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How well School Age Children Report Family SES: Systematic Review

Annotation: The conclusions that researchers make from the studies are strongly contingent on the quality of information they gather. It is especially relevant when school age children are the single source of information. They might lack of knowledge of some factual questions, e.g. parents' level of education or occupation or other characteristics of family socioeconomic status (SES). In this paper I present the systematic review of the studies devoted to the assessment of the quality of school age children responses on family SES proxies. The quality of responses refers to the ability of children correctly indicate the education level and occupation of their parents as well as the number of missing answers on a particular SES measure. 16 papers were included in our sample for the review. We conclude that school age children reports are of moderate quality. Average percentage of agreement is 70% for occupation and 60% for educational questions. Consistency coefficients are about 0.7 for occupation and 0.5 for education. We also make some conclusions about non-response and the respondents' characteristics that might be related to the response quality.

Keywords: SES measures, children responses, responses accuracy

Introduction

The years of 1960-70s are characterized by the beginning of the regular research about the role of educational institution and school in particular in inequality, mobility, professional attainment and other aspects of social life. For example, one of the biggest study when school age children were questioned was conducted by Coleman (1966) The "First International Mathematics Study" (FIMS) was administered approximately at the same time. It included subject test and contextual questionnaire for thirteen years old students in 12 countries. Educational inequality was the main focus of the study (Husen, 1967).

Nowadays, studies, where school age children are the single respondents, have become the usual practice. Questionnaires, which are oriented solely on children and not parents, are used widely. At the same time researchers need to gather both children's opinion or attitudes to the studied phenomenon as well as the factual information, including data about parents, their education, occupation or other indicators of family socioeconomic status (SES). However, additional questioning of parents may be expensive and difficult to master. It is also difficult to access administrative records. Nonetheless gathering information only from children without comparing it with other information implies that students' responses are not prone to errors or at least their

measurement error is equal to the adults'. Their responses are treated as correct ones. Is that true however? Are school age children competent enough to answer questions about parents' education, occupation, articles in home and other family SES related questions?

Leeuw (2001) recommends not to include questions on factual information regarding family, school, health, etc. in questionnaires for children under 18. Meta-analyses also showed that strength of association between SES and educational outcomes depends on approaches to SES operationalization (Sirin, 2005; K. R. White, 1982; S. B. White, Reynolds, Thomas, & Gitzlaff, 1993). However, in case of surveying school age children it is not only a matter of question which is important for researchers to ask, but also the potential possibility of asking such a question from children. The SES proxies are often being chosen based on the limits of information that children can provide. Hardly someone would ask students about their family income irrespective of how valuable that information is for the research.

Nonetheless, there is a lack of research devoting to measurement quality and reliability of the SES related items when the respondents are school age children. Last review was made in (Looker, 1989). Recently, partly due to the increase of the large scale educational studies, the number of investigations of the children's response quality have been carried out. Even though they are sporadic and provide controversial conclusions, we believe that these results need to be summarized and assessed in general.

The purpose of this study is to analyze the quality of measuring SES of families through parental occupation and education within surveys of school age children based on the published papers devoted to investigation of the quality of children responses on family SES variables. By response quality we understand both the accuracy and response rate. We can formulate three interrelated research questions:

1. What is the level of accuracy of school-age children's reports on parental education and occupation?
2. To what extent different SES measures are prone to be missed?
3. Are there any respondents' characteristics related to the response quality?

We employed a systematic review of the methodological studies that related to the three abovementioned questions. As a result we generalized the measuring quality of the two main proxy variables for family SES – parental education and occupation.

Further, we briefly discuss main theoretical approaches to SES operationalization. Then describe the principles of papers selection and final list of papers included in our study. The results and discussion will follow afterwards.

SES measurement. Brief description

There were two widespread approaches to measure family's SES at the beginning of the mass research in sociology of education: Blau-Duncan's model (Blau & Duncan, 1967) and the "Wisconsin model" (Sewell, Haller, & Ohlendorf, 1970). Both approaches were elaborated as predictors of person's occupational position within the "origins and destinations" studies. According to Blau and Duncan, father's education and occupational status (Socioeconomic Index (SEI)) served as a predictor of son's educational and professional trajectories. Both variables were used as separate indicators (Buchmann, 2002, pp. 153–155). "Wisconsin model" argued that socio-psychological factors are also needed to be taken into account, because they can mediate the relationship between SES and status attainment (Sewell, Haller, & Portes, 1969, p. 83). SES variables in their approaches included education of parents, father's occupation, subjective perception of the economic status of the family, and subjective perception of parental expectations on respondent's educational trajectory. All indicators were combined in one index (Sewell et al., 1969, p. 87).

During the next phase of the social research, the new concepts have been added to SES measurement: – cultural capital, family structure, family relations and other. They turned out to be even more relevant for educational outcomes and therefore valid as SES proxies (Bourdieu, 2010; J. S. Coleman, 1988). The increase of interviewing children, not adults, has brought about further changes in the approaches to the SES operationalization. Such indirect measures of SES as articles at home, number of books at home, variety of characteristics of parents-child relationship and other have been widely used since then (Buchmann, 2002; Entwisle & Astone, 1994; Recommendations to the National Center for Education Statistics, 2012; Sirin, 2005).

Questionnaires of international large scale assessments in education such as PISA (Programme in International Students Assessment) or TIMSS (Trends in Mathematics and Science Study)¹ include a variety of SES related variables (Mullis, Martin, Ruddock, O'Sullivan, & Preuschoff, 2009, pp. 113–115; OECD, 2013, pp. 181–182).

¹ timss.bs.edu; oecd.org/pisa

Methodology

As we mentioned above we selected systematic review as a method for investigating the issue of school age children response quality (Petticrew & Roberts, 2006, pp. 10, 21). This approach assumes that the selection of papers included in the review is done according to the predetermined rules for guaranteeing non-bias selection.

The papers selection criteria were as following:

1. The study is about the quality of the school age children responses on the family SES questions;
2. The study should have methodological focus, i.e. it should be solely devoted to the quality of the response. Papers, where the research goal included studying certain educational processes, and where the quality of the children's answers was mentioned as a minor issue, were not included in the list.
3. We also excluded studies with too specific samples.
4. We mostly focused on papers published from 1990, as similar review has been done by Looker in 1989 (Looker, 1989).
5. Papers are published in English language.

We used the following approaches to look for relevant papers:

1. Snowball method – checking the references in the papers more or less relevant to the topic.
2. Search in the citation databases (SCOPUS, WoS) and periodical databases (JSTOR, EBSCO, Science Direct and others) for the papers that cite the articles identified through the snowball search. Actually I tried to spot all the papers that meet the criteria.

16 papers were included in the final list (see table 1 for specific characteristics). Selected articles mostly related to education and child development research. Though this was not a selection criterion, it turned out that researchers in these two fields mostly publish these kinds of studies. 15 out of 16 papers allowed answering first research question about reports' accuracy. 11 papers cover the non-response issue (research question 2). 8 papers contain the relationship between students' characteristics and response quality (research question 3). As of SES proxies' coverage 14 papers contain information on parental education including 14 on parental occupation including occupational status, but not a profession. 3 papers investigated the quality of questions about family structure. Income, home possessions, free or reduced lunches and other measures of financial support were in focus only once or twice. Thus our study allows deep examining only for questions regarding two parental characteristics – education and occupation (including occupational status).

Table 1. The list of papers about the quality of school-age children responses on family's SES questions.

	Paper	SES indicators	Studied issue	Respondents (parents, children (age)), way of data collecting	Sample, country(s), year of data collecting
1.	(Adams & Wu, 2002)	Education Occupation	Accuracy	PISA trial. 15 years old (yo) students. Parents. Questionnaire.	GB (n=309), France (n=711), Czech Republic (n – no information), Canada (n – no information). 2000
2.	(Brese & Mirazchiyski, 2010)	Education Occupation Home possessions	Non-response	PIRLS, TIMSS – 4 th grade students (9-10 yo); TIMSS – 8 th grade students (13-14 yo); PISA - 15 yo students. Questionnaire.	All countries participating in PIRLS 2006, TIMSS 2007, and PISA 2006.
3.	(Engzell & Jonsson, 2015)	Education Occupation	Accuracy Non-response Respondent's characteristics	14-15 yo students. Parents. Questionnaire.	N = 18716. England, Germany, Holland, Sweden. 2010-2011.
4.	(Ensminger et al., 2000)	Education Occupational status Family structure Financial support Free lunches at school	Accuracy Non-response Respondent's characteristics	14-15 yo students. Mothers. Questionnaire.	Students (n=5472). Mothers (n=390). USA. 1991, 1992
5.	(Jerrim & Micklewright, 2014)	Father's education Father's occupation	Accuracy Non-response Respondent's characteristics	PIRLS – 4 th grade students (9-10 yo). PISA – 15 yo students. Questionnaire.	More than 10 countries from every wave were selected. Samples are from 3775 to 21773 respondents per country. 2001, 2006, 2009
6.	(John, 1970)	Education	Accuracy Non-response	6 th grade students (11-12 yo). Questionnaire. Mothers. Interview.	Students (n=900). Mothers (n=241, random sample). USA. 1967
7.	(Kaufman & Rasinski, 1991)	Education Occupation Family structure	Accuracy Non-response	8 th grade students (13-14 yo). Parents. Questionnaire.	Students (n= 25000). Parents (n= 24000). USA. 1988
8.	(Kayser & Summers, 1973)	Education Father's occupation Father's income	Accuracy	9 th -12 th grades students (14-18 yo, panel data). Questionnaire. Mothers and fathers. Interview.	Students (n=212). Mothers (n=130). Fathers (n=73). USA. 1967, 1968, and 1969
9.	(Kerckhoff, Mason, & Poss, 1973)	Education Father's occupation	Accuracy Non-response Respondent's characteristics	6 th to 9 th grades students (boys only), 11-14 yo. Questionnaire. Parents. Interview.	Students 6 th gr. n=507, 9 th gr. n=576, 12 th gr. n=1067. Parents (n=150-202).
10.	(Kreuter, Eckman, Maaz, & Watermann, 2010)	Education	Accuracy Non-response	15 yo students. Parents. Questionnaire.	N = 28635. Germany. 2000
11.	(Lien, Friestad, & Klepp, 2001)	Education Occupation	Accuracy Non-response Respondent's characteristics	13, 15 and 19 yo students (panel data. Mothers and fathers. Questionnaire.	Students (n=924). Mothers (n=735). Fathers (n=648). Norway. 1990, 1992, 1996
12.	(Pueyo, Serra-Sutton, Alonso, Starfield, & Rajmil, 2007)	Education Occupation Occupational status	Accuracy Non-response Respondent's characteristics	From 12 to 18 yo students. Questionnaire. Parents. Interview.	Students (n = 1774). Parents (n=91). Spain. 1999-2000

		Financial support Free lunches at school			
13. (Schulz, 2006)	Education Occupation		Accuracy	PISA trial – 15 yo students. Parents. Questionnaire.	15 countries participating in PISA trial. No specific information about countries. 2005
14. (Vereecken & Vandegehuchte, 2003)	Occupation Occupational status		Accuracy Non-response	11-12 yo students. Parents. Questionnaire.	Students (n=216). Parents (n=200). Belgium. No information on the year data we collected
15. (West, Sweeting, & Speed, 2001)	Occupation Occupational status Family structure		Accuracy Non-response Respondent's characteristics	11 yo students. Parents. Interview.	Students (n=2586). Parents (n=2237). Scotland. 1994
16. (Youngblood, 1977)	Education		Accuracy	High school students (14-16 yo). Parents. Questionnaire.	n=129. Philippines. 1976

Notes: "Occupation" and "Education" mean both parents' occupation and education

Results

We present our findings by the three research questions formulated above. We start every paragraph with a short description on methodology that mainly used in analyzed papers.

1. Accuracy of children's reports on parental education and occupation.

As SES questions are about parents' or family's facts, parental responses are treated as right answers and children's ones are compared to them. To estimate consistency researchers usually calculate such measures as consistency coefficient (Cohen's Kappa)², percentage of agreement, as well as correlation or binary regression.

Table 2. Average and median scores of children response quality measures.

	Father's Occupation	Mother's Occupation	Father's education	Mother's education
Correlation				
Average and Median	0.7	0.7	0.6	0.6
Kappa				
Average and Median	0.7	0.7	0.5	0.5
Percent of agreement (%)				
Average	70	69	64	65
Median	70	74	64	69
Missing cases				
Average	7	12	8	7
Median	5	9	3	5

² Consistency coefficient Cohen's Kappa varies from -1 to 1, equals 1 when agreement is 100%. It is close to percentage of agreement but takes into account random coincidences.

Correlation between children's and parents' responses on parental education varies from moderate (0.5) to quite strong (0.8). The average and the median of correlation coefficients are 0.6 for both parents (table 2 and tables 1-4 in appendix). Correlation on question about parents' occupation varies approximately in the same range (0.5-0.9), however the average and median are slightly higher – 0.7. Thus at least at half of the summarized studies³ children provided responses of a good quality. However, correlation coefficient can be high even if children are not so accurate, but answer is in a codirectional manner with their parents. Therefore, percent of agreement and Kappa would give more precise quality estimation. Average (and median) percent of agreement is about 65% and average (median) Kappa coefficient is 0.5 for parental education and 70% and 0.7 for occupation. Few studies showed some discrepancy in response accuracy regarding mother's or father's characteristics; however they are rather small and contradictory not allowing making unambiguous inference. Similar values of average correlation and consistency coefficients and percent of agreement also confirm that there is no big difference.

As can be seen on the given average, values of quality measures are slightly higher for the question about occupation than about education. However, it is worth noting that the question on occupation is usually open question, where students are offered to describe what parents do at work and name profession in their own words. After that these answers are coded in a particular index of occupations, for example, ISCO, ISEI, EGP, etc. While the question on parental education is a closed question with a list of possible levels of education or educational institutions that parents could graduate from. For example, school, college, university, often even divided by layers within the particular level of education such as bachelor, master or some levels of non-tertiary education. Consequently school-age children need to recognize and choose the name of educational level, which they themselves have not yet met in their educational trajectories. Moreover, parents' occupation is more noticeable for children in everyday life because it is about the present time rather than parents' education, as it is about the time of the past. Perhaps all these make the question about education more difficult and may lead to a lower quality of answers.

Adjusting the form of asking a question to children's competence would improve the quality of their responses. A number of studies indicate that in most cases children make mistakes lightly. Mismatches are one category up or down (more often up) (John, 1970; Kerckhoff et al., 1973; Kreuter et al., 2010). Regarding occupation or occupational status two studies showed that accuracy higher for items with less response options (Schulz, 2006; Vereecken &

³ The number of studies can be greater than number of papers, because there were papers with several different samples under investigation. E.g. different countries or children of different age.

Vandeghechuchte, 2003). Probably merging the response options to broader ones, for example, consideration of higher education as a whole, without division into bachelor, master or PhD can improve the consistency of the responses.

In spite of these difficulties we can conclude that there is a moderate difference between parents' and their school age children's responses about the parental occupation and education, but there is a stable association and consistency. Yet children's responses are not of perfect accuracy, e.g. percent of agreement rarely exceeds 80%; they can serve as appropriate measures of family SES for most studies and research situations especially bearing in mind those difficulties associated with parental surveys or access to administrative records as well as remembering that parents' responses may also contain measurement errors.

It can be assumed that acceptability of different levels of response quality depends on the way data are going to be used. Evidently, descriptive statistics such as one- or two-way frequency tables would be substantially biased if they are based on school-age children's responses. For assessing the precise share of parents with one or another level of education or occupation it is better to use parental or administrative data. Distributions based on children's reports contain at least 20% of misclassifications. On the other hand analysis of the more general tendencies could be more robust to such bias. Whether usage of children's and parents' answers as data sources leads to contradictory inferences can serve as a criterion of acceptable accuracy. Even if school-age children's responses are not perfect, but nonetheless they do not produce spurious conclusion, researchers can rely on them.

Six papers from our list compared the results for statistical analysis usually using the regression models based on children's and parents' data. Two studies demonstrated that children's and parents' reports on education provide different results; however, data on occupation are coherent and regression analysis show the same results (Engzell & Jonsson, 2015; Jerrim & Micklewright, 2014). In (Kreuter et al., 2010). Regression models based on parents' and their children reports on educational level showed significant difference in regression coefficients. The rest three studies found none or very little difference in results (Adams & Wu, 2002; Kerckhoff et al., 1973; Schulz, 2006). Thus, even though there is a discrepancy in parents' and children's responses on questions about the parental education or occupation, the results of in-depth statistical analysis do not show significant difference when using one or another data.

This may be due to above-mentioned co-direction, i.e. trends in children's responses are the same as in parents' ones and it does not affect the results. Another reason for this robustness is averaging effect when the majority of reports are correct. If children are divided into SES groups

based on their responses on education or occupation of their parents, then there will be the majority of the children answered correctly and a smaller part answered incorrectly. But the majority of the correct attributions will pull the trend in the right direction providing non-confusing results. There can be other explanations for this robustness: particular samples, the size of effect and so on. But the fact that few studies showed differences in results allows making the conclusion that reported level of school-age children's reports accuracy are of acceptable quality. The results, such as regression analysis may be over- or underestimated in terms of the definite values of regression coefficients; however, it is unlikely that it will lead to the opposite results.

2. Non-response

Eleven articles from our list allow aggregating the results about non-response rate of different SES measures. It is worth to mention that the number of missing cases in children's responses is rarely compared to the number of missing cases in parents' responses. Therefore, the results should be assessed from the relative point of view: which SES proxy, parental education or occupation, is more or less inclined to be missed.

Findings on non-response vary from paper to paper more considerably than results on consistency. For mother's occupation the minimum number of missing cases is 0.6% and maximum is 46%; average percentage is 12%, median is 9% (table 2 and tables 1-4 in appendix). The number of missing cases in the question on father's occupation lies in a range from 1% to 34% with an average 7% and median 5%.

In regard to educational variables the situation is a little bit better according to the analyzed studies. On average children miss 7% (median 5%) in mother's education and 8% (median 3%) father's education questions. Range is 0.7-15% and 0.2-39% for mother and father, respectively. Medians here are even less than for occupation. Yet a "Do not know" option usually is available in parents' education question and substantial share of student tick it decreasing a number of missing cases.

In the study conducted by John (John, 1970) children left 11% and 5% of questions for father's and mother's education without answer, and 34% and 27% chose "Do not know" respectively. In TIMSS 2011 the average number of missing cases is 3% (range 0.2-15%) and the average share of "Do not know" is 22% (range 4-53%) among all countries participated. According to longitudinal data for Russia⁴ when students in 8th grade was asked about mother's education with

⁴ "Trajectories in Education and Career" Trec.hse.ru

“Do not know” answer, and one year later, in 9th grade same question without it, the non-response rate was 1.5% for both years; however, 12% chose “Do not know” when they were allowed to do so. From the one hand, when question is formulated without that response option children still tick any category distorting the data. On the other hand, the presence of such an option has its drawbacks – it is an easy answer. Perhaps child could correctly identify the level of education and occupation of parents, but he or she will mark this option as the simplest one. However, we believe that in case of surveying school age children it is worth to include “Do not know”, as it allow making data clearer. At the same time researcher who administered the survey could motivate students not to skip questions and choose the option "Do not know", unless they really do not have a clue about what must be answered.

The general conclusion on the non-response research question is close to the one about consistency. Low median values suggest that in most cases children of school age rarely missed answers on questions about the level of education or occupation of their parents.

3. Respondents' characteristics related to the response quality

We analyzed the results on the response quality of school-age children for respondents of different age or grade, gender, socio-economic status and family structure. Eight articles included in our sample contain such comparisons.

The most important factor related to the quality of children's reports both to consistency and tendency to non-response is age of surveyed children. All the studies that have tested that relationship showed that with age increasing the number of missing cases decreases and consistency in the responses of children and parents on questions about education and occupation goes up (Ensminger et al., 2000; Kayser & Summers, 1973; Kerckhoff et al., 1973; Kreuter et al., 2010; Pueyo et al., 2007). Lien et al., 2001) documented no difference in response quality of 13 and 15 years old children. However, as in our sample, only few studies draw their conclusions on the young children, thus we are not able to estimate the difference in specific quality measures. The values in table 2 almost would not change if we take into account children above 14 years old only. Median and average Kappa for mother's education become 0.6 as opposed to 0.5 and median Kappa for father's occupation grows from 0.7 to 0.8. Other figures stay without changes. Nonetheless, given the variation in the response quality measures, such as Kappa, percentage of agreement and correlation coefficient and the number of missing cases, we can conclude that middle school students are not sufficiently competent to answer questions about parental occupation or education. Their answers need to be verified from other sources. While high school students show higher quality of responses and the quality is more stable: the percentage of

disagreement between their and parents' responses and the number of missing cases are less at this age.

Among other studied respondents' characteristics related to the quality of responses on academic achievement, family structure, gender, and SES according to parents' answers. They show that those who answer the questions on parents' occupation and education correctly have higher academic performance (Jerrim & Micklewright, 2014; Kreuter et al., 2010; Pueyo et al., 2007). Living with both parents increases consistency and reduces the chance of missing answers. The largest number of non-response include cases where children live with one parent and know less about the absent one (Ensminger et al., 2000; Pueyo et al., 2007; West et al., 2001). (Kreuter et al., 2010) study shows a positive correlation between the consistency and good family atmosphere, and the regular communication with parents in particular. The higher parents are educated (according to their answers) there is the higher consistency between parents' and children's responses (Engzell & Jonsson, 2015; John, 1970; Schulz, 2006). Children from private schools more accurately report occupation and level of education of their parents (Youngblood, 1977). Some studies demonstrated that boys slightly more often leave questions without answers (Ensminger et al., 2000; John, 1970; Kreuter et al., 2010; Pueyo et al., 2007; Youngblood, 1977).

Thus, the identified "groups at risk" or categories of respondents, which can give more bias in the responses than others include children from families with lower SES, children who answer about a parent not living with them, boys, and children with lower academic achievements. It should be noted that the differences between all these groups are significantly lower than between age groups, but characterize the respondents from these groups of all ages. However, if in case with age a recommendation not to interview children of primary and middle school age can be given, such a suggestion for all these categories of respondents is clearly impossible. One of the possible forms of eliminating this problem can be a partial control of their responses and implementation of correction if necessary.

Conclusion and discussion

We have summarized the results of 16 methodological studies of school-age children response quality on the questions about the SES proxies, such as parental occupation and education.

As for the consistency of children's and parents' responses the analysis showed that the strength of association between their reports is sufficiently strong (correlation is about 0.6-0.7, percent of agreement is up to 70% on average). Hence, children of high school age provide acceptable quality information on family SES. According to analyzed papers the quality of answers about parental occupation is slightly higher than about education. First, parental occupation is in the

sight of children to a greater degree than education. They begin to think about level of education when they reflect on their own educational trajectories, but this starts closer to the high school. Second, children may learn parental education only from conversations with parents, but this kind of behavior inherent only for families with the close relationship between parents and children. Third, on the better children's awareness of the parents' occupation may be due to the form of asking questions, i.e. often open in the case of occupation and always close in the case of education. The degree of response options' generalization is also higher in questions of occupation than education. It is easier for children to "get" in the broad categories.

The average number of missing cases for questions about occupation and education of parents are about the same: for question about the mother's occupation the average is 12% (median, 9%), about father's - 7% (median, 5%). Questions on mother's education children miss 7% in average (median 5%), on father's one - 8% (median 3%). Median in all cases is rather low; therefore, at least at half studies non-response rate is not critically big. In case of question on occupation an important role plays a nature of information collected, namely, whether the researcher asks about particular profession, or the form of employment or occupational status or even just the fact that parents are employed. School-age children miss the question about whether the parents have are employed or the form of their employment significantly fewer than the detailed question on profession.

Respondent's age turned out to be the crucial characteristic related to the quality of the reports. While growing up children start to answer in a more consistent with their parents manner and leave less questions without answer. The quality of responses becomes acceptable at about age of 15 years old or higher.

Such characteristics as respondents' academic achievement, SES and family structure are also associated with the response accuracy. Children from families with higher SES (the responses of parents), who live with both parents and do better in school tend to give answers more consistently with parents' answers. Thus, we have documented the different quality of responses for various categories of respondents. The potential bias in children's responses is uneven and this leads to the necessity of a more detailed check of information obtained from the "risk groups" of respondents. Another approach might be to formulate questions in a simpler manner and conduct a pilot studies with a large focus on these groups.

Summarizing above mentioned reasons recommendations aimed at improving the response quality of school age children on questions about family SES include: 1) Broadening or merging categories when formulating questions at the data analysis step. 2) Partial verification of

information from other sources, such as parent survey or administrative data. The tendency to give inaccurate answers is uneven; some groups of children are more likely to make mistakes. In case of verification of the responses it is necessary to pay special attention to these groups. 3) Inquiry to children to clarify the education and occupation of the parents before the survey.

The study also showed that some of the most commonly used indicators of family SES, namely questions on occupation and education of parents are well studied from the standpoint of children's responses adequacy. While another part of the indirect measures of wealth, social and cultural capital used in surveys, in particular the availability of different home possessions, number of books at home, parent-child relationship, extra-class education participation, and others much less often become the focus of methodological studies. There are studies showing their content validity, justifying their association with the social or cultural capital and that they can be used as SES proxies. Despite this, almost no studies evaluated the consistency of the responses of parents and children and the tendency to not response on these questions. Thus, we do not have unambiguous information on how well school-age children can answer questions about these indicators.

The issues on questions formulation, forms of data collection, and other characteristics of the surveys are also outside the focus of methodological studies of children surveys. Perhaps an interview with the possibility to clarify an answer provides more consistent results than self-administered questionnaires. An approach when question on parents' education is formulated in a similar way as a question about occupation (in open form) or with a simple and broad response scales is also needed to be studied in more details.

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Table 1. Summary of school age children's responses quality on questions about *mother's occupation*

Paper	Correlation	Consistency (Kappa)	Percentage of agreement	Non-response rate
(Adams & Wu, 2002)	0,9; 0,8 ⁵		39-76%, 53-94%	
(Brese & Mirazchiyski, 2010)				23%
(Engzell & Jonsson, 2015)	0,5 – 0,8			
(Ensminger et al., 2000)		0,6-0,7	77-81%	7%
(Kaufman & Rasinski, 1991)	0,4		48%	11%
(Lien et al., 2001)		0,7	13 yo: 2 categories – 85%. 5 categories – 80%. 15 yo: 2 categories – 85%. 5 categories – 81%	13 yo – 12%. 15 yo – 11%
(Pueyo et al., 2007)		0,6	74%	Occupation – 46%. Occupational status – 2%.
(Schulz, 2006)	0,8		Aggregated ISCO categories - 72%, 2-digit ISCO 68%, 4-digit ISCO 58%	
(Vereecken & Vandegehuchte, 2003)		0,8	5 categories – 79%; 3 categories – 84%	7%
(West et al., 2001)		Occupational status – 0,7; employed/unemployed – 0,8; Occupation – 0,8		Occupational status – 0,6%
(Youngblood, 1977)	0,7			

⁵ Results from several samples presented in cited paper.

Table 2. Summary of school age children's responses quality on questions about *father's occupation*

Paper	Correlation	Consistency (Kappa)	Percentage of agreement	Non-response rate
(Adams & Wu, 2002)	0,9; 0,7		43-76%, 55-82%	
(Brese & Mirazchiyski, 2010)				11%
(Engzell & Jonsson, 2015)	0,5 – 0,8			
(Ensminger et al., 2000)		0,4-0,8	67-93%	6%-34%
(Jerrim & Micklewright, 2014)		0,6	71%	1-8%
(Kaufman & Rasinski, 1991)	0,5		52%	4%
(Kayser & Summers, 1973)	0,7-0,8		50-63%	
(Kerckhoff et al., 1973)	6 gr. – 0,8; 9 gr. – 0,9; 12 gr. – 0,9			6 gr. – 9%; 9 gr. – 4%; 12 gr. – 1%
(Lien et al., 2001)		13 yo – 0,8. 15 yo – 0,9	13 yo: 2 categories – 93%; 5 categories – 87%. 15 yo: 2 categories – 93%; 5 categories – 92%.	13 yo – 16%. 15 yo – 12%
(Pueyo et al., 2007)		0,8	88%	Occupation – 24%. employed/unemployed – 4%
(Schulz, 2006)	0,8		Aggregated ISCO categories – 70%, 2-digit ISCO – 64%, 4-digit ISCO – 63%	
(Vereecken & Vandegehuchte, 2003)		6 categories – 0,6; 3 categories – 0,7	6 categories – 67%; 3 categories – 78%	7%
(West et al., 2001)		Occupational status – 0,6; employed/unemployed – 0,8; occupation – 0,7		Occupational status – 1,8%; occupation – 2.8%.
(Youngblood, 1977)	0,7			

Table 3. Summary of school age children's responses quality on questions about *mother's education*

Paper	Correlation	Consistency (Kappa)	Percentage of agreement	Non-response rate
(Brese & Mirazchiyski, 2010)				2%
(Engzell & Jonsson, 2015)	0,4-0,6			
(Ensminger et al., 2000)		0,5-0,7	70-82%	15%
(John, 1970)	0,6		Accurate - 33%. Underestimated - 6%. Overestimated - 30%.	«Do not know» - 27%, missing - 5%
(Kaufman & Rasinski, 1991)	0,8		63%	13%
(Kayser & Summers, 1973)	0,7		67%	
(Kerckhoff et al., 1973)	6 gr. – 0,7; 9 gr. – 0,9; 12 gr. – 0,8		Accurate 6 gr. – 52%; 9 gr. - 79%; 12 gr. - 82%. Underestimated 6 gr. - 13%; 9 gr. - 11%; 12 gr. - 7%. Overestimated – 6 gr. - 35%. 9 gr. - 9%; 12 gr. - 10%.	6 gr. – 0,8%; 9 gr. – 1,2%; 12 gr. – 0,7%
(Kreuter et al., 2010)		0,4-0,7	51-74%	
(Lien et al., 2001)		0,3	51%	13%
(Pueyo et al., 2007)		0,5	74%	8%
(Schulz, 2006)	0,6		66%	
(Youngblood, 1977)	0,8			

Table 3. Summary of school age children's responses quality on questions about *father's education*

Paper	Correlation	Consistency (Kappa)	Percentage of agreement	Non-response rate
(Brese & Mirazchiyski, 2010)				3%
(Engzell & Jonsson, 2015)	0,4-0,6			
(Ensminger et al., 2000)		0,3-0,8	58-88%	17%-39%
(Jerrim & Micklewright, 2014)		0,5	63%	2-7%
(John, 1970)	0,4		Accurate - 21%, Underestimated - 10%, Overestimated - 37%	«Do not know» 34%, missing - 11%
(Kaufman & Rasinski, 1991)	0,8		61%	17%
(Kayser & Summers, 1973)	0,7-0,8		61-64%	
(Kerckhoff et al., 1973)	6 gr. - 0,7; 9 gr. - 0,8; 12 gr. - 0,9		Accurate 6 gr. - 47%; 9 gr. - 55%; 12 gr. - 73%. Underestimated 6 gr. - 12%; 9 gr. - 24%; 12 gr. - 12%. Overestimated - 6 gr. - 40%. 9 gr. - 21%; 12 gr. - 15%.	6 gr. - 0,3%; 9 gr. - 0,2%, 12 gr. - 0,2%
(Kreuter et al., 2010)		0,5-0,6	56-70%	
(Lien et al., 2001)		0,4	57%	14%
(Pueyo et al., 2007)		0,4	67%	8%
(Schulz, 2006)	0,6		63%	
(Youngblood, 1977)	0,8			