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Creation of a Selection Program for Indigenous Students at an Eco-tourism Focused High School in the Ecuadorian Amazon Region

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Abstract

The objective of this study was to contribute to the existing literature on international selection practices, specifically looking at selection of indigenous students in the Amazon region of Ecuador for admission into an eco-tourism focused high school. Selection criteria used in the study were based on current best practices in international selection. This study looked at the predictors of dependability, resilience, stability, sales-drive and student connectedness as they related to the success of the current student population at the school. Sixty-three current students at the Yachana Technical High School completed a traits based survey measuring dependability, resilience, stability, sales drive and student connectedness. Student success at the school was measured by student surveys relating to student academic performance and student sociability at the school that were filled out by three current teachers at the school. Student grades for the first term of the 2010-2011 school year were also analyzed. Results indicated that sales drive and resilience were related to teacher evaluation of students at the school.

Key Words: Selection, International Selection, Ecuador, Yachana Technical High School, Yachana Colegio Tecnico, Amazon Region, Dependability, Resilience, Stability, Sales-drive, Connectedness.

INTRODUCTION

Ecuador's Amazon region is made up of lowland tropical rainforests and is one of the most biologically and culturally diverse areas on the planet (Braman, 2001). With a population of nearly 14 million in 2009, and a land area of 109,483 square miles (World Almanac, 2009), Ecuador, when compared with other South American countries, is one of the least developed socially and educationally (Larrea and Kawachi, 2004; Torres, 2005). Ecuador's population is split between urban areas, highlands and tropical lowlands. There are large disparities in economic conditions and opportunities available to the inhabitants of the different regions. Among the populations most affected by the economic disparities are the indigenous peoples of Ecuador's Amazon region (Larrea and Kawachi, 2004). These individuals are among the most impoverished in the country (Braman, 2001). Estimates have as many as 87% of the Ecuador's rural indigenous population living below the poverty level (Larrea and Kawachi, 2004).

As of the year 2000, the average Ecuadorian citizen completed only 7.5 years of schooling despite an educational system intended for ten years of continuous schooling starting at the preschool level. Factors including educational quality, efficiency in rural regions, as well as discrimination based on ethnicity and gender have been major contributors to this problem. Ecuador's total national social spending ranks among the lowest in South America and contributes to a national illiteracy rate that has consistently been reported at around 10% (Torres, 2005). When looking specifically at Ecuador's indigenous population, the issues are compounded. The average length of schooling for indigenous individuals is only 3.3 years. Ninety percent of Ecuador's indigenous children do not continue their education past primary school. Estimates have placed the total illiteracy rate for the indigenous population at 28% (Torres, 2005).

In October 2005, the Yachana Foundation opened the Yachana Colegio Tecnico (referred to as the Yachana

Technical High School) as a means of offering education and job training to the indigenous youth of the remote rural communities of the Ecuadorian Amazon region. The goal of the Yachana Foundation is to foster learning and growth among the peoples of the Amazon and help them become effective stewards of their rainforest. Additionally, the Yachana Foundation works to create opportunities for socially and environmentally responsible economic advancement for the region's indigenous inhabitants (Yachana Foundation, 2008). The Yachana Technical High School's focus is on using meaningful education to equip indigenous students with the needed skill set to work towards reversing generations of poverty, promoting environmental awareness, and acting as stewards of Ecuador's rainforest (Yachana Foundation, 2008).

Current student selection at Yachana Technical High School is needs based. Students that apply to the school must be from the rural Amazon region of Ecuador and come from disadvantaged families that are short on resources. Most importantly, these students need to want an education (McMeekin, 2010). Students pay a fee of $200 USD per year, which supplies them with full board and lodging at the school along with basic insurance coverage (McMeekin, 2011; Peaty, 2007). The actual cost of operating the school is $1,200 per student for the school year, and is subsidized through the Yachana Foundation (Yachana Foundation, 2008).

Students are selected for admission to the Yachana Technical High School from all over the Ecuadorian Amazon region, with many students having to travel for a day or more to reach the school from their homes. The current student population has students representing the Kichua, Mestizo, Shibear, and Chachi ethnic groups (Walker, 2010). Because of the expense of education relative to family income is so high, and given the boarding school-like educational model at the school, it is very important for the students to have a good fit with the school. Each potential student is required to make a visit to the school prior to being admitted (McMeekin, 2010). During this visit, potential students are guided through the day-to-day school activities by current students and given a preview of what life at the school is like. The current students, in turn, are given the opportunity to provide feedback on the prospective students to the selection committee and in doing so play a key role in the selection process (McMeekin, 2010).

In September of 2010, the Yachana Technical High School shifted its educational model from rotating two groups of students between the school and home on a three-week schedule to having just one group of students attending the school full time. This change in the school's model dropped the total student population at the school from 104 students during the 2009-2010 school year to a maximum enrollment of 68 students for the 2010-2011 school year and beyond. The reduction in student population has increased pressure on the school's enrollment committee, which is currently receiving an average of 15 to 20 applications per available position at the school (McMeekin, 2011).

Recent multi-national educational research has shown a relationship between trait-based assessments and academic success at the secondary and collegiate level. The five-factor model, also known as the Big Five personality traits, consists of the dimensions that are thought to explain much of the variance in human individual differences (Costa and McCrae, 1992). These five traits are extraversion, emotional stability, agreeableness, conscientiousness and openness. These traits have been shown to predict performance in a variety of settings across cultures (Barrickand Mount, 1991). Research has demonstrated that most of the Big Five personality traits are significantly related to academic success with openness to experience, agreeableness and conscientiousness accounting for about 15% of variance in student grades (Furnham and Monsen, 2009). The trait of conscientiousness has been shown to be positively related to positive academic outcomes, including success on exams and essays in multiple studies (Farsides and Woodfield, 2006). A positive correlation between conscientiousness and openness and academic success has been demonstrated in both Chinese secondary students and British high school students (Furnham and Monsen, 2009; Zhang, 2003).

In addition to measures of the big five personality traits, student resilience and student connectedness have been linked to important predictors of academic success. Resilient students have been classified as those individuals that, despite experiencing social and economic risk factors, have developed characteristics and coping strategies that make academic success possible (McMillan and Reed, 1994). McMillan and Reed (1994) found that resilient students were able to articulate clear educational goals that would lead to desired future outcomes. Within Hispanic communities, resilient individuals have been shown to envision themselves as caretakers for their families as well as communities (Campa, 2010). Research conducted in the United States shows that despite hardship and risk factors such as poverty and lack of family support, minority students possessing traits associated with resilience and school connectedness have experienced more success than peers not possessing such traits (McMillan and Reed, 1994). With the students at the Yachana Technical High School coming from backgrounds of poverty and family risk factors, resilience should be demonstrated to have similar effects in empowering these students to seek out educational opportunities to give them the skill set necessary to help improve their family and community.

Student connectedness is a student's personal experience of the school's social climate, specifically, the quality of peer and student-staff relationships and has been identified as predictor of student success (Brown

and Evans, 2002). It has been demonstrated that successful student academic outcomes correlate positively with student feelings of connectedness to the institution (Waters, Cross and Shaw, 2010). Feelings of connectedness within a school community have also been associated with student engagement and positive academic outcomes for low-income youth (Juvonen, 2007).As part of the selection requirements, students that attend the Yachana Technical College must come from families that are low-income and short on resources. Connectedness to the school environment should be a very important factor in helping students succeed in the educational environment offered at the Yachana Technical High school.

There is currently no selection measure created specifically for the purpose of academic selection for an indigenous population in an international educational setting. However, the challenge of applying human resources and business selection practices to international populations is not new. With current business practices dictating the globalization of the marketplace, more and more businesses are finding it necessary to globalize their human resources practices in order to compete in worldwide markets. This globalization becomes a challenge when organizations expand into new regions and lack information on the extent to which human resources selection practices are universal or culture specific. This lack of awareness creates the potential for issues to arise when selection methods found to be acceptable in some parts of the world are imported to other parts and cause unexpected consequences (Ryan et al, 1999).

Ryan et al. (1999) also note that differences in political structure, economy, and culture can all have a significant impact on the usefulness of selection practices in different areas of the world. They note that the differences that have the largest impact on human resources practices are those rooted in cultural belief.

Organizations around the world are in the process of converging on the methods being used for selection and recruitment of employees in international settings. Regardless of the type of organization and the job requirements, selection criteria have a distinct need to be adaptable regardless of country and culture-specific values (Huo, Huang and Napier, 2002). Selection practices will always be focused on finding the best possible person to fill a vacancy regardless of the type of organization and its location in the world. This has driven the need to identify common selection methods that are culturally adaptable.

The focus of this study is to address the ability of potential students at the Yachana Technical High School to perform the 'technical' aspects of the job of student at the school and to examine whether current international selection practices and research can be applied to the school's indigenous student population. With recent program changes reducing the student population by 40%, there has been pressure to improve student selection procedures. The present study will examine current practices in international business and service industry selection procedures along with current research on educational best practices to see if these methods are applicable in the selection of students at the Yachana Technical High School.

Research has consistently shown a positive relationship between the big five traits and success within the work context (e.g., Barrick and Mount, 1991; Ng et al., 2005). The present study evaluates selection measures that include the constructs of sales drive, dependability, and stability.

Educational research conducted in the United States shows that despite hardship, economic, and family risk factors, students displaying characteristics consistent with resilience and students who develop a connection to the school through quality peer and staff relationships experience better academic outcomes than students who do not (Campa, 2010; Brown and Evans, 2002; Horn and Chen, 1997;McMillan and Reed, 1994; Waterset al., 2010). Student success, as measured by positive academic and educational outcomes at the Yachana Technical High School, require students to achieve in the classroom, work study and socially. The boarding school-like environment of the Yachana Technical High School dictates that students have the coping skills necessary to spend extended periods away from their homes, and the support of their families, and dedicate their time and energy almost exclusively to their studies. Therefore, we predict that resilience and student connectedness will be positively related to student success at the Yachana Technical High School as well.

METHODS

Participants

The sample for this study consisted of 63 current students at the Yachana Technical High School (46 males and 17 females). Student ages ranged from 14 to 28 years old, with a mean age of 17.5 years and a median age of 17.0 years. Additional demographic information was collected regarding students' year in school and whether or not they had siblings that had attended the Yachana Technical High School.

Procedure

All current students at the Yachana Technical High School were asked to complete a survey. Item content is similar to well-known and validated measures of the big five personality factors, such as the International Personality Item Pool (IPIP; Goldberg et al., 2006). On these measures, items in the dependability scale correspond with the big five factor of conscientiousness;

sales drive corresponds with extroversion and stability items correspond with emotional stability. We predict that dependability, sales drive, and stability will be positively related to student success as the Yachana Technical High School. Students were informed that the purpose of this survey was to collect information on the current student population that would be used in the school's ongoing efforts to improve student selection procedures. Additionally, three teachers at the school filled out student evaluation forms for each of the students, rating students on academic performance and sociability. Data were collected at the Yachana Technical High School by means of paper/pencil survey. An archival data set of the information collected by the student survey and teacher evaluations was created and provided for analysis after removing all identifying information about students to maintain confidentiality and anonymity.

Measures

Personality: The NGauge© Success Profile, a personality inventory designed for the selection of sales associates and customer service representatives, was used to assess dependability, sales drive, stability and resilience of the current student population at the Yachana Technical High School. Items from the NGauge©Success Profile scales for dependability (11 items), sales drive (8 items), stability (8 items) and resilience (12 items) were used. Items were translated into Spanish by a bilingual student at Minnesota State University and then checked for accuracy by a bilingual employee of the Yachana Foundation in Quito, Ecuador. Participants were asked to read each item and indicate on a 6-pointLikert scale the degree to which they agreed with each item. The NGauge©Success Profilehas has been validated for use in selection of sales associates and customer service representatives.

Connectedness: Participants answered questions from the 21st Century Community Learning Centers survey of student connectedness. This measure has been applied with student populations in the Midwestern United States. Survey items were translated into Spanish by a bilingual student at Minnesota State University and then checked for accuracy by a bilingual employee of the Yachana Foundation in Quito, Ecuador. This survey consists of seven items that participants read and rated agreement on a 6-point Likert scale.

Student success: Student success was determined by analysis of student cumulative grades for the first semester of the 2010-2011 school year and by having three Yachana Technical High School teachers complete ratings of student performance using the 21st Century Community Learning Centers Teacher survey consisting of five questions related to student academic performance and two questions related to student

sociability at the school. Again, survey items were translated into Spanish by a bilingual student at Minnesota State University and then checked for accuracy by a bilingual employee of the Yachana Foundation. Questions regarding student performance were scored on a four point continuum consisting of *needs improvement, performance is average, performance is good* and *performance is among the best at the school* Student success surveys were filled out by 3 teachers in different subject areas at the school. In addition to rating student performance teachers were also asked to indicate the length of time that they have known the student (*1 month or less, 2-6 months* or *more than 6 months*) and how well they know the student (*very well, somewhat,* or *not very* well). Correlations were run on the teacher ratings to test for inter rater reliability. No significant correlations were found indicating that the three was not consistency in the teachers ratings of students.

RESULTS

Preliminary Analyses

Reliability analyses were conducted for each of the scales for the selection measure. Several of the measures had inadequate reliability. Thus, items had to be dropped from many of the scales to create scales with reliabilities in the acceptable range. Decisions to drop or retain items were made by examining item means, variances, and item-total correlations. Although the original versions of the scales had acceptable reliability in previous research, the use of translated measures and the diversity of the subjects in this study likely contributed to the reliability problems. Final means, standard deviations, Cronbach's alphas and ranges for each of the scales can be seen in Table 1.

Correlations between the scales for connectedness, sales drive, dependability, resilience, and stability and the dependent variables of teacher ratings of academic performance and sociability, and student grades are presented in Table 2.

Tests of Hypotheses

Our hypotheses stated that dependability, sales drive, stability, resilience and student connectedness would all be positively related to student success as the Yachana Technical High School. Dependability was not correlated with grades or teacher ratings. Sales drive was negatively correlated with grades but positively correlated with teacher ratings for academics and sociability. This finding suggests that students with higher sales drive, a proxy for extraversion, received lower grades but were perceived as being better performers and were more sociable.

Table 1. Means, Standard Deviations, Alphas for All Study Scales

	Mean	SD	Alpha (α)	Possible Range	Actual Range
Connectedness	5.21	0.54	0.71	1-6	1-6
Sales Drive	4.72	0.72	0.73	1-6	1-6
Dependability	4.16	0.71	0.72	1-6	1-6
Resilience	3.78	0.66	0.65	1-6	1-6
Stability	4.2	0.72	0.64	1-6	1-6

Table 2. Correlations between All Study Variables

	Grade	Teach 1	Teach 2	Connect	Sales	Depend	Resil
Teach 1	0.033						
Teach 2	-0.052	0.954**					
Connect	0.056	0.189	0.181				
Sales	-0.258*	0.308*	0.283*	0.436**			
Depend	-0.226	0.076	0.056	0.312*	0.502**		
Resil	-0.138	0.287*	0.320*	-0.017	0.298*	0.060	
Stabil	0.117	0.227	0.174	0.397**	0.430**	0.444**	0.106

* Correlation is significant at the $p < .05$ level.
**Correlation is significant at the $p < .01$ level.

Note: Grade = Student Grades; Teach 1 = Teacher Ratings of Student academic performance; Teach 2 = Teacher Ratings of Student Sociability; Connect = Student Feelings of Connectedness; Sales = Sales Drive; Depend = Student Dependability; Resil = Student Resilience; Stabil = Student Stability.

Table 3. Linear Regression of Scales on Grades

Variable	ΔR^2	B	β
Model	0.189		
Stability		0.286	0.310*
Sales Drive		-0.286	-0.311**
Dependability		-0.231	-0.249***
Connectedness		0.177	0.146
Resilience		-0.061	-0.060

* $p < .05$
** $p = .054$
***$p < .10$

Stability was not significantly correlated with grades or teacher ratings for academics or sociability, and although resilience was not significantly correlated with grades, it was positively correlated with teacher ratings for academics and sociability. Student connectedness was not significantly correlated to grades or teacher ratings for academics or sociability. These findings can be found in Table 2.

We also conducted linear regression analyses to determine the best predictors of student grades, teacher rating for academics and teacher rating for sociability. These results are presented in Table 3, 4 and 5.

The first linear regression analysis was run using dependability, sales drive, stability, resilience, and student connectedness to predict student grades. The regression analysis predicting grades was significant (R^2 = .189, F (3, 57) = 2.654, p = .03). Stability was the most significant predictor in the model (β = .31, p = .034), followed by sales drive (β = -.311, p = .054). Dependability was a marginally significant predictor of

Table 4. Linear Regression of Scales on Teacher Ratings of Academics

Variable	ΔR^2	B	β
Model	0.16		
Connectedness		0.036	0.101
Sales Drive		0.053	0.195
Dependability		-0.030	-0.106
Resilience		0.068	0.225
Stability		0.030	0.114

Table 5. Linear Regression of Scales on Teacher Ratings of Sociability

Variable	ΔR^2	B	β
Model	0.16		
Connectedness		0.046	0.137
Sales Drive		0.041	0.162
Dependability		-0.023	-0.087
Resilience		0.079	0.279
Stability		0.011	0.040

Table 6. Regression of Scales and Grades on Connectedness

Variable	ΔR^2	B	β
Model	0.27		
Sales Drive		0.271	0.359[*]
Dependability		0.025	0.032
Resilience		-0.125	-0.152
Stability		0.185	0.244[**]

[*] $p< .05$

[**] $p = .066$

grades (β = -.249, p = .092). Neither resilience (β = -.060, *ns*) nor student connectedness (β = .146, *ns*) contributed significantly to the model. It is important to note that even though sales drive and dependability were somewhat predictive of student grades, these relationships were in the opposite direction of the stated hypotheses. Students with greater sales drive and greater dependability were found to receive poorer grades.

A second linear regression analysis was run using dependability, sales drive, stability, resilience, and student connectedness to predict student academic performance as indicated by teacher rating of academics. This overall regression was not significant, as seen in Table 5.

A third linear regression analysis was run using dependability, sales drive, stability, resilience, and student connectedness to predict student academic performance as indicated by teacher rating of sociability.

The overall regression was not significant, as seen in

Table 6.

Exploratory Analysis

In addition to the proposed hypotheses, a linear regression analysis was run to see identify predictors of Connectedness. Dependability, sales drive, stability and resilience were used to predict connectedness. The overall regression was significant(R^2 = .27, F(4, 62) = 5.262, p < .001). Sales drive was the only significant predictor in the model, (β = .359, p = .009). Stability was found to be a marginally significant predictor in the model, (β = .244, p = .066).

DISCUSSION

The purpose of this study is to contribute to the existing research on international selection. This study examined

the relationship between the variables of dependability, resilience, sales drive, stability, connectedness and student success at an eco-tourism focused technical high school located in the Amazon Region of Ecuador. In this study, student success was evidenced by teacher ratings of student academic performance, teacher ratings of student sociability and by student grades. This is the first study to date, to examine the topic of student selection within an indigenous population in the Amazon region of Ecuador. Considering previous research findings in the area of traits-based selection in international contexts (Barrickand Mount, 1991; Campa, 2010; Huo et al., 2002; Ryan et al., 1999) and academic contexts (Brown and Evans, 2002; Farside and Woodfield, 2006; Furnham and Monsen, 2008; Juvonen, 2007; McMillan and Reed, 1994; Waters et al., 2010; Zhang, 2003), we hypothesized that dependability, resilience, sales drive, stability and connectedness would all be positively related to student success.

The majority of the hypotheses were not supported. Although the lack of significant findings indicates these measures provide little guidance on how to best select students for this educational context, there are some meaningful results that should be explored. Sales drive and resilience were the only variables that related to the outcomes of teacher ratings or grades in the expected direction. The finding that resilience is related to academic success supports the findings of Campa (2010), who noted that resilient individuals have been shown to envision themselves as caretakers for their families as well as communities and are therefore more motivated for achievement. For the purposes of this study and the measures used, sales drive items were very similar to IPIP items relating to the Big Five trait of extraversion. Multiple studies have found that extraversion relates to positive outcomes across cultures in a multitude of settings including education (Barrickand Mount, 1991; Costa and McCrea, 1992). In this study, teacher ratings correlated positively with sales drive. An interesting finding is that student grades for the first semester and sales drive were negatively correlated. This seems to be contradictory, but with sales drive being effectively a measure of extraversion, it may be reasonable to assume that students that are more extraverted would make a greater impression on teachers in both academic and social settings, even if their grades do not match teacher ratings.

This study also had a relatively small student sample size, and considerable range restriction in grades. The range of grades for students in the sample ranged from 15.83 out of 20 points possible (79%) to 19.25 out of 20 points possible (96%). These grades seem to indicate that all students at the school were experiencing some degree of academic success, so even with the more extraverted students receiving lower grades, they were still receiving acceptable grades. Their grades just were not as high as the less extroverted students. The finding

that student grades and teacher ratings are not correlated may be a sign of a halo effect where more extroverted students, those higher in sales drive on this measure, are looked upon more favorably by teachers than students scoring lower on sales drive, though students that score lower on sales drive receive higher grades.

The variables of connectedness, dependability and stability were not found to be predictors of academic success in this study. Connectedness, a student's personal experience of the school's social climate (Brown and Evans, 2002) has been correlated with academic success for low income and at-risk youth in several studies (Brown and Evans, 2002; Juvonen, 2007; Waters et al., 2010). These results were not replicated in this study. A likely explanation is that the small student population at the school and the inability to collect survey data from the students that elected to leave during the school year did not allow for enough variance in student experience of connectedness. The students from whom data was collected tended to score quite high in connectedness, where as it could be that at least some of the students that left the school during the course of the school year would not have been as connected as the rest of the student population.

Another explanation for the lack of significant findings in this study is that the scales for dependability and stability used in this study had to be adapted considerably from the scales used on the original measure in order for the inter-item correlations to be acceptable. It is possible that the items making up these scales are no longer measuring dependability and stability or are measuring them to a lesser degree than scales used in previous cross-cultural studies.

Conclusions

Although this study contributes to the understanding of the determinants of student success in the context of an eco-tourism focused school located in the Amazon region of Ecuador, it is necessary to discuss a variety of limitations of this study. Almost all of the students surveyed for this study were experiencing some degree of success at the Yachana Technical High School. The 2010-2011 school year at the Yachana Technical High School began with 68 students enrolled at the school. At the time data was collected five students had already chosen to leave the school. The remaining 63 students were all experiencing some level of academics success as demonstrated by the high mean and low variance on the grades measure discussed earlier. There is no way of knowing the degree of academic success for the students that chose to leave the school before the end of the term because no grade information was available for the students that elected to leave.

Additionally, the teacher population at the school experiences a large amount of turnover from year to year.

It is possible that the teachers at the school that provided student ratings do not know the students that they are rating well enough to give accurate ratings. Though the grades supplied for the first term of the school year included grades from the teachers that filled out the student rating forms, they still may have been limited by the length of time that they knew the students. This could explain the discrepancies between student grades and student ratings. It is also a possibility that training the teachers could lead to more accurate ratings of student success.

Another possible limitation to this study is the context within which the study was conducted. It is a possibility that traditional measures of student performance and predictors of academic success do not transfer to this environment, as evidenced by the low alpha scores for the item scales. Perhaps the areas measured in this study are simply not important to the indigenous population of the Ecuadorian Amazon region and other, more important determinants of student success need to be looked for. With the Yachana Technical High School's focus on eco-tourism and sustainable use of the rainforest, additional scales beyond sales drive could be helpful to measure student knowledge of effective eco-tourism practices or direct knowledge of the rainforest ecosystem.

Recommendations

This appears to be the first attempt to apply current selection practices to an indigenous population in the Ecuadorian Amazon Region. This leaves many areas for potential research into the factors related to student success in this setting including the sex, age and family educational history of the research participants. Ideally, future studies would also benefit from survey data being collected from students at the beginning of the school year. Due to the small student population at the school that was the focus of this study, it would also be helpful to add participants by identifying and surveying recent graduating classes from the school as well and to attempt to classify the level of success that they have experienced since leaving the school.

Exploring the factors that lead to student success at the Yachana Technical High School can help the practitioners at the school select the students from the region that will be most likely to experience success within the learning environment at the school and be able to then have the largest positive impact after leaving the school. If reliable factors for determining student success in this specific location can be found they might also be able to be applied in similar regions and aid in the understanding and improvement of indigenous selection practices for areas outside of education. This is a very novel area of study, but the results could have widespread implications.

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