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## Designing and implementing a test for measuring cultural dimensions in primary school

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## ABSTRACT

Cognition and culture are deeply intertwined as there are important cross-cultural differences in the cognitive development of individuals. Although there are a large number of studies on the subject of culture, these are qualitative in nature and not focused on school contexts. Our aim is to develop a quantitative instrument for primary education that determines the cultural texture within an individual institution, as well as among different kinds of schools. For this purpose, Hofstede's original instrument was adapted, taking into consideration the characteristics and practices of primary school students. A factor analysis and complementary qualitative analysis of the factors obtained from 783 surveys (administered to third and fourth graders) led to the creation of five dimensions, which contrasted with Hofstede's theoretical dimensions. These dimensions include Value of School Achievement, Value of Institutional Structure, Resistance to change, Normative versus Affective and Value of Equality in the Production of Knowledge. Furthermore, this new set of dimensions was a more accurate representation of the school context and the values held by primary school students. Significant differences were found in three of the dimensions when analyzing the cultural differences of the sample and taking into account the students' socioeconomic background. These findings are important as they reveal the presence of subcultures within a given society, which are determined by belonging to a certain socioeconomic class. Measuring cultural values among primary school students contributes to the creation of educational models, the design of educational institutions and the development of public policy since new structures cannot succeed without adequate cultural support.

## 1. Introduction

The challenge of improving a community's education lies in understanding the specific ways in which its members behave socially. This understanding involves a fundamental concern regarding the integration of the different subcultures that shape contemporary communities, as well as the values, rules and attitudes that define their idiosyncrasies (Bourdieu, 1993). The components of this diversity are important to both the teaching and learning process, as well as for defining standards and criteria with which to

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measure a student's abilities. As proposed by Cole, Gay, Glick, and Sharp (1971), cognition and culture are deeply intertwined; i.e. a student's cognitive development can be determined by the constraints of his or her environment. Investigations in the field of cognitive-science (Kuwabara & Smith, 2012; Nisbett & Masuda, 2003; Nisbett & Miyamoto, 2005; Nisbett, Peng, Choi, & Norenzayan, 2001) have revealed significant cross-cultural differences in the cognitive development of individuals. Therefore, a community's culture may be partly influenced by the set of constraints that shape an individual's potential for cognitive and social development (Nussbaum, 2011).

Although there is a large number and variety of studies on the subject of culture (Munn, 1992), their methodological approaches are usually not suitable for the study of complex, large-scale modern institutions (Hofstede, 2001), particularly educational institutions. Salili, Chiu, and Lai (2001) describe a large number of empirical studies analyzing the influence of culture on school-level academic achievement. Since Pierre Bourdieu's work (1986), the idea that economic capital can be transformed into cultural capital that is then passed on to the children within a family structure is well known. It is also widely acknowledged that differences in school achievement can often be attributed to disparities in economic and cultural capital (Sullivan, 2001). Moreover, it has been proven that culture has cognitive repercussions that go beyond a person's neurophysiological status (Pérez-Arce, 1999). In this regard, Rueda (2006) suggests that culture shapes the way in which students construct cognitive learning. Based on this premise, Gruenert and Whitaker (2015) suggest that the introduction of educational policies that take into account classroom cultures may improve academic achievement, as well as enhancing the quality of student life and the school experience.

Research into the cultural dimensions of classroom and school communities has been, for the most part, of a qualitative nature (Hofstede, 1986; Lieberman, 1988; Lipka & Ilutsk, 2014). An attempt to quantify cultural dimensions has been developed by Hofstede (2001) for the study of adult organizations. However, its application with groups of children and in school contexts is still only rudimentary (Guo, 2013; Hofstede, 1986; Hofstede, 2001). Studying the cultural dimensions of a school community using a quantitative approach may provide a broad map of the dimensions of the cultural texture of an individual institution, as well as the differences between different kinds of schools.

Hofstede's theoretical framework is based on a basic principle which suggests that culture is a collective programming of the mind that takes place through social interaction (Hofstede & Minkov, 2010). Therefore, people acquire the values that determine their choices and attitudes both gradually and constantly (Hofstede, 2001). Hofstede's (2001) theoretical development suggests that a culture can be described in terms of its orientation within five fundamental dimensions. These dimensions are described by five cultural indexes: (1) high or low power distance, (2) high or low uncertainty avoidance, (3) individualism versus collectivism, (4) masculinity versus femininity, and (5) long-term or short-term orientation. This framework allows for the measurement of an adult's cultural orientation on both a national and organizational level (Hofstede, 2001). It is the most broadly used culture test in the world and has been applied in over 50 countries (Grimmelikhuijsen, Porumbescu, Hong, & Im, 2013). It has also proven to be fairly accurate at describing the dimensions that it comprises (Søndergaard, 1994).

Primary school is a particularly interesting place to study culture. According to Hofstede's (2001) framework, at approximately 10 years of age children undergo benchmark developments in the acquisition of cultural elements, both in terms of form and content (Hofstede, 2008; Hofstede & Minkov, 2010). From their birth and until this age, children develop a set of values that will later contribute towards explaining their actions within society. This is a period in which cultural learning among children is "fast and highly unconscious", assimilating all "necessary information from the environment" (Hofstede & Minkov, 2010, p. 8). School plays a major role in this process as, after the nuclear family, it is the most important social space to which children are exposed. It therefore provides an important source of social values and meanings. Following this critical period, learning gradually becomes more and more conscious and starts to focus on acquiring new practices. Values, on the other hand, are relatively stable structures (Hofstede, 2001; Hofstede, 2008).

Given the above, our first research question asks: *What changes must be made to Hofstede's quantitative test in order to use it with primary school students?*

In this sense, significant differences in the cultural dimensions proposed by Hofstede have been found among college students from different socio-economic backgrounds living in the same country (Chile) (Recabarren, Nussbaum, & Leiva, 2008). However, Hofstede's (2001) cultural measurements have not been able to distinguish between cross-country and cross-cultural measurements, making such instruments insensitive to the presence of subcultures (Schlägel & Sarstedt, 2016).

Having an instrument that is designed to be applied with children makes it possible to study cultural indexes at school level and therefore distinguish between the subcultures that may co-exist in a given community. Consequently, our second research question asks: *What cultural differences can be observed among primary school students aged up to 10 from different socio-economic backgrounds?*

The main objective of this paper is, therefore, to show the development and validation of an instrument designed to measure the cultural orientation of primary school students, following Hofstede's quantitative method. A secondary objective is to use the validated instrument in order to compare school indexes from different socio-economic groups and determine whether these socio-economic differences lead to the existence of different subcultures among Chilean children.

## 2. Methodology

As with Hofstede's (2001) instrument, the culture test that was developed to be applied with children aged 9 and 10 (third and fourth grade, primary school) was designed in the form of a survey. The survey comprises 46 multiple choice questions, the aim of which is to describe the students' cultural orientation in terms of Hofstede's (2001) cultural dimensions. These are detailed in Table 1.

The methodological approach used for this study was Design-Based Research (Bannan-Ritland, 2003; The Design-Based Research Collective, 2003). This approach was adopted as it facilitates the study of complex problems in genuine educational situations. This

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