

NEPS SURVEY PAPERS

Frank Goßmann

# MEASURING CULTURAL CAPITAL IN THE NEPS

NEPS Survey Paper No. 48  
Bamberg, December 2018

**Survey Papers of the German National Educational Panel Study (NEPS)**

at the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg

The NEPS Survey Paper Series provides articles with a focus on methodological aspects and data handling issues related to the German National Educational Panel Study (NEPS).

The NEPS Survey Papers are edited by a review board consisting of the scientific management of LIfBi and NEPS.

They are of particular relevance for the analysis of NEPS data as they describe data editing and data collection procedures as well as instruments or tests used in the NEPS survey. Papers that appear in this series fall into the category of 'grey literature' and may also appear elsewhere.

**The NEPS Survey Papers are available at** <https://www.neps-data.de> (see section "Publications").

**Editor-in-Chief:** Corinna Kleinert, LIfBi/University of Bamberg/IAB Nuremberg

**Contact:** German National Educational Panel Study (NEPS) – Leibniz Institute for Educational Trajectories – Wilhelmsplatz 3 – 96047 Bamberg – Germany – [contact@lifbi.de](mailto:contact@lifbi.de)

# Measuring Cultural Capital in the NEPS

*Frank Goßmann, Leibniz Institute for Educational Trajectories (LIfBi)*

**E-mail address of lead author:**

frank.gossmann@lifbi.de

**Bibliographic data:**

Goßmann, F. (2018). *Measuring Cultural Capital in the NEPS* (NEPS Survey Paper No. 48). Bamberg, Germany: Leibniz Institute for Educational Trajectories, National Educational Panel Study. doi:10.5157/NEPS:SP48:1.0

# Measuring Cultural Capital in the NEPS

## Abstract

Cultural capital theory is an established approach to explain educational inequalities by social origin. Hence, measuring cultural capital in a survey on education like the NEPS is of paramount importance. This paper gives a detailed overview of the cultural capital measurements in the NEPS. It outlines the theoretical background and mechanisms leading to educational inequalities. According to these mechanisms, the cultural capital instruments in the NEPS aim to measure objectified and embodied cultural capital as well as reading culture as means of social distinction and learning. Cultural capital instruments in NEPS starting cohorts 3 and 6 are described. Reliability and validity of the measures were tested using the scientific use files of the NEPS starting cohort 3 and NEPS starting cohort 6. Taken together starting cohort 3 and 6 contain almost all of the numerous cultural capital measurements in the NEPS. Essentially, these results indicate that the majority of the cultural capital measurements are reliable and valid. This is especially true for measures developed for adult respondents whereas measuring cultural capital of students at the beginning of secondary education seems to be more challenging.

## Keywords

educational inequality, cultural capital, Bourdieu, cultural reproduction, cultural mobility

## 1. Introduction

Cultural capital theory is commonly used to explain the effect of social origin on educational success. More specifically, cultural capital is assumed to be one of the causal mechanisms that underlie this relation. Hence, measuring cultural capital in a survey on education like the NEPS is of paramount importance. Pierre Bourdieu and Jean-Claude Passeron (Bourdieu, 1977; Bourdieu & Passeron, 1971) introduced the notion of cultural capital in their studies on the social reproduction in France and inspired scholars to develop this theory further. As Bourdieu and Passeron did not give a clear definition, quite different concepts of cultural capital were proposed and applied in empirical studies (Lareau & Weininger, 2003). For example, Farkas (1990) and Lareau (Lareau, 2002; Lareau & Horvat, 1999) basically defined cultural capital as the capability to comply with formal or informal standards that are rewarded in the educational system. Sullivan (2001) emphasized that linguistic competence and cultural knowledge are substantial elements of the concept. However, the most commonly used concept of cultural capital refers to familiarity with highbrow culture that originates from the work of Paul DiMaggio published in 1982 (Lareau & Weininger, 2003). In this line of research two dimensions of cultural capital are differentiated: highbrow cultural activities signaling elite status group membership (DiMaggio, 1982) and activities that further learning especially reading activities (Crook, 1997). The latter concept is the theoretical basis of the cultural capital measures in the NEPS.

In this paper, I present the cultural capital measures in the NEPS. In the following section I outline the theoretical background. Thereafter, I offer a synopsis of the NEPS measures. Next, I present some empirical results regarding distributions, missing values, reliabilities, dimensionalities, and some basic bivariate analyses testing for criterion validity. In the last section, I briefly summarize the paper and discuss the most important results. Since there is a large number of cultural capital measurements in the NEPS this paper focusses on starting cohort 3 (SC3) and 6 (SC6) containing different stage-specific measurements. This is because taken together these starting cohorts contain almost all of the cultural capital measurements in the NEPS. Moreover, cultural capital measurements in all NEPS starting cohorts are as similar as possible. Hence, this survey paper also provides assistance for NEPS data users working with other starting cohorts.

## 2. Theoretical background

### Definitions

Bourdieu (Bourdieu, 1986, p. 243) distinguished three forms of cultural capital: “in the embodied state, i.e., in the form of long-lasting dispositions of the mind and body; in the objectified state, in the form of cultural goods (pictures, books, dictionaries, instruments, machines, etc.) [...]; and in the institutionalized state, a form of objectification [...]”. Furthermore, Bourdieu described embodied cultural capital as familiarity with culture (1977, p. 494). Close to the latter definition, DiMaggio referred to cultural capital as “interest in and experience with prestigious cultural resources” (1985, p. 1233).

Concerning the role cultural capital plays for the production of social inequality, there are two concurrent theoretical models. One assuming that the functioning of cultural capital preserves the social structure, and one claiming that cultural capital entails the potential for social mobility (DiMaggio, 1982, p. 190).

### **Cultural reproduction model**

Bourdieu and Passeron (1971) theorized that educational success presupposes the possession of embodied cultural capital, which is held by higher social classes. It is exclusively acquired by familial socialization, not within school, but serves as a basis for student assessment by teachers. This leads to cultural reproduction across generations and to social reproduction, as social class position is highly dependent on educational attainment. Whereas educational success is commonly ascribed to individual ability, Bourdieu rejected the idea of ability and stated that educational success is exclusively the result of the possession of cultural capital. Thus, the educational system legitimates social reproduction by maintaining the idea of meritocracy (Bourdieu, 1977, p. 497).

### **Cultural mobility model**

Referring to Bourdieu's theory of cultural capital (Bourdieu, 1977; Bourdieu & Passeron, 1971) and Weber's work on status group culture (1978) DiMaggio (1982) conceptualized a cultural theory allowing for social mobility. Status group culture comprises cultural traits, tastes, and styles that are characteristic for the respective status group serving as means of inclusion and exclusion. Ultimately, status groups aim to secure their access to social, economic, and cultural resources like higher educational diplomas. As in modern societies status group members do not necessarily know each other they demonstrate their membership by participation in status group culture, that is cultural participation is a sufficient condition for being perceived as a member of a certain status group. Therefore, high cultural participation is a form of capital that can be used by individuals of any social background to receive good grades and diplomas. Thus, cultural capital is a potential means of upward social mobility.

### **Causal mechanisms**

Commonly, researchers differentiate two dimensions of cultural capital that represent different causal mechanisms affecting educational outcomes. On the one hand, participation in highbrow culture signals a high social status, and teachers favor students that exhibit these signals. On the other hand, activities that further skills relevant for educational success like reading are considered (Crook, 1997). Empirical studies that examined the status distinction showed significant effects on educational success (DiMaggio, 1982; Rössel & Beckert-Zieglschmid, 2002). Studies that simultaneously investigated the effect of activities furthering skills indicated that it is primarily these activities affecting educational success. Especially reading and watching sophisticated television programs promoted educational success (de Graaf, Nan Dirk, de Graaf, Paul M., & Kraaykamp, 2000; Sullivan, 2001). Sullivan (2001) showed that these correlations were mediated by linguistic competence and cultural knowledge.

## **3. Measurements in the NEPS**

Generally, in NEPS theoretical constructs are measured in various stages of life. Thus, we aim to obtain comparable measures of cultural capital over the life course. On the other hand, we have to address the stage-specific situation of the respective target persons. Therefore, measures of the same theoretical constructs for different stages of life might deviate from each other. Moreover, Bourdieu states that cultural capital is intergenerationally transmitted. Hence, we collect data on the cultural capital of target persons and their parents in starting cohorts 1 to 4.

In accordance with Bourdieu's abovementioned definition (Bourdieu, 1986, p. 243), three forms of cultural capital are measured in NEPS: (1) institutionalized cultural capital, (2) objectified cultural capital, and (3) embodied cultural capital. Furthermore, data on (4) reading culture is collected. These measurements are described in the following (see also Stocké, Blossfeld, Hoenig, & Sixt, 2011, pp. 114–115). The schedule for measurements of cultural capital in all NEPS starting cohorts can be found in Table 1. Measures of the target persons' cultural capital are indicated by a "T", measures of the parents' cultural capital by a "P". Surveying both, target persons' and parents' cultural capital, allows for an investigation of intergenerational transmission of cultural capital. Generally, it is supposed that the individual endowment with cultural capital varies only slightly over time (cp. Stocké, Blossfeld, Hoenig, & Sixt, 2011, p. 115).

*Table 1: Schedule for Measurements of Cultural Capital in all NEPS Starting Cohorts*

Starting cohort	Forms of cultural capital	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
					W1	W2	W3	W4	W5	W6	W7
1	Institutionalized cultural capital				T P	T P	T P	T P	T P	T P	T P
	Objectified cultural capital						P				
	Embodied cultural capital						P		T		
	Reading culture						P				
				W1	W2	W3 G1	W4 G2	W5 G3	W6 G4	W7 G5	W8 G6
2	Institutionalized cultural capital			T P	T P	T P	T P	T P	T P	T P	
	Objectified cultural capital			P		P			P		
	Embodied cultural capital			P		P			P		
	Reading culture			P		P			T P		

Note. T: Measurement of target persons' cultural capital. P: Measurement of parents' cultural capital. W: Wave. G: Grade attended.

Starting cohort	Forms of cultural capital	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
			W1 G5	W2 G6	W3 G7	W4 G8	W5, W6 G9	W7 (G10)	W8 (G11)	W9 (G12)	W10 (G13)
3	Institutionalized cultural capital		T P	T P	T P	T P	T P	T	T	T	T
	Objectified cultural capital		T P				T P				
	Embodied cultural capital		T P				T P				
	Reading culture		T P	T	T	T	T P				
			W1 G9	W2 G10	W3 G11	W4 G12	W5 G13				
4 academic track	Institutionalized cultural capital		T P	T	T P	T P	T				
	Objectified cultural capital		T P								
	Embodied cultural capital		T P								
	Reading culture		T P								
				W2	W3, W4	W5, W6	W7	W8	W9		W10
4 vocational track	Institutionalized cultural capital			T	T P	T	T	T	T		T
	Objectified cultural capital										
	Embodied cultural capital										
	Reading culture										

Note. T: Measurement of target persons' cultural capital. P: Measurement of parents' cultural capital. W: Wave. G: Grade attended.



Starting cohort	Forms of cultural capital	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
			W1	W2	W3, W4	W5, W6, W7	W8, W9	W10	W11, W12	W13	W14, W15
5	Institutionalized cultural capital		T P	T	T	T	T	T	T	T	T
	Objectified cultural capital				T		T				
	Embodied cultural capital				T		T				
	Reading culture				T		T				
		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
6	Institutionalized cultural capital	T P	T	T	T	T	T	T	T	T	T
	Objectified cultural capital		T				T				T
	Embodied cultural capital		T				T				T
	Reading culture		T				T				T

Note. T: Measurement of target persons' cultural capital. P: Measurement of parents' cultural capital. W: Wave. G: Grade attended.

**Institutionalized cultural capital**

Institutionalized cultural capital is measured by surveying the detailed educational history of target persons and general and vocational educational qualifications of the mother and the father. If possible and appropriate data on educational institutions, educational qualifications, and grades is collected. Conceptually it is assigned to sociodemographic variables in NEPS.

**Objectified cultural capital**

Objectified cultural capital is measured by an adapted item battery from the student questionnaire of the Programme for International Student Attainment (PISA) 2003 (Ramm & Adamsen, 2006). It comprises questions on cultural possessions (“At home, do you have classic literature, e.g. by Goethe, books with poems, works of art (e.g. paintings)?”), home educational resources (“At home, do you have a desk to study, your own room, learning software, books that belong just to you books that are useful for homework, a dictionary, a library membership card?”; see Table 2 & Table 3), and on the number of books at home (see Table 4 & Table 5). The item on the number of books at home implemented in the students’ survey in starting cohort 3 was adapted from Paulus (Paulus, 2009). These scales can be assigned to the abovementioned dimensions of cultural capital: the cultural possessions scale refers to status signaling respectively the distinctive dimension, the home educational resources scale and the indicator books at home refer to the dimension of learning.

*Table 2: Objectified Cultural Capital (SC3, Fifth Graders PAPI)*

Variable	German text	English translation
	Gibt es bei dir zu Hause...	At home, do you have ...
	1 - ja	1 - yes
	2 - nein	2 - no
t34006a	... einen Schreibtisch zum Lernen?	... a desk to study?
t34006b	... ein Zimmer für dich allein?	... your own room?
t34006c	... Lern-Software?	... learning software?
t34006d	... Bücher, die dir ganz alleine gehören (außer deinen Schulbüchern)?	... books that belong just to you (excluding textbooks)?
t34006e	... Bücher mit Gedichten?	... books with poems?
t34006f	... Kunstwerke (z. B. Gemälde)?	... works of art (e.g. paintings)?
t34006g	... Bücher, die bei Hausaufgaben hilfreich sind?	... books that are useful for homework?
t34006h	... ein Wörterbuch?	... a dictionary?

*Table 3: Objectified Cultural Capital (SC6, CATI)*

Variable	German text	English translation
	Gibt es bei Ihnen zu Hause...	At home, do you have ...
	0 - nicht genannt	0 - not specified
	1 - genannt	1 - specified
	-20 - nichts davon	-20 - none of the above
	-97 - verweigert	-97 - refused
	-98 - weiß nicht	-98 - don't know
t34006d	... klassische Literatur, z.B. von Goethe?	... classic literature, e.g. by Goethe?
t34006e	... Bücher mit Gedichten?	... books with poems?
t/p34006f	... Kunstwerke (z. B. Gemälde)?	... works of art, e.g. paintings?

*Table 4: Number of Books at Home (SC3, Fifth Graders PAPI)*

Variable	German text	English translation
t34005a	Wie viele Bücher gibt es bei dir zu Hause ungefähr? Zähle nicht mit: Zeitschriften, Zeitungen und deine Schulbücher	Around how many books do you have at home? Do not count magazines, newspapers or your text books.
	1 – keine oder nur sehr wenige (0 bis 10 Bücher)	1 - None or only very few (0 to 10 books)
	2 – genug, um ein Regalbrett zu füllen (11 bis 25 Bücher)	2 - Enough to fill one shelf (11 to 25 books)
	3 – genug, um mehrere Regalbretter zu füllen (26 bis 100 Bücher)	3- Enough to fill several shelves (26 to 100 books)
	4 – genug, um ein kleines Regal zu füllen (101 bis 200 Bücher)	4 - Enough to fill a small set of shelves (101 to 200 books)
	5 – genug, um ein großes Regal zu füllen (201 bis 500 Bücher)	5 – Enough to fill a large set of shelves (201 to 500 books)
	6 – genug, um eine Regalwand zu füllen (mehr als 500 Bücher)	6 - Enough to fill a shelf unit (more than 500 books)

*Table 5: Number of Books at Home (SC3 Parents' Survey, SC6 CATI)*

Variable	German text	English translation
t/p34005a	Wie viele Bücher gibt es bei Ihnen zu Hause ungefähr? Als Hilfestellung: auf einen Meter Regalbrett passen ungefähr 40 Bücher.	How many books do you have about in your home? As an aid: about 40 books fit on one meter of shelf.
	1 –0 bis 10 Bücher	1 - 0 to 10 books
	2 –11 bis 25 Bücher	2 - 11 to 25 books
	3 –26 bis 100 Bücher	3- 26 to 100 books
	4 –101 bis 200 Bücher	4 - 101 to 200 books
	5 –201 bis 500 Bücher	5 –201 to 500 books
	6 –mehr als 500 Bücher	6 - more than 500 books

### Embodied cultural capital

To measure embodied cultural capital, several existing instruments from different surveys have been adapted. The measurement of participation in highbrow cultural activities was adapted from the ALWA study (Matthes & Trahms, 2010) comprising the frequency of going to the theater, museums or art exhibitions, classic concerts, and opera (see Table 6 and Table 7). This scale aims to measure socially distinctive activities. The item battery consists of two more items, which measure the frequency of going to the cinema and rock- pop concert. They represent middlebrow cultural activities and were added to lower the response burden.

*Table 6: Participation in Highbrow Cultural Activities (SC3, Fifth Graders PAPI)*

Variable	German text	English translation
	Wie oft hast du in den vergangenen 12 Monaten folgende Dinge getan?	How often have you done the following things in the past 12 months?
	1 - nie	1 - Never
	2 - einmal	2 - Once
	3 - 2- bis 3-mal	3 - 2 to 3 times
	4 - 4- bis 5-mal	4 - 4 to 5 times
	5 - mehr als 5-mal	5 - More than 5 times
t34009a	ein Museum oder eine Kunstaussstellung besucht	Visited a museum or an art exhibition
t34009b	im Kino einen Film gesehen	Watched a movie at the cinema
t34009c	eine Oper, ein Ballett oder ein klassisches Konzert besucht	Visited an opera, ballet or classic concert
t34009d	ein Theater besucht	Been to the theater
t34009e	ein Rock- oder Popkonzert besucht	Went to a rock or pop concert

*Table 7: Participation in Highbrow Cultural Activities (SC3 Parents' Survey, SC6, CATI)*

Variable	German text	English translation
	Wie oft haben Sie in den letzten 12 Monaten folgende Dinge getan:	How often have you done the following things within the last 12 months:
	1 - nie	1 - Never
	2 - einmal	2 - Once
	3 - 2- bis 3-mal	3 - 2 to 3 times
	4 - 4- bis 5-mal	4 - 4 to 5 times
	5 - mehr als 5-mal	5 - More than 5 times
	-97 - verweigert	-97 - refused
	-98 - weiß nicht	-98 - don't know
t/p34009a	ein Museum oder eine Kunstaussstellung besucht?	Visited a museum or an art exhibition?
t/p34009b	im Kino einen Film gesehen?	Watched a movie at the cinema?
t/p34009c	eine Oper, ein Ballett oder ein klassisches Konzert besucht?	Visited an opera, ballet or classic concert?
t/p34009d	ein Theater besucht?	Been to the theater?
t/p34009e	ein Rock- oder Popkonzert besucht?	Visited a rock or pop concert?

Moreover, questions concerning the frequency of actively making music (Table 8, Table 9, Table 10) and listening to classical music (Table 11, Table 12, Table 13) were asked that are based on MEPS and BiKS. Similar to participation in high cultural activities, those measures of the scale “music” relate to social distinction.

*Table 8: Frequency of Actively Making Music (SC3, Fifth Graders PAPI)*

Variable	German text	English translation
	An wie vielen Tagen im vergangenen Monat hast du selbst musiziert, z. B. ein Musikinstrument gespielt oder im Chor gesungen? Mit dem Computer Musik machen zählt nicht dazu.	On how many days in the last month have you made music, e.g. played an instrument or sung in a choir? Making music on the computer does not count.
t34009g	An ungefähr __ Tagen (Range: 0-99)	On about __ Days (Range: 0-99)

*Table 9: Actively Making Music (SC6, CATI)*

Variable	German text	English translation
	Spielen Sie ein Musikinstrument oder singen Sie, z.B. im Chor?	Do you play a musical instrument or do you sing, e.g. in a choir?
t34009i	0 - nein 1 - ja -97 - verweigert -98 - weiß nicht	0 - no 1 - yes -97 - refused -98 - don't know

*Table 10: Frequency of Actively Making Music (SC6, CATI)*

Variable	German text	English translation
	Wie oft haben Sie im vergangenen MONAT musiziert, also ein Musikinstrument gespielt oder gesungen?	How often did you make music, i.e. played a musical instrument or sung songs during the past MONTH?
t34009j	__ Mal (Range: 0-99)	__ Times (Range: 0-99)

*Table 11: Frequency of Listening to Classical Music (SC3, Fifth Graders PAPI)*

Variable	German text	English translation
	Hörst du auch klassische Musik? An wie vielen Tagen der vergangenen Woche war das der Fall?	Do you also listen to classical music? On how many days was this the case in the past week?
t34009h	An ungefähr __ Tagen (Range: 0-99)	On about __ Days (Range: 0-99)

*Table 12: Listen to Classical Music (SC6, CATI)*

Variable	German text	English translation
	Hören sie klassische Musik?	Do you listen to classical music?
t34009k	0 - nein 1 - ja -97 - verweigert -98 - weiß nicht	0 - no 1 - yes -97 - refused -98 - don't know

*Table 13: Frequency of Listening to Classical Music (SC6, CATI)*

Variable	German text	English translation
	Und wenn Sie an die vergangene WOCHE denken, wie oft haben Sie klassische Musik gehört?	And if you think of the past WEEK, how often did you listen to classical music?
t34009h	__ Mal (Range: 0-99)	__ Times (Range: 0-99)

Additionally, a scale on cultural involvement was adapted from PISA (Kunter et al., 2002) containing the frequency of discussing political and social questions as well as books and works of art and culture in general (Table 14 and Table 15). Like the other items of embodied cultural capital presented in this paper, those measures refer to social distinction.



Table 14: Cultural Involvement (SC3, Fifth Graders PAPI)

Variable	German text	English translation
	Wie oft kommt es im Allgemeinen vor, dass du mit deiner Mutter oder deinem Vater ...	How often does it normally happen that you talk with your mother or father ...
	1 - nie oder selten	1 - Never or seldom
	2 - mehrmals im Monat	2 - Several times a month
	3 - einmal in der Woche	3 - Once a week
	4 - mehrmals in der Woche	4 - Several times a week
	5 - täglich	5 - Daily
t34010a	... über Bücher redest?	... about books?
t34010b	... über Filme oder Fernsehsendungen redest?	... about movies or TV programs?
t34010c	... über politische oder soziale Fragen redest?	... about political or social issues?
t34010d	...über Kunstwerke oder Kunst im Allgemeinen redest?	... about works of art or art in general?

Table 15: Cultural Involvement (SC6, CATI)

Variable	German text	English translation
	Wie oft kommt es im Allgemeinen vor, dass Sie mit anderen über folgende Dinge diskutieren?	How often does it generally happen that you discuss with others about the following topics?
	1 - täglich	1 - Daily
	2 - mehrmals in der Woche	2 - Several times a week
	3 - einmal in der Woche	3 - Once a week
	4 - mehrmals im Monat	4 - Several times a month
	5 - nie oder selten	5 - Never or seldom
	-97 - verweigert	-97 - refused
	-98 - weiß nicht	-98 - don't know
t34010f	über politische oder soziale Fragen?	About political or social questions?
t34010g	über Bücher?	About books?
t34010h	über Kunstwerke oder Kunst im Allgemeinen?	About art works or art in general?

### Reading culture

As already mentioned, studies have shown that reading furthers educational success (de Graaf, Nan Dirk et al., 2000; Sullivan, 2001). NEPS measurements of reading culture refer to the learning dimension of cultural capital. We ask respondents in every starting cohort how much time they spent on reading (see Table 16, Table 17, Table 18, Table 19). These items were developed by the Project "NEPS Decisions".

Table 16: Frequency Reading (SC3, Fifth Graders PAPI)

Variable	German text	English translation
	Wie viel Zeit verbringst du normalerweise damit, außerhalb der Schule zu lesen? Denke dabei bitte an alle möglichen Gelegenheiten, bei denen du liest, also nicht nur Bücher oder Zeitschriften, sondern auch E-Mails oder im Internet.	How much time do you usually spend reading outside of school? Please consider all possible opportunities you have for reading, in other words not only books or magazines, but also e-mails or the internet.
	1 - ... gar nicht außerhalb der Schule. 2 - ... bis zu einer halben Stunde. 3 - ... zwischen einer halben und einer Stunde. 4 - ... 1 bis 2 Stunden. 5 - ... mehr als 2 Stunden.	1 - Not at all outside school 2 - Up to half an hour 3 - Between half an hour and 1 hour 4 - 1 to 2 hours 5 - More than 2 hours
t34001a	An einem normalen Schultag lese ich...	On a normal school day I read...
t34001c	An einem normalen schulfreien Tag lese ich...	On a normal non-school day I read...

Table 17: Quantity Reading - Free Time, Working Day (SC3, Parents' Survey CATI)

Variable	German text	English translation
	Wie viel Zeit verbringen Sie an einem normalen Arbeitstag damit, in Ihrer Freizeit zu lesen?	How much time do you spend on reading in your free time on a normal working day?
p34001a	__ (Stunden; Range 0-24) -97 - verweigert -98 - weiß nicht	__ (hours; Range 0-24) -97 - refused -98 – don't know
p34001b	__ (Minuten; Range 0-60) -97 - verweigert -98 - weiß nicht	__ (minutes; Range 0-60) -97 - refused -98 – don't know

*Table 18: Quantity Reading - Free Time, Day off From Work (SC3, parents' survey CATI)*

Variable	German text	English translation
	Wie viel Zeit verbringen Sie an einem arbeitsfreien Tag damit zu lesen?	How much time do you spend on reading on a day off?
p34001c	__ (Stunden; Range 0-24) -97 - verweigert -98 - weiß nicht	__ (hours; Range 0-24) -97 - refused -98 – don't know
p34001d	__ (Minuten; Range 0-60) -97 - verweigert -98 - weiß nicht	__ (minutes; Range 0-60) -97 - refused -98 – don't know

*Table 19: Reading Quantity - Free Time: Hours (SC6, CATI)*

Variable	German text	English translation
	Wie viel Zeit verbringen Sie im Durchschnitt täglich damit, in Ihrer Freizeit zu lesen?	How much time do you spend reading on average per day during your free time?
t34001e_g1	__ : __ (Stunden : Minuten; Range 1-99) -97 - verweigert -98 - weiß nicht	__ : __ (hours : minutes; Range 1-99) -97 - refused -98 – don't know

In NEPS stage 4 “From lower to upper secondary school”, there is a special focus on reading. Hence, questions to assess the quality of the students’ reading were asked. More specifically, students of starting cohort 3 were asked how frequently they read certain genres and periodicals like journals and magazines. We assumed that certain genres and periodicals represent more stimulating reading matter than others. We argue that this especially applies to the following genres and kinds of periodicals: classics of children's youth literature, nonfiction books, children's and youth pages in high quality supraregional papers, and sophisticated magazines. Items on the frequency of genres read by the students (compare Table 20) were adapted from PISA 2000 (Kunter et al., 2002). On the other hand, items on the frequency of reading certain periodicals (see Table 21) were adapted from the KOALA-S parents’ survey 2006.

Table 20: Frequency Reading (Genre; SC3, Fifth Graders PAPI)

Variable	German text	English translation
	Wie oft liest du in deiner Freizeit normalerweise ...	How often do you normally read in your spare time ...
	1 - nie oder selten	1 - Never or seldom
	2 - mehrmals im Monat	2 - Several times a month
	3 - einmal in der Woche	3 - Once a week
	4 - mehrmals in der Woche	4 - Several times a week
	5 - täglich	5 - Daily
t34002a	... Krimis, Thriller, Horror- oder Fantasybücher wie z. B. Harry Potter oder Herr der Ringe?	... detective novels, thrillers, horror or fantasy books, such as Harry Potter or Lord of the Rings?
t34002b	... Klassiker der Kinder- und Jugendliteratur von Autoren wie z. B. Erich Kästner oder Otfried Preußler?	... classics of children's youth literature by authors, such as Erich Kästner or Otfried Preußler?
t34002c	... Sachbücher?	... nonfiction books?
t34002d	... Comics?	... comic books?
t34002e	... anderes?	... other?

Table 21: Frequency Reading (Periodicals; Fifth Graders PAPI)

Variable	German text	English translation
	Liest du folgende Zeitungen oder Zeitschriften?	Do you read the following newspaper or magazines?
	1 - nie oder selten	1 - Never or seldom
	2 - mehrmals im Monat	2 - Several times a month
	3 - einmal in der Woche	3 - Once a week
	4 - mehrmals in der Woche	4 - Several times a week
	5 - täglich	5 - Daily
t34003a	Lokale Tageszeitung(en)	Local newspaper(s)
t34003b	Boulevardzeitungen, wie z. B. BILD, BZ	Tabloids, such as BILD, BZ
t34003c	Kinder-/Jugendseiten in anderen überregionalen Zeitungen wie z. B. Süddeutsche Zeitung (SZ) oder Frankfurter Allgemeine Zeitung (FAZ)	Children's and youth pages in other suprarregional papers, such as Süddeutsche Zeitung (SZ) or Frankfurter Allgemeine (FAZ)
t34003d	Magazine wie z. B. Dein SPIEGEL, FOCUS Schule oder GEOLino	Magazines, such as Dein SPIEGEL, FOCUS Schule or GEOLino
t34003e	andere Jugendzeitschriften wie z. B. Tierfreund, hey!, Bravo Sport oder Popcorn	Other magazines for younger readers such as Tierfreund, hey!, Bravo Sport or Popcorn

#### 4. Empirical Results

The aim of the following section is to assess reliability and validity of the cultural capital measurements in NEPS SC3 and SC6. Therefore, I present empirical results considering the distributions, missing values, reliabilities, dimensionalities, and criterion validity of the measures. Analyses are based on the NEPS Scientific Use Files SC3: 7.0.1 released in 2018 and SC6: 8.0.0 released in 2017 (Blossfeld, Roßbach, & von Maurice, 2011).<sup>1</sup> I used data of the first measurement of cultural capital to minimize attrition bias.<sup>2</sup>

<sup>1</sup> SC3, version 7.0.1, doi:10.5157/NEPS:SC3:7.0.1; SC6, version 8.0.0, doi:10.5157/NEPS:SC6:8.0.0

<sup>2</sup> That is NEPS SC3, wave 1 and NEPS SC6, wave 2.

## 4.1 Distributions

In principle it is to be expected that distributions of cultural capital variables are positive skewed as they represent characteristics of the higher social classes, that is most individuals do not have these characteristics. Data on embodied cultural capital from SC3 and SC6 consistently shows that pattern whereas data on objectified cultural capital and reading culture does not.

Table 24 gives a first overview of the data, showing means, medians, standard deviations, minima, maxima, and number of observations for each of the cultural capital variables collected from fifth graders in SC3. Most cultural capital variables have a considerable degree of variance even though the distributions of most variables are positive skewed. As a rule of thumb, positive skewed distributions display mean values that are higher than the median values. This is true for almost every variable in Table 22. As an example, Figure 1 illustrates this shape in more detail. Obviously, visiting the opera, ballet, or classic concert is the most skewed variable: 71.3% of the respondents never did one of these activities in the 12 months preceding the interview. This finding is in line with Bourdieu's statement that going to the opera is one of the most socially exclusive activities. Items representing stimulating high quality reading matter (see chapter 3) are positively skewed as well (compare Figure 2, Figure 3). In contrast, the other items on reading culture (time students spent on reading popular fiction, comic books, books of unspecified genres, and popular youth magazines and time students spent on reading outside school in general; see Figure 2, Figure 3, Figure 4) are not positive skewed.

This is also true for items on objectified cultural capital.<sup>3</sup> Furthermore, the items of the home educational resources scale shows little variance only. Students were asked if they had certain possessions at their home facilitating learning, e.g. an own desk or books useful for homework (see chapter 3). 66%-96% affirmed that they had such possessions at home. Possibly, this low variance of the items is an issue regarding reliability of the scale as a whole and discriminatory power of the single items. The lower the variance of an item the less suitable it is to distinguish students with high home educational resources from students with low resources.

---

<sup>3</sup> For a more detailed illustration of the items on the "number of books" see Figure 7 in the appendix.

Table 22: Descriptive Values – SC3, Fifth Graders

Form of cultural capital	Variable	Mean	Median	Std.	Min.	Max.	N valid
Objectified cultural capital	Home possessions - Desk	0.96	1	0.20	0	1	5620
	Home possessions - Room	0.85	1	0.35	0	1	5620
	Home possessions - Learning software	0.66	1	0.47	0	1	5423
	Home possessions - Books with poems	0.58	1	0.49	0	1	5567
	Home possessions - Work of art (e.g. paintings)	0.68	1	0.47	0	1	5555
	Home possessions - books for homework	0.82	1	0.38	0	1	5580
	Home possessions - dictionary	0.91	1	0.28	0	1	5610
	Home possessions - own books	0.94	1	0.23	0	1	5620
	Number of books	3.74	4	1.45	1	6	5350
Embodied cultural capital	Participation in high culture: Museum, art exhibition	2.49	2	1.23	1	5	4946
	Participation in high culture: Cinema	3.48	3	1.26	1	5	5063
	Participation in high culture: Opera, ballet, classical concert	1.48	1	0.91	1	5	4924
	Participation in high culture: Theater	2.19	2	1.14	1	5	4965
	Participation in high culture: Rock/pop concert	1.51	1	0.99	1	5	4987
	Frequency of actively making music	10.49	4	15.86	0	99	4249



	Frequency of listening to classical music	3.44	1	8.75	0	99	4332
	Cultural involvement: books	2.38	2	1.34	1	5	4663
	Cultural involvement: movies or TV shows	3.18	3	1.33	1	5	4615
	Cultural involvement: political social questions	2.04	1	1.29	1	5	4624
	Cultural involvement: art works, art	2.03	1	1.31	1	5	4658
Reading culture	Frequency reading - school day	2.93	3	1.24	1	5	5240
	Frequency reading - non-school day	2.97	3	1.38	1	5	5077
	Frequency reading (genre): detective stories, thrillers, horror or fantasy	2.65	2	1.60	1	5	5256
	Frequency reading (genre): classic literature	2.18	2	1.40	1	5	5012
	Frequency reading (genre): nonfiction books	2.18	2	1.34	1	5	4864
	Frequency reading (genre): comic books	2.76	3	1.55	1	5	5017
	Frequency reading (genre): other	3.29	4	1.56	1	5	5042
	Frequency reading: local newspaper	1.85	1	1.32	1	5	4697
	Frequency reading: tabloids (such as BILD, BZ)	1.53	1	1.07	1	5	4592
	Frequency reading: youth pages in other superregional papers (such as SZ, FAZ)	1.79	1	1.23	1	5	4694
	Frequency reading: magazines (such as SPIEGEL, FOCUS Schule)	1.96	1	1.27	1	5	4692
	Frequency reading: other youth magazines (such as Bravo, Popcorn)	2.77	3	1.56	1	5	4748

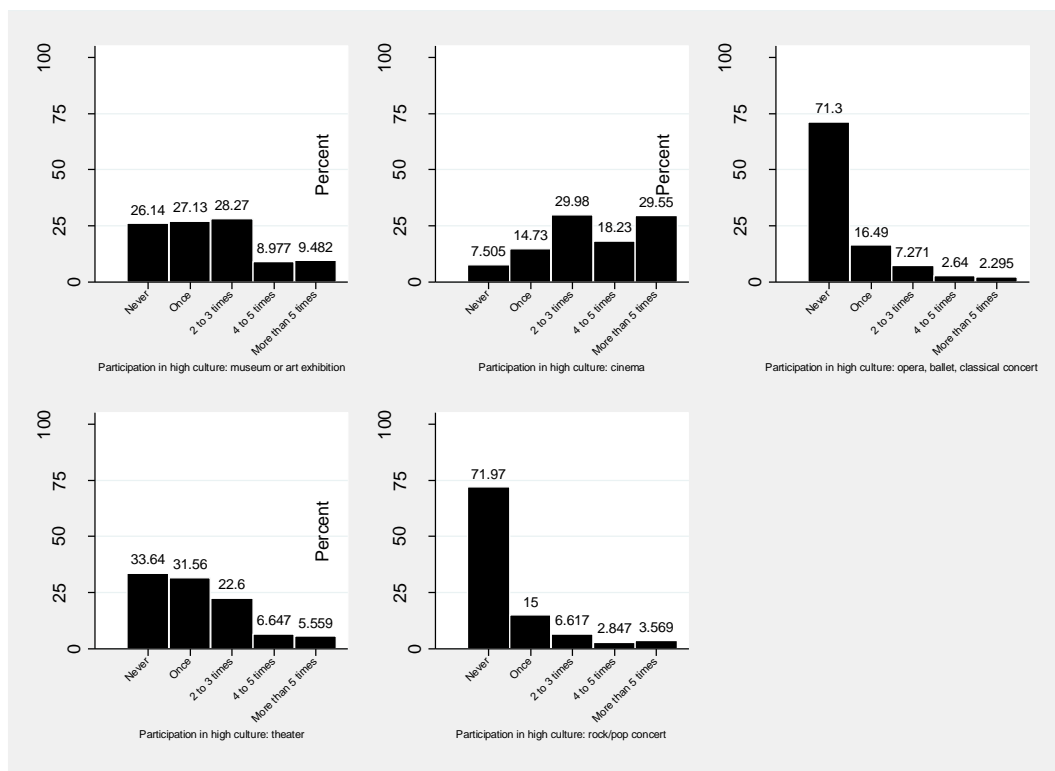


Figure 1: Distribution of participation in high culture – SC3, fifth graders

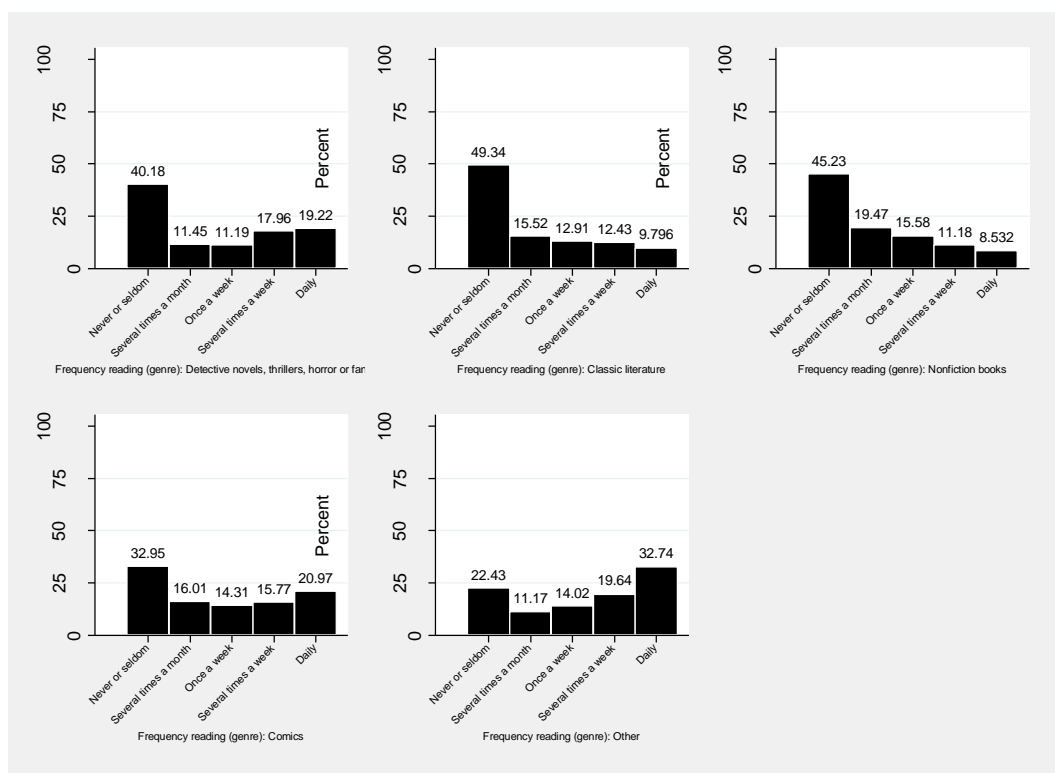


Figure 2: Distribution of frequencies of reading various genres – SC3, fifth graders

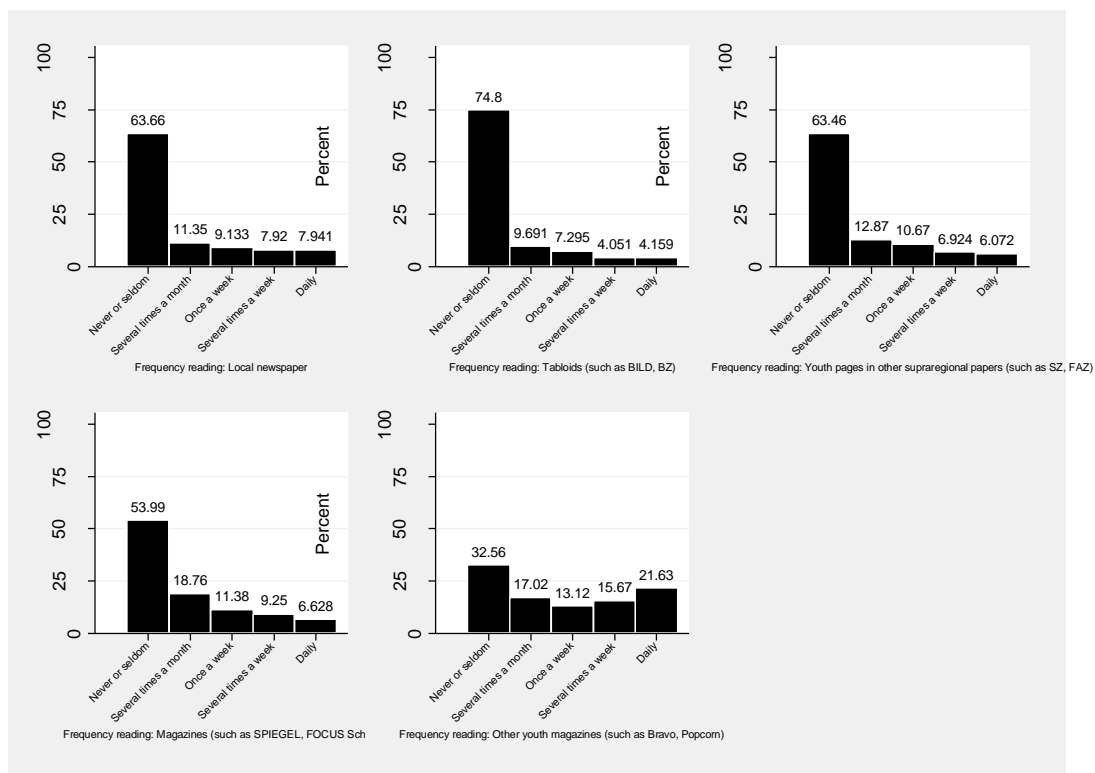


Figure 3: Distribution of frequencies of reading periodicals – SC3, fifth graders

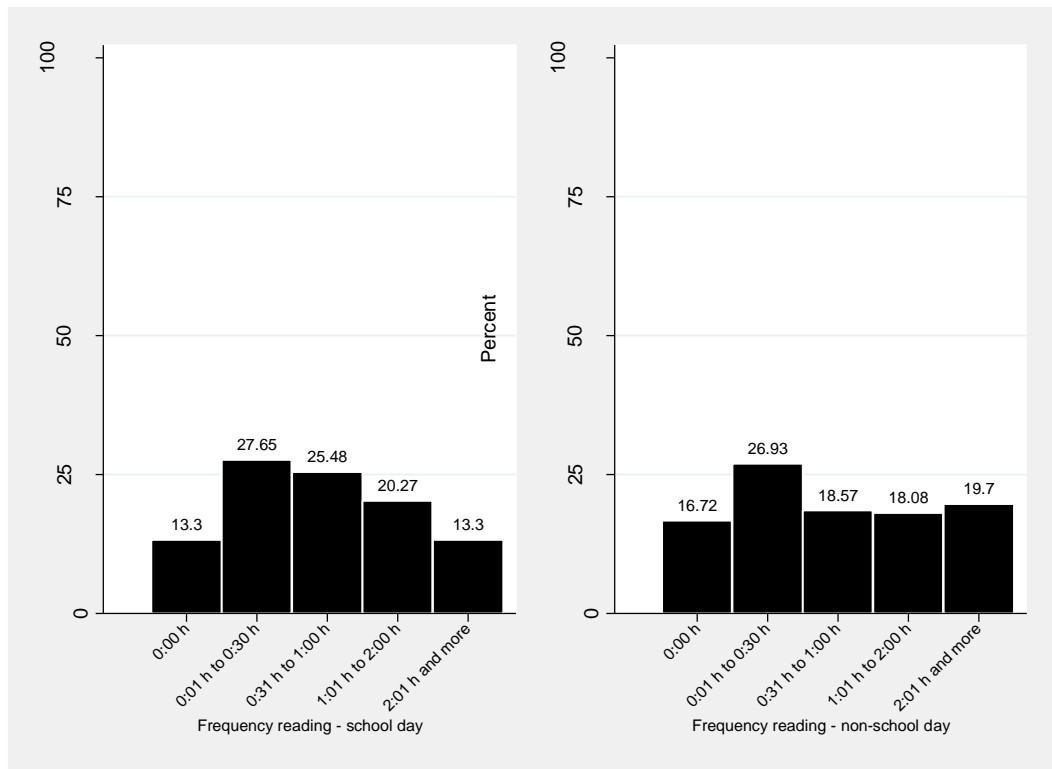


Figure 4: Distribution of reading quantity – SC3, fifth graders

Essentially, the same patterns occur in the data collected from the parents in SC3 and respondents in SC6. Variables referring to high culture display positively skewed distributions. As an example, Figure 5 shows the distributions of participation in high culture in SC6. Figure 6 illustrates the distribution of time spent on reading in the respondents' free time. The values of the original variable were conflated into categories that correspond to those in the students' PAPI. Given this categorization, the variable is almost normally distributed.

Please note that time spent on reading in the parent interview of SC3 and in the SC6 survey contained some implausibly high values (see Table 23 and Table 24, columns "Max"). The same is true for "Frequency of actively making music", "Frequency of listening to classical music" in SC6. For reasons of transparency these values were not corrected at this point of the analyses.

Table 23: Descriptive Values – SC3, Parents

Form of cultural capital	Variable	Mean	Median	Std.	Min.	Max.	N valid
Objectified cultural capital	Number of books	4.02	4	1.31	1	6	4151
Embodied cultural capital	Participation in high culture: Museum, art exhibition	2.51	3	1.23	1	5	4153
	Participation in high culture: Cinema	3.05	3	1.30	1	5	4152
	Participation in high culture: Opera, ballet, classical concert	1.65	1	1.03	1	5	4154
	Participation in high culture: Theater	1.88	1	1.06	1	5	4154
	Participation in high culture: Rock/pop concert	1.57	1	0.90	1	5	4154
Reading culture	Quantity reading – free time, working day: hours	0.96	1	0.97	0	21.5	4138
	Quantity reading – free time, day off from work: hours	1.35	1	1.17	0	20	4134

Table 24: Descriptive Values - SC6

Form of cultural capital	Variable	Mean	Median	Std.	Min.	Max.	N valid
Objectified cultural capital	Home possessions - classical literature	0.58	1	0.49	0	1	9310
	Home possessions - Poems	0.65	1	0.48	0	1	9310
	Home possessions - Works of art	0.43	0	0.49	0	1	9310
	Number of books	4.05	4	1.33	1	6	9317
Embodied cultural capital	Participation in high culture: Museum, art exhibition	2.30	2	1.28	1	5	9307
	Participation in high culture: Cinema	2.57	3	1.44	1	5	9315
	Participation in high culture: Opera, ballet, classical concert	1.62	1	1.07	1	5	9318
	Participation in high culture: Theater	1.79	1	1.09	1	5	9318
	Participation in high culture: Rock/pop concert	1.63	1	0.99	1	5	9318
	Actively making music	0.22	0	0.42	0	1	9318
	Frequency of actively making music	2.09	0	6.75	0	99	9312
	Listen to classical music	0.55	1	0.50	0	1	9318
	Frequency of listening to classical music	1.09	0	2.89	0	99	9304

	Cultural involvement: political social questions	3.53	4	1.27	1	5	9316
	Cultural involvement: books	2.03	2	1.21	1	5	9316
	Cultural involvement: art works, art	1.41	1	0.87	1	5	9315
Reading culture	Reading quantity - free time: hours	1.25	1	1.10	0	24	9299

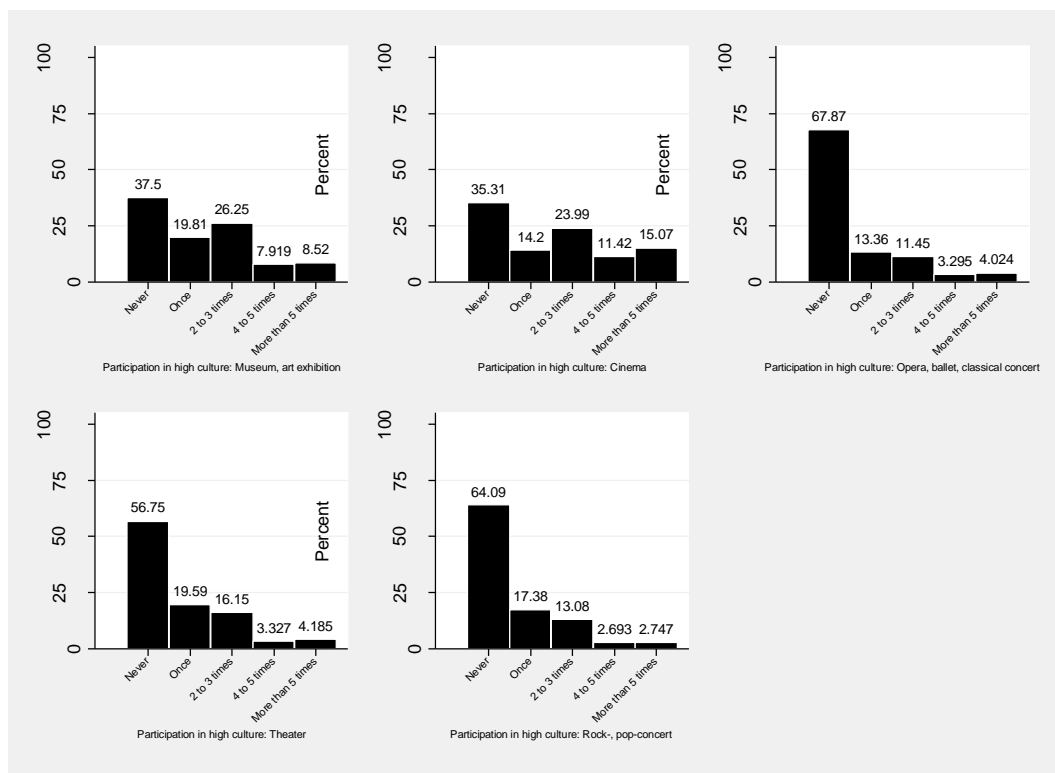


Figure 5: Distribution of participation in high culture – SC6

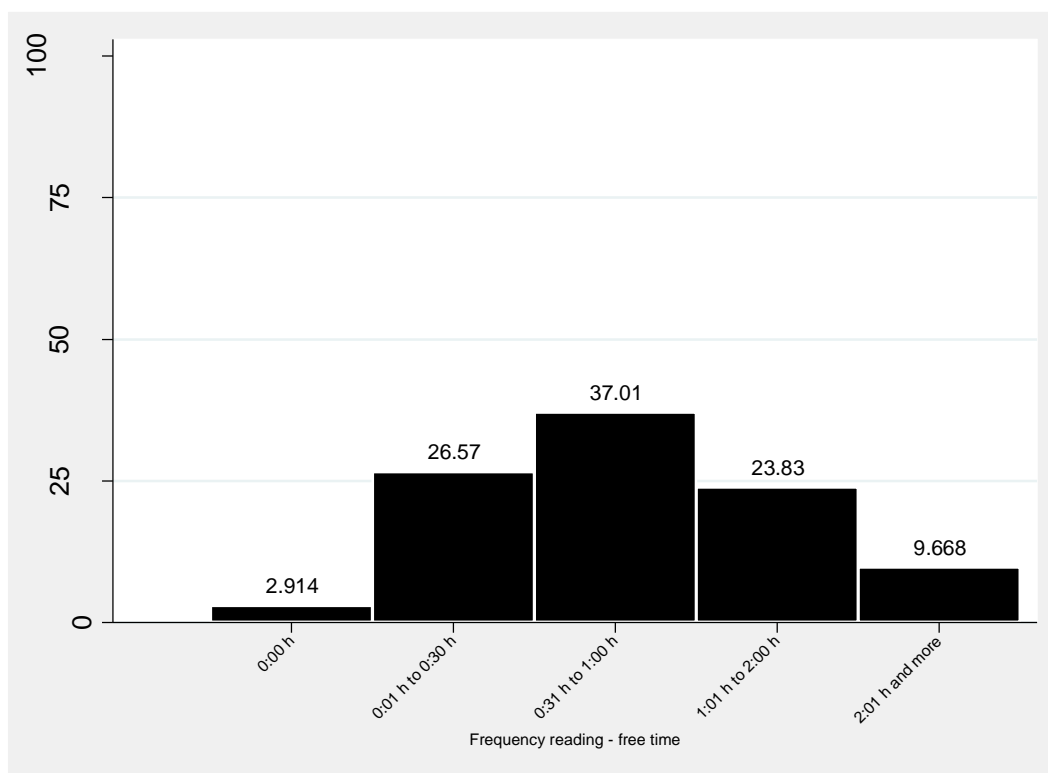


Figure 6: Distribution of reading quantity - SC6



## 4.2 Missing values

Generally, item nonresponse may occur for different reasons. Respondents might fail to understand the question, to recall the relevant information, to make a judgement, fit the answer into the given options or they might edit their answer in terms of social desirability (Collins, 2003, pp. 231–234). Moreover, respondents might skip questions to reduce interview duration.

Table 25 shows the missing values of the cultural capital variables in absolute numbers and as relative share of fifth graders in SC3. The relative share ranges from 1.55% to 16.30%. Variables regarding objectified cultural capital consistently displayed the lowest rates of missingness whereas variables referring to embodied cultural capital tended to show the highest rates. Overall, the rates of missingness of reading culture (7.46% to 14.27%) and embodied cultural capital (9.11% to 16.30%) seem rather high. However, it should be considered that data was surveyed by a paper and pencil questionnaire that was filled out by 10 years old students. Even more important, response burden due to interview duration was high. Before completing the questionnaire, students participated in several competence tests. Subsequently, they filled out the questionnaire comprising about 150 items. Item nonresponse increased markedly in the last third of the questionnaire: Whereas the rate of missingness in the first and second third mostly was around 3%, it increased to about 7% at the beginning of the last third. In the last tenth of the questionnaire it steadily rose up to 16%. The questions on reading culture were placed at the beginning of the last third. Items on embodied cultural capital were placed at the very end of the questionnaire. In sum, it seems to be very likely that item nonresponse was heavily increased by the survey mode and the respondents' early age as well as by the high response burden.

*Table 25: Missing Values – SC3, Fifth Graders*

Form of Cultural Capital	Variable label	Number of missings	Proportion of missings in percent
Objectified cultural capital	Home possessions – Desk	89	1.55
	Home possessions - Room	89	1.55
	Home possessions - Learning software	286	4.97
	Home possessions - Books with poems	142	2.47
	Home possessions - Work of art (e.g. paintings)	154	2.68
	Home possessions - books for homework	129	2.24
	Home possessions - dictionary	99	1.72
	Home possessions - own books	89	1.55

	Number of books	335	5.82
Embodied cultural capital	Participation in high culture: Museum, art exhibition	739	12.85
	Participation in high culture: Cinema	622	10.81
	Participation in high culture: Opera, ballet, classical concert	761	13.23
	Participation in high culture: Theater	720	12.52
	Participation in high culture: Rock/pop concert	698	12.13
	Frequency of actively making music	938	16.30
	Frequency of listening to classical music	855	14.86
	Cultural involvement: books	524	9.11
	Cultural involvement: movies or TV shows	572	9.94
	Cultural involvement: political social questions	563	9.79
	Cultural involvement: art works, art	529	9.20
Reading culture	Frequency reading - school day	445	7.73
	Frequency reading - non-school day	608	10.56
	Frequency reading (genre): detective stories, thrillers, horror or fantasy	429	7.46
	Frequency reading (genre): classic literature	673	11.70
	Frequency reading (genre): nonfiction books	821	14.27
	Frequency reading (genre): comic books	668	11.61
	Frequency reading (genre): other	643	11.18
	Frequency reading: local newspaper	490	8.51
	Frequency reading: tabloids (such as BILD, BZ)	595	10.34
	Frequency reading: youth pages in other superregional papers (such as SZ, FAZ)	493	8.57
	Frequency reading: magazines (such as SPIEGEL, FOCUS Schule)	495	8.60

Frequency reading: other youth magazines (such as Bravo, Popcorn)	439	7.63
---	-----	------

Hardly any missing values occurred in the parents' survey in SC3 and in SC6 (see Table 26 and Table 27). The rate of missingness ranged from 0.02% to 0.48% in the parents' interview in SC3 and 0.03% to 0.25% in SC6. Differences in the rates of missingness supposedly stem from differences in the age of the respondents and the survey mode. In contrast to students in SC3, their parents were surveyed by a computer-assisted telephone interview. Respondents in SC6 were surveyed by a computer-assisted personal interview.

*Table 26: Missing Values – SC3, Parents*

<b>Form of Cultural Capital</b>	<b>Variable label</b>	<b>Number of missings</b>	<b>Proportion of missings in percent</b>
Objectified cultural capital	Number of books	3	0.07
Embodied cultural capital	Participation in high culture: Museum, art exhibition	1	0.02
	Participation in high culture: Cinema	2	0.02
	Participation in high culture: Opera, ballet, classical concert	0	0.00
	Participation in high culture: Theater	0	0.00
	Participation in high culture: Rock/pop concert	0	0.00
Reading culture	Quantity reading – free time, working day: hours	16	0.39
	Quantity reading – free time, day off from work: hours	20	0.48

Table 27: Missing Values - SC6

<b>Form of Cultural Capital</b>	<b>Variable label</b>	<b>Number of missings</b>	<b>Proportion of missings in percent</b>
Objectified cultural capital	Home possessions - classical literature	12	0.13
	Home possessions - Poems	12	0.13
	Home possessions - Works of art	12	0.13
	Number of books	5	0.05
Embodied cultural capital	Participation in high culture: Museum, art exhibition	15	0.16
	Participation in high culture: Cinema	7	0.08
	Participation in high culture: Opera, ballet, classical concert	4	0.04
	Participation in high culture: Theater	4	0.04
	Participation in high culture: Rock/pop concert	3	0.03
	Actively making music	4	0.04
	Frequency of actively making music	6	0.06
	Listen to classical music	3	0.03
	Frequency of listening to classical music	14	0.15
	Cultural involvement: political social questions	5	0.05
	Cultural involvement: books	5	0.05
	Cultural involvement: art works, art	6	0.06
Reading culture	Reading quantity - free time: hours	23	0.25

### 4.3 Reliabilities

Cultural capital is a multidimensional construct and most dimensions are not directly observable. These latent constructs are measured by scales comprising multiple items. In chapter 3, the scales and the corresponding items are described in detail. The different dimensions represented by these scales are derived theoretically (cp. chapter 3). In the following tables, the internal consistencies measured by Cronbach's Alpha are reported for each dimension in SC3 and SC6. Additionally, the single indicators, their discriminatory power (item-rest correlation), and Cronbach's Alpha if the respective items was dropped are shown. As there are dimensions and indicators that were not measured in every interview this is indicated by a dash.

Table 28 shows the internal consistency of the different indices regarding objectified cultural capital.<sup>4</sup> In SC3, home educational resources revealed values below 0.5. As already mentioned in chapter 4.1, this was to be expected due to low variances of the single items. Accordingly, the measures of the items' discriminatory power were low. Only one item ("books for homework") exceeded the 0.3 threshold. Moreover, the cultural possessions scale showed an insufficient internal consistency ( $\alpha = 0.368$ ). Please note that this scale consists of two items only. In sum, the scales of objectified cultural capital in SC3 are not reliable. On the contrary, the internal consistency of the cultural possessions index in SC6 was acceptable ( $\alpha = 0.691$ ).

Internal consistencies of the embodied cultural capital indices are presented in Table 29.<sup>5</sup> Participation in high culture showed acceptable values for each of the interviewed groups, that is fifth graders in SC3 ( $\alpha = 0.641$ ), parents in SC3 ( $\alpha = 0.696$ ), and respondents in SC6 ( $\alpha = 0.692$ ). The same is true for the cultural involvement scales of the students' survey in SC3 ( $\alpha = 0.667$ ) and in SC6 ( $\alpha = 0.557$ ). Results suggest that the indicator "discussing Movies and TV shows" in SC3 and "discussing political and social questions" in SC6 should be excluded from the indices. Even though the values of the respective discriminatory power are above the 0.3 threshold, Cronbach's Alpha without the items were slightly increased with  $\alpha = 0.668$  and  $\alpha = 0.564$  respectively. The internal consistency of the indices "music" were unacceptable ( $\alpha = 0.246$  and  $0.275$ ).

Finally, the index "high quality reading" revealed an acceptable value of  $\alpha = 0.656$  (see Table 30).

---

<sup>4</sup> Please note that for scales with two items only Cronbach's alpha is reported.

<sup>5</sup> Please note that for scales with two items only Cronbach's alpha is reported.

Table 28: Reliability Tests for Objectified Cultural Capital in SC3 and SC6

Index	Item	Starting cohort 3				Starting cohort 6	
		Fifth graders		Parents		Item-rest correlation	Alpha without item
		Item-rest correlation	Alpha without item	Item-rest correlation	Alpha without item		
Home educational resources	Desk	0.203	0.444	-	-	-	-
	Room	0.172	0.457	-	-	-	-
	Learning software	0.239	0.435	-	-	-	-
	Own books	0.25	0.420	-	-	-	-
	Books for homework	0.314	0.368	-	-	-	-
	Dictionary	0.2811	0.400	-	-	-	-
Total			0.467		-		-
Cultural possessions	Classical literature	-	-	-	-	0.529	0.568
	Books with poems			-	-	0.517	0.584
	Work of art			-	-	0.472	0.641
Total			0.368		-		0.691

Table 29: Reliability Tests for Embodied Cultural Capital in SC3 and SC6

Index	Item	Starting cohort 3				Starting cohort 6	
		Fifth graders		Parents		Item-rest correlation	Alpha without item
		Item-rest correlation	Alpha without item	Item-rest correlation	Alpha without item		
Participation in high culture	Museum, art exhibition	0.442	0.565	0.510	0.616	0.501	0.618
	Opera, ballet, classical concert	0.448	0.566	0.510	0.610	0.529	0.577
	Theater	0.482	0.496	0.526	0.589	0.502	0.608
Total			0.641		0.696		0.692
Music	Frequency of actively making music			-	-		
	Frequency of listening to classical music			-	-		
Total			0.246		-		0.275
Cultural involvement	Books	0.474	0.575	-	-	0.442	0.326
	Movies or TV shows	0.338	0.668	-	-	-	-
	Political and social questions	0.500	0.562	-	-	0.311	0.564
	Art works, art	0.460	0.587	-	-	0.382	0.464
Total			0.667		-		0.557

Table 30: Reliability Tests for Reading Culture in SC3

Index	Item	Starting cohort 3				Starting cohort 6	
		Fifth graders		Parents		Item-rest correlation	Alpha without item
		Item-rest correlation	Alpha without item	Item-rest correlation	Alpha without item		
High quality reading	Frequency reading (genre): classic literature	0.407	0.602	-	-	-	-
	Frequency reading (genre): nonfiction books	0.438	0.584	-	-	-	-
	Frequency reading: youth pages in other superregional papers (such as SZ, FAZ)	0.446	0.584	-	-	-	-
	Frequency reading: magazines (such as SPIEGEL, FOCUS Schule)	0.438	0.586	-	-	-	-
Total			0.656		-		-



#### 4.4 Dimensionalities

Below, one dimensionality of the various scales of cultural capital is tested using factor analyses.<sup>6</sup> One dimensionality is a necessary condition of validity. In the case of multidimensionality of an item, it measures multiple latent variables implying measurement errors. Hence, loadings on the common factor of the items should be substantial ( $\geq 0.4$ ) and loadings on other factors should not exceed 0.4 or the loadings on the common factor.

Considering scales of objectified cultural capital in SC3 and SC6, one dimensionality was given (see Table 31). However, factor loadings of the home educational resources variables were low. Only the variables “dictionary” and “books for homework” revealed values just above 0.4.

The factor loadings of the cultural possessions items measured from fifth graders were low, too, whereas those measured from SC6 were sufficiently high ranging from 0.570 to 0.635.

The factor structures of embodied cultural capital and high quality reading also indicated one dimensionality (see Table 32 and Table 33). Nevertheless, the scale “music” showed insufficiently low factor loadings across both starting cohorts.

---

<sup>6</sup> More specifically, the principle factor method was applied.

Table 31: Factor Analyses of Objectified Cultural Capital in SC3 and SC6

Starting cohort 3										Starting cohort 6			
Fifth graders						Parents							
		Factor 1		Factor 2		Factor 1		Factor 2		Factor 1		Factor 2	
Factor	Item	Eigen-value	Factor-loadings	Eigen-value	Factor-loadings	Eigen-value	Factor-loadings	Eigen-value	Factor-loadings	Eigen-value	Factor-loadings	Eigen-value	Factor-loadings
Home educational resources	Desk	0.785	0.276	0.108	0.053	-	-	-	-	-	-	-	-
	Room		0.276		0.225		-		-		-		-
	Learning software		0.357		-0.108		-		-		-		-
	Own books		0.354		0.146		-		-		-		-
	Books for homework		0.455		-0.120		-		-		-		-
	Dictionary		0.417		-0.084		-		-		-		-
Cultural possessions	Classical literature	0.277	-	-0.175		-	-	-	-	1.117	0.635	-0.143	
	Books with poems		0.372				-		-		0.623		
	Work of art		0.372				-		-		0.570		

Table 32: Factor Analyses of Embodied Cultural Capital in SC3 and SC6

		Starting cohort 3								Starting cohort 6			
		Fifth graders				Parents							
		Factor 1		Factor 2		Factor 1		Factor 2		Factor 1		Factor 2	
Factor	Item	Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading
Participation in high culture	Museum, art exhibition	0.987	0.554	-0.144		1.141	0.610	-0.163		1.130	0.602	-0.156	
	Opera, ballet, classical concert		0.562				0.612				0.633		
	Theater		0.604				0.628				0.606		
Music	Actively making music	0.197	0.314	-0.140		-	-	-	-	0.269	0.367	-0.171	
	Listening to classical music		0.314				-		-		0.367		
Cultural involvement	Books	1.262	0.590	-0.024		-	-	-	-	0.801	0.592	-0.070	
	Movies or TV shows		0.423				-		-		-		
	Political and social questions		0.624				-		-		0.412		
	Art works, art		0.588				-		-		0.531		

Table 33: Factor Analysis of Reading Culture in SC3

		Starting cohort 3							
		Fifth graders				Parents			
Factor	Item	Factor 1		Factor 2		Factor 1		Factor 2	
		Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading	Eigen-value	Factor-loading
High quality reading	classic literature	1.208	0.521	0.023	0.083	-	-	-	-
	nonfiction books		0.540		0.076		-		-
	youth pages in other superregional papers (such as SZ, FAZ)		0.565		-0.073		-		-
	magazines (such as SPIEGEL, FOCUS Schule)		0.571		-0.074		-		-

To assess if the different cultural capital indices and single indicators measure separable dimensions, I performed correlation analyses. Generally, it is to be expected that the different dimensions correlate with each other. However, the level of the correlations should not suggest that the measures capture the same dimension of cultural capital.

Table 34 and Table 35 show that all the different measures of cultural capital in SC3 are correlated with each other. More specifically, correlations were low ( $r < 0.3$ ) or moderate ( $0.3 \leq r < 0.5$ ).

*Table 34: Correlations of Cultural Capital Measures in SC3 (Students)*

	Home educational resources	Cultural possessions	Books at home	Participation in high culture	Music	Cultural involvement	Reading quantity	High quality reading
Home educational resources	1.0000							
Cultural possessions	0.2984*	1.0000						
Books at home	0.2888*	0.2743*	1.0000					
Participation in high culture	0.1416*	0.2283*	0.2373*	1.0000				
Music	0.0390*	0.1030*	0.1386*	0.1592*	1.0000			
Cultural involvement	0.1362*	0.2527*	0.1531*	0.3422*	0.1025*	1.0000		
Reading quantity	0.1363*	0.1289*	0.3111*	0.1791*	0.0942*	0.2327*	1.0000	
High quality reading	0.1446*	0.2206*	0.1715*	0.3583*	0.1389*	0.4794*	0.2521*	1.0000

Note. \*  $p < 0.05$

*Table 35: Correlations of Cultural Capital Measures in SC3 (Parents)*

	<b>Books at home</b>	<b>Participation in high culture</b>	<b>Reading quantity</b>
<b>Books at home</b>	1.0000		
<b>Participation in high culture</b>	0.4825*	1.0000	
<b>Reading quantity</b>	0.1453*	0.1348*	1.0000

Note. \*  $p < 0.05$

Cultural capital measures in SC6 display a similar pattern of correlations (cp. Table 36). All indices and single indicators are correlated with each other and correlations were low or moderate. However, the level of correlations tended to be higher than in SC3 and the correlation between cultural possessions and books at home was high ( $r \geq 0.5$ ).

In sum, correlation analyses imply that each of the cultural capital measures in SC3 and SC6 represents a separate dimension.

Table 36: Correlations of Cultural Capital Measures in SC6

	Cultural possessions	Books at home	Participation in high culture	Music	Cultural involvement	Reading quantity
Cultural possessions	1.0000					
Books at home	0.5777*	1.0000				
Participation in high culture	0.4515*	0.4386*	1.0000			
Music	0.2275*	0.2059*	0.2968*	1.0000		
Cultural involvement	0.4011*	0.4030*	0.4001*	0.2164*	1.0000	
Reading quantity	0.1448*	0.1631*	0.1432*	0.0984*	0.1943*	1.0000

Note. \*  $p < 0.05$

## 4.5 Criterion validity

According to the idea of criterion validity, quantitative analyses should confirm hypotheses of the respective research. Hence, the indices and single indicators of a construct should relate to other indices and single indicators in correspondence with theory.

Cultural capital theory states that cultural capital is unequally distributed across social classes, that is the higher the individual social class position, the higher the endowment with cultural capital. This is especially true for the cultural reproduction model, but should also hold for the cultural mobility model. Otherwise, cultural capital would lose its distinctive power and, hence, its potential for mobility.

In the following, this hypothesis is tested by comparing the means of the various cultural capital dimensions across social classes with respect to significant differences using one-way analyses of variance (ANOVA). However, several cultural capital indices do not satisfy the normality assumption. Although ANOVA is robust regarding its violation, the non-parametric Kruskal-Wallis test was conducted as a robustness check.

Social class position was measured by the EGP class scheme and formal education. In case of SC3, both indicators were derived from the parents' survey and for SC6, social class position of the respondent was applied. EGP classes were conflated into three categories: "low" consisting of EGP IIIb, VI, VII, "intermediate" containing EGP IIIa, IV, V, and "high" representing the service classes EGP I and II. In SC3, data on the occupation of both parents is available. The social class indicator that was used contains the information of the parent with the higher social class according to the EGP class scheme.

The second social class indicator "formal education" entails the following categories: "low", that is basic secondary education (Hauptschulabschluss), "intermediate" referring to intermediate or higher secondary education (Mittlere Reife and Abitur), and "high" meaning tertiary education (Fachhochschul- and Hochschulabschluss). As the data on educational background in SC3 was collected similar to occupational information, the variable "formal education" reflects the educational certificate of the parent with the higher formal education.

The indices "home educational resources", "cultural possessions", "participation in high culture", "cultural involvement", and "high quality reading" are sum scores of the respective single indicators (see Table 31, Table 32, and Table 33). "Books at home" and "reading quantity" in SC6 are single indicators (see Table 4, Table 5, and Table 19). In contrast, "reading quantity" in SC3 for both, students (see Table 16) and parents (see Table 17 and Table 18), are weighted mean scores of the respective variables taking a typical week with 5 school and working days and 2 days off as a basis. As the single indicators of the latent variable "music" were measured on different scales (see chapter 3) they had to be standardized with a mean of 0 and a standard deviation of 1 before they were summed up.

Table 37 shows the results of the analyses. The first three columns indicate the name of the cultural capital measure and the interview in which data was collected. The fourth and fifth column show the overall mean and the standard deviation of the measure in the respective sample. The seventh column displays the means with regard to the EGP classes. Columns eight and nine indicate the p-values of the ANOVA and the Kruskal-Wallis test considering ties.



Finally, columns ten to twelve are equivalent to the three former columns but displaying results regarding formal education.

In sum, the abovementioned hypothesis was confirmed for the majority of the cultural capital measures. The mean values increased with social class position whether measured by EGP or formal education. Furthermore, these differences were significant at a .05 level minimum. However, there are few exceptions with respect to this pattern. Regarding students of SC3, the p-value calculated by the ANOVA across the different EGP classes for the index “music” was .095. Moreover, the index “cultural involvement” in SC3 displayed neither ascending mean values in accordance with the social class indicators nor significant p-values. Additionally, the means of the variable “reading quantity” for parents in SC3 were unlike theoretical expectations: they did not increase with social class position measured by EGP and differences in means were not significant according to ANOVA. On the other hand, results for the different educational groups confirmed the hypothesis. Besides, the variable “high quality reading” showed a pattern of the means that only partially matched with theory. As expected, means of students from the low social class were lower than these of students from the high class, but they were higher than means of intermediate class students. However, differences in the means were significant at a .05 level.

Table 37: Comparison of the Means of Cultural Capital Measures Across Social Classes

Cultural capital measure	SC	Respondent	Mean	SD		EGP			Education		
						Mean	ANOVA p-value	Kruskal-Wallis p-value	Mean	ANOVA p-value	Kruskal-Wallis p-value
Home educational resources	3	Students	5.162	1.039	Low	4.940			4.730		
					Intermediate	5.239	.000	.000	5.273	.000	.000
					High	5.395			5.473		
Cultural possessions	3	Students	1.262	0.752	Low	1.143			1.109		
					Intermediate	1.234	.000	.000	1.253	.000	.000
					High	1.356			1.422		
	6	Target person	1.660	1.151	Low	1.217			1.104		
					Intermediate	1.563	.000	.000	1.588	.000	.000
					High	1.945			2.227		
Books at home	3	Students	3.744	1.449	Low	3.162			2.886		
					Intermediate	3.711	.000	.000	3.725	.000	.000
					High	4.290			4.739		

Participation in high culture		Parents	4.020	1.314	Low	3.174			2.809		
					Intermediate	3.780	.000	.000	3.840	.000	.000
					High	4.496			5.002		
	6	Target person	4.053	1.327	Low	3.504			3.298		
					Intermediate	3.987	.000	.000	3.995	.000	.000
					High	4.455			4.753		
	3	Students	6.120	2.515	Low	5.747			5.713		
					Intermediate	5.875	.000	.000	5.928	.000	.000
					High	6.460			6.867		
Music		Parents	6.032	2.629	Low	4.651			4.324		
					Intermediate	5.574	.000	.000	5.615	.000	.000
					High	6.820			7.715		
	6	Target person	5.712	2.715	Low	4.691			4.538		
					Intermediate	5.527	.000	.000	5.545	.000	.000
					High	6.368			6.939		
	3	Students	0.017	1.511	Low	0.032	.095	.000	-0.116	.000	.000

	6	Target person	.000	1.563	Intermediate	0.071			-0.093		
					High	0.076			0.257		
					Low	0.260			-0.312		
					Intermediate	0.095	.000	.000	-0.057	.000	.000
					High	0.174			0.353		
Cultural involvement	3	Students	9.624	3.739	Low	9.694			9.707		
					Intermediate	9.546	.726	.803	9.487	.239	.145
					High	9.568			9.707		
	6	Target person	6.970	2.466	Low	6.322			5.970		
					Intermediate	6.770	.000	.000	6.891	.000	.000
					High	7.512			7.904		
Reading quantity	3	Students	0.851	0.642	Low	0.766			0.715		
					Intermediate	0.857	.000	.000	0.839	.000	.000
					High	0.918			1.006		
		Parents	1.071	0.903	Low	1.086			0.974		
					Intermediate	1.032	.357	.002	1.063	.001	.000

					High	1.080		1.137		
					Low	1.11		1.16		
					Intermediate	1.16	.001	1.23	.000	.000
					High	1.20		1.34		
High quality reading	3	Students	8.090	3.665	Low	8.052		8.041		
					Intermediate	7.799	.047	7.870	.000	.000
					High	8.217		8.560		

## 5. Summary and conclusion

In this paper, I gave a detailed overview of the cultural capital measurements in NEPS SC3 and SC6 including the underlying theories, the measurements, and empirical results with respect to distributions, missing values, reliabilities, dimensionalities and criterion validity.

The instruments were developed with regard to

the established theoretical mechanisms underlying educational inequalities due to social origin (Crook, 1997), that is social distinction (DiMaggio, 1982; Rössel & Beckert-Zieglschmid, 2002) and activities that promote learning (de Graaf, Nan Dirk et al., 2000; Sullivan, 2001; see chapter 2)2. Each of the measures can be assigned to one of these mechanisms (compare chapter 3).

Except for the items on the quantity of reading, cultural capital measures implemented in the NEPS were adapted from other scientific surveys (see chapter 3).

Empirical results from NEPS data displayed that almost all cultural capital variables had a sufficient variance (compare chapter 4.1). However, this is not true for the items of the “home educational resources” scale. Furthermore, several variables showed positive skewed distributions. Broadly speaking, this especially applied to variables regarding embodied high cultural capital, that is the majority of items. Item nonresponse is a potential issue regarding data on the students’ cultural capital. The analyses showed this data contained a considerable proportion of missing values due to item nonresponse ranging from 7% to 16%. These high rates of missingness probably occurred because of the early age of the respondents, the survey mode (PAPI), and the high response burden (cp. chapter 4.2). However, item nonresponse might be systematic and lead to biased results. If this was the case, data should be imputed or other appropriate means should be taken. Item nonresponse in the SC3 parents’ survey and the SC6 was negligible (<0.5%).

Internal consistencies of the scales were measured by Cronbach’s alpha. Results showed acceptable values ( $\geq 0.5$ ) for the following scales: “cultural possessions” in SC6, “participation in high culture” in all of the three samples, “cultural involvement” in SC3 and SC6, and “high quality reading” in SC3. In contrast, the scales “home educational resources” and “cultural possessions” measured by SC3 students’ questionnaire as well as “music” in SC3 and SC6 displayed unacceptable reliabilities ( $< 0.5$ ). The same pattern occurred regarding the factor structures. Factor loadings were substantial ( $\geq 0.4$ ) for most scales except for “home educational resources” and “cultural possessions” in the student sample of SC3 and “music” in SC3 and SC6. None of the cultural capital items showed substantial loadings on further factors implying one-dimensionality. Furthermore, correlation analyses showed that the different scales and single indicators of cultural capital in SC3 and SC6 represent separate dimensions of cultural capital.

Almost all cultural capital scales and single indicators were unequally distributed across social classes measured by the EGP class scheme and formal education. Means of the cultural capital scales and indicators increased by social classes. These differences were significant. Nevertheless, this did not consistently apply to the indices “music”, “cultural involvement”, and “high quality reading” in SC3 as well as to reading quantity for parents in SC3.

In short, quantitative analyses revealed that the following scales fulfilled all of the tested criteria regarding reliability and validity: “cultural possessions” (SC6), “books at home” (SC3, SC6), “participation in high culture” (SC3, SC6), “cultural involvement” (SC6), and “reading quantity” (students in SC3 and SC6). Additionally, “reading quantity” of parents in SC3 and “high quality reading” of students in SC3 might be considered reliable and valid measurements with minor limitations to criterion validity. In contrast, the use of the scales “home educational resources”, “cultural possessions”, and “cultural involvement” measured by the students’ questionnaire in SC3 as well as “music” in SC3 and SC6 is not recommended as they did not meet criteria of reliability and validity. These findings suggest that measuring cultural capital of students at the beginning of secondary education is more challenging than in later stages of life.

Insufficient results with respect to the “home educational resources” scale might stem from low variances of the single indicators. The poor performance of the “cultural possessions” scale for fifth graders in SC3 possibly resulted from two issues. First, the scale consists of two items only. Secondly, fifth graders might not have reliable information whether their parents or other family members have books with poems. However, the scale implemented in SC6 comprised the same items as in the SC3 students’ questionnaire plus one additional item and showed reliable and valid results.

Overall, NEPS data provides a variety of reliable and valid cultural capital measures concerning the established mechanisms social distinction and learning across different stages of life.

## References

- Blossfeld, H.-P., Roßbach, H.-G., & von Maurice, J. (Eds.). (2011). Education as a lifelong process: The German National Educational Panel Study (NEPS) [Special issue]. *Zeitschrift Für Erziehungswissenschaft*. (14).
- Bourdieu, P. (1977). Cultural reproduction and social reproduction. In J. Karabel & A. Halsey (Eds.), *Power and ideology in education*. New York: Oxford University Press.
- Bourdieu, P. (1986). The Forms of Capital. In J. G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp.241–258). New York: Greenwood Press.
- Bourdieu, P., & Passeron, J.-C. (1971). *Die Illusion der Chancengleichheit. Untersuchungen zur Soziologie des Bildungswesens am Beispiel Frankreichs*. Stuttgart: Klett.
- Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research*, 12, 229–238.
- Crook, C. J. (1997). The dimensionality of stratification-related cultural practices in Australia. *Journal of Sociology*, 33(2), 226–238.
- De Graaf, Nan Dirk, de Graaf, Paul M., & Kraaykamp. (2000). Parental cultural Capital and educational Attainment in the Netherlands: a Refinement of the cultural Capital Perspective. *Sociology of Education*, 73(2), 92–111.
- DiMaggio, P. (1982). Cultural Capital and School Success - The Impact of Status Culture Participation on the Grades of United-States High-School-Students. *American Sociological Review*, 47(2), 189–201.
- DiMaggio, P., & Mohr, J. (1985). Cultural Capital, Educational Attainment, and Marital Selection. *American Journal of Sociology*, 90(6), 1231–1261.
- Farkas, G., Grobe, R. P., Sheehan, D., & Shuan, Y. (1990). Cultural Resources and School Success: Gender, Ethnicity, and Poverty Groups within an Urban School District. *American Sociological Review*, 55(1), 127–142.
- Kunter, M., Schümer, G., Artelt, C., Baumert, J., Klieme, E., Neubrand, M., . . . Weiß, M. (2002). *PISA 2000: Dokumentation der Erhebungsinstrumente*. Materialien aus der Bildungsforschung: Nr. 72. Berlin: Max-Planck-Inst. für Bildungsforschung.



- Lareau, A. (2002). Invisible Inequality: Social Class and Childrearing in Black Families and White Families. *American Sociological Review*, 67(5), 747–776.
- Lareau, A., & Horvat, E. M. (1999). Moments of Social Inclusion and Exclusion Race, Class, and Cultural Capital in Family-School Relationships. *Sociology of Education*, 72(1), 37–53.
- Lareau, A., & Weininger, E. B. (2003). Cultural capital in educational research: A critical assessment. *Theory and Society*, 32(5-6), 567–606.
- Matthes, B., & Trahms, A. (2010). Arbeiten und Lernen im Wandel Teil II - Codebuch. FDZ-Datenreport 02/2010. Retrieved from <http://fdz.iab.de/187/section.aspx/Publikation/k100831n03>
- Paulus, C. (2009). Die "Bücheraufgabe" zur Bestimmung des kulturellen Kapitals bei Grundschulern. Retrieved from [http://psydok.psycharchives.de/jspui/bitstream/20.500.11780/3344/1/BA\\_Artikel.pdf](http://psydok.psycharchives.de/jspui/bitstream/20.500.11780/3344/1/BA_Artikel.pdf)
- Ramm, G., & Adamsen, C. (2006). PISA 2003: Dokumentation der Erhebungsinstrumente. Münster, München [u.a.]: Waxmann.
- Rössel, J., & Beckert-Zieglschmid, C. (2002). Die Reproduktion kulturellen Kapitals. *Zeitschrift Für Soziologie*, 31(6), 497–513.
- Stocké, V., Blossfeld, H.-P., Hoenig, K., & Sixt, M. (2011). Social inequality and educational decisions in the life course. *Zeitschrift Für Erziehungswissenschaft*, 14(2), 103–119.
- Sullivan, A. (2001). Cultural Capital and Educational Attainment. *Sociology*, 35(4), 893–912.
- Weber, M., Roth, G., & Wittich, C. (1978). *Economy and society: An outline of interpretive sociology*. Berkeley: University of California Press.

## 6. Appendix

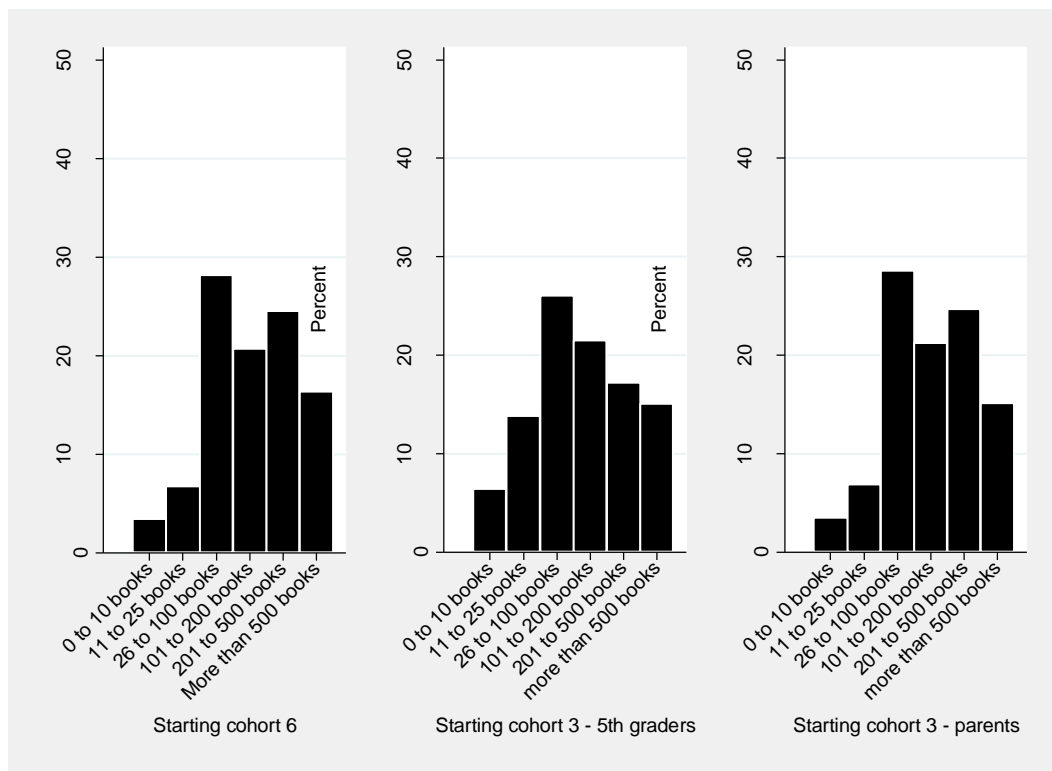


Figure 7: Distribution of number of books – SC3, SC6

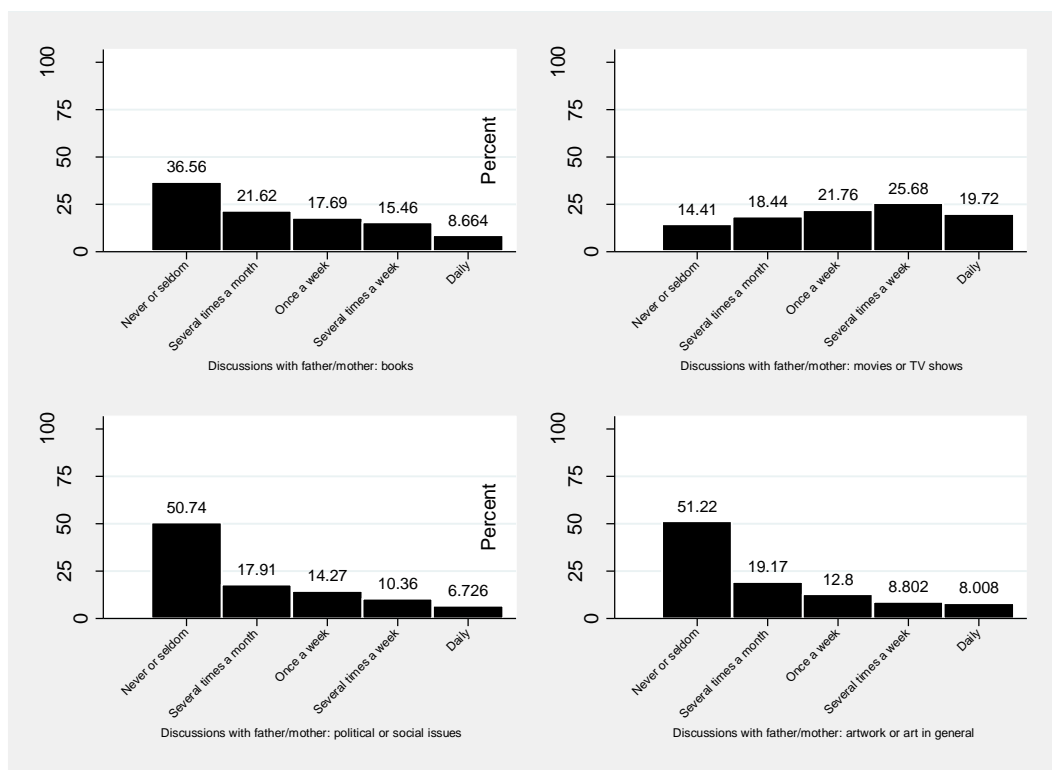


Figure 8: Distribution of cultural involvement – SC3, fifth graders

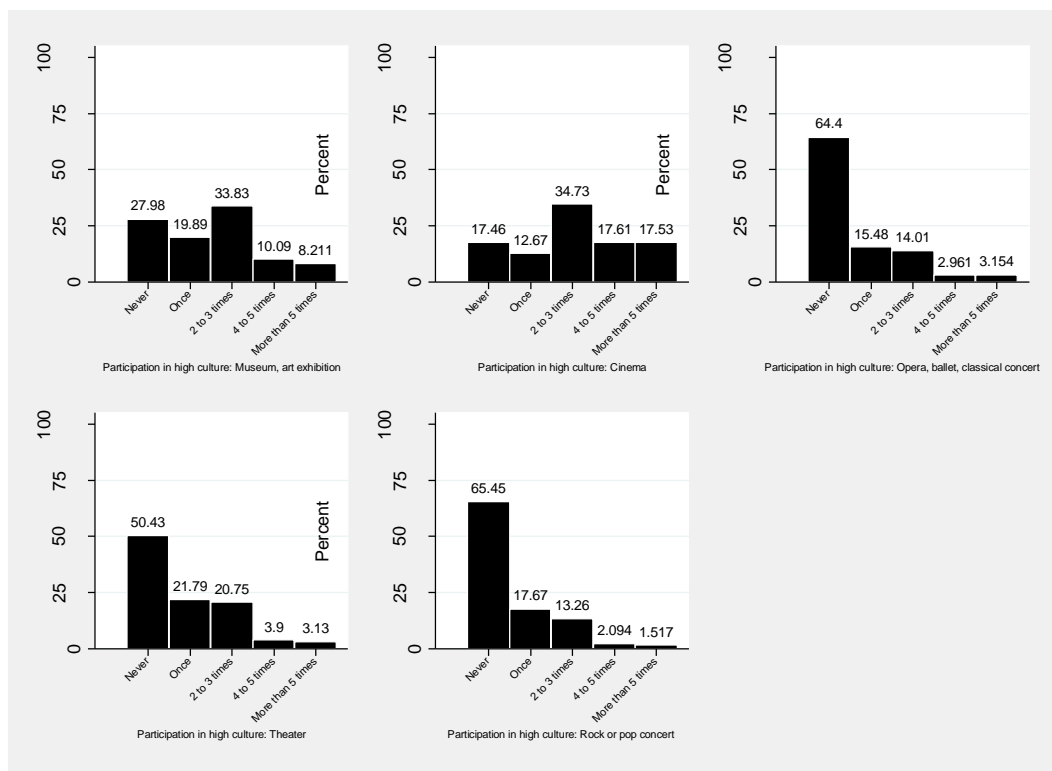


Figure 9: Distribution of participation in high culture – SC3, parents

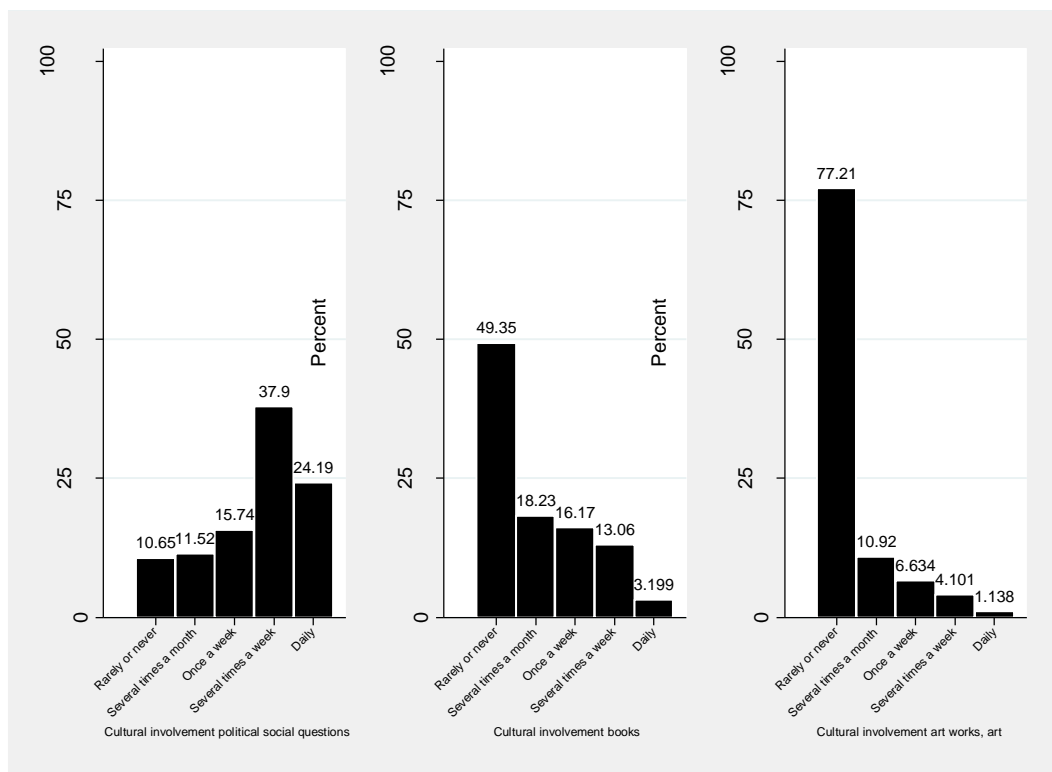


Figure 10: Distribution of cultural involvement - SC6

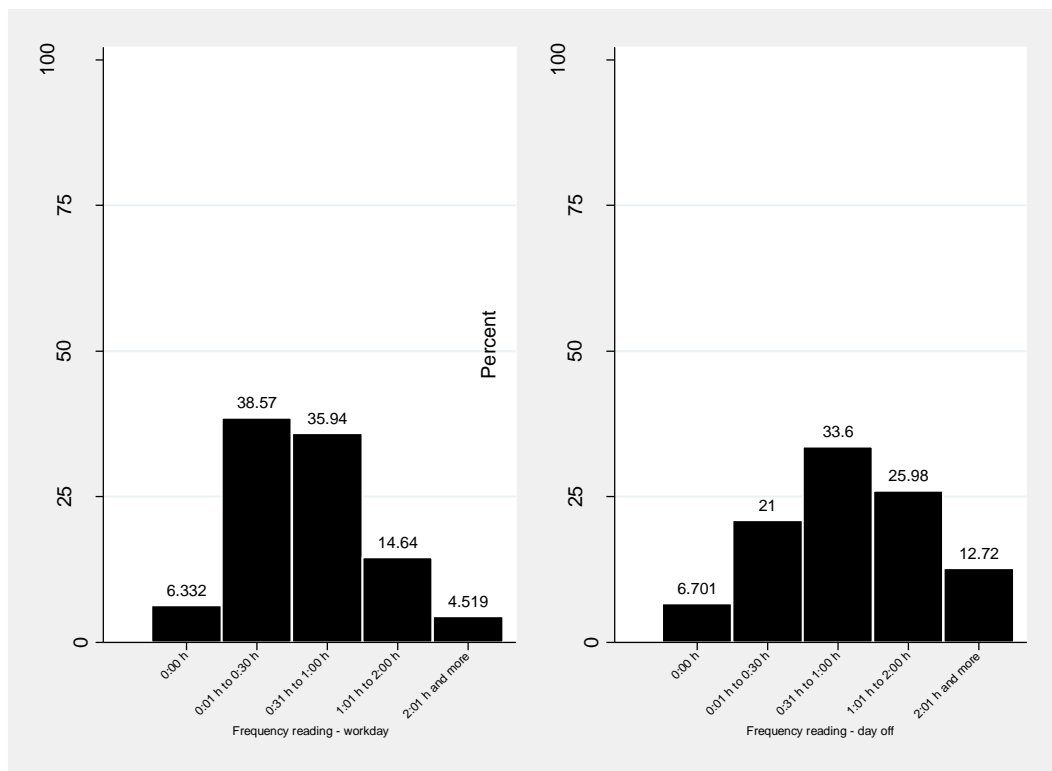


Figure 11: Distribution of reading quantity – SC3 parents