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DEVELOPMENT OF THE PUERTO RICAN VERSION OF THE
INTERPERSONAL ADJECTIVE SCALES REVISED:
ESCALA DE ADJETIVOS INTERPERSONALES
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DEVELOPMENT OF THE PUERTO RICAN VERSION OF THE INTERPERSONAL
ADJECTIVE SCALES - REVISED: ESCALA DE ADJETIVOS INTERPERSONALES

By

Marieva Puig

A THESIS

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ABSTRACT

DEVELOPMENT OF THE PUERTO RICAN VERSION OF THE INTERPERSONAL ADJECTIVE SCALES-REVISED: ESCALA DE ADJETIVOS INTERPERSONALES

By

Marieva Puig

This study examined the structure of a Puerto Rican version of the Interpersonal Adjective Scales -Revised (IAS-R) (Wiggins, Trapnell & Phillips, 1988). The "Escala de Adjetivos Interpersonales" (EAI) was examined from a survey of 210 Puerto Rican college undergraduates. The first wave of analyses consisted of confirmatory factor analysis of the EAI scales. Indices of fit indicated that the two factor structure was not the best fit. Further, principal component analyses suggested that a three factor solution more adequately fit the data. A second wave of exploratory analyses consisted on performing first and second order principal factor analysis on the 64 items of the EAI. In this analysis a two factor structure was deemed appropriate. These findings suggest similarities and raised the question of potential differences between the IAS-R and the EAI. The possibility of these findings being the result of measurement error suggest the need to continue the development of the EAI.

To all the people who have supported me throughout this journey.

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CHAPTER 1

INTRODUCTION

The first section of this thesis contains a brief historical background of Puerto Ricans, followed by a review of Sullivan's interpersonal theory, Wiggins' circumplex model of interpersonal traits, and the IAS-R measurement. Finally, the methods and analyses performed in order to examine the factor structure of the EAI are discussed.

Why Puerto Ricans?

The 1989 Census listed Puerto Ricans as the second largest Hispanic subgroup (2.5 million) residing in the United States (Alvarez, 1992). In addition, approximately 4 million Puerto Ricans reside on the island itself (Lamberty & Garcia Coll, 1994). Despite the large number of Puerto Ricans on the island and the mainland, there is a dearth of research on this population. Most research groups Puerto Ricans with other Hispanic groups in the U.S. mainland. Consequently, potentially important idiographic differences among the groups in these samples are overlooked and ignored.

The historical and migration experiences of various Hispanic groups in the United States differ greatly (Baca Zinn, 1989). For example, many Cubans migrated to the United States as political refugees. Meanwhile, Mexicans living in California, New Mexico, Utah, Nevada and Colorado became U.S. residents as a result of the Guadalupe-Hidalgo Treaty, (1848) while some of those still in Mexico later became illegal immigrants (Amott & Matthaei, 1991). In the case of Puerto Ricans, they largely began to migrate in 1948 when Puerto Rico became a Commonwealth of the United States. These three

The problems caused by the singular classification of Hispanics are numerous. These problems are compounded by the difference among Hispanics in socioeconomic factors. These factors include educational achievements, family income, and participation in the labor market (Baca Zinn, 1989; Romero, 1986). Generalizations made from studies of Hispanics as a single racial or ethnic group do not allow for each group's accurate representation. This study addressed this problem of heterogeneity in grouping by focusing specifically on Puerto Ricans. Thus, it acknowledges the unique characteristics of this group, including history and ethnicity.

The ethnic background of Puerto Ricans is a mixture of three races: Taino (indigenous people), Spanish (colonizers) and African slaves brought by the Spaniards. These three groups contributed to form the Puerto Rican culture. The gregarious family patterns, interdependence among community members, and strong kinship bonds are characteristic of Puerto Rican culture, and are where the African and Taino influence are most evident. For Puerto Ricans, maintaining strong family bonds is the greatest responsibility in life (Locke, 1992). Kinship, dependency, and cooperation between immediate family members and other relatives are highly valued. In addition, Puerto Rican families encourage intimate personal relationships with extended family members (Canino et al., 1980). The typical extended family consists of cousins, grandparents, neighbors, "padrinos" (godparents) and other friends who have become part of the family even though they are not biologically related. This family structure and relationships among members of extended family in Puerto Rico represent the influence of African values on the formation of present-day Puerto Rican culture.

When the Spanish colonizers arrived in Puerto Rico in 1493, they had a major impact on the establishment of Spanish as the main language and of Christianity as the predominant religion. However, the influence of the Africans and Tainos on the religious beliefs of Puerto Ricans is also evident in the emphasis on spiritualism. Spiritualism is rooted in the belief that certain persons in this world can establish contact with spiritual forces and can use this ability to restrain unfavorable actions of evil spirits or encourage the favorable actions of good spirits (Locke, 1992). This belief in the power to communicate with spirits is evident in Puerto Rico today. The traditional Catholic saints are imbued with the power to influence the fates of their town inhabitants. Saints are seen as religious patrons of different towns around the island.

Spanish Catholicism permeates the traditional sex roles that exist in Puerto Rico. The concept of 'marianismo' suggests that women should maintain their virginity for the honor of the family and as a sign of respect for motherhood. Conversely, men's sexual activity is not important as long as they are good providers for family members. These gender roles have also influenced the childrearing practices used among Puerto Rican parents.

In the Puerto Rican culture there is a distinct difference between prescribed behaviors for males and females. These gender related behaviors are similar to those seen in African culture. On the one hand, girls are expected to be quiet, submissive, and giving, while boys are expected to be respectful but active, aggressive, and daring (Alvarez, 1992). When girls grow up they are expected to be the anchors of the family, but they have less social freedom and less control over decision making in the home than men

(Alvarez, 1992). Men, on the other hand, tend to have an authoritarian role in the family and have unlimited freedom to socialize outside the home. However, regardless of these differences in childrearing practices for girls and boys, respect for elders and authority figures is highly valued for all Puerto Ricans. This respect for elders and authority figures reflects both the Spanish and African influence on Puerto Rican values.

During the last decade, Puerto Rico's culture has also been influenced by the United States. The United States invaded the island during the Spanish-American War in 1898. In 1917, Puerto Ricans were granted United States citizenship. Currently, Puerto Rico is a Commonwealth of the United States. This sociopolitical relationship between Puerto Rico and the mainland has facilitated the movement of Puerto Ricans to and from the mainland with the full rights of naturalized citizens (Locke, 1992), a situation that is unique to Puerto Ricans. The United States' influence in the Puerto Rican community is mostly seen in two broad areas: a) the industrialization of the island, and b) the implementation of English as a second language in the schools, the workplace, and the media. The industrialization as implemented by the United States has resulted in an increase in the presence of women in the workplace. This increase subsequently influenced the role of women in the society, which has become perhaps the strongest indication of the influence of the United States' values on Puerto Rican culture.

The cultural characteristics outlined above are important to consider when developing measures of interpersonal traits, such as Wiggins (1979, 1989) circumplex model, for use with a sample from the island of Puerto Rico. Specifically, although the literature of interpersonal traits and circumplex models of interpersonal behaviors has

evolved over a period of fifty years (Benjamin, 1987; Freedman et al., 1951; Kiesler, 1982; Leary, 1957; Wiggins, 1979), to my knowledge, no research has investigated the applicability of interpersonal theory to the Puerto Rican culture. There is also no literature base that specifically addresses the circumplex model of interpersonal traits and its applicability to the Puerto Rican population. The present study was designed to address this deficit. To adequately accomplish this, a discussion of interpersonal theory is necessary.

CHAPTER 2

INTERPERSONAL THEORY

Harry S. Sullivan's (1953) interpersonal theory is based on the notion that behavior exhibited by isolated individuals is an inadequate model for the study of personality. Sullivan defines personality as "the relatively enduring patterns of recurrent interpersonal situations which characterize human life" (p. 110-111). According to Sullivan, personality is only manifested in interpersonal interactions (Carson, 1991). Sullivan and other interpersonal theorists assert that personality emerges within the context of interpersonal relations with real and/or fantasized personifications of significant others (Carson, 1969; Sullivan, 1953). Contemporary interpersonal theorists continue to maintain this perspective of personality by studying persons in social situations (Benjamin, 1987; Pincus, 1993; Wiggins, 1982).

Central to the notion of personality is the concept of the "self-system," which Sullivan views as emerging out of early interactions with significant others (Carson, 1969; Horowitz & Vitkus, 1986; Kiesler, 1982). Carson (1991) summarized Sullivan's notion of the development of the self-system and its relation to the interpersonal traits that differentiate people as follows: "Early interactions lay down memory traces, often affect-laden, imprecise, inarticulate and schematic in quality, that are activated by current interpersonal situations and determine to a greater or lesser extent both experience and behavior in those situations" (p. 186). Thus, both the behavior and the perception of others' behaviors toward one appear strongly affected by our concept of who we are (Pincus, 1993), in other words, by our developed self-system.

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One of the self-system's major functions is to maintain a sense of security and to avoid anxiety through the elicitation of a limited class of interpersonal reactions from others (Kiesler, 1982). More specifically, when individuals interact with others, the self-system is maintained by selectively unattending to information that is not consistent with one's view of oneself (Carson, 1969; Kiesler, 1982). This selective filtering serves as a mechanism to avoid anxiety (Carson, 1969). Sullivan referred to the need to avoid anxiety and the need to relieve tension as the needs for interpersonal security and satisfaction, respectively. Sullivan's theoretical assumptions have primarily been researched by personality researchers who focus on circular representations of interpersonal behaviors (Benjamin, 1987; Leary, 1957; Kiesler, 1982; Wiggins et al., 1988). Thus, as discussed below, Sullivan's assumptions can be described within the context of interpersonal circumplex models.

Circumplex Models of Interpersonal Behavior

The circumplex model in its original form was influenced by Symonds (1939) and Sullivan's (1953) interpersonal theory. The representation of interpersonal behaviors in a circular model emerged from observations of people in group psychotherapy. The goal of researchers who designed the model was to define "interpersonal mechanisms" of overt behavior arising during group interactions. From their efforts, a list of interpersonal mechanisms was developed and presented in a circular continuum (La Forge & Sucze, 1956; Leary, 1957).

The literature on different types of circumplex models of interpersonal behavior is extensive. Models described in the literature include Benjamin's Structural Analysis of

Social Behavior (1987), Kiesler's 1982 Interpersonal Circle (1983) and Wiggins' et al.,

Interpersonal Circumplex model (1988). Despite their differences, these models have

similar theoretical assumptions based on Sullivan's interpersonal theory. Thus, the

literature often refers to this body of work as research on the 'Interpersonal Circle'

(Carson, 1991; Kiesler, 1983; Wiggins, 1982; Wiggins & Broughton, 1985). For the

purpose of this study, however, Wiggins' circumplex model of interpersonal traits will

serve as the primary focus.

This model is widely accepted. It is influential in its contribution to psychotherapy

interventions, personality research, and in the development of diagnostic criteria for

personality disorders in the DSM-IV (Carson, 1991; Carson, 1969; Horowitz & Vitkus,

1986; Pincus, 1993; Pincus & Wiggins, 1990).

Wiggins' circumplex model of interpersonal traits conceptualizes traits in two

different ways: (a) as descriptions of how a person behaves in particular situations, and (b)

as descriptors of the intrapsychic process that affect how a person perceives the

environment (Funder, 1991). This circumplex model is based on Sullivan's notion that

interpersonal behaviors represent a blend of two basic motivations: status and affiliation

(Kiesler, 1986). In other words, when two people interact they negotiate how friendly or

hostile they will be with each other, and how 'in control' each of them will be while

interacting. The two main orthogonal factors of the circumplex model are represented by

the bipolar axes of dominance vs. submissiveness and hostility vs. affiliation. All

interpersonal behaviors can be described as joint functions of these dimensions (Wiggins,

1982). For example, arrogant behavior is a blend of dominant and hostile patterns of

interpersonal traits. As seen in Figure 1, Wiggins' circumplex model contains eight

interpersonal trait variables arranged around the two main axes. Interpersonal traits

specifically describe enduring patterns of interpersonal behaviors characteristic of an

individual; that is, patterns which are consistent cross-situationally (Pincus, 1993).

Interpersonal traits in the circumplex model are best described within the context

of circular causality (Brokaw & McLemore, 1991). Circular causality refers to two

people interacting and mutually influencing each others' behaviors. In other words, the

behavior of each person is seen as both a response to, and a stimulus for, the others'

behavior (Kiesler, 1983, 1988). In the circumplex model of interpersonal traits, this

circular causality is referred to as complementarity. Specifically, complementarity is based

on the assumption that a person's interpersonal behavior tends to initiate or invite from

others reactions that lead to repetition of the original patterns of behavior (Kiesler, 1986).

Complementarity is evident among the two main axes of the circumplex, the horizontal

and vertical axes (see figure 1). Dominant behaviors elicit submissive responses from

interactants and, vice versa, submissive behavior elicits dominant responses. With regards

to the horizontal axis, hostile behaviors elicit hostile responses and affiliative behavior

elicits friendly responses (Carson, 1991). For example, if Person A is frequently

interacting in a sly and tricky way a complementary response would be distant and

dissocial. This notion of complementarity has been challenged by research that indicates a

high frequency of hostile-dominant behaviors eliciting hosite-dominant responses (Orford,

1986). However, Pincus (1993) noted that is important to consider that complementarity

is a dynamic principle; therefore, it is not simply based on observable behavior but it

includes intrapsychic processes that influence the individual's perceptions of their interpersonal world.

Research with Wiggins' circumplex model of interpersonal traits indicates that the interpersonal variables represent a specific pattern of correlations (McCrae & Costa, 1989). Adjacent variables are highly correlated and variables opposite to each other are inversely correlated. Thus, the interpersonal variable 'warm' is inversely correlated to 'cold-hearted'. As discussed below, this aspect of the circumplex is particularly beneficial for assessment purposes.

<u>The Circumplex and its Usefulness for Diagnosing and Understanding Psychopathology</u>

Wiggins' interpersonal circumplex model can provide a taxonomy to guide assessment and diagnosis. An example of how this is of value is in its use with the DSM-IV Axis II personality disorders (Benjamin, 1995; Kiesler, 1992; McLemore & Benjamin, 1979; Wiggins, 1982). Personality disorders are defined in the DSM-IV as "enduring patterns of inner experience and behavior that deviate markedly from the expectations of the individual's culture, are pervasive and inflexible, have an onset in adolescence or early adulthood, are stable over time, and lead to distress or impairment" (American Psychiatric Association, 1994, p. 629). Research on interpersonal traits has concluded that interpersonal dysfunction is central to histrionic, narcissistic, dependent, avoidant, schizoid, and antisocial personality disorders (Benjamin, 1995; Wiggins & Pincus, 1989).

The circumplex can also be used to represent the inflexibility or rigidity of personality disordered individuals. The vector length from the center of the circumplex can be used as an indication of the intensity of an interpersonal trait (Wiggins et al., 1989).

Calculation of the vector length as an index of interpersonal dysfunction can be measured using a psychometrically sound instrument. One instrument that measures interpersonal traits is the Interpersonal Adjective Scales-Revised (IAS-R; Wiggins et al., 1988). This interpersonal measure can be given as a self-report or other's report on the accuracy of the 64 adjectives selected for use as descriptors of the person's interpersonal styles targeted for assessment. The IAS-R was constructed with interpersonal adjectives that can be scored and plotted in the circumplex model.

Interpersonal Adjective Scales-Revised

The original Interpersonal Adjective Scales (IAS) (Wiggins, 1979) were developed from the framework of Sullivan's (1953) interpersonal theory. Building on Leary's (1957) work, the IAS were constructed to form a two-dimensional circumplex with interpersonal trait descriptors around the coordinates of dominance and affiliation (Wiggins, 1979).

The interpersonal adjectives were selected as a subset of Goldberg's (1977) 1710 trait descriptive adjectives. From this subset, only adjectives that fell within the domain of interpersonal traits were chosen. Interpersonal adjectives were defined as those traits reflected in dyadic interactions that have a relatively clear cut social (status) and emotional (affiliation) consequence for both participants (Wiggins, 1979). Careful item selection and other forms of psychometric validation resulted in the development of the IAS. The measure consisted of 128 adjectives, which formed eight 16-item scales. Wiggins, Trapnell, and Phillips (1988) later revised these scales and developed a 64-item short form version known as the Interpersonal Adjective Scales-Revised (IAS-R). This test was

standardized on a sample (n=1161) of college undergraduates from North American universities (Canada and the United States).

The IAS-R is a shorter version of the IAS and contains 64 adjectives that form eight 8-item scales. Construct Validity of the IAS-R was achieved from second order principal components analyses of the intercorrelation matrix of the scales. The scales were derived from first order principal component analysis. The eight scales were labeled as follows: Assured-Dominant (PA), Arrogant-Calculating (BC), Cold-Hearted (DE), Aloof-Introverted (FG), Unassured-Submissive (HI), Unassuming-Ingenuous (JK), Warm-Agreeable (LM), and Gregarious-Extraverted (NO). The two-word labels are meant to include terms that share the same semantic features. The two-letter abbreviations are arranged counterclockwise in alphabetical order for organizational purposes only. Table 1 describes the adjectives that belong to each interpersonal scale.

The internal consistency indices, as calculated by the coefficient alpha values of each of the eight scales are as follows: assured-dominant, .84; arrogant-calculating, .85; cold-hearted, .80; aloof-introverted, .85; unassured-submissive, .83; unassuming-ingenuous, .75; warm-agreeable, .86; and gregarious-extraverted, .85.

The convergent and discriminant validity of the IAS-R has been documented (see Wiggins & Broughton, 1985). For example, there is a correlation of .80 for the "assured-dominant" scale and Bem's masculinity scale (1974). Correlation coefficients of -.77 emerged from comparisons of the "aloof- introverted" scale with the sociability scale of Buss and Plomin (1975).

How the IAS-R responses relate to actual interpersonal behavior was provided by Gifford and O'Connor (1987). Their results indicated that preferred interpersonal space and several conversation behaviors, as measured by Bales' (1970) Interpersonal Process Analysis, can be mapped in the interpersonal circumplex model (Gifford & O'Connor, 1987). Nonverbal behaviors have also been demonstrated to be related to interpersonal traits represented in the circumplex (Gifford, 1991). For example, Gifford's (1991) findings indicated that subjects who score high on the gregarious-extraverted scale turn their head toward others more, and wrap their arms less than aloof subjects. These studies suggest that the IAS-R has good external validity.

Overall, there is evidence that the IAS-R is an adequate measure of interpersonal traits and its eight scales represent a clear circumplex model of interpersonal traits as suggested by the theory. However, as mentioned earlier, the IAS-R was developed using a sample of college students from North American universities. Therefore, the applicability of the IAS-R with a culturally distinct population such as Puerto Ricans has not been established.

CHAPTER 3

WHY EXAMINE THE IAS-R STRUCTURE WITH A PUERTO RICAN SAMPLE

The existence of the eight interpersonal traits with similar structure as the IAS-R inventory has not yet been investigated with a Puerto Rican sample. Although interpersonal traits could be considered a universal phenomenon, different cultures vary in their norms of appropriate interpersonal behavior. Thus making the above question an important one because the Puerto Rican culture differs in theoretically important ways (e.g. language, community oriented society, traditional gender roles) from the United States' and Canada's culture where the IAS-R was developed.

The first goal of this study was to determine whether Wiggins' circumplex model and the factor structure of the IAS-R could be replicated in a Puerto Rican sample. To accomplish this, the factor structure of the Puerto Rican version of the IAS-R, the Escala de Adjetivos Interpersonales (EAI) was examined. The questions that addressed the psychometric properties of the EAI were the following:

a) Does the EAI contain the eight scales of interpersonal traits that compose the IAS-R?

b) Are the first order factor structure and the second order factor structure of the EAI scales similar to those suggested by Wiggins' circumplex model of interpersonal traits?

Answers to these questions provided the information necessary to examine the applicability of Wiggins' circumplex model of interpersonal traits, as measured by the EAI, on a Puerto Rican sample. Thus, the IAS-R was considered replicated if the EAI eight scales loaded in a similar pattern as the IAS-R and if the second order factor

analysis revealed two main orthogonal factors similar to the Dominance and Affiliation factors of the IAS-R.

A secondary goal of this study was to explore the pattern of responses of the Puerto Rican sample in each of the EAI scales. The previously discussed cultural values and norms of Puerto Ricans contribute to determine the interpersonal traits considered appropriate in that society. Thus, one could speculate that Puerto Rican responses on the scales of interpersonal traits would be consistent with the norms of interpersonal behavior. To explore the pattern of responses among Puerto Rican college students the following set of questions were addressed:

1) Will Puerto Rican college students endorse 'gregarious- extraverted' and 'warm-agreeable' interpersonal traits more than 'aloof-introverted' and 'cold-hearted' traits?

2) Will Puerto Rican college women score significantly higher in the 'unassured/submissive' interpersonal trait scale, than Puerto Rican men?

3) Will Puerto Rican college men score significantly higher in the 'assured/dominant' interpersonal trait scale than Puerto Rican women?

CHAPTER 4

METHODS

Sampling and data collection procedures

        As part of a project at Pennsylvania State University, the sample was collected

from two major universities located in the northeastern region of the island of Puerto

Rico. These institutions were the University of Puerto Rico and the Interamerican

University at Rio Piedras campus. These universities are located in the metropolitan

areas of Puerto Rico and students from all the different towns of the island attend these

two main campuses. Thus, student population is representative of college students

throughout the Island.

        With permission from professors and oral informed consent from the students,

data were collected from undergraduate psychology classes. The EAI was administered

during class time. No monetary or other rewards were offered for participating in the

study.

Subjects

        The sample consisted of 210 Puerto Rican college undergraduate students, ages

17 to 35 (M=24; SD = 5.1), attending the University of Puerto Rico and the

Interamerican University in Rio Piedras. Of the 210 subjects, 76% (n=158) were women

and 24% (n=52) men. This gender ratio can be explained, in part, by the fact that in

Puerto Rico, twice as many women as men attend major universities.

Measure

    The measure used in this study was the translated Puerto Rican version of the

IAS-R (i.e. Escala de Adjetivos Interpersonales or EAI; see Appendix A). I developed

the EAI via a series of back translations (Draguns, 1982), and designed it to reflect the

idiomatic expressions of Puerto Ricans. Bilingual experts in scale construction on the

U.S. mainland and the island of Puerto Rico were consulted to ensure correct translation.

Table 2 includes the Puerto Rican version of the eight items on each the eight

interpersonal adjective scales.

The EAI is patterned after the IAS-R (see Appendix B). Both contain 64

adjectives, on which respondents rate themselves according to the descriptive accuracy of

each adjective. The ratings are done on an eight-point Likert scale ranging from

1 (extremely inaccurate) to 8 (extremely accurate). Like the IAS-R, the EAI contains a

glossary that provides definitions of each of the 64 adjectives. Respondents were able to

refer to this glossary if they had questions about the meaning of any of the adjectives.

CHAPTER 5

RESULTS

Data Analyses

       Two sets of analyses were done on the EAI to assess its psychometric properties

and to determine whether its scales matched those of the IAS-R.

       The first wave of analyses grouped the EAI items according to the format of the

IAS-R scales. The first step was to test the reliability of these scales. Thus, the internal

consistency of the EAI scales was tested by calculating the coefficient alpha values

(Cronbach, 1951). Having done this, the second step was to perform confirmatory factor

analysis of the intercorrelation matrix of the eight EAI scales to examine its factor

structure. Indices of fit determined if the two factor structure (i.e. Dominance and

Affiliation) was an appropriate model for the EAI scales. The indices of fit utilized were

the goodness of fit index (GFI), Bentler and Bonett's (1980) Non-normed Index (NFI) and

the root-mean-square residual estimate (RMR).

       The second wave of analyses tested the factor structure of the EAI without

groupiing the items in the same format of the eight IAS-R scales. In other words, the

items were not forced in the scales suggested by the IAS-R format. First and second

order principal component analyses were performed on the 64 items of the EAI to

determine whether eight scales would emerge from the Puerto Rican sample and if their

contents would match those of the IAS-R. The scree test and the ≥ 1 eigenvalue criteria

were used to determine the factor groupings to be retained for rotation. These factors

were then rotated according to the orthogonal varimax criteria. Those items with factor

loadings of .30 or above were deemed as belonging to that particular scale.

Psychometric Properties of the EAI

Internal consistency. As part of the first wave of analyses the alpha coefficient values (Cronbach, 1951) of internal consistency were computed for each of the eight EAI scales. Kaplan and Saccuzo (1982) criteria for adequate coefficient alpha values of $\geq$ .70 was used to determined if the EAI scales had appropriate internal consistency. As part of the reliability analysis the item total correlations for each EAI scale were examined. According to Nunnally (1978) item-total correlations above .30 are considered good. Based on this criterion, four of the items of the EAI scales were dropped because of their low item-totalcorrelation with other items in the scales. The interpersonal adjectives with low item-total correlations were: 'self-confident' (confiado(a) en si mismo (a); $r = .14$) from theAssured/Dominant scale, 'crafty' (listo(a); $r = .13$) from the Arrogant/Calculating scale,'iron-hearted' (fuerte de caracter; $r = .17$) from the Cold-hearted scale, and 'unaggressive' (gentil; $r = .04$) from the Unassured/Submissive scale. The resulting alpha values for each of the EAI scales are illustrated in Table 3. As demonstrated in Table 3, coefficient alpha values (Cronbach, 1951) for each of the eight EAI scales indicated that the Unassuming/Ingenuous scale was the only scale that dic not have adequate internal consistency (alpha= .47). Overall, this analysis suggested that seven out of the EAI eight scales have adequate internal consistency.

Confirmatory Factor Analysis. The second part of this first wave of analyses was to examine if the EAI scales form a two factor structure similar to that of the IAS-R. Confirmatory factor analysis of the intercorrelation matrix of the EAI scales was performed (see Table 4). Confirmatory factor analysis using the indices of fit

aforementioned indicated that the two factor structure is not an adequate model for the eight EAI scales (GFI= .75; NFI= .21; RMR= .33). Thus these indices suggested that the factor structure of the EAI scales is not similar to that of the IAS-R scales.

The next step was to examine which factor structure could better represent the EAI scales. Principal components analysis using both the scree test and the eigenvalue ≥ 1 criteria suggested the retention of three factors. Thus, three factors were rotated according to the orthogonal varimax criteria. Scales with factor loadings of .30 or above were deemed as belonging to that factor. Table 5 indicates the factor loadings of the scales on the three factors identified. The eigenvalues for the first three factors were 2.29, 2.08, and 1.66 respectively. The first factor included the following four scales: arrogant /calculating (BC), cold-hearted (DE), aloof / introverted (FG), and assured/ dominant (PA). This first factor was labeled 'Dominance-Cold' because the scales represent a combination of dominant and cold-hearted interpersonal traits. The second factor included two scales: gregarious/ extraverted (NO) and warm/ agreeable (LM). On the basis of the content of the scales this second factor was labeled 'Affiliative'. The third factor included two scales: unassured/ submissive (HI) and unassuming/ ingenuous (JK) scale. This factor was labeled 'Submissive' .

In summary, these analyses suggested that the EAI contains seven out of the eight IAS-R scales of interpersonal traits. Furthermore, the second order factor structure of the EAI scales do not replicate the two factor structure of the IAS-R.

Principal component analysis. The second wave of analyses consisted of first order and second order principal components performed on the 64 items of the EAI. Using the scree test and the eigenvalue ≥ 1 criteria, the first order principal components

suggested the retention of seven factors. These seven factors were then retained and rotated according to the orthogonal varimax criteria. Items with factor loadings of $\geq .30$ were deemed as belonging to that scale.

Table 6 indicates the content and factor loadings of the seven scales that emerged. To compare the content of these scales with the original IAS-R scales, those items with loadings of .30 or above on the EAI scales were compared to those items that loaded on the matching IAS-R scales. If 85% (see Verhulst et al., 1988) of the items loading on the EAI scales were similar to the items loading on the IAS-R, then it was determined that the scales were replicated. For all of the seven EAI scales, less than 85% of the items loading EAI match the items on the IAS-R scales. This indicated that the IAS-R eight scales were not replicated. Thus suggesting that the content of the EAI scales that emerged differ in structure from the IAS-R scales.

The seven scales were labeled according to the semantic characteristics of the adjectives in each of the scales. The labels for the scales were: assured (e.g. self confident, assertive, enthusiastic), arrogant/calculating (e.g. sly, cruel), cold-hearted (e.g. antisocial, dissocial, warmthless), introverted (e.g. timid, distant), dominant (e.g. firm, persistent, forceful), warm/agreeable (e.g. accommodating, charitable), and gregarious/extraverted (e.g. neighbourly, friendly). These results indicated, as was the case in the first wave of analyses, that the scale of Unassuming/Ingenuous did not emerge in the EAI. Furthermore, in this analysis dominant-related adjectives formed a different scale from the 'assured' scale.

Next, I was interested in examining the second order structure of the EAI scales to examine whether they would form a two factor structure. Second order principal component analysis of these seven EAI scales was performed using the scree test and the ≥ 1 eigenvalue criteria to determine how many factors to retain. Results suggested the retention of two factors. These two factors were rotated according to the orthogonal varimax criteria. Table 7 indicates the factor loadings of the seven scales on the two factors. The structure of the two factors was determined based on those scales with loadings of $\geq .30$ on a single factor. The factors were labeled according to the semantics of the scales grouped in one factor. The first factor included the following four scales: arrogant/calculating, cold-hearted, introverted and dominant. This factor was labeled 'Dominance-Cold.' Three scales had factor loadings of $\geq .30$ on the second factor. These scales were: warm-agreeable, gregarious/extraverted, and assured. This second factor was labeled 'Affiliation.' These two factors that emerged in this second order principal component analysis differed in content from the original two factor structure of the IAS-R. The scales themselves are different from the eight IAS-R scales.

Furthermore, in the IAS-R, the factor labeled 'Dominance' contained two main scales:assured/dominant and unassured/submissive. The factor labeled 'Affiliation' contained the scales cold-hearted and warm/agreeable. This was not the case for the EAI two factor structure (see Table 7).

Overall, these results suggested that while a two factor solution emerged from the second wave of analyses, there are differences between the EAI and the IAS-R structure. That is, the first order factors did not match the scales of the IAS-R. In both analyses, the scale 'Unassuming/Ingenuous' did not emerge; thus suggesting that the EAI

contains seven scales of interpersonal traits as opposed to the eight scales of the IAS-R..

Furthermore, the second order two factor structure of the IAS-R was not replicated in the

EAI as indicated by the confirmatory factor analysis and first and second order principal

component analyses.

Cultural Influences on the EAI Responses

A secondary goal of this study was to explore whether Puerto Ricans' responses

on each of the EAI scales reflect a specific pattern that parallels the cultural norms. This

analyses were done with the EAI scales grouped in the format of the IAS-R.

The first exploratory question was whether Puerto Rican college students

endorse 'gregarious- extroverted' and 'warm-agreeable' interpersonal traits more than

'aloof-introverted' and 'cold-hearted' traits. Differences in these scales' scores were tested

via Chi-Squares. For the Chi-Square analyses scale scores above 4 were considered high

and scale scores $\leq$ 4 were considered low. Results suggested that Puerto Rican college

students scored significantly higher in the gregarious/extroverted scale as compared to the

aloof/introverted scale (p= .013). For the warm/agreeable scale as compared to the

cold/hearted scale no students scored high in the cold/ hearted scale and no students

scored low in the warm/agreeable scale.

The other two exploratory questions were: a) whether college women score

significantly higher in the 'unassured/submissive' interpersonal trait's scale than Puerto

Rican men and b) whether Puerto Rican college men score significantly higher in the

'assured/dominant' interpersonal trait's scale than Puerto Rican women. To determine

gender effects on the score in these scales T-tests were used with an alpha of .05. Results

indicated no significant differences between Puerto Rican college men and women score

in the unassured/submissive nor the assured/dominant scale.

CHAPTER 7

DISCUSSION

This study was designed to determine whether the Puerto Rican version of the

Interpersonal Adjective Scales Revised (IAS-R), the 'Escala de Adjetivos

Interpersonales' (EAI), replicated the factor structure of the IAS-R.

Two waves of analyses were performed. The first wave of analyses grouped the

EAI items according to the IAS- R format. These analyses indicated that seven out of the

eight EAI scales had adequate internal consistency. The 'unassuming-ingenuous' scale

had low internal consistency (coefficient alpha= .47; Cohen, 1951). The items included

in this scale were: undemanding, uncalculating, uncunning, unsly, boastless,

unargumentative, unwily, and uncrafty. These negatively worded (e.g. unsly) items are

used to describe the opposite of a trait (e.g. arrogant/calculating). In this study, one word

adjectives were used in the EAI to maintain the same format of the IAS-R. Thus, careful

precautions were taken when deciding the Spanish adjective with equivalent semantic

meaning to the English version. However, it is possible that the use of the one word

adjective to describe such interpersonal traits (e.g. undemanding) is linguistically

inappropriate. The 'unassuming-ingenuous' scale may have emerged had longer phrases

been used in place of the one word adjectives. Future studies must examine the reliability

of this scale by using phrases instead of one word adjectives.

When these scales, arranged according to the IAS-R format, were submitted to

confirmatory factor analysis the results indicated that the two factor structure of the

IAS-R was not replicated in the EAI. Instead, a three factor structure was indicated to be

a better model, statistically for the EAI. These three factors, labeled on the basis of the semantic meanings of the adjectives, were 'Dominance-Cold', 'Affiliation' and 'Submissive.' It must be underscored that this factor structure may not necessarily be an indication of cultural differences but instead a result of measurement error. In order to examine whether this could be an artifact of measurement error it would be necessary to collect a U.S. sample of 210 college undergraduates and examine the factor structure of the IAS-R.

Keeping in mind cultural differences, a second wave of analyses was performed to further explore the possible structure of the EAI. Instead of grouping the EAI items in the similar format of the IAS-R scales, principal component analyses were performed on the 64 items of the EAI. Similar to the first analyses, the EAI emerged with seven scales of interpersonal traits as opposed to the eight IAS-R scales (Table 6). The 'unassuming-ingenuous' scale did not emerge in this analysis. Again, this could be due to the use of one word adjective to describe negatively worded adjectives which are not common descriptors of interpersonal traits among Puerto Ricans. When these seven scales were compared to the seven IAS-R matching scales, results suggested that the content of these EAI scales differed in structure from the IAS-R. For example, the 'Assured' scale of the EAI contained adjectives with positive loadings such as self-confident, self-assured, jovial, enthusiastic, cheerful and adjectives with negative loadings such as meek, bashful, shy, unbold, andforceles. In contrast to the 'Assured-dominant' scale of the IAS-R which contains items such as self-assured and self-confident together with adjectives that imply dominant qualities (e.g. domineering, forceful, persistent, firm), the EAI did not include dominant adjectives in the 'Assured' scale. In the EAI, these dominant-related

adjectives formed their own scale. Perhaps, these results suggests that Puerto Ricans perceive being self-assured as different from being dominant. Thus indicating that culture may influence the structure of interpersonal traits is some ways.

When these seven scales were submitted to second order principal component analysis, they form a two factor structure. The structure of this second order factors was different from the IAS-R. The two factors were labeled: 'Dominance-Cold' and 'Affiliation'. Similar to the previous wave of analyses, the factor 'Dominance-Cold' suggested a pattern different from the IAS-R's 'Dominant' factor. The 'Dominant' factor on the IAS-R contains positive factor loadings from the 'assured-dominant' scale and negative loadings from the 'unassured-submissive' scale. In contrast,the 'Dominance-Cold' factor of the EAI contains the following four scales: 'arrogant-calculating', 'cold-hearted', 'introverted' and 'dominant'. This particular pattern, which also emerged in the first wave of analyses, may suggest that for Puerto Ricans, arrogant and cold-hearted interpersonal behaviors are considered traits associated with a dominant trait.

Casting a critical eye on these factor findings, it may be argued that the factor structure of the EAI may be an artifact of: a) this study sample size, b) the ratio of females to males, c) the restriction of the sample to college undergraduate students or d) measurement error.

These methodological issues could be considered limitations of this study. The sample size of 210 is smaller than those of many investigations with the IAS-R. The larger percentageof women in this study may limit the generalizability of these findings to Puerto Rican women. Furthermore, the college sample may not be representative of the Puerto

Rican population in general. Even though on these analyses the factor structure of the EAI is not exactly similar to the IAS-R, there is the possibility that it is not all due to cultural differences but to random error issues of measurement. In order to make final conclusions about these differences further studies must be performed with equal sample size from the U.S.and Puerto Rico.

In addressing the secondary goal of this study, the responses of Puerto Ricans on each of the EAI scales were examined to determine whether there was a pattern that paralleled the cultural norms. Using the EAI scales grouped in the IAS-R original format, analyses indicated that Puerto Rican college students scored significantly higher in the 'gregarious/extraverted' and 'warm-agreeable' scale as compared to the 'aloof/introverted' scale (p= .013). This pattern supports the speculation that cultural values (e.g. strong family bonds and interdependency with community) influenced Puerto Ricans to endorse warm, agreeable, and gregarious interpersonal traits.

The next exploratory questions addressed whether there were gender differences among the responses of Puerto Rican college students. No significant differences were found between Puerto Rican college men and women with regards to the 'assured-dominant' scale and the 'unassured-submissive' scale. This can be interpreted in one of two ways: a) the restriction of the sample to a college sample may have included men and women with more liberal attitudes (e.g. androgenous gender roles) than the general Puerto Rican population or, b) the influence of the United States in the last century has had an impact in the gender roles of Puerto Rican men and women such that Puerto Rican women and men perceive themselves as equal with regards to being dominant and/or submissive.

In summary, the current study was the first attempt to use Wiggins' et al. (1988) IAS-R to assess the factor structure of interpersonal traits for a Puerto Rican sample. Research is needed to further evaluate the psychometric characteristics of the EAI. The limitations of this study may be circumvented by using: a) a larger more representative sample from the community with a balance ration of male/female participants, b) possibly the use of phrases instead of one word adjectives were it may be necessary or c) collect another sample of Puerto Rican and U.S undergraduates and examine the similarities and differences of the factor structure of the EAI and IAS-R further.

Despite its limitations, this study has provided a foundation for further research withinterpersonal traits and other personality related issues among Puerto Ricans. In addtition, the study adds a potentially useful cultural component to the growing body of research on the measurement of interpersonal traits.
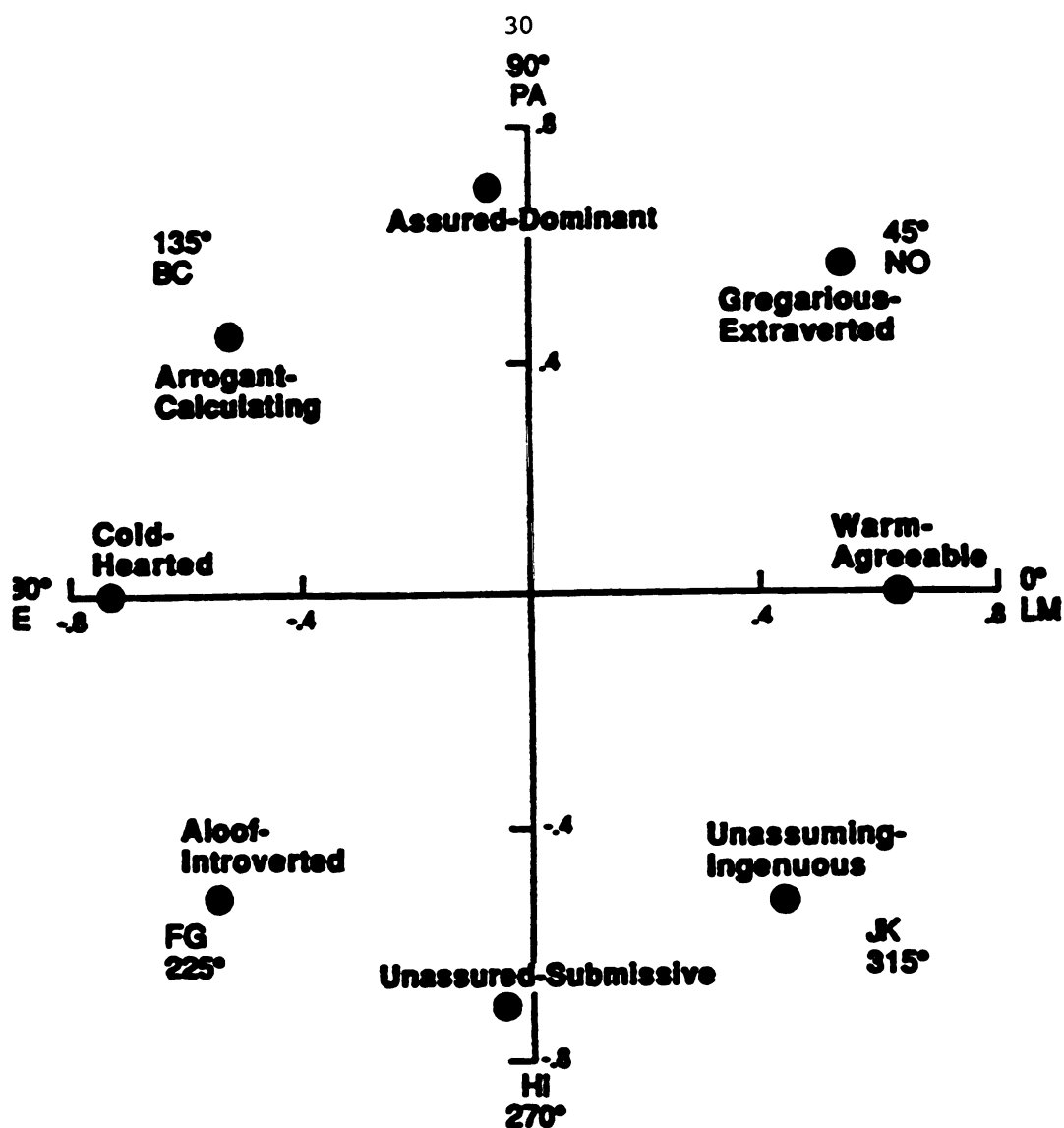
FIGURE

Figure 1   Circumplex Structure of the Interpersonal Adjective Scales
          Revised

TABLES

TABLE 1
Set Of Interpersonal Adjective Scales -Revised (IAS-R)

Assured-Dominant
3 Assertive
17 Dominant
21 Self-assured
32 Domineering
38 Forceful
42 Persistent
46 Self-confident
50 Firm

Arrogant-Calculating
24 Cunning
30 Crafty
48 Boastful
54 Wily
55 Calculating
57 Sly   .
61 Cocky
64 Tricky

Cold-Hearted
11 Coldhearted
12 Ruthless
19 Iron-hearted
22 Cruel
26 Uncharitable
35 Unsympathetic
53 Hard-hearted
59 Warmthless

Aloof-Introverted
1 Introverted
13 Dissocial
18 Anti-social
23 Unsparkling
45 Unneighbourly
52 Unsociable
56 Uncheery
60 Distant

Unassured-Submissive
4 Unauthoritative
9 Shy
25 Meek
28 Unaggressive
36 Timid
37 Unbold
49 Bashful
63 Forceless

Unassuming- Ingenuous
2 Undemanding
5 Uncalculating
10 Uncunning
27 Unsly
31 Boastless
33 Unargumentative
39 Unwily
51 Uncrafty

Warm-Agreeable
6 Accomodating
7 Kind
8 Charitable
14 Tender-hearted
15 Soft-hearted
34 Tender
41 Gentle-hearted
62 Sympathetic

Gregarious-Extraverted
16 Cheerful
20 Enthusiastic
29 Jovial
40 Extraverted
43 Perky
44 Friendly
47 Outgoing
58 Neighbourly

TABLE 2
Set of Adjective Scales for the EAI

Seguro(a)-Dominante
3 Assertivo
17 Dominante
21 Seguro(a) de si mismo
32 Mandon
38 Forzoso(a)
42 Insistente
*46 Confiado(a) en si mismo
51 Terco(a)

Arrogante-Calculador(a)
24 Malicioso(a)
*30 Listo(a)
48 Presumido(a)
54 Misterioso(a)
55 Calculador (a)
57 Enganoso(a)
61 Pretencioso(a)
64 Tramposo(a)

Hostil
11 Insensible
12 Despiadado(a)
*9 Fuerte de Caracter
22 Cruel
26 No caritativo(a)
35 Incompasivo(a)
53 Duro de Corazon
59 No afectuoso(a)

Distante-Introvertido
1 Introvertido (a)
13 Solitario(a)
18 Antisocial
23 Desanimado(a)
45 Antipatico(a)
52 No sociable
56 Serio(a)
60 Distante

Inseguro(a)-Sumiso(a)
4 No autoritario
9 Retraido(a)
25 Sumiso(a)
*28 Gentil
36 Timido
37 No atrevido(a)
49 Avergonzoso(a)
63 No Forzoso(a)

****Modesto-Ingenuo**
2 Modesto
5 No calculador(a)
10 No malicioso(a)
27 Honesto
31 Humilde
33 Pasivo(a)
39 Verdadero
51 Sano

Amable-Agradable
6 Servicial
7 Amable
8 Caritativo(a)
14 Tierno(a) de corazon
15 Compasivo(a)
34 Tierno(a)
41 De buen corazon
62 Simpatico(a)

Sociable-Extrovertido
16 Alegre
20 Entusiasmado(a)
29 Jovial
40 Extrovertido(a)
43 Animado(a)
44 Amigable
47 Sociable
58 Bien Amistoso

Note. * items with low item total correlation.
       ** scale with low coefficient alpha

Table 3
Psychometric Characteristics of the EAI

Scale	SD	M	Coefficient Alpha
(PA) Assured-Dominant (Seguro-Dominante)	4.67	1.27	0.70
(BC) Arrogant-Calculating (Arrogante-Calculador)	2.65	1.12	0.72
(DE) Cold-Hearted (Hostil)	1.99	0.91	0.72
(FG) Aloof-Introverted (Distante-Introvertido)	2.84	1.15	0.79
(HI) Unassured-Submissive (Inseguro-Sumiso)	3.79	1.19	.072
(JK) Unassuming-Ingenuous (Modesto-Ingenuo)	5.87	0.83	0.47
(LM) Warm-Agreeable (Amable-Agradable)	6.84	0.79	0.81
(NO) Gregarious-Extraverted (Sociable-Extrovertido)	6.68	0.87	0.85

Table 4
Intercorrelation Matrix of the EAI Scales

Scale	PA	BC	DE	FG	HI	JK	LM	NO
PA	--							
BC	.39	--						
DE	.27	.57	--					
FG	.05	.44	.65	--				
HI	-.27	.13	.24	.46	--			
JK	-.05	-.30	-.18	-.05	.28	--		
LM	-.10	-.08	-.22	-.31	.01	.33	--	
NO	.33	.01	-.14	-.50	-.36	.17	.63	--

Table 5
Factor Loadings of the EAI

Scales	Factor 1	Factor 2	Factor 3
(BC) Arrogant-Calculating (Arrogante-Calculador)	.84	-.06	-.07
(DE) Cold-Hearted (Hostil)	.84	-.16	.14
(FG) Aloof-Introverted (Distante-Introvertido)	.64	.56	.06
(PA) Assured-Dominant (Seguro-Dominante)	-.08	.55	.26
(NO) Gregarious-Extraverted (Sociable-Extrovertido)	.11	.83	.07
(LM) Warm-Agreeable (Amable-Agradable)	-.16	-.27	.76
(HI) Unassured-Submissive (Inseguro-Sumiso)	-.23	-.43	.60
(JK) Unassuming-Ingenuous (Modesto-Ingenuo)	-.56	.29	.60

Table 6

Factor Loadings of the EAI Scales from Principal Component Analysis

Scale Name	Items	Factor Loadings
Assured	46 self-confident	.59
	21 self-assured	.55
	29 jovial	.52
	20 enthusiastic	.51
	16 cheerful	.48
	43 perky	.48
	3 assertive	.35
	25 meek	-.35
	49 bashful	-.38
	9 shy	-.40
	37 unbold	-.42
	23 unsparkling	-.53
	63 forceless	-.35
Gregarious/Extroverted	47 outgoing	.70
	58 neighbourly	.70
	62 sympathetic	.68
	44 friendly	.68
	51 uncrafty	.38
	40 extroverted	.37
	34 tender	.35
Arrogant/Calculating	57 sly	.64
	24 cunning	.57
	64 tricky	.52
	12 ruthless	.50
	54 wily	.50
	53 hard-hearted	.48
	55 calculating	.45
	27 unsly	-.45
	10 uncunning	-.51
	22 cruel	.35

Table 6 Continued

Scale Name	Items	Factor Loadings
Dominant	17 dominant	.75
	32 domineering	.70
	19 iron-hearted	.65
	50 firm	.56
	42 persistent	.47
	30 crafty	.43
	38 forceful	.43
	4 unauthoritative	-.34
Warm/Agreeable	6 accommodating	.72
	8 charitable	.69
	7 kind	.57
	28 unaggressive	.47
	31 boastless	.36
	39 unwily	.33
	15 soft-hearted	.35
	41 gentle-hearted	.37
Cold-Hearted	18 anti-social	.61
	52 unsociable	.52
	13 dissocial	.48
	35 unsympathetic	.46
	45 unneighbourly	.40
	59 warmthless	.38
	26 uncharitable	.34
Introverted	36 timid	.38
	1 introverted	.52
	60 distant	.47
	56 uncheery	.46
	11 cold-hearted	.42

Table 7

Factor Loadings of the Second Order Principal Components Analysis of the EAI

Scale Name	Dominance-Cold	Affiliation
Arrogant-Calculating (Arrogante-Calculador)	.81	-.09
Cold-Hearted (Hostil)	.80	-.19
Introverted (Introvertido)	.63	-.08
Dominant (Dominante)	.45	.08
Warm-Agreeable (Amable-Agradable)	-.14	.71
Gregarious-Extroverted (Sociable-Extrovertido)	-.13	.68
Assured (Seguro)	.33	.63

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