Overlapping Deprivation Analysis Approach (EU-MODA). *Child Indicators Research*, 9(2), 335-356.
- de Milliano, M. and I. Plavgo (2017). "Analysing Multidimensional Child Poverty in Sub-Saharan Africa: Findings Using an International Comparative Approach." *Child Indicators Research*.
- De Neubourg, C., Chai, J., de Milliano, M., & Plavgo, I. (2012). *Cross-Country MODA Study: Multiple Overlapping Deprivation Analysis (MODA)*. Technical Note. (Innocenti Working Papers no. 2012-05,). Florence: Unicef Office of Research
- Dermott, E. & Main, Gill. (2017), *Poverty and social exclusion in the UK: Volume 1 - The nature and extent of the problem*, Bristol: The Policy Press.
- Ferrone, L., & Chzhen, Y. (2017). How to Reach the Sustainable Development Goal 1.2? Simulating Different Strategies to Reduce Multidimensional Child Poverty in Two Middle-Income Countries. *Child Indicators Research*, doi:10.1007/s12187-017-9485-4.
- Gabos, A., Ozdemir, E., & Ward, T. (2011). *Material deprivation among children*. Research note, European commission, social situation observatory—income distribution and living conditions.
- Gordon, D., Nandy, S., Pantazis, C., Pemberton, S., & Townsend, P. (2003). *Child Poverty in the Developing World*. Bristol: Policy Press.
- Gordon, D. (2006). The concept and measurement of poverty. In C. Pantazis, D. Gordon, & R. Levitas (Eds.), *Poverty and social exclusion in Britain*. Bristol: The Policy Press.
- Gordon, D., & Nandy, S. (2012). Measuring child poverty and deprivation. In A. Mimujin and S. Nandy (Ed.), *Global Child Poverty and Well-being: Measurement, concepts, policy and action*. Bristol, U.K.: The Policy Press.
- Gordon, D., & Pantazis, C. (1997). *Breadline Britain in the 1990s*, . Aldershot: Ashgate.
- Guio, A.C., Fusco, A., & Marlier, E. (2009). *A European Union Approach to Material Deprivation using EU-SILC and Eurobarometer data*. IRISS Working Paper 2009-19. Luxembourg: CEPS/INSTEAD.
- Guio, A.C., Gordon, D., & Marlier, E. (2012). *Measuring Material Deprivation in the EU: Indicators for the Whole Population and Child-specific Indicators*. Publications Office of the European Union: Luxembourg, EU.

- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
 - 11
 - 12
 - 13
 - 14
 - 15
 - 16
 - 17
 - 18
 - 19
 - 20
 - 21
 - 22
 - 23
 - 24
 - 25
 - 26
 - 27
 - 28
 - 29
 - 30
 - 31
 - 32
 - 33
 - 34
 - 35
 - 36
 - 37
 - 38
 - 39
 - 40
 - 41
 - 42
 - 43
 - 44
 - 45
 - 46
 - 47
 - 48
 - 49
 - 50
 - 51
 - 52
 - 53
 - 54
 - 55
 - 56
 - 57
 - 58
 - 59
 - 60
 - 61
 - 62
 - 63
 - 64
 - 65
- Guio, A.C., Gordon, D., Marlier, E., Najera, H., & Pomati, M. (2017). Towards an EU measure of child deprivation. *Child Indicators Research*, doi:10.1007/s12187-017-9491-6.
- Hjelm, L., Ferrone, L., Handa, S. and Chzhen, Y. (2016). Comparing Approaches to the Measurement of Multidimensional Child Poverty, Innocenti Working Paper 2016-29 UNICEF Office of Research, Florence
- Holliday, I. (2000). Productivist welfare capitalism: Social policy in East Asia. *Political Studies* 48(4), 706-723.
- Hur, S. (2016). Child Poverty and Policy Options: with Special Focus on Poor Children without Basic Livelihood Security. *Health and Social Welfare Forum*, 233, 19-30.
- Hur S. & Lee (2012). Estimation of Welfare Blind Zone of Child Poverty Households and Analysis of Current Status. *Child Welfare Research Institute, Child Fund Korea*.
- Jang, S. & Kwon, E. (2010). Problems and interventions for the family living in the care of grandparents. *The Journal of Social Sciences*, 29(1), 351-373
- Jung, E. (2014). Findings of Characteristic of Poor Children using Depreavation Index. *Health and Welfare Issue & Focus*. Vol 137. Seoul: Korea Institute for Health and Social Affairs.
- Jung, E. (2015). Child Poverty and Social Policy Challenges in Korea. *Health and Social Welfare Forum*, Vol 220, 47-55.
- Kim, E. (2015). Measuring Multidimensional Child Poverty in Korea : New approach to Measure Material Deprivation of Children. *Korea Social Policy Review*, 22(3), 105-137.
- Kim, M. S. (2008). Current status in Child poverty of Korea and Policy Suggestion, *Health and Social Welfare Forum*, Vol 139, 5-22.
- Kim, Y. (2016). The size and status of irregular workers in Korea: Survey results of Economically Active Population Survey (2016.3) of National Statistics Office, *Labour Society Bullentin* 189. 54-94
- Kwon, H-j. (1997). Beyond European Welfare Regimes: Comparative Perspectives on East Asian Welfare Systems. *Journal of Social Policy*, 26(4), 467-484.
- Kwon, H.-j. (2017). From the Developmental to the Universal Welfare State: Lost in Transition? In J. Choi, H.-j. Kwon, & M. G. Koo (Eds.), *The Korean Government and Public Policies in a Development Nexus: Sustaining Development and Tackling Policy Changes*, Volume 2. 83-97. Cham: Springer International Publishing.
- Kwon, H.-j., & Kim, E. (2010). Economic Development and Social Protection in East Asia: Focusing social assistance. Paper presented at the ILO 2nd Regulating for Decent Work Conference, ILO, Geneva, Switzerland,
- Lau, M., Pantazis, C., Gordon, D., Lai, L. a., & Sutton, E. (2014). Poverty and Social Exclusion in Hong Kong: First results from the 2013 Living Standards Survey.
- Lee, B. J. (2013). Developing an index of child well-being in Korea. Presented at The 4th ISCI Conference: Child indicators in a Globalized World: Implications for Research, Practice and Policy, Seoul National University, Seoul, Korea, May 29-31, 2013.
- Lee, B. J., Kim, S., Ahan, J., Yoo, J., Choi, C., Lee, Y., et al. (2013). What Does Composite Well-being Index of Children Tell Us about Korean Children's Quality of Life. Seoul: Save the Children.

- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
 - 11
 - 12
 - 13
 - 14
 - 15
 - 16
 - 17
 - 18
 - 19
 - 20
 - 21
 - 22
 - 23
 - 24
 - 25
 - 26
 - 27
 - 28
 - 29
 - 30
 - 31
 - 32
 - 33
 - 34
 - 35
 - 36
 - 37
 - 38
 - 39
 - 40
 - 41
 - 42
 - 43
 - 44
 - 45
 - 46
 - 47
 - 48
 - 49
 - 50
 - 51
 - 52
 - 53
 - 54
 - 55
 - 56
 - 57
 - 58
 - 59
 - 60
 - 61
 - 62
 - 63
 - 64
 - 65
- Lim, W.S., & Lee, J. (2014). Poverty Statistical Yearbook 2014. Sejong: Korea Institute for Health and Social Affairs.
- Mack, J., & Lansley, S. (1985). Poor Britain. London: Allen & Unwin.
- Main, G., & Bradshaw, J. (2014). Child poverty and social exclusion: Final report of 2012 PSE study. Poverty and Social Exclusion in the UK. UK.
- Ministry of Land, Infrastructure and Transportation. (2014). 2013 Statistics of City Planning. Sejong: Ministry of Land, Infrastructure and Transportation
- Minujin, A., & Nandy, S. (2012). Global Child Poverty and Well-Being: Measurement, Concepts, Policy and Action. Bristol: The Policy Press.
- Nandy, S., & Pomati, M. (2015). Applying the Consensual Method of Estimating Poverty in a Low Income African Setting. [journal article]. Social Indicators Research, 124(3), 693-726.
- Nunnally, J. C. (1981). Psychometric theory. New Delhi: Tate mcGraw-Hill Publishing Company Ltd.
- OECD (2014). Education at a Glance 2014: OECD Indicators. Paris: OECD Publishing.
- Pantazis, C., Gordon, D., & Levitas, R. (2006). Poverty and Social Exclusion in Britain. Bristol: The Policy Press.
- Roelen, K., Gassmann, F., & de Neubourg, C. (2009). The Importance of Choice and Definition for the Measurement of Child Poverty—the case of Vietnam. Child Indicators Research, 2(3), 245-263.
- Statistical Research Institute (2016). Monitoring System Construction for implementing the Sustainable Development Goals(SDGs). Daejeon: Korea National Statistics Office
- Townsend, P. (1979). Poverty in the United Kingdom: A survey of household resources and standards of living. Harmondsworth: Penguin.
- UN (2015). Transforming our World: The 2030 Agenda for Sustainable Development. New York: United Nations.
- UNICEF Office of Research (2013). Child Well-being in Rich Countries:A comparative overview. Innocenti Report Card 11. Florence. : UNICEF Office of Research.

Table 1. Child Deprivation Index

Domain	Items/Activities	Age group
Food (3 items)	<ul style="list-style-type: none"> - Three meals a day - At least one meal a day with meat, chicken or fish (or a vegetarian equivalent) - Fresh fruit and vegetables every day 	-All age (0-18)
Clothing (2 items)	<ul style="list-style-type: none"> - Some new clothes (i.e. not all second hand) - Two pairs of properly fitting shoes 	-All age
Development /Education (5 items &activities)	<ul style="list-style-type: none"> - Books suitable for the child's age and knowledge level - Money to participate in school(nursery) trips and events - A quiet place with enough room and light to do homework - Indoor games (At least one toy per child, educational toy, board game, block, computer game, etc.) - An Internet connection 	<ul style="list-style-type: none"> -Over age 3 (3-18) -School-aged (6-18) -School-aged -All age -School-aged
Participation (4 items &activities)	<ul style="list-style-type: none"> - Outdoor leisure equipment (bicycle, scooter, roller-skater, etc.) -Regular leisure activities (swimming, playing instrument, Taekwondo, etc.) - The opportunity, from time to time, to invite friends home to play and eat - The opportunity to celebrate special occasions, birthday, etc. 	<ul style="list-style-type: none"> -All age -School-aged -School-aged -All age

Table 2. ANOVA and logistics regression for Optimum poverty threshold

	F statistics for corrected ANOVA model	Logistic Regression model Chi-square
Null model	53.68	
Deprivation score of 1 or more	41.31	47.05
Deprivation score of 2 or more	54.87	104.68
Deprivation score of 3 or more	70.95	190.64
Deprivation score of 4 or more	81.99	257.32
Deprivation score of 5 or more	93.11	295.54
Deprivation score of 6 or more	90.60	277.59

Table 3. Numbers of children's deprivations

Number of Deprivation	Frequency in sample	%	Number of Children
0	1,283	32.1	3,098,000
1	810	20.3	1,956,000
2	656	16.4	1,584, 000
3	462	11.6	1,115, 000
4	244	6.1	589, 000
5	186	4.7	450,000
6+	350	8.8	845,000
Total	3,990	100.0	9,637,000

* Weighted by population weight

Table 4. Multidimensional Child Poverty in Korea

	%	Number of Children
Poor	9.8	944,000
Rising	3.2	308,000
Vulnerable	36.5	3,518,000
Not poor	50.5	4,867,000
Total	100.0	9,637,000

* Number of Children is estimated with reference to total population of children in this study

Table 5. Logit regression for Child Poverty: Odds ratio

	Exp(B)	95% C.I.for EXP(B)		Significance	
		Lower	Upper		
Number of Adults	1.1	0.8	1.5	.435	ns
Number of Children	1.5	1.2	1.8	.000	***
Sex of Head of Household (Male=referent)	0.7	0.4	1.1	.127	ns
Education level of Head of Household (Degree or higher = referent)				.000	***
College	1.1	0.7	1.8	.809	ns
High school	2.8	2.0	3.8	.000	***
Less than Secondary school	9.7	5.5	17.1	.000	***

Economic Activity of Head of Household (Full-time employees=referent)				.000	
Working but precarious job	2.2	1.5	3.2	.000	***
Unemployed/Inactive	2.9	1.7	4.9	.000	***
Head of Household Disability (No reported disability=referent)	2.6	1.2	5.5	.011	**
Family type (Two-parent family=referent)				.000	
Single parent	5.3	3.0	9.2	.000	***
Grand parents	2.5	1.0	6.0	.048	**
Region (Middle-sized city=referent)				.012	
Rural	1.6	1.0	2.5	.071	ns
Major city	1.5	1.1	1.9	.006	***
Constant	0.01			.000	
Number of observation	3,310				
Log-likelihood	1733.00				

***<0.01, **<0.05

Figure 1. Percentage of children ‘not having’ items and activities for children

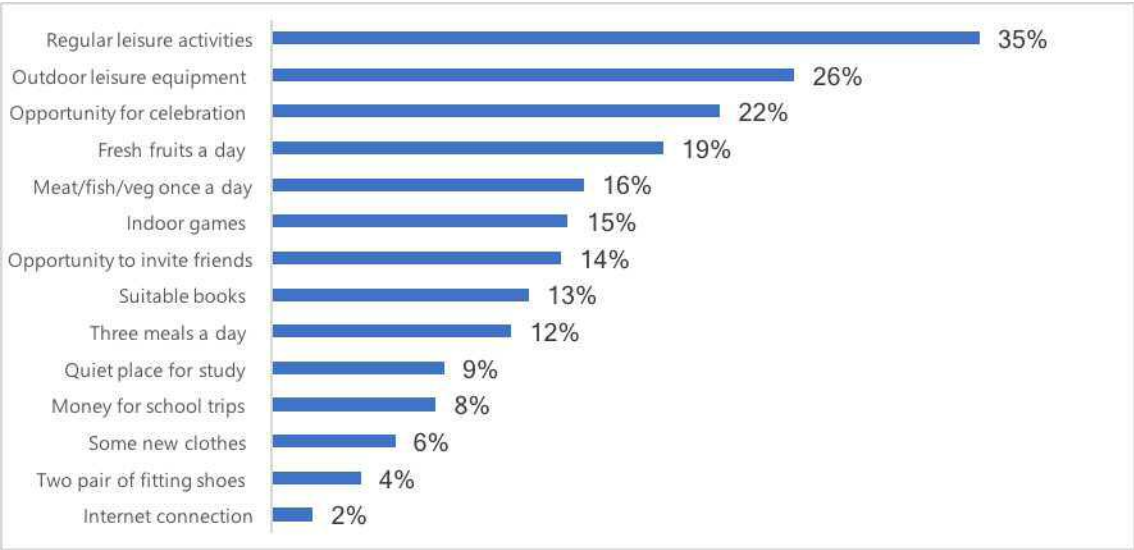
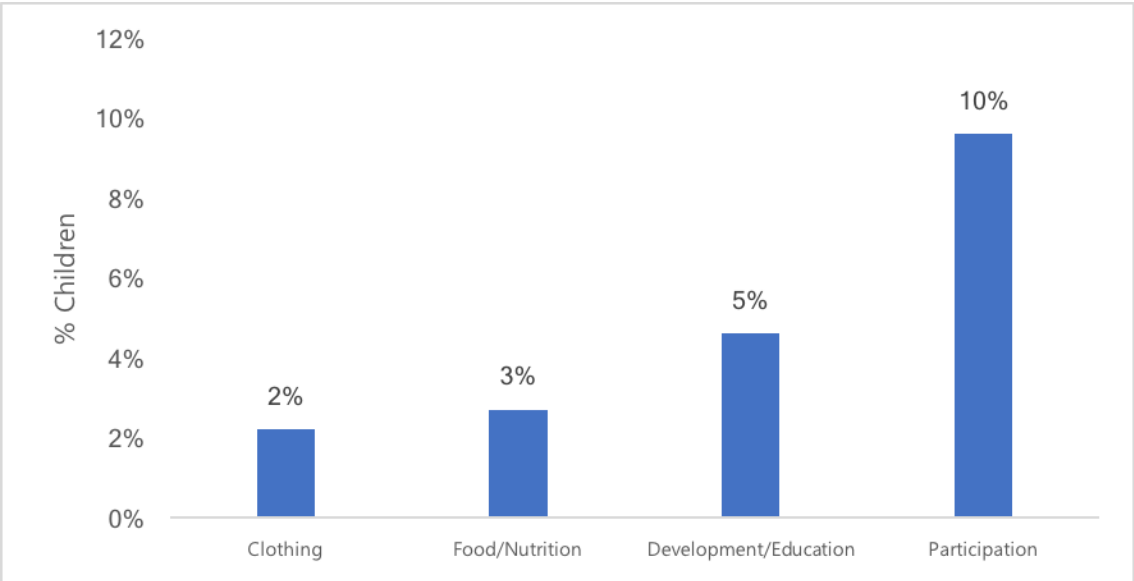


Figure 2. Proportion of Children deprived on each domain (% of severe deprivation)



*Indicators for each domain are elaborated in Table 1 with specific items and activities for age-group

Figure 3. Average Income by deprivation score (95% Confidence Intervals)

