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Paper Title A Cross-National Examination of the Effect of the Schwartz Human Values on PISA (Programme for International Student Assessment) Performance Assessments

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Session Title Social Contexts Research in International Education Settings

Session Type Roundtable Presentation

Presentation Date 4/28/2017

Presentation Location San Antonio, Texas

Descriptors Achievement Gap

Methodology Quantitative

Unit Division G - Social Context of Education

DOI 10.302/1172789

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**A Cross-National Examination of the Effect of the Schwartz Human
Values on PISA Performance Assessments**

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Abstract. In recent years, the growing frequency of PISA assessments, flows of transnational borrowing and policy adaptation have intensified with implications on national education reforms. Such a growing impact seems to have reinforced the underlying legitimacy of a world of education that is not culturally diverse. The study aimed to highlight societal cultural values as significant factors in explaining a country's students' performance in PISA assessments. Combining the data from the World Values Survey with the PISA scores database, we examined how the Schwartz values relate to student achievement at the national level. Results of regression analysis indicated that when controlling for GDP per capita, tradition remains the best predictor of PISA tests in the three core disciplines. Beyond economic disparity, cultural values, the tradition value in particular, play a significant role in explaining academic achievements per country. Paradoxically, while globalization, in some instances, has led to positive educational policies and multicultural values challenging traditions; still, the tradition may serve to build group identities, social cohesion and national solidarity necessary in the dynamic global era. Such a comparative study that takes into account the influence of the cultural values at the national level may assist educational administrators to make their educational systems both more effective and socially responsive.

Key words: Schwartz human values, PISA, comparative approach, indicators of performance, culture, globalization

Paper type: Research paper

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1. Introduction

As educational leaders, policy analysts, and academics acquire more information about, and perhaps insights into, the structures, policies, and practices of various educational systems, the internationalization of educational policy-making will spread (Bieber, Dobbins, Fulge, and Martens, 2014). The emerging impact of globalization on educational policies is largely recognized. There is unprecedented interest in improving the quality of education, and particularly student outcomes (Phillips and Schweisfurth, 2014; Rawolle and Lingard, 2008). In this regard, new international comparisons regarding student performance have increasingly become a new indicator to measure the quality of a nation's educational system (Lingard, 2010). Importantly, with the growing frequency of international assessments such as PISA, flows of transnational 'borrowing' and policy adaptation have noticeably intensified with important implications on national education reforms (Meyer and Benavot, 2013; Sellar and Lingard, 2014; Steiner-Khamsi and Waldow, 2012).

The growing impact of international assessments seems to have reinforced the underlying legitimacy of a world of education that is not culturally diverse, while also ignoring the disparity of economic wealth among the various nations. Internationalization of the Western model of education with its organized grades and classroom procedures, its hierarchical structure and assessment procedures, has become prevalent (Power, 2015; Schleicher and Stewart, 2008). A central assumption underlying PISA is that global variation in students' academic performance is attributable to national educational structures and policies. Thus, policy makers in countries with contrasting cultures have tended to follow policy blueprints similar to those adopted by many Western governments, who for diverse reasons have chosen to restructure the administrative structures and processes of their public

A Cross-National Examination

sectors but with little consideration of their cultural fit (Hallinger and Leithwood, 1996; Meyer and Benavot, 2013). However, important economic, social, and cultural differences exist between Western and Asian learners, for example, in regard to their conception of what is meant by knowledge, and what constitutes effective teaching and learning (Bajunid, 1996; Feniger, Livneh, and Yogev, 2012; Li, 2012). A recent study has indicated that cultural background appears to be of more importance for Chinese immigrant students' educational attainment than exposure to the Australia or New Zealand educational systems (Feniger and Lefstein, 2014).

The trend towards multiculturalism and significant cultural differences may have implications in determining what should be regarded as appropriate patterns of management and school organization in different societies, indicating the need for cross-cultural research in educational policy (Feniger and Lefstein, 2014; Hallinger and Leithwood, 1996). Accordingly, in considering that cultural values to a great extent shape the context in which educational systems operate (Dimmock and Walker, 2000), the goal of the present study is to highlight societal cultural values as significant indicators in explaining learning and educational performance. We propose that the Schwartz Cultural Framework and Value Types (2011) may explain achievement differences in PISA achievement test score indicators. We have used Schwartz's framework due to its extensive use as a national cultural framework for facilitating international comparisons in social research, and because the framework includes value measurements which have been shown to have cross-culturally equivalent meanings at an individual level to operationalize the cultural dimensions. By focusing on societal cultural values above disparity in economic growth as predictors of success in international assessments, we seek to extend our knowledge regarding additional indicators explaining differences across countries regarding success in international assessments. Specifically, the current study first examines how high-achieving countries in

A Cross-National Examination

PISA assessments differ from low-achieving countries in terms of the Schwartz cultural values. A second aim of the study is to examine which of the Schwartz values best predicts PISA educational achievement tests.

It is therefore hoped that the present study can make important theoretical contributions. First, the significance of educational indicators today above contextual care in reading them (Novoa and Yariv Mashal, 2003), has emphasized the contribution of the OECD to the construction of a 'global field of measurement' constituted through numbers, and its enhanced role as policy actor (Lingard *et al.*, 2005). However, studies have noted that social, cultural, demographic, and economic indicators also account for a country's educational achievements (Alexander, 2012; Tan, 2012). Second, although schools in different societies may appear to have similar formal leadership hierarchies, these appearances often disguise subtle differences in values, relationships, and processes beneath the surface (Dimmock and Walker, 2000). Essentially, values can reflect major social commitments in societies and across nations (Schwartz, 2006). For example, a society with a more hierarchical structure may encourage responsible behavior by assigning clear, hierarchical roles and by teaching its citizens to obey authority. In contrast, more egalitarian cultures may teach their members to view and act towards one another as equals. Accordingly, different approaches to teaching and learning, for example, may only be truly understood when placed in their cultural context (Cheng and Lam, 2013). Therefore, by taking the pervasive influence of the culture and values at the national level into account, this study may assist educational administrators in making their educational systems both more effective and more socially responsive.

2. Literature review

2.1. Cultural diversity and the internationalization of education

A Cross-National Examination

Globalization has emerged as a result of several factors, among them advances in information and communication technology and the opening up of markets (Power, 2015). Global processes have changed the context within which educational systems operate, the way we communicate, teach, and learn. Globalization guides political, economic, and educational organization (Gaziel, 2009; Rawolle, 2010). Because of a global order in which knowledge is seen as major resource, isomorphic pressures toward internationalization in education and schooling have been noted (Wiseman, Astiz, Fabrega, and Baker, 2011). More importantly, global comparisons and thus global indicators and standards have begun to regulate national policy decision-making by establishing a commensurate space for measurement of national educational performance (Lingard and Rawolle, 2010, 2011) where ‘reference societies’ have emerged for national educational systems (Schriewer and Martinez, 2004).

Lingard and Rawolle (2011) refers to an emergent ‘global education policy field’ with statistics as a dominant point to its existence. This is well-demonstrated through the emphasis in the OECD assessment program of PISA on student performance indicators in mathematics, science, and reading literacy. The quality of education in OECD countries is increasingly being judged according to indicators of educational success such as scores achieved in these domains by 15 year-olds (OECD, 2013) creating new indicator of reference to measure a country performance with test score as basis of reference. Yet, countries differ not only in wealth and degree of social equality, but also in their cultural values requiring careful consideration of national and local histories and cultures (Lingard, 2010).

Cross-cultural researchers have come to agree that culture influences people’s thinking, emotions, and actions (Earley, 1993; Hofstede, 1997; Schwartz, 1992; Triandis, 1995). Deeply rooted values are considered as abstract motivations that guide, justify, and explain attitudes, norms, opinions, and actions (Feldman, 2003; Schwartz, 1992). People learn these

A Cross-National Examination

values through both formal and informal socialization, through parents, and through exposure to laws and norms reflecting cultural values (Inglehart and Baker, 2000). Nations that address basic societal issues differently have different cultural values (Schwartz and Ros, 1995). For example, in countries characterized by Confucian cultures, values affecting attitudes towards education may be different from the values predominant in North American and European countries. The same could be said of the values underlying educational attitudes in Arabic-speaking cultures (Lewis, 1995; Tilak, 2003). Since these values shape the behaviors of a country's citizens, individual attitudes toward academic achievement may vary as a function of values (Inglehart, 1997; Schwartz, 1997). Therefore, we propose that the Schwartz Cultural Framework and Value Types (2011) may explain achievement differences in PISA achievement tests.

2.2 Schwartz Cultural Framework and Value Types

The most well-researched values systems are those of Hofstede (2001) and Schwartz (1999, 2011). The Schwartz values framework includes 10 motivationally distinct types of individual values samples from 63 nations (Schwartz, 1992, 1994, 1999). It derives 10 motivationally distinct, broad, and basic values from three universal requirements of the human condition: individuals' needs as human beings, requisites of coordinated social interaction and belonging to a group (Schwartz, 2011). The ordered set of values forms a system of value priorities that are built around three dimensions that correspond to three essential principles of social organization. These value types are (Schwartz and Bardi, 2001):

Power: assessing the importance of authority, wealth, social power, public image, and social recognition; *Achievement*: assessing the importance of ambition, success, capacity, influence, and intelligence (successful, capable, ambitious, and influential); *Hedonism*: Pleasure and sensuous gratification for oneself (e.g. pleasure, enjoying life); *Stimulation*: assessing the importance of variety and excitement; *Self-direction*: assessing the importance

A Cross-National Examination

of creativity, freedom, independence, and curiosity; *Universalism*: assessing the importance of broadmindedness, social justice, equality, and a world at peace; *Benevolence*: assessing the importance of helpfulness, loyalty, forgiveness, honesty, and responsibility (helpful, honest, forgiving, loyal, and responsible); *Traditionalism*: assessing the importance of respect for tradition, humility, devoutness, and moderation; *Conformity*: assessing the importance of obedience, self-discipline, and politeness; *Security*: assessing the importance of social order, family security, national security, and a sense of belonging.

The main source of this values structure relates to the dynamic relations among values involving both conflict and congruence in the nature of relationships. Two dimensions summarize the structure of the relationships among the basic values. *Openness to change vs. Conservation*. This dimension concerns the relationship of the individual to the group. The dimension of openness to change involves the values of *self-direction* and *stimulation* that primarily serve the interests of the individual, whereas conservation that encompasses the values of *conformity*, *tradition*, and *security* primarily serves the interests of others. The openness to change dimension reflects autonomous cultures in which the individual is regarded as a unique and self-sufficient being, who is encouraged to express and cultivate his or her special gifts. As for more conservative cultures, the focus is on the collective and the individual is expected to find meaning in participating and belonging to the group, placing high priority in their in-groups.

Self-enhancement vs. Self-transcendence. This dimension concerns the means by which a society guarantees responsible behaviors that enable large numbers of people to live harmoniously together. Self-enhancement includes the values of *achievement* and *power* whereas self-transcendence involves the values of *universalism* and *benevolence*. In the self-enhancement dimension, individuals are assigned and accept social functions that bear specific obligations and limit their behaviors. These reflect more hierarchical cultures, where

an unequal distribution of power and authority is seen as necessary. At the other end of the dimension lie more egalitarian cultures. Individuals recognize each other as equals, demonstrate concern for others, and treat each other the way they wish to be treated.

Hedonism shares elements of both openness to change and self-enhancement.

2.3. National cultural values and PISA international achievements

Research has emphasized that the top ten countries in terms of PISA scores easily divide into two main groups: the ten highest achieving countries reflecting Confucian Asian cultures, and European cultures reflecting Western values (Huntly, Kaiser, and Luna, 2012; Lee, 2009).

More recent international studies (i.e., PISA, 2006 and 2012) are also in general agreement with this classification of high-achieving countries. For example, the ten highest scoring countries in the PISA 2012 assessments for science are Shanghai China, Hong Kong, Singapore, Japan, Finland, Estonia, Vietnam, Poland, and Canada. Similarly, the ten highest scoring countries in the PISA 2012 assessment for mathematics are Shanghai China, Singapore, Hong Kong, Chinese Taipei, Korea, Macao-China, Japan, Liechtenstein, Switzerland, and the Netherlands. Overall, it seems that Confucians tend to score somewhat higher than Europeans (Wilkins, 2004).

In Confucian culture, the ethical–moral system rules all relationships in a society that is highly hierarchical, structured with superiors and subordinates (Inglehart, 2006). Wisdom, responsibility, and benevolence descending from one's superiors and obedience, loyalty, and respect ascending from subordinates are the main values of such social hierarchy. People in such a society gain a sense of control through doing what they are told and conforming to agreed laws and decrees (Chang and Wong, 2008). Since Social–Order values such as tradition, security and conformity depict a traditional and predictable world, any changes may be seen negatively (Hitlin and Kramer, 2007). Confucianism also emphasizes the maintenance of a strong system of ethics. Conservative values and hierarchy, which are both

A Cross-National Examination

very important in South Asian cultures, share the assumption that one should act properly within a community and place the interests of others above one's own personal needs and aspirations (Bernardo, 2008). Research has indicated that for Confucian Asia (e.g. Taiwan, Japan and South Korea), values that emphasize social relationships, family, community, harmony, and trust are related to happiness and life satisfaction (Inoguchi and Shin, 2009; Shin and Inoguchi, 2009; Tan and Tambyah, 2011). Moreover, in the Chinese cultural context, academic achievement is seen as a social endeavor. By achieving in school, a student can bring wealth, fame, and honor to the family (Tao and Hong, 2014).

Western Europe is characterized by high degree of egalitarianism. People take individual responsibility for their actions and make decisions according to their own personal understanding of any given situation. The Western Europe culture calls for selfless concern for the welfare of others and fitting into the natural and social world rather than striving to change it through assertive action. It has also helped lay the foundations for participatory democracy (Power, 2015). Academic achievement is largely seen as an individual endeavor, and emphasis is placed on students expressing their own goals and focusing on their own needs, interests, and preferences (Tao and Hong, 2014). This behavior is characterized by such traits as independence, curiosity, and choosing one's goals (King and McInerney, 2012). Northern and Western Europe promote the personal self, a value system that is characteristic of more capitalist and competitive systems.

Institutions in the United States, including schools, are founded on the individualistic values of Western Europe (Trumbull, Rothstein-Fisch, Greenfield, and Quiroz, 2001), with an emphasis on individual rather than collective score grades as indicators of performance (Raeff, Greenfield, and Quiroz, 2000). American culture tends to emphasize power, achievement, and hierarchy (Greenfield, 2006). American values seem to encourage an

assertive, pragmatic, innovative orientation to the social and natural environment (Greenfield and Quiroz, 2013).

The high academic performance of Asian students is often attributed to core Confucian beliefs about the role of learning and academic achievement (Li, 2012). For example, effort rather than ability is strongly emphasized. Also, one's academic success is celebrated at the group (family) level, rather than on an individual level (Lee, 1996; Li, 2012). It seems that in general, Asians are more oriented towards social goals than their Western counterparts (Cheng and Lam, 2013; King, McInerney, and Watkins, 2012). In addition, in a study comparing the meaning of 'learning' in Chinese and American contexts, Li (2002) found little conceptual overlap in terms of how learning was interpreted. Another example attesting to these differences in core values relates to the amount of time students from a diverse sampling of countries devote to schoolwork and leisure activities. Research has indicated that in Western countries, students are also encouraged to develop personal goals in diverse areas and leisure activities, along with their studies (Larson and Verma, 1999). However, in more conservative and traditional culture, the family's structure influences women students' participation in leisure involving physical activity; especially, leisure that involves physical activity since in Confucianism, appreciation of the beauty of the human body is not allowed (Tsai and Zhou, 2013).

2.4. Research Questions

There is a common consensus that the five facets of *Power*, *Achievement*, *Hedonism*, *Stimulation*, and *Self-Direction* are indicators of more individualistic values and should therefore be emphasized more strongly by Europeans. *Tradition*, *Conformism*, and *Benevolence* characterize collectivist values and are more strongly emphasized by the Confucian Asians. Contemporary researchers in education see this type of Confucian cultural orientation as largely successful (Li, 2012; Tan, 2012). Therefore, we propose that values that

A Cross-National Examination

predominate in more conservative cultures, such as *conformity*, *tradition*, and *security*, and hierarchical culture, such as *achievement* and *power*, should be strong predictors of performance indicators of PISA academic achievement test. Specifically, the current study attempts to address the following research questions:

1. Do high achieving countries versus low achieving countries will differ in terms of the Schwartz cultural dimension of values?
2. Which of the Schwartz cultural dimension of values are the strongest predictors of performance indicators of PISA educational achievement test?

3 Method

3.1. Participating Countries and Students

All OECD countries have participated in PISA since its inception in 2000. PISA 2012 is the program's 5th survey. The PISA study provides comparable information on student achievement (15-year-olds) in mathematics, science, and reading for all OECD member countries (see Organization for Economic Co-operation and Development, 2012 for details). This includes 65 countries in total, made up of 34 OECD countries and 31 partner countries. In the present study, we have combined the data from the sixth wave of the World Values Survey assessing the Schwartz values with the database of test scores in math, science, and reading from the Program for International Student Assessment (PISA, 2012) to estimate each country's values and how these values relate to the indicators of student achievement in the PISA test at the national level. We have included in this comparative study controls for GDP per capita index. Combining the available data, we constructed a dataset containing participants in 33 of the 65 OECD countries.

The following countries were included in the study:

Algeria, Argentina, Armenia, Australia, Brazil, Chile, China, Colombia, Cyprus, Estonia, Germany, Hong Kong, Japan, Jordan, Kazakhstan, Malaysia, Mexico, the

A Cross-National Examination

Netherlands, New Zealand, Peru, Poland, Qatar, Romania, Russia, Singapore, Slovenia, Spain, Sweden, Thailand, Tunisia, Turkey, the USA, Uruguay.

3.2 Measures

3.2.1 **Schwartz Human Values.** Individual data from the sixth wave of the World Values Survey (WVS) was used. Ten distinct types of individual values from the value orientation scales developed by Schwartz (2001) were included in the WVS 2010-2014 survey, which is a compilation of surveys conducted in more than 80 countries representing about 85 percent of the world's population (Inglehart, 2004). The World Values Survey (WVS) of 2010-2014 was conducted among a representative random sample of the adult population within each nation-state. Data for 49 nations was available. Since, Schwartz's questions are given in reverse order (1) "very much like me"; (6) "not at all like me", we reversed the values prior to any analysis (alpha Cronbach=.81). The *benevolence* value was omitted from the data because only 13 countries out of 33 provide complete data for this value.

3.2.2 **Indicator of Educational achievement.** We used the Program for International Student Assessment (PISA, 2012) micro database to measure educational achievement. PISA mapped performance in the three subjects used in the study on a scale with an international mean of 500 and a (student-level) standard deviation of 100 test-score points across the OECD countries.

3.2.3 **Control variables - The GDP per capita index.** The GDP per capita indicates the average standard of living of individual members of the population and the economic strength of each country. The measure is commonly used in cross-cultural research designs in different national settings (National Center for Education Statistics, (NCES) 1996, 2001; Science and Engineering Indicators, 2002; Shapiro and Kamin, 2004). Data on GDP per capita in 2009 US dollars is from the World Bank World Development Indicators. We chose to control for GDP per capita because countries with higher gross domestic product (GDP)

A Cross-National Examination

per capita generally show higher rates of student academic achievement (Baker *et al.*, 2002). Richer countries can raise student achievement directly through education spending. However, in poorer countries students often lack basic nutrition, or face exposure to potentially harmful environments, factors which are correlated with learning difficulties (UNICEF, 2001). All raw data is presented in the Appendix A.

4 Results

Table 1 illustrates the means, standard deviations and correlations for all the study variables.

-Insert Table 1 about here-

The correlation pattern shown in Table 1 reveals several important insights, indicating that the measures relevant to the proposed outcomes were significantly correlated. First, academic achievement in mathematics was positively associated with Schwartz variables of *achievement* ($r=.36, p<.05$), *conformity* ($r=.35, p<.05$), and *tradition* ($r=.45, p<.01$); academic achievement in reading was positively associated with Schwartz variables of *hedonism* ($r=.37, p<.01$), *achievement* ($r=.37, p<.05$), *conformity* ($r=.39, p<.05$), and *tradition* ($r=.48, p<.01$); academic achievement in science was positively associated with Schwartz variables of *hedonism* ($r=.40, p<.05$), *achievement* ($r=.38, p<.05$), *conformity* ($r=.36, p<.05$), and *tradition* ($r=.47, p<.01$). Second, there were no statistically significant associations between the GDP per capita index factor and each of the academic outcomes of mathematic, reading, and science ($p>.05$).

4.1. Hypothesis test

First, using independent samples T-test, results reveal that the higher lower performers were significantly different in terms of their Schwartz values levels. When compared with the low performer level group, the high performer group in mathematics reported significantly higher levels of *security* ($M=2.59, SD=.41; M=2.22, SD=.50; T=-2.32, p<.05$), *hedonism* ($M=2.89, SD=.64; M=3.39, SD=.56; T=-2.39, p<.05$); *universalism* ($M=2.35, SD=.36;$

A Cross-National Examination

M=2.69, SD=.51; T=-2.14, $p<.05$); *achievement* (M=3.29, SD=.56; M=2.82, SD=.62; T=-2.28, $p<.05$); *conformity* (M=2.84, SD=.44; M=2.50, SD=.34; T=-2.40, $p<.05$); *tradition* (M=2.89, SD=.58; M=2.30, SD=.58; T=-3.08, $p<.001$).

When compared with the low performance level group, the high performer group in science reported significantly higher levels of *security* (M=2.59, SD=.41; M=2.22, SD=.50; T=-2.33, $p<.05$), *hedonism* (M=2.89, SD=.64; M=3.39, SD=.56; T=-2.38, $p<.05$); *universalism* (M=2.35, SD= 0.36; M=2.69, SD=.51; T=-2.14, $p<.05$); *achievement* (M=3.29, SD=0.56; M=2.82, SD=.62; T=-2.28, $p<.05$); *conformity* (M=2.84, SD=.44; M=2.50, SD=.34; T=-2.40, $p<.05$); *tradition* (M=2.89, SD=.58; M=2.30, SD=.50; T=-3.08, $p<.05$).

When compared with the low performance level group, the high performer group in reading achievement reported significantly higher levels of power (M=4.32, SD=.41; M=3.88, SD=.68; T=-2.10, $p<.05$); *security* (M=2.57, SD=.41; M=2.27, SD=.51; T=-1.80, $p<.05$), *hedonism* (M=3.45, SD=.57; M=2.89, SD=.57; T=-2.63, $p<.05$); *achievement* (M=3.36, SD=.56; M=2.82, SD=.62; T=-2.62, $p<.05$); *conformity* (M=2.84, SD=.45; M=2.54, SD=.36; T=-2.08, $p<.05$); *tradition* (M=2.92, SD=.60; M=2.35, SD=.50; T=-2.95, $p<.01$).

Second, in order to identify which of the Schwartz values variables were the best predictors of each PISA indicators of academic achievement outcome, namely reading, mathematics, and science, three stepwise multiple regression analyses were conducted. In each regression, the Schwartz values of self-direction, power, security, hedonism, universalism, benevolence, achievement, stimulation, conformity, and tradition were used as predictors. In the first regression, academic achievement in mathematics was used as the dependent variable. In the second regression, academic achievement in science was used as the dependent variable. In the third regression, academic achievement in reading was used as the dependent variable. Then, additional analysis was conducted, using only the significant predictors of each of the academic achievement outcomes, namely reading, mathematics and

A Cross-National Examination

science, and controlling for GDP per capita index. Table 2-4 identifies the significant predictors that emerged for each of the final regression models. Regression analysis (table 2-4) indicated that when controlling for GDP per capita, *tradition* explained 23% of variance in science achievement ($\beta = .45, p < .001$), and 15% of variance in mathematics achievement ($\beta = .42, p < .01$). As for reading achievement, when controlling for GDP per capita, *stimulation* and *tradition* explained 34% of variance in reading achievement ($\beta = -.39, p < .06; \beta = .74, p < .001$) respectively.

-Insert Table 2 about here -

-Insert Table 3 about here -

-Insert Table 4 about here -

5. Discussion

With the rapid growth of globalization, the use of large-scale standardized international assessment as indicator of performance has increased considerably as a way to evaluate and compare the quality of the future labor force across different countries (Schwippert and Lenkeit, 2012). This is particularly well illustrated by the greater number of participant countries, an increased public awareness, and ongoing comparisons of country performance rankings (Meyer and Benavot, 2013). However, globalization tends to ignore that theory, policy and practice borrowed may interface with the cultures of different host societies (Schwippert, 2007). Societies differ greatly in the extent to which their educational philosophy and practices express more hierarchical and conservative values or more egalitarian and democratic values. Accordingly, the main objective of this study was to determine the extent to which cultural values from the Schwartz typology play a significant role in explaining and determining higher achievements in PISA international assessments. The theoretical grounds for the study were based on the premise that values may be viewed as important components of a country's success in international assessments beyond the success

A Cross-National Examination

that would be predicted based on the country's economic growth indicator and educational structures.

The findings obtained by the present study testify to the connection between cultural values and success in international assessments. Preliminary findings indicated that higher performers versus low performers were significantly different in terms of their Schwartz values levels. This provides initial support to our premise that cultural context matters when it comes to educational achievement. This may be because cultural orientations underlie the structural arrangements in society and provide both guidance and justification for the decision makers who shape societal institutions. More specifically, the results indicated that when comparing high performers to low performers, *security*, *hedonism*, *achievement*, *conformity*, and *tradition* were significantly higher for the best performers in the three core disciplines of the PISA achievement analyses. This strengthens the assumption that culturally shaped beliefs and forms of interactions may explain difference in achievement of different nations in the indicators of performance of international test reflecting the importance of the social and cultural capital (Coleman, 1988; Bourdieu, 2011).

Values such as *tradition*, *conformity*, and *security* primarily regulate how one relates socially to others and affects their interests referring to the conservation dimension of Schwartz values, whereas values such as *achievement* and *hedonism* primarily regulate how one expresses personal interests and characteristics. In line with the Schwartz typology (2005), *conformity* entails subordination to persons with whom one frequently interacts such as parents, teachers, and managers, whereas *tradition* entails subordination to more abstract entities such as religious and cultural customs and ideas. More conservative cultures tend to emphasize the preservation of social order, encouraging individuals to ignore personal preferences that might disrupt the status quo (Tao and Hong, 2014). This set of values are close to the values that prevail in Confucian culture, where student commitment and parental

A Cross-National Examination

involvement in education is particularly high. Moreover, *achievement* and *hedonism* as part of the self-enhancement dimension reflect the individual's acceptance of social functions with obligations. These values characterize more hierarchical cultures. However, achievement motivation reflects a long-term need for success or the concern for the attainment of excellence (McClelland, 1961). Therefore, it may be that these values motivate individuals to invest in group tasks and legitimize self-enhancing behavior as long as this behavior contributes to group prosperity and success.

This findings concurs with previous research confirming cultural explanations for strong performances on PISA tests in East Asian education systems (2009) (Tan, 2012). The research attributes the strong performances to a high degree of commitment to education and ambition associated with Confucian values, as well as a focus on disciplined study routines (Tan, 2012). Similarly, in his research Simola (2005) explained the success of Finland on the basis of historical developments, attributing positive results on PISA tests to a relatively authoritarian, obedient, and collectivist mentality associated with Finnish culture. In addition, cultural indicators such as cultural communication between parents and children, cultural possessions at home, teacher professionalism, combined with a very conventional teaching culture that places teachers in front of the class as top-down lecturers, are also viewing as contributing to the PISA positive results (Simola, 2005; Välijärvi *et al.*, 2002).

Furthermore, results from the investigation of which Schwartz values, namely Power, Achievement, Hedonism, Stimulation, Self-direction, Universalism, Benevolence, Traditionalism, Conformity, and Security, best predicted success on indicators of PISA international achievements, showed that *tradition* was consistently the best predictor of PISA achievement tests. Specifically, analysis indicated that when controlling for GDP per capita, *tradition* constantly remains the best predictor of PISA achievement test results in the three core disciplines. This means that beyond economic disparity, cultural values in general, and

the *tradition* value in particular, play a significant role in explaining academic achievements per country. This result is consistent with previous research showing that GDP and educational expenditure are not consistently predictors for student achievement (Hanushek and Wößmann, 2010). More importantly, *tradition* expresses obedience to the expectations of authorities; it seems, that people in countries whose culture considers unconditional respect for parents and religion and opposes behaviors that threaten the traditional family provide strong motivators for successful achievement independent of the financial conditions of the country. This result emphasizes the motivational power of the value of *tradition*.

6. Conclusion

Although the enormous pool of information provided by international assessments has a great potential to inform policy and improvement (Sellar and Lingard, 2014), our findings are important given that global forces and internationalization seem to imply a challenge to and a questioning of national cultures and traditions (Giddens, 1994). Perhaps, paradoxically, while globalization, in some instances, has led to positive educational policies and multicultural values (Appadurai, 1996); still, the *tradition* value is a value that may facilitate academic performance in the global world. It may be that these two paradoxical entities may not necessarily contradict each other but rather, can coexist in a complementary way. Even though the worldwide exchange of information seems to intensify diversity and cultural transformation, challenging the excesses of tradition (Held, 1999), *tradition* which entails respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provides, may serve to build the group identities, social cohesion, and national solidarity necessary in the dynamic global realm. Globalization presents both opportunities and threats; thus, it appears that nations may change their functional role (Hirst and Thompson, 1996) becoming both more practical in exploiting what globalization has to offer

and more reactive to its detrimental effects. Therefore, in reaction to the globalization process and forces, national identity may be strengthened rather than weakened.

6.1. Limitations and future research

The major strength of the present study is that the likelihood of common method variance was low because data was collected from three sources minimizing problems associated with same source bias (Avolio, Yammarino, and Bass, 1991): WVS (Schwartz framework), PISA achievement (OECD) and GDP per capita (WBWD). Also, to ensure that all comparisons made in the current study use the same variables for each country, countries that for some reason had missing data were excluded from the sample. However, several limitations of the study warrant further attention in future research. The WVS data, however, is limited in other ways. The WVS Schwartz value types are also 1-item questions (one Schwartz item for each of 10 values). A question can be raised as to whether Schwartz's ten universal values are reliably or validly measured in this manner. So results need to be interpreted with caution. Future research should extend the inquiry to additional explanatory variables such as political stability, social capital, country size, which might also offer explanations of achievement performance variations in international assessments.

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Figure Caption: Table 1
 Descriptive statistics and inter-correlation matrix for the study variables N=33

Table 1. Descriptive statistics and inter-correlation matrix for the study variables N=33

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Self-direction	2.78	.35	1	.21	.64**	.60***	.78***	.67***	.57***	.67***	.67***	.24	.26	.22	.02
(2) Power	4.07	.61		1	.39*	.32	.25	.65***	.64***	.34*	.58***	.19	.24	.26	.20
(3) Security	2.40	.49			1	.53***	.82***	.73***	.43**	.79***	.82***	.28	.32	.31	.24
(4) Hedonism	3.13	.64				1	.50**	.55***	.38*	.41*	.49**	.34	.40*	.37*	.10
(5) Universalism	2.51	.46					1	.73***	.54***	.85***	.81***	.32	.33	.33	.14
(6) Achievement	3.05	.63						1	.62***	.75***	.88***	.36*	.38*	.37*	.20
(7) Stimulation	3.91	.38							1	.50**	.62***	.02	.04	.04	.14
(8) Conformity	2.67	.42								1	.88***	.35*	.36*	.39*	.26
(9) Tradition	2.59	.61									1	.45**	.47**	.48**	.37*
(10) PISA-Mathematic	458.00	60.60										1	.97***	.96***	.22
(11) PISA-Science	465.06	56.53											1	.98***	.23
(12) PISA-Reading	459.84	53.07												1	.26
(13) GDP per Capita	25051.96	22159.86													1

*p<.05; **p<.01; ***p<.001

Figure Caption: Table 2
Results of Hierarchical Regression Analysis for Predicting PISA test scores in Science

Table 2: Results of Hierarchical Regression Analysis for Predicting Science Achievement while controlling for GDP per capita

	β	T	Sig
<i>(Constant)</i>		30.40	.00
GDP per Capita	.233	1.333	.19
F	1.777		
ΔR^2	.05		
<i>(Constant)</i>		8.95	.00
GDP per Capita	.06	.35	.71
Tradition	.45	2.62*	.01
F	4.49**		
ΔR^2	.23		

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure Caption: Table 3
 Results of Hierarchical Regression Analysis for Predicting PISA test scores in
 Mathematic

Table 3: Results of Hierarchical Regression Analysis for Predicting Mathematic Achievement while controlling for GDP per capita

	β	T	$Sig.$
<i>(Constant)</i>		27.84	.00
GDP per Capita	.22	1.31	.19
F	1.72		
ΔR^2	.05		
<i>(Constant)</i>		8.03	.00
GDP per Capita	.06	.39	.69
Tradition	.42	2.43*	.02
F	3.96*		
ΔR^2	.20		

* $p < .05$; ** $p < .01$; *** $p < .001$

Figure caption: Table 4
 Results of Hierarchical Regression Analysis for Predicting PISA test scores in Reading

Table 4: Results of Hierarchical Regression Analysis for Predicting Reading Achievement while controlling for GDP per capita

	β	T	Sig
(Constant)		32.20	.00
GDP per capita	.26	1.51	.14
<i>F</i>	2.29		
ΔR^2	.06		
(Constant)		5.55	.00
GDP per capita	.03	.21	.82
Stimulation	-.39	-1.96	.06
Tradition	.74	2.92***	.00
<i>F</i>	3.62**		
ΔR^2	.34		

* $p < .05$; ** $p < .01$; *** $p < .001$