



Level of inequality in life satisfaction among children in fifteen countries of the world

(To be revised)

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Background



- Subjective well-being, as a concept, refers to people's satisfaction or happiness with both their lives as a whole and with particular aspects of their lives
- In fifteen countries, items on satisfaction or happiness have been adopted (three questionnaires)

Background



- Satisfaction/Happiness was measured by self-report using 11-point scale, from 0 ('not at all satisfied') to 10 ('totally satisfied')
- Happiness is also rated on pictorial scales using smiles on graphical scales

Objective



- The main objective of the presentation is to show differences in level of inequality of satisfaction /happiness in lives among children (10 &12 age group) between the fifteen countries

Measurements of inequality



- There are different statistical measurements for quantifying inequality
 - Range
 - mean absolute deviation (average difference from the mean)
 - standard deviation
 - relative standard deviation (coefficient of variation)
 - mean pair wise difference
 - Gini coefficient
 - Theil index
- We considered only three of them

Measurements of inequality



- Standard deviation is a measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation/inequality

$$SD = \sum_{i=1}^n \frac{(x_i - \bar{x})^2}{n - 1}$$

- Relative standard deviation (Coefficient of Variation) is a statistical measure of the dispersion of data points in a data series around the mean

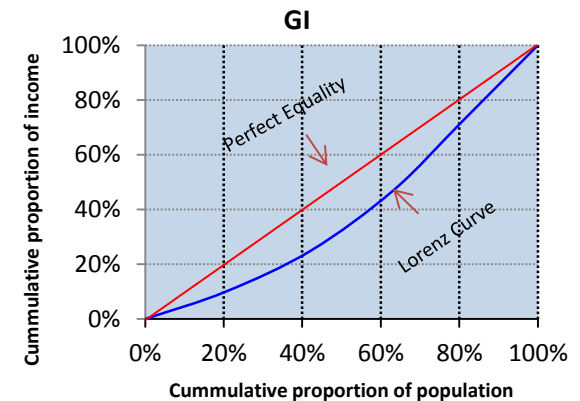
$$CV = \frac{\text{Standard Deviation}}{\text{Mean}} = \frac{SD}{\bar{x}}$$

Measurements of inequality



- The Gini coefficient, also referred to as *Gini's concentration ratio*, (Gini 1912) is currently used to characterize inequality in income distributions. **It is also used in various areas as a measure of inequality.**
- The *Gini coefficient* is also defined as the ratio between the area between the Lorenz curve and the above diagonal and the area of the complete triangle below that diagonal

$$Gini = \frac{1}{2n^2 \bar{x}} \sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|$$



- Takes on values between 0 and 1 with zero interpreted as no inequality

Measurements of inequality



- For weighted data it is expressed as the following

$$G_g = \frac{\sum_{i=1}^n \sum_{j=i+1}^n w_i w_j |x_i - x_j|}{\sum_{i=1}^n w_i \sum_{i=1}^n w_i x_i}$$

Life satisfaction scales compared



- Brief Multidimensional Student Life Satisfaction Scale (BMSLSS)
- Personal Well-being Index of School Children (PWI-SC seven items)
- Over all Life Satisfaction (OLS) and

Life satisfaction scales compared



- BMSLSS is based on the questions
How satisfied are with:
 - Your family life?
 - Your friends?
 - Your school experience?
 - Your own body?
 - The area you live in general

Life satisfaction scales compared



- PWISC7
 - How satisfied are you with:
 - All the things you have?
 - Your health?
 - The things you want to be good at?
 - Your relationship with people in general?
 - How safe you feel?
 - Doing things away from your home?
 - What may happen to you later in life?
- OLS
 - How satisfied are you with your life as a whole?

Results: BMSLSS



Country	Mean (%)	Gini	Inequality Rank using Gini (High to low)	SD	Inequality Rank using SD (High to low)	CV	Inequality Rank using CV (High to low)
Algeria	88.212	0.076805	9	13.360	10	15.15%	9
Colombia	91.050	0.062319	14	12.003	13	13.18%	13
England	84.894	0.094515	3	15.260	2	17.98%	2
Estonia	85.614	0.087499	6	14.282	6	16.68%	6
Ethiopia	83.517	0.097588	2	14.892	4	17.83%	3
Germany	84.075	0.086470	7	13.803	8	16.42%	7
Israel	89.544	0.071673	11	13.181	11	14.72%	11
Nepal	86.454	0.086135	8	13.915	7	16.10%	8
Norway	90.009	0.063990	13	11.442	14	12.71%	14
Poland	86.532	0.088717	5	14.697	5	16.98%	5
Romania	92.661	0.048652	15	9.358	15	10.10%	15
S. Africa	84.883	0.093385	4	15.070	3	17.75%	4
S. Korea	82.023	0.103862	1	15.560	1	18.97%	1
Spain	87.738	0.073272	10	12.863	12	14.66%	12
Turkey	90.944	0.068944	12	13.428	9	14.76%	10

Results: PWISC7



Country	Mean (%)	Gini	Inequality Rank using Gini (High to low)	SD	Inequality Rank using SD (High to low)	CV	Inequality Rank using CV (High to low)
Algeria	87.054	0.076055	6	12.952	8	14.88%	7
Colombia	92.549	0.052415	14	10.598	13	11.45%	13
England	86.599	0.089001	5	15.347	2	17.72%	4
Estonia	87.415	0.074473	7	12.992	7	14.86%	8
Ethiopia	80.912	0.099163	2	14.370	4	17.76%	3
Germany	88.302	0.066166	9	11.657	11	13.20%	10
Israel	90.456	0.065449	10	12.496	9	13.81%	9
Nepal	80.573	0.097347	3	14.188	5	17.61%	5
Norway	90.747	0.055339	13	10.039	14	11.06%	14
Poland	89.874	0.070673	8	13.575	6	15.11%	6
Romania	93.812	0.041326	15	8.384	15	8.94%	15
S. Africa	82.851	0.097252	4	15.131	3	18.26%	2
S. Korea	82.129	0.106575	1	15.917	1	19.38%	1
Spain	89.407	0.062411	11	11.654	12	13.03%	11
Turkey	92.686	0.056736	12	12.035	10	12.98%	12

Results: OLS



Country	Mean (%)	Gini	Inequality Rank using Gini (High to low)	SD	Inequality Rank using SD (High to low)	CV	Inequality Rank using CV (High to low)
Algeria	91.27	0.077822	11	18.49	9	20.26%	10
Colombia	94.23	0.052748	14	14.59	14	15.48%	14
England	86.58	0.111450	4	21.13	4	24.40%	4
Estonia	89.67	0.086577	8	18.18	10	20.28%	9
Ethiopia	86.27	0.110511	5	20.24	5	23.46%	5
Germany	88.18	0.095354	7	18.64	8	21.14%	7
Israel	92.02	0.072943	12	18.18	11	19.75%	11
Nepal	86.50	0.115939	3	22.16	3	25.62%	3
Norway	90.03	0.083780	9	17.49	12	19.43%	12
Poland	88.11	0.100137	6	20.01	6	22.71%	6
Romania	95.13	0.043590	15	12.99	15	13.66%	15
S. Africa	85.65	0.129880	2	25.38	1	29.64%	1
S.Korea	80.98	0.142758	1	22.22	2	27.43%	2
Spain	90.18	0.079512	10	16.46	13	18.25%	13
Turkey	92.69	0.069046	13	18.97	7	20.47%	8

General comparisons and conclusion



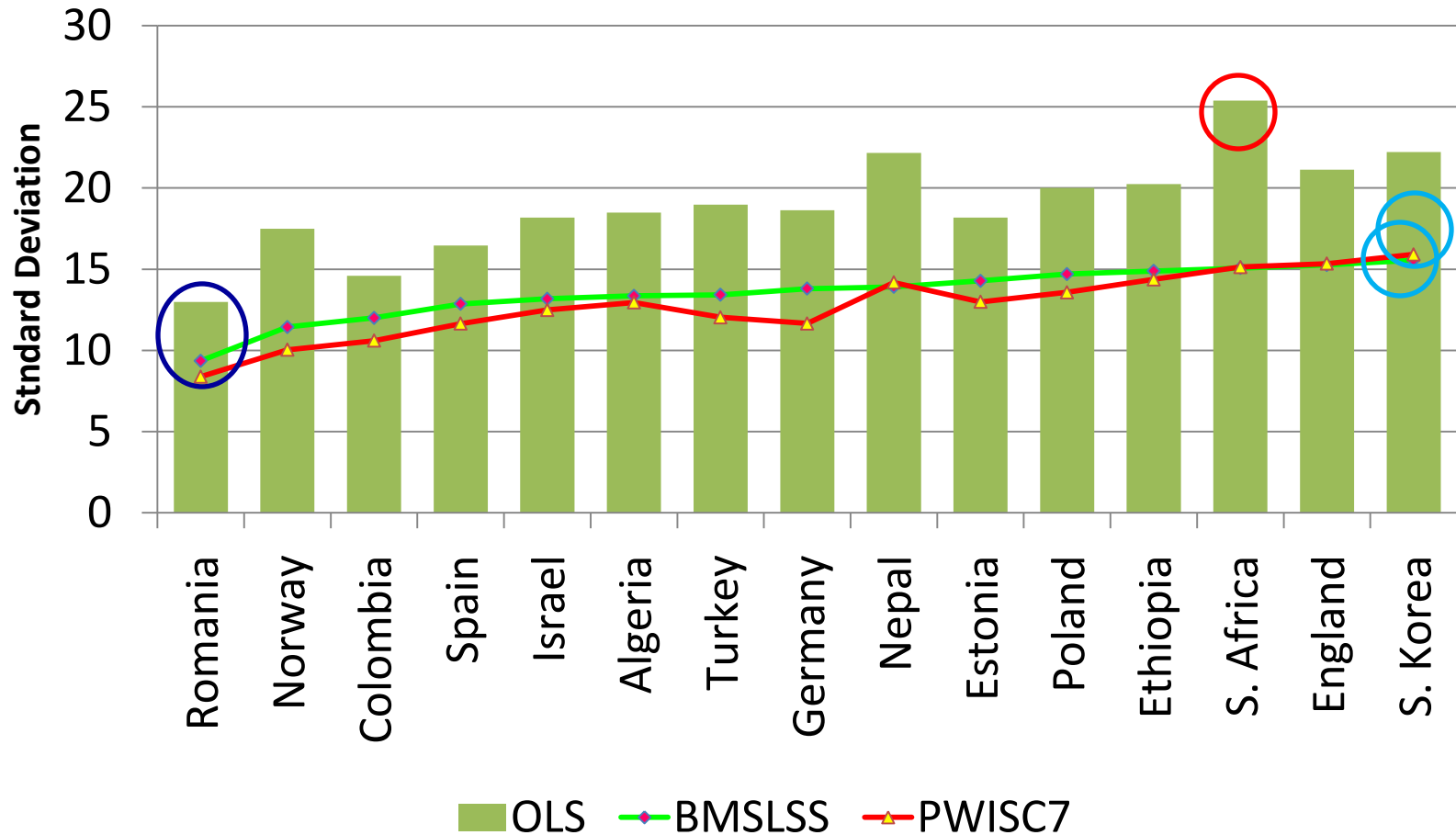
- Though, similar results were observed for almost all the three inequality measures in terms of the highest and lowest scores, variations were observed in scores among the between countries
- So it seems difficult to decide which inequality measurement is correctly showing the level of in equality in life satisfaction among children
- In 2005, **Wim Kalmijn and Ruut Veenhoven**(Erasmus University Rotterdam) reviewed descriptive statistics that can be used to quantify inequality of happiness using 8 criteria (Published in Journal of Happiness Study, 2005)
- **Standard deviation** proved to be satisfactory among the three

General comparisons and conclusion



- Based on **Standard deviation**
 - Romania scored the lowest Standard Deviation (lowest inequality) on **BMSLSS**, **PWISC**, and **OLS**
 - South Korea scored the highest (highest inequality) on two of measurement scales (**BSLSS** and **PWISC**) while South Africa scored the highest for **OLS**

General comparisons and conclusion





Thank you