Methods

Data

The main data source for the analysis is the First Study of Citizenship Education in Chile, carried out by the Education Quality Agency of the Ministry of Education. The application date was November 9, 2017. The target population of this study is Eighth-grade students from 242 schools. In the data, there are 8,589 students and 6,770 parents. This database was analyzed with the R package "ResponsePatterns" to detect possible repetitive and "careless" response patterns and thus contribute to a higher quality of research data (Gottfried, et al 2022). Responses from 171 students and 79 parents were removed, which, when merged, gave a total of 6,270 valid cases.

The analysis of school variables includes data from the Ministry of Education's SIMCE 2017 database. This database contains information at the school level, such as the administrative dependency, its socioeconomic classification, and the achievement scores obtained in the mathematics and language census tests. It is available for free use on the MINEDUC [web page].

After eliminating missing cases, the final sample used in the analysis was based on 5,047 students and parents of 231 schools for the dependent variable of access to social services.

Variables

Dependent variables

This study has three dependent variables related to the justification of social inequality in specific policy domains. The first asks whether access to social services should be conditional on income, i,.e., "It is just that in Chile people who can pay have a better education for their children". Students rated their preferences using the following responses: "strongly disagree", "Disagree", "Agree", and "strongly agree". An average index is built with these items (Cronbach's Alpha = 0,86). (Apéndice: items en español y su correspondiente traducción al inglés)

Table 1 shows the items used, their response categories, and their frequencies.

Table 1: Dependent variables

Label	Stats / Values	Freqs (% of Valid)	Valid
It is just that in Chile people with higher incomes can have better pensions than people with low incomes	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	1837 (30.6%) 1945 (32.4%) 1622 (27.0%) 608 (10.1%)	6012 (95.9%)

Label	Stats / Values	Freqs (% of Valid)	Valid
It is just that in Chile people who can pay have a better education for their children	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	1766 (29.7%) 1732 (29.1%) 1704 (28.6%) 750 (12.6%)	5952 (94.9%)
It is just that in Chile people with higher incomes can access better health services than people with low incomes	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	2254 (38.0%) 1685 (28.4%) 1401 (23.6%) 593 (10.0%)	5933 (94.6%)
Inequality justification index	Mean (sd) : 2.2 (0.9) min < med < max: 1 < 2 < 4 IQR (CV) : 1.7 (0.4)	13 distinct values	6077 (96.9%)

Independent variables

For the primary independent variable, the perception of meritocracy, five items address the perception of rewards according to effort and intelligence at the school and societal levels. At the school level, students answer whether "Intelligence is important to get good grades" and "Effort is important to get good grades". At the societal level, students respond to the following questions: "In Chile, people are rewarded for their efforts", "In Chile, people get what they deserve", and "In Chile, people are rewarded for their intelligence and skills". Each item was answered on a four-point scale ranging from "Strongly disagree" to "Strongly agree".

The rest of the independent variables are divided into individual and school levels. At the individual level, family socioeconomic status was measured by the parents' highest educational level and the number of books at home. Likewise, an index of access to technology includes the number of computers, tablets, and cell phones at home, as well as whether there is an Internet connection. Table 2 shows the items used, their response categories, and their frequency.

Table 2: Independent variables

Label	Stats / Values	Freqs (% of Valid)	Valid
Intelligence is important to get good grades	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	367 (6.1%) 920 (15.3%) 2970 (49.4%) 1760 (29.3%)	6017 (95.9%)
Effort is important to get good grades	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	109 (1.8%) 88 (1.5%) 1427 (23.7%) 4406 (73.1%)	6030 (96.1%)

Label	Stats / Values	Freqs (% of Valid)	Valid
In Chile, people are rewarded for their intelligence and skill	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	517 (9.0%) 1568 (27.3%) 2673 (46.6%) 983 (17.1%)	5741 (91.5%)
In Chile, people are rewarded for their efforts	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	512 (8.7%) 1733 (29.4%) 2607 (44.2%) 1050 (17.8%)	5902 (94.1%)
In Chile, people get what they deserve	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	604 (10.5%) 1911 (33.1%) 2388 (41.4%) 871 (15.1%)	5774 (92.1%)
Parental educational level	1. 8th grade or less 2. Secondary Education 3. Higher tec. education 4. University or Postgraduat 5. Missing	559 (8.9%) 1698 (27.1%) 960 (15.3%) 1080 (17.2%) 1975 (31.5%)	6272 (100.0%)
Number of books at home	1. Les than 25 2. More than 25	3920 (63.2%) 2281 (36.8%)	6201 (98.9%)
Technology access index	Mean (sd) : 7.8 (2.5) min < med < max: 0 < 8 < 12 IQR (CV) : 3 (0.3)	13 distinct values	6272 (100.0%)

The school-level variables are the administrative dependency of the school, the socioeconomic classification made by the Ministry of Education, the level of performance in the SIMCE test of the school, and the proportion of parents with university or postgraduate degrees. Table 3 shows the items used, response categories, and frequency.

Table 3: School context variables

Label	Stats / Values	Freqs (% of Valid)	Valid
Proportion of parents with university level by school	Mean (sd) : 0.2 (0.2) min < med < max: 0 < 0.1 < 0.9 IQR (CV) : 0.2 (0.9)	103 distinct values	6272 (100.0%)

Label	Stats / Values	Freqs (% of Valid)	Valid
SIMCE score by school	1. Low	2091 (33.3%)	6272
	2. Medium	2091 (33.3%)	(100.0%)
	3. High	2090 (33.3%)	
Administrative dependency of school	1. Public	2659 (42.4%)	6272
	2. Subsidized private	3169 (50.5%)	(100.0%)
	3. Private	444 (7.1%)	
Socioeconomic level of school	1. Low	720 (11.5%)	6272
	2. Medium low	2282 (36.4%)	(100.0%)
	3. Medium	1383 (22.1%)	
	4. Medium high	1309 (20.9%)	
	5. High	578 (9.2%)	

Methods

The data has a hierarchical structure of students nested in schools, so the model estimation is performed in a multilevel (random effects) framework. This modeling approach lets us correctly estimate individual and contextual effects in a single model. We estimate cumulative link mixed models for the ordinal dependent variables, whereas we use linear mixed effects models for the average index of inequality justification.

The hypotheses of this research were pre-registered in the Open Science Framework platform of the Center for Open ScorrectlyOSF), the access to the document is available at this link. The statistical analysis of this research was performed using the free software R version 4.1.3.