

Child Indicators Research

How do family economic contexts affect children's subjective well-being? A study of South Korea --Manuscript Draft--

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Abstract:	<p>The aim of this research is to examine the relationship between family economic contexts and children's subjective well-being with a child-centric perspective and to examine the mediation effects of basic psychological needs (peer relatedness and academic competence) based on self-determination theory. To investigate children's real lives' experiences, family economic contexts are measured by two indicators, income-to-needs ratio and Child Material Deprivation Index (CMDI). Subjective well-being is measured by Student's Life Satisfaction Scale (SLSS) and positive affect. A subsample of the South Korea data from the International Survey of Children's Well-being project (ISCWeB) is used for statistical analysis. The sample consists of 4,403 10- and 12-year-old children. Structural equation modeling with bootstrapping is utilized to examine the direct and indirect effects of the analytic model.</p> <p>The results show that CMDI is significantly related to SLSS and positive affect. However, the coefficients between family income-to-need ratio and subjective well-being indicators are not statistically significant. The basic psychological needs (peer relatedness and academic competence) have significant effects on SLSS and positive affect. The indirect effects of CMDI and income-to-needs, mediated by peer relatedness and academic competence, are statistically significant. The results suggest that CMDI may be a better indicator than family income when investigating children's subjective well-being, and that self-determination theory is applicable to studies on South Korean children's well-being. Based on the results, implications and recommendations are discussed.</p>

How do family economic contexts affect children's subjective well-being?

A study of South Korea

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Abstract

The aim of this research is to examine the relationship between family economic contexts and children's subjective well-being with a child-centric perspective and to examine the mediation effects of basic psychological needs (peer relatedness and academic competence) based on self-determination theory. To investigate children's real lives' experiences, family economic contexts are measured by two indicators, income-to-needs ratio and Child Material Deprivation Index (CMDI). Subjective well-being is measured by Student's Life Satisfaction Scale (SLSS) and positive affect. A subsample of the South Korea data from the International Survey of Children's Well-being project (ISCWeB) is used for statistical analysis. The sample consists of 4,403 10- and 12-year-old children. Structural equation modeling with bootstrapping is utilized to examine the direct and indirect effects of the analytic model.

The results show that CMDI is significantly related to SLSS and positive affect. However, the coefficients between family income-to-need ratio and subjective well-being indicators are not statistically significant. The basic psychological needs (peer relatedness and academic competence) have significant effects on SLSS and

positive affect. The indirect effects of CMDI and income-to-needs, mediated by peer relatedness and academic competence, are statistically significant. The results suggest that CMDI may be a better indicator than family income when investigating children's subjective well-being, and that self-determination theory is applicable to studies on South Korean children's well-being. Based on the results, implications and recommendations are discussed.

Key Word

Subjective well-being, Family income, Material deprivation, Self-determination theory

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1 Introduction

Subjective well-being has gained much attention in the past decade, which can be confirmed by the growing number of published on international comparison reports of subjective well-being (Helliwell, Layard & Sacks, 2015; Rees & Main, 2014, 2015; UNICEF, 2013). Unfortunately, these reports comparing the level of individual's happiness across the world have repeatedly shown that South Korea is one of the unhappiest countries in the world. What is more alarming is that South Korean children are identified as the unhappiest children in the world across multiple dimensions of subjective well-being (Lee & Yoo, 2014; Rees & Main, 2014, 2015). As a result, there is a growing interest in South Korea to understand the current state of children's subjective well-being, its determinants and their mechanisms.

Moreover, the growing economic inequality that South Korean children face is also quite concerning (Kim, 2013). The widening gap in economic inequality affects children's well-being not only by limiting children's access to essential material goods necessary for their develop, but also by creating unequal opportunities to gain competency and capabilities due to the heavy concentration of expensive private education outside of the school system. Numerous international and Korean studies have investigated the impact of family economic contexts on children's development, and have reported the negative impacts that low-income and poverty have on children's developmental outcomes (Conger, Conger & Martin, 2010; Ku, Park, Jung & Kim, 2009; Maholems & King, 2012; Min & Lee, 2015). However, less is known about the impact of family economic contexts on children's subjective well-being. A few studies that investigated this association have reported mixed findings (Main, 2014). Researchers who found a significant relationship between family economic contexts and children's subjective well-being have suggested the importance of using child-reported indicators when measuring their economic experiences (Bradshaw & Main, 2012; Main, 2014; Sarriera et al., 2014). However, to the best of our knowledge, no study in South Korea has investigated the effect of family economic conditions on children's subjective well-being using a child-reported measure of material deprivation. Thus, we will address this gap in the literature by examining the effects of family income and child-reported measure of material deprivation on children's subjective well-being.

In positive psychology, subjective well-being is considered to be comprised of life satisfaction, positive affect and negative affect (Diener, 2000). According to the self-determination theory, deep satisfaction of three basic

1 psychological needs, autonomy, relatedness, and competence, is a prerequisite for achieving one's well-being
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3 (Dehaan & Ryan, 2014). A realization of one's function and potentiality has been highlighted as an important
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5 factors associated with children's well-being. Economic contexts of family are expected to have an influence on
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7 the realization of children's function and potentiality, which in turn affect their well-being. However, the
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9 mechanisms underlying the relationship between family's economic contexts and child well-being in Korea have
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11 not been fully investigated. Also the previous studies in Korea have largely focused on family income which may
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13 not truly represent children's economic experiences.

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15 Thus, this study aims to identify how the family's economic contexts are associated with children's subjective
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17 well-being using children's life satisfaction and positive affect as indicators. Careful attention is paid to identify
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19 the differential effects of family income and material deprivation on children's subjective well-being. Based on
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21 self-determination theory, the mediating effects of peer relatedness and academic competence are also examined.
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25 2 Theoretical Background

26 2.1 Children's subjective well-being

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29 There is growing interest in conducting research on positive indicators among social scientists. Particularly,
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31 happiness, regarded as one of the most representative indicators of positive status, has recently gained much
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33 attention of social scientists. Happiness studies in social science are mainly based on two philosophical traditions:
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35 eudaimonic and hedonic (Kashdan, Biswa-Diener & King, 2008; Main, 2014; Ryan & Deci, 2001; Steger,
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37 Kashdan & Oishi, 2008). Eudaimonia which is heavily based on Aristotle's idea refers to a life lived to its fullest
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39 potential (Ryan & Deci, 2001). Theories on eudaimonia assert that people inherently endeavor to do worthwhile
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41 things for life, thus well-being is attained by satisfying basic psychological needs (Kashdan et al., 2008). On the
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43 other hand, hedonic theorists focus on how person feel and experiences pleasantness in one's life (Diener, 2000).
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45 From a hedonic perspective, subjective well-being, one of the most frequently used concept of hedonic happiness,
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47 consists of three components—presence of life satisfaction and positive affect, and absence of negative affect
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49 (Diener, 2000). Life satisfaction refers to cognitive appraisal of well-being, and positive and negative affect refer
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51 to emotional well-being.
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54 The relationship between eudaimonic happiness and hedonic happiness can be explained by self-determination
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56 theory. According to self-determination theory, eudaimonic well-being is attained by satisfying three basic
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58 psychological needs (autonomy, relatedness, and competence), and it makes one experience hedonic happiness
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60 (i.e., subjective well-being) (Dehaan & Ryan, 2014; Kashdan et al., 2008). Ryan and Deci (2001) as well as Ryff
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1 and Singer (1998) reviewed that the theoretical assumption that satisfaction of basic eudaimonic psychological
2 needs make people more hedonically happier was supported by empirical studies. Based on the theory, three basic
3 psychological needs are defined as followed. First, autonomy is defined as “the need to experience behavior as
4 self-endorsed and volitional” (Dehaan & Ryan, 2014, p. 40). Second, relatedness is defined as “the need to feel
5 connected and significant to others” (Dehaan & Ryan, 2014, p. 40). Lastly, competence is defined as “capability
6 and effectiveness with the important activities one engages in life” (Dehaan & Ryan, 2014, p. 40). In sum, self-
7 determination theory suggests that one can experience happiness if these psychological needs are satisfied.
8 Satisfaction of these basic psychological needs means that one is fully functioning and is in the process of
9 integrative self-regulation (Dehaan & Ryan, 2014). Several studies have been conducted to examine the link
10 between the three basic psychological needs and subjective well-being. Particularly, studies have shown that
11 strong links between satisfaction of the basic psychological needs and increase in positive affect and decrease in
12 negative affect (Howell, Chenot, Hill & Howell, 2011; Ryan, Bernstein & Brown, 2010; Sheldon, Ryan & Reis,
13 1996).

2.2 Children’s subjective well-being and family’s economic contexts

31 The economic conditions of family have been identified numerously as a key context for child development. It
32 is generally accepted that children living in poverty and low family social economic status (SES) experience more
33 developmental problems and adversities, have significantly lower positive outcomes, and have worse prospects
34 for future (Conger, Conger & Martin, 2010; Maholems & King, 2012). Specifically, a long line of research using
35 rigorous methodologies have demonstrated the significant long lasting influences of family economic indicators
36 on children’s cognitive and emotional development. These studies reported that low family SES impacted various
37 aspects of children’s lives, which leads to disparities from early childhood to adolescence, raging from cognitive
38 and non-cognitive development, to physical and mental health outcomes (Conti & Heckman, 2014). Similar
39 findings have also been reported in Korea. Korean longitudinal studies noted that Korean youths in poverty
40 showed more internalizing and externalizing behavior problems, lower academic achievement, and lower levels
41 of cognitive development (Ku et al., 2009; Min & Lee, 2015). Specifically, the initial gaps in children’s outcome
42 between poor and non-poor Korean children have been found to persist throughout childhood, resulting in
43 socioeconomic disparities in adulthood (Min & Lee, 2015).

44 However, most previous studies have focused on negative outcomes such as behavioral, social and emotional
45 problems. Less attention has been paid to positive outcomes (Ben-Arieh, 2005; Seligman & Csikszentmihalyi,
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1 2000). Previously, researchers equated absence of negative problems with wellness or health. However, there have
2
3 been changes in perspectives where presence of positive outcomes are no longer equated with absence of negative
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5 outcomes, and are considered independent (Ben-Arieh, 2005). Moreover, in child development research,
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7 commonly used indicators of child development are indicators of well-becoming, which focus on how well a child
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9 will grow-up to be productive and successful adults, rather than indicators of well-being, focusing on their present
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11 quality of life (Ben-Arieh, 2010). As a result, research on children's well-being and its predictors are at a relatively
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13 earlier stage of research compared to other developmental outcomes. Furthermore, mechanisms underlying the
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15 relationship between family economic contexts and children's subjective well-being are not fully investigated.

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17 Theoretically, family economic contexts are expected to be associated with children's subjective well-being.
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19 Subjective well-being is grounded in one's life events, one's affect, and evaluation of such experiences (Diener,
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21 2000). Children from low-income families have repeatedly been found to experience more negative life events
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23 with greater severity and chronicity (Griggs & Walker, 2008; Maholems & King, 2012). When one has more
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25 negative experiences, it is more likely that he or she will exhibit lower subjective well-being than those who do
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27 not have these negative experiences.

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29 However, the findings from previous literature that examines the link between family income and children's
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31 subjective well-being have not been consistent (Main, 2014). For example, several studies did not find a significant
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33 association between family income and subjective well-being using a nationally representative samples of children
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35 from UK (Knies, 2011; Main, 2014). Korean studies have reported mixed results about the effect of family
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37 economic contexts on children's subjective well-being. Kim (2013) analyzed the effect of poverty on domains of
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39 child well-being (UNICEF, 2013) using Korean micro data, and the results showed that children in poverty showed
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41 lower well-being in every domains of child well-being including subjective well-being. However, Suh and Jung
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43 (2014) reported that the significance of family income on children's subjective well-being disappeared when other
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45 personal and contextual variables were also considered. Another study indicated that there was no direct impact
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47 of family income, but, income impacted subjective well-being indirectly through children's self-perspectives
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49 (Sung & Kim, 2013).

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51 One of the major issues in child poverty research is measurement of children's economic context that adequately
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53 reflects children's economic contexts and experience. Family income has been a traditional indicator of children's
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55 economic status. It is a relatively simple and objective measure that has been widely used. However, there have
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57 been several criticisms on the effectiveness of family income in illustrating the economic conditions of children
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59 (Main & Bradshaw, 2012; Remond, 2014). First, it is an indirect method to measure living standards and economic
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1 experiences (Redmond, 2014). Although family income provides useful information on family's economic
2 conditions, it does not take into account key factors that could also affect a family's economic situation such as
3 family's assets and savings, non-cash income, and differential needs (Perry, 2002). Second, family income has
4 also been criticized for its limitations in illustrating children's economic experience since family income measure
5 does not show intra-family distribution of economic resources (Main & Bradshaw, 2012).
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10 As a complementary measure to family income, poverty researchers have explored the utility of material
11 deprivation (Beverly, 2000; Iceland & Bauman, 2007). Measures of material deprivation have several strengths
12 over family income. First, material deprivation may better reflect the economic resources that family can use to
13 access goods and services (Beverly, 2000). Second, the experiences of deprivation may have a greater impact on
14 happiness than income itself (Dunn, Gilber & Wilson, 2011). For example, although children may be less aware
15 of their family's financial situation, they may be more sensitive to the necessities that their family can afford or
16 not afford (Knies, 2011). Third, scholars have suggested that the inclusion of material deprivation measure in
17 poverty research adds additional information regarding family's economic circumstances and creates a better
18 measure that reflects the multidimensional characteristic of poverty (Nolan, 1999; Willitts, 2006).
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29 More recently, there has been discussion over whose report of material deprivation is more useful in
30 understanding children's experiences of family economic circumstances. While the vast majority of studies have
31 utilized measures of family income and material deprivation reported by parents or adult family members, a few
32 scholars have questioned the effectiveness of adult-derived measures of family economic conditions in
33 understanding children's subjective well-being (Main, 2014). Particularly, insignificant associations reported
34 between family income, household material deprivation, child material deprivation and children's subjective well-
35 being in studies that utilized adult-reported measures (Knies, 2011), and significant findings in studies that utilized
36 child-reported measures highlights this issue (Main & Bradshaw, 2012; Sarriera et al., 2015).
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46 Despite the strengths of including measures of material deprivation as a complementary measure to family
47 income, there have only been a hand full of South Korean studies utilizing material deprivation as an indicator in
48 relation to child development and well-being (Jung, 2013a; Jung, 2013b; Yoo, Chung & Lee, 2015). Moreover,
49 to the best of our knowledge, this is one of the first studies to utilize child-reported measure to assess children's
50 experience of material deprivation and to examine how material deprivation is associated with children's
51 subjective well-being. The specific focus on understanding the effects of adult-reported family income and child-
52 reported child material deprivation on children's subjective well-being is expected to help us better understand
53 the discrepancies reported in previous findings and its relevance to South Korean children.
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1 In terms of subjective well-being, there is also some evidence that family economic conditions may have
2 differential effect on the cognitive appraisal of subjective well-being and the positive and negative affect
3 associated with subjective well-being (Diener, Ng, Harter & Arora, 2010; Kahneman & Deanton, 2010). For
4 example, the results of Diener et al. (2010) study, in which the effects of material prosperity on life evaluation
5 and emotional well-being were analyzed using the Gallup World Poll, reported that income was a moderately
6 strong predictor of life evaluation but a much weaker predictor of positive and negative feelings. Kahneman and
7 Deanton (2010) found that income had differential effects on each emotional well-being indicators and Cantril's
8 ladder, a life satisfaction indicator. According to this study, income had a stronger relationship with life
9 satisfaction than emotional well-being (Kahneman & Deanton, 2010). Based on previous literature, we are also
10 examining the unique effects of family economic contexts on each respective aspects of subjective well-being,
11 life satisfaction and positive affect.
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25 2.3 Mediating effects of peer relatedness and academic competence

26 It is not enough to just identify simple relationships between family's economic contexts and subjective well-
27 being. For further implications, mechanisms that link the relationships should also be investigated (Cummings,
28 2000). As self-determination theory suggested, satisfaction of basic psychological needs (e.g., autonomy,
29 relatedness, and competence) may explain the pathways between family's economic contexts and subjective well-
30 being. This theoretical hypothesis is supported by Diener et al. (2010) who suggest that fulfillment of
31 psychological needs mediates the relationship between life satisfaction as well as emotional well-being and wealth.
32 Empirical studies have also shown that low family social economic status is related to children's low academic
33 achievement and negative peer relationship, which in turn hamper their subjective well-being (Furlong, Gilman
34 & Heubner, 2009; Gross-Manos, 2014).
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45 Children in low family SES have difficulties in achieving academic competence and establishing good peer
46 relationship which comprise basic needs for them (Griggs & Walker, 2008; Maholems, & King, 2012). There is
47 accumulating evidence that children from low-income families have lower academic achievement (Haveman &
48 Wolfe, 1995; Ku, Park, & Jung, 2006). According to human capital theory, parents with low income reduce the
49 educational investment for children because of the high opportunity cost, and this low investment leads to
50 children's low cognitive development and low academic achievement (Becker, & Tomes, 1994). Children with
51 low academic achievement, affected by family income, are more likely to have unmet psychological needs in
52 relation to academic competence. This, in turn, may hinder his or her subjective well-being. Literature supports
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1 the negative relationship between low academic achievement and children's well-being (Gilman & Heubner, 2006;
2 Suldo, Riley & Shaffer, 2006; Quinn & Duckworth, 2007).
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5 Also, children from low-income families are also at a greater risk for experiencing social problems, particularly
6 with their peers (McLoyd, 1998). Peer acceptance and good friendship have been identified as indicators that
7 significantly affect children's well-being (Bradshaw et al., 2007; Gross-Manos, 2014). Children's experience of
8 economic hardship may have a direct influence on children's needs for peer relatedness. For example, the culture
9 of materialism and consumption that most developed countries face creates a social environment where consuming
10 and accessing material goods is key to children's social integration (Brusda & Frønes, 2014). On the other hand,
11 lack of resources and material deprivation are linked with social exclusion (Redmond, 2014). In a qualitative study
12 that examined children's experience of material deprivation, children who experienced material deprivation were
13 more likely to report that they felt social exclusion and more frequently experienced bullied by other peers than
14 their peers who do not experience material deprivation (Ridge, 2002).
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25 Based on the review of previous literature, this study seeks to identify how family economic contexts are
26 associated with children's life satisfaction and positive affect. To overcome the limitations of family income as an
27 effective measure of child's economic condition, this study will test the effects of family income and material
28 deprivation simultaneously. In addition, the mediating effects of peer relatedness and academic competence are
29 examined based on self-determination theory,
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37 3 Methods

38 3.1 Data

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41 For the purpose of this study, we utilized a subsample of the South Korean data from the International Survey
42 of Children's Well-Being (ISCWeB). ISCWeB is an international study that seeks to understand children's
43 perceptions and evaluations of their well-being in 15 countries (Rees & Main, 2015). Each country's data consist
44 of a large scale representative sample of children in three separate age groups, approximate ages of 8, 10, and 12,
45 and their parents. In 2013 fall, nationally representative data of South Korean children and their parents were
46 collected using multi-cluster random sampling method. First, schools from 16 administrative regions in South
47 Korea were randomly selected. Then, one or two classes from grades that mostly consist of children in respective
48 ages were selected. Both parents and children were provided with written informed consent. Those who provide
49 consent were included in the study. The entire study procedure was approved by the Institutional Review Board
50 of [University name omitted for blind review].
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The present study utilized a subsample of ISCWeB South Korea data. The data collected from eight-year-olds were not included in this study because some of the key variables were not measured for this age group. Cases with missing information on family income and size (611 of whole 5,014 (12.2%) elements) among children aged 10 and 12 were also excluded. Statistical tests (t-test) were conducted to identify mean differences between income missing group and non-missing group. There was no significant differences of subjective well-being and other social economic status measurements. The results of t-test are demonstrated in Table 1. Regression imputation method is used to substitute other missing values. The rate of missing values for all observed variables (excluding family income and size) are less than 1.0 percent, except a variable of peer relatedness (I have enough friends), which has 1.7 percent of missing.

Table 1 Results of statistical test for income missing sample

		Mean	S.D	t-value
Life satisfaction (SLSS) '0=not at all ~ 10=totally'	Income missing	7.58	2.206	1.610 ^{n.s}
	Non-missing	7.73	2.143	
Positive affect '0=not at all ~ 10=extremely'	Income missing	7.70	2.119	0.876 ^{n.s}
	Non-missing	7.78	2.056	
Number of participants in economic activities of family	Income missing	1.64	0.681	0.103 ^{n.s}
	Non-missing	1.63	0.609	
Receiving government financial aid '0 = no / 1 = yes'	Income missing	.057	0.233	1.788 ^{n.s}
	Non-missing	.039	0.192	
Children's worrying about family money '1 = never / 4 = always'	Income missing	1.87	0.824	0.757 ^{n.s}
	Non-missing	1.85	0.773	

Finally, statistical analyses are completed using data of 4,403 children aged 10, and 12. Specifically, the sample consists of 2,133 10-year-olds (48.4%) and 2,270 12-year-olds (51.6%). In addition, there are 2,116 boys (48.1%) and 2,287 girls (51.9%) in this study.

3.2 Measurements

3.2.1 Independent variables

Income-to-needs ratio: Family income is operationalized as income-to-needs ratio in this study. Although there are numerous studies that use family income or log-transformation of family income children's economic circumstance, lack of consideration for cost of living and family size has been suggested as a major limitation. Income to needs ratio represents family's economic well-being better than direct measures of family income (Mcloyd, 1998). Thus, income-to-needs ratio is calculated with parent-reported monthly family income, number of household members, and 2013 national minimum cost of living for the purpose of this study. Family income is divided by the respective national minimum cost of living, which is based on the sample's family size. Income-to-needs ratio is usually converted into some strata as grouping variable (Dearing, McCartney & Taylor, 2001;

1 Ku, 2003; Mcloyd, 1998). In this research, income-to-needs ratio is converted into 11 strata (0 to 10). Zero refers
2 to elements whose family income-to-needs ratio is under 1, one refers to elements whose family income-to-needs
3 ratio is greater or equal to 1 and under 2, and ten refers to elements whose family income-to-needs ratio is greater
4 and equal to 10.
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11 **Material deprivation:** Material deprivation is measured by Child Material Deprivation Index (CMDI)
12 developed by Main and Bradshaw (2012). This index contains 10 items related to children’s everyday lives. Items
13 include ‘pocket money’, ‘saving money’, ‘branded trainers’, ‘iPod or similar’, ‘cable or satellite TV’, ‘garden or
14 similar’, ‘access to family car’, ‘clothes to fit in’, ‘annual family holiday’, and ‘monthly day trips’. Children
15 answered for each item in 3 categories, ‘have’, ‘lack (want)’, and ‘lack (don’t want)’. Following the suggestions
16 made by Main and Bradshaw (2012), we measured material deprivation by the number of lacked and wanted items.
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24 25 3.2.2 Mediators

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27 **Peer relatedness:** Peer relatedness is measured using two items provided by the ISCWeB survey. The items
28 include “My friends are usually nice to me”, “I have enough friends.” Children were asked to respond using a
29 five-point Likert scale, which ranges from 1 (I do not agree) to 5 (totally agree).
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35 **Academic competence:** Academic competence is measured using children’s self-evaluation of their level of
36 competence on key three subjects, ‘Korean’, ‘English’, and ‘Mathematics.’ They were asked to respond using a
37 five-point Likert scale, which ranges from 1 (very bad) to 5 (very good).
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43 3.2.3 Dependent variables

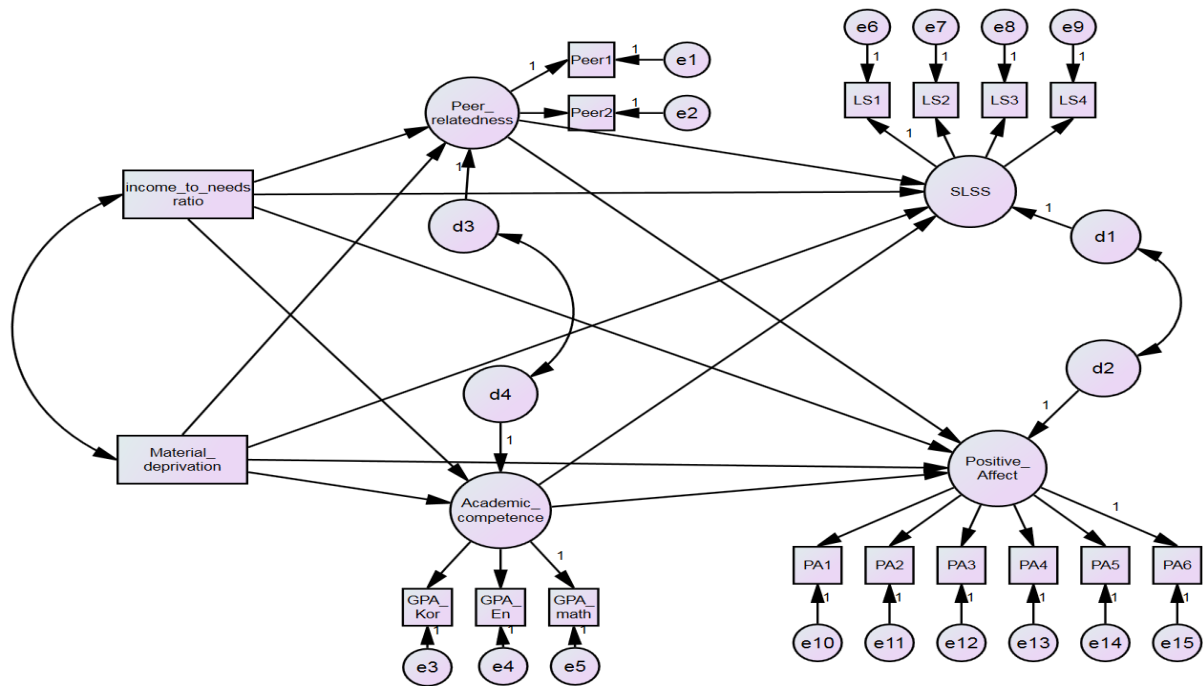
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45 **Life satisfaction:** Life satisfaction is measured using a four item scale. The four items are from the Students’
46 Life Satisfaction Scale (SLSS; Huebner, 1991), which are “My life is going well”, “My life is just right”, “I have
47 a good life”, and “I have what I want in life.” Children were asked to respond using an eleven-point Likert scale,
48 which ranges from zero (not at all agree) to ten (totally agree).
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55 **Positive affect:** Positive affect is measured by the short version of Russell’s core affect (2003, 2009; Children’s
56 worlds, 2015) an indicator that assesses children’s emotional well-being. Children were asked how much they
57 have felt each of the following six affects, “satisfied”, “happy”, “relaxed”, “active”, “calm”, and “full of energy”,
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1 during the last two weeks. Children answered using an eleven-point Likert scale, which ranges from zero (not at
 2 all) to ten (extremely).
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7 3.3 Data analysis

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 9 To test the differential effects of family income and material deprivation on children's subjective well-being,
 10 the analytic model for SEM analysis is specified as Figure 1. Indicators of family income-to-needs ratio and
 11 material deprivation, considered as independent variable, are included as observed variables. On the other hand,
 12 the two dependent variables (i.e., life satisfaction and positive affect) are specified as latent constructs. As
 13 suggested by the self-determination theory, latent variables of peer relatedness and academic competence are
 14 considered as mediators. SEM is analyzed using a three-step process. First, the measurement model is fitted to
 15 examine whether latent constructs are adequately constructed. Second, structural model is fitted to examine the
 16 associations between observed and latent constructs. Third, the mediation effect will be examined using
 17 bootstrapping. For bootstrapping, Maximum Likelihood estimation procedure is used after employing regression
 18 imputation for missing data. Statistical analysis is performed with the SPSS 20 and AMOS 20.
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 52 **Figure 1 Research Model**
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1 4 Results

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3 4.1 Descriptive analysis

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5 Descriptive statistics of key variables are presented in Table 2. The mean and standard deviation of 11 strata-
6 converted income-to-needs ratio are 2.55 and 2.022. The average number of lacked materials that children wanted
7 are 1.59 (SD= 1.657). The mean of two mediators, peer relatedness and academic competence, are 4.10 and 3.66,
8 respectively. On the other hand, the mean values of life satisfaction and positive affect, are 7.74 and 7.78. As there
9 is no variable whose absolute value of the skewness exceeds 3 nor kurtosis 10, the assumptions for normal
10 distribution are considered to be met (Kline, 2011). The correlations among variables are attached in appendix.
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17 **Table 2. Summary of Descriptive Statistics (N=4,403)**

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	Mean	SD	Minimum	Maximum	Skewness (S.E.)	Kurtosis (S.E.)
19 Income-to-needs ratio	2.55	2.022	.00	10.00	1.650 (.037)	3.185 (.074)
20 Material deprivation	1.59	1.657	.00	10.00	1.661 (.037)	4.066 (.074)
21 Academic competence	3.66	.892	1.00	5.00	-.451 (.037)	-.209 (.074)
22 Peer relatedness	4.10	.859	1.00	5.00	-.902 (.037)	.406 (.074)
23 Life satisfaction	7.74	2.132	.00	10.00	-.888 (.037)	.183 (.074)
24 Positive affect	7.78	2.051	.00	10.00	-.965 (.037)	.572 (.074)

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32 Bivariate relationships between the independent variables (i.e., income-to-needs ratio strata & material
33 deprivation) and the dependent variables (i.e., life satisfaction and positive affect) are examined. Figure 2 and, 3
34 and table 3 show the mean of life satisfaction and positive affect for each income-to-needs ratio strata. Figure 4
35 and, 5 and table 4 show the average life satisfaction and positive affect per each number of respective material
36 deprivation. .
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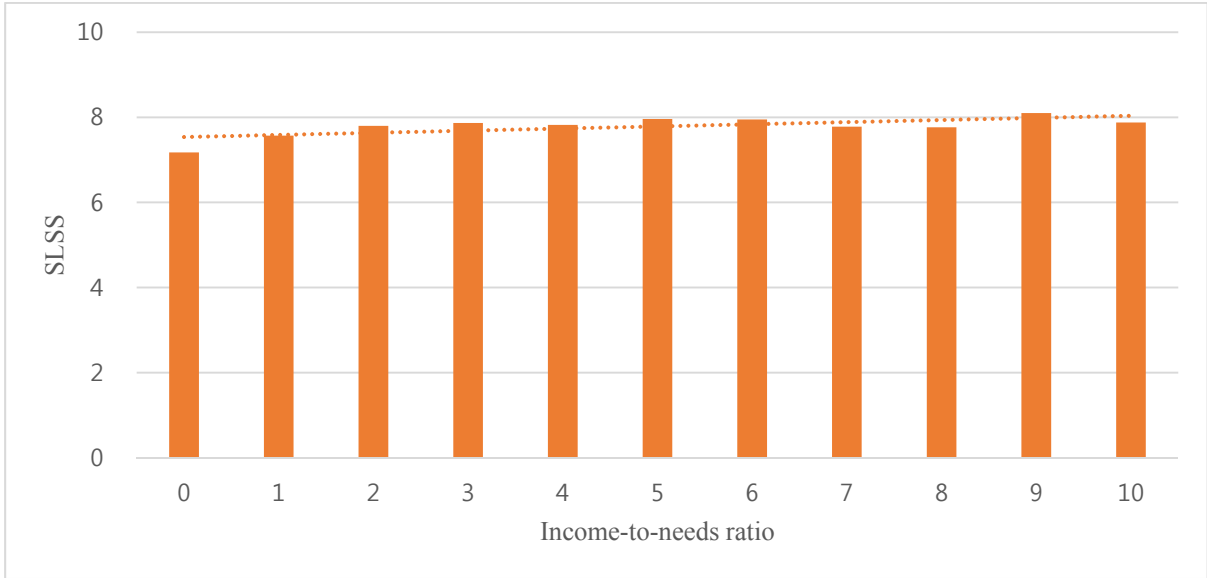


Figure 2 relationship between income-to-needs ratio and life satisfaction

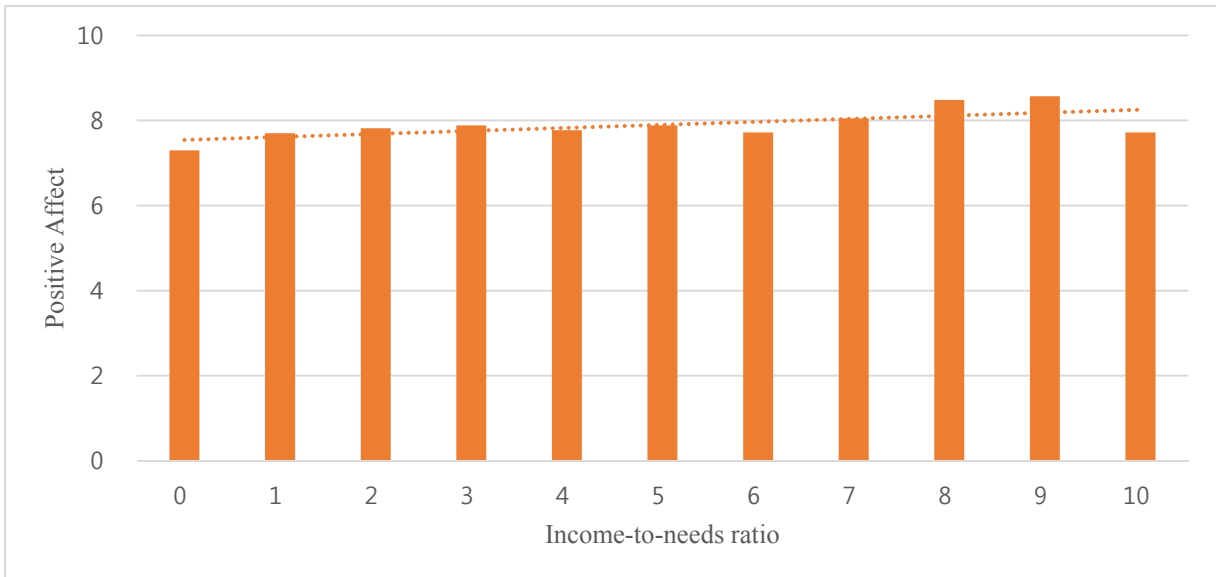


Figure 3 relationship between income-to-needs ratio and positive affect

Table 3 relationship between income-to-needs ratio and subjective well-being

Income-to-needs ratio	0	1	2	3	4	5	6	7	8	9	10
N	311	1176	1157	879	296	221	122	76	31	46	88
SLSS	7.17	7.57	7.80	7.87	7.82	7.96	7.95	7.78	7.76	8.10	7.88
Positive Affect	7.30	7.70	7.82	7.89	7.77	7.89	7.72	8.05	8.48	8.57	7.72

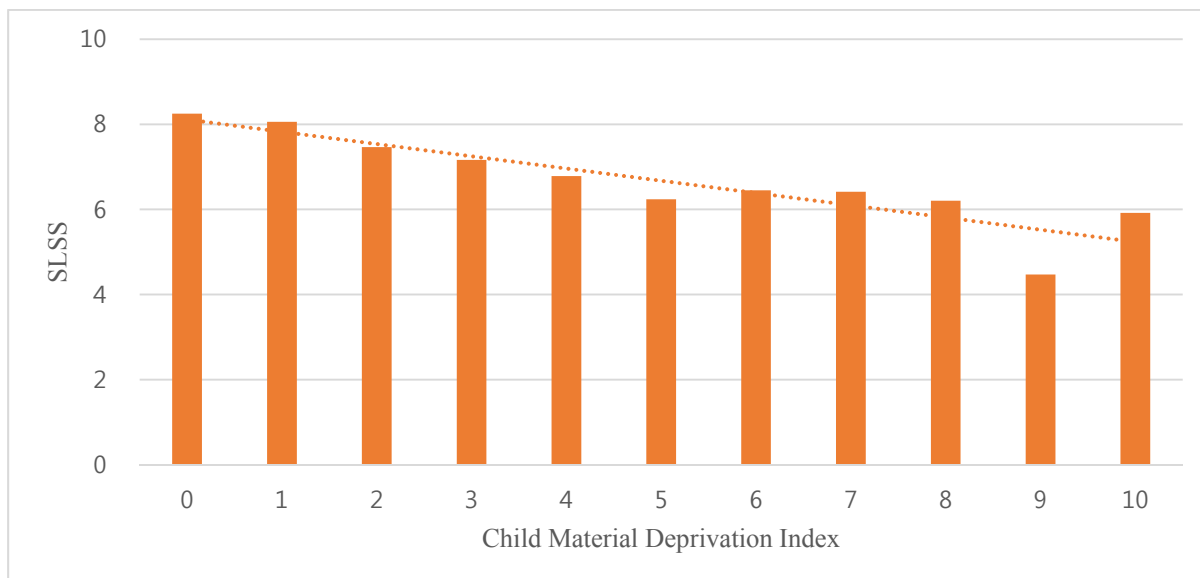


Figure 4 relationship between material deprivation and life satisfaction

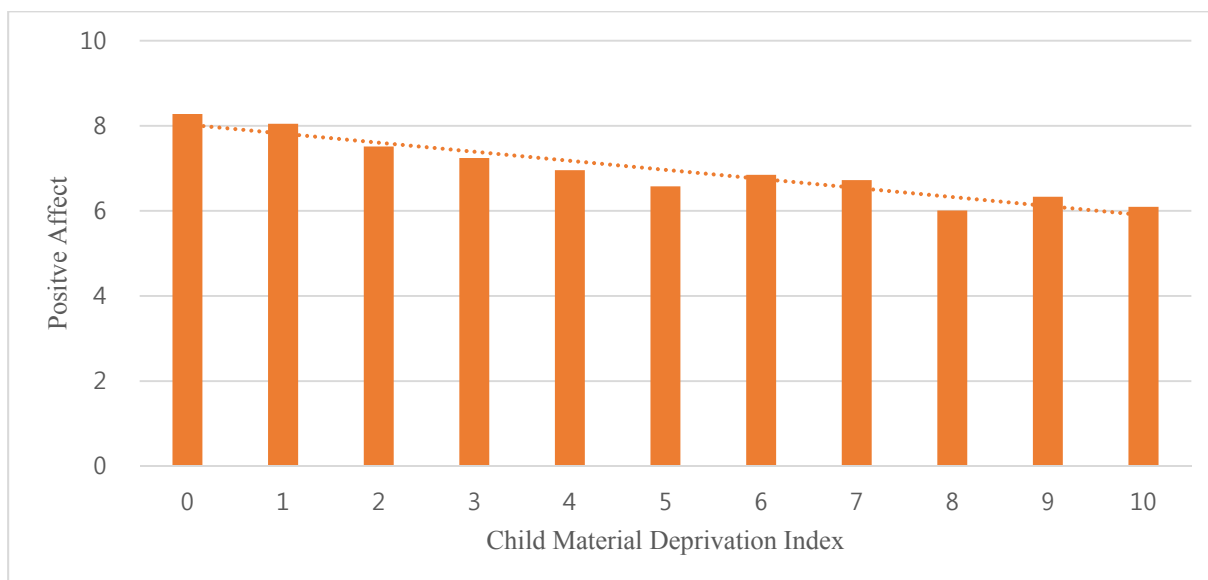


Figure 5 relationship between material deprivation and positive affect

Table 4 relationship between material deprivation and subjective well-being

No. of deprived	0	1	2	3	4	5	6	7	8	9	10
N	1256	1288	820	497	254	111	66	23	16	7	21
SLSS	8.28	8.05	7.51	7.24	6.96	6.58	6.85	6.72	6.01	6.33	6.10
Positive Affect	8.25	8.06	7.47	7.16	6.78	6.24	6.45	6.41	6.20	4.47	5.92

The simple bar charts show that as the number of deprived items increases, the mean of life satisfaction and positive affect decreases. On the contrary, income-to-needs ratio does not seem to have any specific relationship with two indicators of children's subjective well-being. As shown in the bar charts, statistical tests indicate that material deprivation has stronger relationship with subjective well-being than income does. In ANOVA tests, F statistics of SLSS according to income-to-needs ratio groups (Group 0 to 10) is significant ($F=3.915, p<.01$). But,

post-hoc result shows that mean differences only exist between Group 0 (under national minimum living cost group) and other income groups. On the other hand, the F statistics of SLSS according to CMDI groups is significant ($F=35.754, p<.01$), and mean differences generally exist among various groups. Same pattern is identified in ANOVA test of positive affect according to income groups ($F=3.401, p<.01$), and to CMDI groups ($F=28.828, p<.01$). Mean differences among income groups just exist between Group 0 (under national minimum living cost group) and other income groups. Lastly, table 5 shows the bivariate correlation coefficients (Pearson's r) among mean scores of income to needs ratio, CMDI, SLSS, and positive affect.

Table 5 correlation coefficients

	1	2	3	4
1. Income to needs ratio	1			
2. CMDI	-.106***	1		
3. SLSS	.065***	-.266***	1	
4. Positive affect	.052***	-.241***	.802***	1

The absolute values of correlation coefficients between CMDI and SLSS ($r = -0.266$), and positive affect ($r = -0.241$) are bigger than those between income-to-needs ratio and SLSS ($r = 0.65$), and positive affect ($r = 0.052$). In sum, a series of descriptive analyses suggest that CMDI is more associated with children's subjective well-being than family income-to-ratio.

To examine the relationship between family economic contexts and children's subjective well-being with greater statistical rigor, we employed SEM analysis as presented in the following section.

4.2 Structural equation modeling analysis

First, the measurement model is fitted to examine whether the latent constructs are adequately specified. As can be seen in Table 6, the model fit indices show acceptable model fit with CFI and TLI greater than 0.9 and RMSEA of 0.07 (Hair et al., 2006). In addition, the standardized factor loadings for all the observed variables to respective latent constructs were acceptable, over 0.7 (Fornell & Larcker, 1981), the results are shown in Table 6 and 7.

Table 6 Model Fit Indices of Confirmatory Factor Analysis

Model	χ^2	CFI	TLI	RMSEA
Measurement Model	1878.603 (df=84), $p<.001$.970	.962	.070 (.067 - .072)

Table 7 Factor Loading of Observed Variables

			Unstandardized	Standardized	S.E.	C.R.	p
SLSS	←	LS1	1.000	.941	-	-	-
SLSS	←	LS2	1.075	.958	.008	136.534	$P<.001$

1	SLSS	←	LS3	1.013	.936	.008	124.135	P<.001
2								
3	SLSS	←	LS4	.976	.864	.010	94.963	P<.001
4								
5	Positive Affect	←	PA1	1.000	.933	-	-	-
6								
7	Positive Affect	←	PA2	1.001	.938	.008	118.867	P<.001
8								
9	Positive Affect	←	PA3	.999	.842	.012	86.291	P<.001
10								
11	Positive Affect	←	PA4	.915	.830	.011	83.221	P<.001
12								
13	Positive Affect	←	PA5	.860	.763	.012	69.492	P<.001
14								
15	Positive Affect	←	PA6	.918	.808	.012	78.200	P<.001
16								
17	Academic Competence	←	GPA_Kor	1.000	.703	-	-	-
18								
19	Academic Competence	←	GPA_En	1.303	.739	.035	36.802	P<.001
20								
21	Competence	←	GPA_math	1.218	.727	.033	36.670	P<.001
22								
23	Peer Relatedness	←	Peer1	1.000	.870	-	-	-
24								
25	Peer Relatedness	←	Peer2	1.036	.855	.024	44.022	P<.001
26								

Second, structural model is also fitted using the analytic model displayed in Figure 1. As can be seen in Table 8, the model fit indices suggest that the structural model also has an acceptable model fit (CFI=.965; TLI=.956; RMSEA=.067). Table 9 shows the results of structural model analysis.

Table 8 Model Fit Indices of Structural Model

Model	χ^2	CFI	TLI	RMSEA
Structural Model	1994.936 (df=136), p<.001	.969	.960	.064 (.061 - .066)

Table 9 Results of structural model analysis

			Unstandardized	Standardized	S.E.	C.R.	p
Income-to-needs ratio	→	SLSS	-.015	-.014	.014	-1.073	.283
Income-to-needs ratio	→	Positive Affect	-.007	-.007	.013	-.554	.580
Material deprivation	→	SLSS	-.163	-.131	.017	-9.726	P<.001
Material deprivation	→	Positive Affect	-.141	-.122	.016	-8.875	P<.001
Income-to-needs ratio	→	Academic competence	.068	.170	.007	10.030	P<.001
Income-to-needs ratio	→	Peer relatedness	.007	.019	.006	1.178	.239

1	Material deprivation	→	Academic competence	-0.093	-.191	.008	-11.187	P<.001
2	Material deprivation	→	Peer relatedness	-.094	-.199	.008	-12.235	P<.001
3	Academic competence	→	SLSS	.607	.239	.043	14.070	P<.001
4	Academic competence	→	Positive Affect	.411	.174	.040	10.191	P<.001
5	Peer relatedness	→	SLSS	1.104	.418	.043	25.620	P<.001
6	Peer relatedness	→	Positive Affect	1.102	.449	.042	26.013	P<.001
7	Income-to-needs ratio	↔	Material deprivation	-.106				P<.001
8	d1	↔	d2	.772				P<.001
9	d3	↔	d4	.293				P<.001
10	Squared Multiple Correlation		SLSS	.346				
11			Positive Affect	.327				

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26 The strength of relationship between key independent and dependent variables and their statistical significance
27 are presented in Table 9. The findings suggests that when family income and children's evaluation of material
28 deprivation are considered simultaneously, the effects of the two family economic context variables have
29 differential effects on children's subjective well-being. To be specific, a significant and direct association between
30 material deprivation and children's subjective well-being is found. Analytic findings suggest that the increase in
31 the number of deprived items decreases children's life satisfaction ($\beta = -.163, p < .001$) and positive affects ($\beta =$
32 $-.141, p < .001$). However, family's income-to-needs ratio is not directly associated with neither life satisfaction
33 ($\beta = -.015, p = .309$) nor positive affect ($\beta = -.007, p = .581$) at the level of statistical significance.

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36 In terms of the two basic psychological needs, peer relatedness and academic competence, both material
37 deprivation and family income-to-needs ratio are found to have a significant effect on children's academic
38 competence ($\beta = -.034, p < .001$; $\beta = .068, p < .001$, respectively). However, while a significant negative effect of
39 material deprivation on peer relatedness is found ($\beta = -.094, p < .001$), the association between family income-to-
40 needs ratio and peer relatedness is not significant ($\beta = .007, p = .230$). This finding suggests that there are differential
41 effects of material deprivation and family income-to-needs ratio on children's basic psychological needs.

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44 The direct effects of two basic psychological needs on two subjective well-being indicators are also examined.
45 The analytic results indicate that the associations between these variables are statistically significant. Children
46 with higher satisfaction of peer relatedness show higher level of life satisfaction ($\beta = 1.104, p < .001$) and positive
47 affect ($\beta = 1.102, p < .001$). In addition, child with better evaluation of one's academic competence shows higher
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life satisfaction ($\beta = 0.607, p < .001$) and higher positive affect ($\beta = 0.411, p < .001$).

Table 10 Results of effects decomposition

	Unstandardized			Standardized		
	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
Income-to-needs ratio → SLSS	-.015	.050***	.035**	-.014	.049	.034
Income-to-needs ratio → Positive affect	-.007	.036**	.029**	-.007	.038	.031
Material deprivation → SLSS	-.163***	-.160***	-.323**	-.131	-.128	-.260
Material deprivation → Positive affect	-.141***	-.141**	-.283**	-.122	-.122	-.245

** $p < .05$, *** $p < .01$

Lastly, decomposition of effects with bootstrapping analysis are showed in Table 10. Though direct effects of income to needs ratio on life satisfaction ($\beta = -0.015, p > .05$) and positive effect ($\beta = -0.007, p > .05$) are not statistically significant, indirect effects mediated by peer relatedness and academic competence on life satisfaction ($\beta = 0.050, p < .01$) and positive affect ($\beta = 0.036, p < .01$) are statistically significant. On the other hand, direct effects of material deprivation on life satisfaction ($\beta = -0.163, p < .01$) and positive effect ($\beta = -0.141, p < .01$) as well as indirect effects mediated by peer relatedness and academic competence on life satisfaction ($\beta = -0.160, p < .05$) and positive affect ($\beta = 0.036, p < .01$) are all statistically significant. These results concur with self-determination theory's explanation that the satisfaction of basic psychological needs is essential element of subjective well-being (Dehaan & Ryan, 2014).

5 Discussion

The aim of this study is to examine the effects of family economic contexts on South Korean children's subjective well-being, and to investigate the indirect effects of family economic contexts through peer relatedness and academic competence on subjective well-being based on the self-determination theory. The analytic results show that child-reported material deprivation has a stronger relationship, both directly and indirectly on children's subjective well-being than traditionally used family income-based measurement. Income-to-need ration does not have significant direct effects on life satisfaction nor positive affect, but does have indirect effects through peer relatedness and academic competence. The satisfactions of psychological needs (i.e., peer relatedness and academic competence) are found to significant explanatory factors for subjective well-being in accordance with the assumption of self-determination theory.

These results suggest some implications. Firstly, this study is one of the first research in Korea that investigate the effects of child-reported material deprivation on their subjective well-being. The most common criticism of family income in child study is that it cannot reflect the with-in family distribution of income (Ashiabi & O'Neal,

1 2007). In other words, family income has limitations on describing children's economic situation of daily lives.
2
3 Thus, a more child-centric and more relevant measurement to children's real lives and experiences is required.
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5 Although there are growing interests among child researchers to better understand Korean children's subjective
6
7 well-being, few studies have examined its link with child-reported material deprivation. The significant direct and
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9 indirect effects of child-reported material deprivation in this study highlights the importance of utilizing child-
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11 reported measures such as material deprivation, which better reflects children's experiences when investigating
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13 their economic conditions. These significant effects of child-reported material deprivation support similar findings
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15 from previous studies (Main, 2014; Main & Bradshaw, 2012).
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17 Second, the findings from this study suggest the applicability of self-determination theory when trying to
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19 understand South Korean children's subjective well-being. Although autonomy is not included in this study due
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21 to the restriction of the data, the significant effects of academic competence and peer relationship show that
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23 satisfaction of basic psychological needs is a key element to achieving subjective well-being. The significant
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25 mediating effects of these psychological needs for both family income and material deprivation highlight the
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27 importance of considering these basic psychological needs as a prerequisite for achieving happiness. Recently,
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29 there are increasing interests in the study of happiness and positive indicator. However, children's positive
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31 outcomes are not static, but interplaying with environment and resources (Ben-Arieh, 2010). Beyond stating state
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33 the status of happiness, researches are needed to contribute to building and maintaining children's positive
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35 outcomes. Theoretical understanding of the mechanisms might be a start line. Based on Aristotle's philosophical
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37 tradition, self-determination theory explains not only status of eudaimonic happiness and hedonic happiness but
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39 also relation between them. Following empirical results of this study which support the theory, the validity of self-
40
41 determination theory can be further examined.
42

43 Third, this study identifies again the significant influence of economic contexts on children's happiness. The
44
45 significant direct effects of family economic contexts on basic psychological needs and their indirect effects on
46
47 subjective well-being through basic psychological needs indicate that family economic contexts are key factors
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49 for both eudaimonic and hedonic happiness. South Korea is a country that has relatively good economic conditions
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51 and high academic achievement. Though, Korean children are less happy than children from other countries (Lee
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53 & Yoo, 2014; Rees & Main, 2014, 2015). A potential reason could be found in highly competitive and materialistic
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55 atmosphere in the society. Financial burden of private education to get ahead in school is creating inequality in
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57 educational outcomes, and children from low-income families are less likely to be successful in school compared
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59 to their affluent counterparts (Ku et al., 2006; 2009). Moreover, the discrimination that Korean children face,
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1 based on their academic achievement, also creates challenges to establish good peer relationships. However,
2 comparison of social hierarchy among peers is not limited to their academic achievement. It is also related to their
3 ability to access material goods. Participation in and maintenance of social relationships may be influenced by
4 economic resources among young people in consumer societies (Brusda & Frønes, 2014). Chan and Prendergast
5 (2007) suggest that confusion societies have a cultural tendency to use social comparison of goods as a way to
6 locate one's position in the social hierarchy. This culture may also contribute to children's sensitivity to their
7 possessions and enhance children's sense of relative deprivation. Thus, children should be satisfied with their
8 basic psychological needs including peer relatedness and academic competence regardless of their economic
9 conditions. In order to make children happier adults and government should endeavor to advocate children's rights
10 and do their responsibilities.

11 In sum, the findings from this study highlight the importance of applying child-centric and capability-based
12 perspectives to research, policies and services. As adults' perceptions of child well-being could be differ from
13 children's own perception (Ben-Arieh, 2010; Stuart & Jose, 2012), it needs to measure economic contexts of
14 children on a child-centric perspective (Sarriera et al., 2015). Also, policy makers need to re-examine what is the
15 best interests of children. Most prior implications of studies and social policies have utilized a family-based
16 strategy, where families are given financial aids to support their children. However, the findings from this study
17 suggest that family-based financial assistance programs could partially enhance children's subjective well-being
18 at best, and their goals could be achieved only when children have enough goods and experiences appropriate to
19 their developmental stages. In other words, family economic conditions are related to children's capability to have
20 good relationship with friends, to be competent in school, and further, to be happy. Amartya Sen (1999) argued
21 that "the role of income and wealth –important as it is along with other influences- has to be integrated into a
22 broader and fuller picture of success and deprivation. (p.20)" Income is important as means and resources for
23 accessing necessary experiences to develop children's capability and fulfill their psychological needs. According
24 to an adult study, the experiences accessed by income were found to have a greater impact on happiness compared
25 to income itself (Dunn, Gilber & Wilson, 2011). Although further studies are needed to examine this association
26 on children, focusing on enabling children to obtain the necessary resources to develop their capabilities may be
27 more effective in enhancing children's well-being than the current welfare assistance programs.

28 This study has some limitations. There was listwise deletion of 611 (12.2%) elements who did not answer the
29 family income and family size. Researchers judged that statistical data imputation is not appropriate, as income-
30 to-needs ratio is a fundamental independent variable of this research. The statistics showed that there were no

1 significant differences in other social economic indicators and subjective well-being indicators between missing
2 and non-missing elements. However, the deletion might cause a loss of information and a decrease in statistical
3 efficacy (King, Honaker, Joseph, & Scheve, 2001). Another limitation is that it could not fully test self-
4 determination theory, since the ISCWEB dataset does not contain variable measuring autonomy. Though self-
5 determination theory suggests three basic psychological needs -autonomy, relatedness, and competence- this
6 research model examined of them -peer relatedness and academic competence-. In the future research, it is needed
7 to complement this limitation by empirically examining the whole theoretical model of self-determination theory.
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Appendix. Correlation of variables

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1.Income-to-needs ratio	1																
2.CMDI	-.106***	1															
3.peer1	.028	-.182***	1														
4.peer2	.042***	-.162***	.744***	1													
5.GPA_Kor	.097***	-.144***	.202***	.199***	1												
6.GPA_En	.168***	-.161***	.207***	.219***	.517***	1											
7.GPA_math	.141***	-.148***	.179***	.202***	.506***	.544***	1										
8.LS1	.054***	-.246***	.440***	.425***	.305***	.266***	.276***	1									
9.LS2	.049***	-.240***	.421***	.411***	.287***	.255***	.271***	.910***	1								
10.LS3	.070***	-.244***	.436***	.415***	.295***	.256***	.269***	.874***	.895***	1							
11.LS4	.072***	-.275***	.402***	.387***	.257***	.233***	.233***	.802***	.819***	.831***	1						
12.PA1	.061***	-.225***	.432***	.420***	.253***	.231***	.245***	.748***	.758***	.751***	.706***	1					
13.PA2	.052***	-.231***	.421***	.408***	.247***	.208***	.228***	.746***	.753***	.751***	.698***	.904***	1				
14.PA3	.027***	-.215***	.369***	.353***	.199***	.164***	.184***	.662***	.676***	.661***	.628***	.765***	.779***	1			
15.PA4	.051***	-.203***	.393***	.401***	.213***	.202***	.197***	.641***	.649***	.648***	.610***	.743***	.753***	.745***	1		
16.PA5	.046***	-.217***	.376***	.367***	.246***	.221***	.226***	.625***	.630***	.617***	.581***	.696***	.692***	.702***	.657***	1	
17.PA6	.041***	-.188***	.396***	.412***	.204***	.190***	.199***	.639***	.650***	.638***	.586***	.724***	.735***	.698***	.793***	.624***	1

p<.05, *p<.01

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