Trans-Cultural Patterns of Child Adjustment in Colombian and United States School Children

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Resumen

Se seleccionó una muestra de 74 niños entre los 8 y los 11 años de edad, pertenecientes a dos niveles socio-económicos; la muestra fue tomada de 20 escuelas de Medellín (Colombia). El propósito del estudio fue comparar la muestra Colombiana con una muestra nacional de los EE.UU., utilizada en análisis previos de conglomerados de la batería Self-Report of Personality-Child (SRP-C) del BASC (Reynolds & Kamphaus, 1992). El análisis de conglomerados se utilizó para agrupar los auto-reportes de los niños Colombianos. Las consideraciones teóricas y empíricas fueron empleadas para identificar una solución de 6 conglomerados. Cinco de los 10 conglomerados identificados para la muestra de los EE.UU. formaron características comunes con la muestra Colombiana. Aunque la muestra Colombiana fue pequeña, los resultados sugieren la existencia de un modelo multicultural similar de ajuste infantil entre los niños colombianos y estadounidenses.

Palabras claves: ajuste transcultural, análisis de conglomerados, BASC, ajuste infantil.

Summary

A sample of 74 8 to 11 year olds from two levels of SES was selected from twenty schools in Medellín, Colombia. The purpose of the study was to contrast the Colombian sample with a national U.S. sample of children used in a previous cluster analysis of the Self-Report of Personality-Child (SRP-C) of the BASC (Reynolds & Kamphaus, 1992). Cluster analysis was used to group the self-reports of the Colombian children. Theoretical and

empirical considerations were used to identify a 6-cluster solution. Five of the 10-clusters identified by the U.S. sample shared common characteristics with those of the Colombian sample. Although the Colombian sample was small, the results suggest the existence of highly similar cross-cultural patterns of child adjustment among Colombian and U.S. school children.

Key words: transcultural adjustment, cluster analysis, BASC, child adjustment.

Introduction

Most child behavior research has been focused on the study of child psychopathology (Jensen et al., 1993; Kamphaus & Frick, 1996; Kazdin, 1995). *The Diagnostic and Statistical Manual of Mental Disorders* ([DSM-IV-TR], American Psychiatric Association, 2000) has been useful as a tool in diagnosing childhood disorders; although, it is exclusively a dichotomous approach that allows the clinician to classify a child as either having or not having a disease. Research requires going farther, beyond these frontiers. Specifically, research on multidimensional paradigms for the study of behavior requires the use of combinations of scales, constructs, or dimensions to study behavior. In other words, if child mental health and behavior have to be understood as a dynamic system, then a dynamic framework is required as well (Caron & Rutter, 1991; Kamphaus, DiStefano, & Lease, 2003; Richters, 1997).

In this way, *The Behavior Assessment System for Children* ([BASC], Reynolds & Kamphaus, 1992) and similar measures have become alternative methods for classifying child behavior. In our previous investigations the BASC has allowed us to measure the child on several dimensions of behavior simultaneously (Kamphaus, Huberty, DiStefano, & Petoskey, 1997; Kamphaus et al., 1999; Kamphaus & DiStefano, 2001). Furthermore, the fact that the BASC includes a group of parents, teacher, and self-report rating scales to permit us to distinguish interactions between children and their context of development.

Research on BASC validity and reliability has been extensive (Reynolds & Kamphaus, 1992). This system has been useful not only for research but also for clinical purposes (Pineda et al., 1999a, 1999b; Reynolds & Kamphaus, 2002). Analyses of traditional dimensions of child behavior by using the BASC have been also documented. Moreover, those studies have revealed evidence that child behavioral adjustment and variation may be organized into a limited number of "types" (Huberty, DiStefano, & Kamphaus, 1997; Kamphaus et al., 1997, 1999, 2003). Some of these types appear to be measurement instrument independent, with similar groups identified by using other scales such as the Missouri Children's Behavior checklist (Curry & Thompson, 1985) and the Child Behavior Checklist (Achenbach, Howell, McConaughy, & Stranger, 1995).

By using cluster analysis of BASC results for a large and nationwide American sample, the existence of specific typologies or clusters of child behavior have been identified (Kamphaus et al., 1997). With the Teacher Rating Scale (TRS), seven clusters were found and named according with their characteristics. The clusters were named as follows: "1, Well Adapted," "2, Average," "3, Disruptive Behavior Disorder," "4, Learning

Disorder," "5, Physical Complains/Worry," "6, Severe Psychopathology," and "7, Mildly Disruptive" (Kamphaus et al., 1997). Using the Parent Rating Scale ([PRS], Kamphaus et al., 1999), nine clusters were identified as well; clusters 1,2,3,5, and 6 were similar to those found with the TRS, whereas: "1, Adapted," "5, Minimal Problems," "6, Attention Problems," "7, Internalizing," (Kamphaus et al., 1999) were identified as new clusters.

Recently, Kamphaus et al. (2003), identified a ten-cluster solution by using cluster techniques in the analyses of 4.982 BASC self-reports for children (SRP-C). On more time, "Well adapted," "Average," "Disruptive Behavior Problems," "Physical Complains/Worry," "Internalizing," and "General Problems – Severe" clusters were found. New clusters identified by using the SRP-C were: "Attitude Toward School," "Low Self Esteem," "Low Self-Reliance," and "Attitude Toward School and Teachers." Beyond these results, the authors reported that although 6 of the ten clusters were found either by using the TRS or PRS, for the majority of the ten clusters, parents and teachers did not report problems with a child. Parent and teacher evaluations both described a child as "average" or close to norm level of 50 across all of their rating scales, regardless of how the child viewed himself/herself. Only when a child belonged to one of the two most severe clusters, "General Problems–Severe" and "Disruptive Behavior Problems," did parents and teachers show variation in their ratings. However, even with the most behaviorally impaired clusters, parents and teacher ratings were still within one standard deviation of the mean score of 50. These results provide support for the notion that parents and teachers may often be unaware of children's self-perceptions (Kamphaus & Frick, 2002). Further, children who suffer from problems of an internalizing nature (e.g., low self reliance, physical complaints/worry, and low self esteem) may go unnoticed, and potentially untreated (Pagano, Cassidy, Little, Murphy, & Jellinek, 2000). Finally, the authors underlined the fact that these findings demonstrate again the importance of collecting self-report information by children.

Pineda, Kamphaus, Mora, Restrepo, et al. (1999) conducted a cross-cultural validation of the BASC in Medellín Colombia. Parents of one hundred twenty 6 to 11 year-old children were assessed by using the Spanish version of the BASC. Cluster analysis of the PRS results showed a six-cluster solution. Kamphaus and DiStefano (2001) ran cluster analyses for a Colombian sample of TRS. They found five of the six clusters that had been found by Pineda, Kamphaus, Mora, Restrepo, et al. (1999) with PRS. The new cluster identified by Kamphaus and DiStefano (2001) was named "Learning Problems." This cluster was anticipated because the teacher rating scale provides more information about academic achievement.

In this way Kamphaus and DiStefano (2001) contrasted TRS and PRS results between an American sample and a Colombian sample. Although the Colombian sample was smaller (N=108) than the American (N=1228), the same criteria and cluster techniques were used for both samples. Six of the seven clusters found in the American sample were identified by the cluster analysis for the Colombian TRS sample. The cluster named "Mildly Disruptive" was not found in the Colombian sample.

For the PRS, five of the nine clusters in the American sample were also found in the Colombian sample; “Minimal Problems,” “Attention Problems,” and “Internalizing” “Adapted” were not identified. Kamphaus and DiStefano concluded that the PRS cluster analytic results were fairly similar for the two cultures, especially considering the large differences in sample size.

These results were corroborated by Brewis and Pineda (2001), who compared BASC parent and teacher scale ratings from Colombian and U.S. school children between the ages of 6 and 11 years. They investigated the theory, that rates of psychiatric symptomatology of childhood would be highly similar across cultures. Using the BASC PRS and TRS, they found that indeed rates of depression and withdrawal were similar across groups, while there was more cross-cultural variability in the symptoms of anxiety and somatization.

The main purpose of our investigation was to replicate the study of Kamphaus et al. (2003) with a Colombian sample in order to assess the cross-cultural generalizability of cluster analytic findings produced with U. S. samples. We predicted that most of the 10 clusters found in the U.S. sample would be identified in the Colombian sample. Our main hypothesis is that the “Well Adapted” cluster found in U.S. samples will be replicated in the Colombian sample. The existence of a “chreod” of normal development in both cultures is predicated by C. H. Waddington’s biopsychosocial theory of development (Waddington, 1942, 1953, 1971).

Previous studies of Colombian samples have often added socioeconomic status (SES) as a variable, due to differences between public and private school systems, and life quality. Parental SES was included in the analyses of the Colombian samples by Pineda, Kamphaus, Mora, Puerta, et al. (1999), Pineda, Kamphaus, Mora, Restrepo, et al. (1999) and Kamphaus and DiStefano (2001). Therefore, this study also provides information about SES differences among clusters and, more important, data regarding trans-cultural patterns of child adjustment in Colombian and United States school children. Furthermore, this study is a result of our continuing efforts to contribute to our knowledge about the cross-cultural psychology of two major cultures: North American and Latin American.

Method

Instrumentation

For the purpose of this study, the Self Report of Personality for Children (SRP-C) from the BASC (Reynolds & Kamphaus, 1992) was utilized. The BASC consists of three rating forms: parent, teacher and self. They were created to facilitate the differential diagnosis and educational classification of a variety of emotional and behavioral problems as well as adaptive competencies in preschoolers, children and adolescents. The SRP-C is used only in 8 to 11 year-old children and 12-18 year-old adolescents, while the parents and teachers’ forms cover ages 2 ½ through 18. Children younger than eight years old have difficulty producing accurate self-reflections (Reynolds & Kamphaus, 1992)

The SRP-C includes 152 items that are rated by each child using a four-point range of frequency, from “Never” to “Almost Always,” measuring 12 dimensions of behavior that are reported in Table 1

(Reynolds & Kamphaus, 1992). There is evidence of three types of reliability in the SRP-C: internal consistency, test-retest reliability, and inter-rater reliability. The median alpha reliability coefficient for the 12 individual scales was .81 for the norming sample and .80 for a separate clinical sample of 271 cases (Reynolds & Kamphaus, 1992).

In addition, separate exploratory and covariance structure analyses of the norming sample produced evidence for the three factors labeled clinical maladjustment (e.g. Depression, Anxiety, Atypicality), social maladjustment (e.g. Attitude Toward Teachers, Sensation Seeking), and personal adjustment (comprised of positive or adaptive scales such as Relations with Parents). The SRPC exhibited a lawful pattern of correlations with analogous scales from other self-report instruments including the MMPI-A and Achenbach YSR (Kamphaus & Frick, 2002). The Depression and Sense of Inadequacy scales of the SRPA, for example, correlated .43 and .62 respectively with the Depression clinical scale of the MMPI-A for a sample of 35 adolescents. Similarly, the SRPA Atypicality scale correlated .58 for females but only .25 for males with the Thought Disorder scale of the 1985 version of the YSR. Somatization from the SRPA correlated .70 for girls and .58 for boys with the Somatic Complaints scale of the YSR in these same investigations (Reynolds & Kamphaus, 1992).

Table 1

*BASC self-Report of Personality Scale Definitions**

Scale	Definition
Anxiety	Feelings of nervousness, worry, and fear: the tendency to be overwhelmed by problems
Attitude to School	Feelings of alienation, hostility, and dissatisfaction regarding school
Attitude to Teachers	Feelings of resentment and dislike of teachers; beliefs that teachers are unfair, uncaring, or overly demanding
Atypicality	The tendency toward gross mood swings, bizarre thoughts, subjective experiences, or obsessive-compulsive thoughts and behaviors often considered "odd"
Depression	Feelings of unhappiness, sadness, and dejection; a belief that nothings goes right
Interpersonal Relations	The perception of having good social relationships and friendship with peers
Locus of Control	The belief that rewards and punishments are controlled by external events or other people
Relations with Parents	A positive regard toward parents and a feeling of being esteemed by them
Self-Esteem	Feelings of self-esteem, self-respect, and self-acceptance
Self-Reliance	Confidence in one's ability to solve problems; a belief in one's personal dependability and decisiveness
Sensation Seeking	The tendency to take risks, to like noise, and to seek excitement
Sense of Inadequacy	Perceptions of being unsuccessful in school, unable to achieve one's goals, and generally inadequate
Social Stress	Feelings of stress and tension in personal relationships; a feeling of being excluded from social activities
Somatization	The tendency to be overly sensitive to, experience, or complain about relatively minor physical problems and discomforts

* Note: From Behavior Assessment System for Children (p.58), by C.R. Reynolds and R.W. Kamphaus, 1992, Circle Pines, MN: American Guidance Service. Copyright 1992 by AGS publishing. Reprinted with permission.

Sample

The Colombian sample for this study was originally selected for the validation of the Spanish (Colombian) version of the BASC, which was developed and published by Pineda, Kampaus, Mora, Restrepo, et al. (1999). In his study, the sample was randomly selected from public and private schools in Medellín, Colombia in order to collect a representative sample of the local school population. Given that there are large differences in socioeconomic status in Medellín due to differences between public and private school systems, parental SES was included in the analyses. Six levels of SES, ranging from 1 to 6, were coded for this investigation in accordance with the official classification system used by the Colombian government to determine benefits and taxes. Level 1 includes families with meager resources roughly equivalent to a monthly income of approximately of 150 dollars and they live in neighborhoods with fewer services, roads, street lighting, and more criminality. On the other hand, the level 6 represents the highest SES level where the population has more financial resources (i.e. monthly income of over $10,000 dollars per family per month), greater access to recreational and extra-curricular activities and safer neighborhoods. The six SES levels were grouped in two levels, where SES 1-2-3 were combined to form level 1 or low, and SES 4-5-6 level 2 or high.

Parental consent was obtained for participation before the administration of the forms. One hundred twenty 6-11 year-old children participated in the study, which originally included not only the self report form, but also the parents and teacher's report forms from the BASC. The number of 8-11 year-old children was 78, representing 65% of the original sample. Children with an incomplete self-report, or who were under the age of eight or over the age of 11 were excluded from the analyses, yielding a final sample of 74 cases. This sample was characterized by an equitable gender and SES distribution (38 males-51.4%, 36 females – 48.6%; low SES 48.6%, high SES 51.4%). Grouping by ages, 36.5% was eight years old, 24.3% was nine years old, another 24.3% was ten years old and 14.9% was eleven years old.

Analyses

Clustering Techniques. Cluster analysis refers to a set of classification procedures used to uncover homogeneous groups underlying a data set (Anderberg, 1973; Aldenderfer & Blashfield, 1984; Blashfield & Aldenderfer, 1988; Hartigan, 1975; Milligan & Cooper, 1987). The goal of cluster analysis is to create smaller subgroups of children that are similar to members within a cluster while distinct from members of other clusters (Aldenderfer & Blashfield, 1984). Many different algorithms exist for clustering data. The most popular algorithm in the social sciences, Ward's hierarchical analysis, creates groups that have minimum variance within a cluster (Ward, 1963). However, a drawback to the Ward method is that once a case is assigned as a member of a particular cluster, it cannot be reassigned as the clustering procedure continues. Therefore, a case assigned to a cluster early in the procedure may ultimately have a stronger association with a different cluster at the conclusion of the analysis, but is not permitted to change cluster membership.

To overcome this drawback, one option is to employ the final solution from the Ward clustering procedure as the starting point for

a K-means iterative clustering procedure (Milligan & Cooper, 1987). The K-means iterative procedure allows for cases to switch from their initial cluster assignment to a different cluster with which it most closely associates (MacQueen, 1967).

After all cases in the data set have been assigned to a cluster, the K-means procedure recalculates the average values across all variables within the cluster, which is used as the starting point for the next iteration of the procedure. The iterative process continues making "passes" through the data set until cases do not change clusters. By using the final Ward's solution as the initial starting point for the K-means procedure, the researcher gains the benefits of both clustering algorithms.

For the present study, the squared Euclidean distance measure was used as the clustering index of similarity to group cases. Thus, cases joined the cluster in which the squared Euclidean distance between the case and the cluster centroid was minimized.

Cluster Analysis Procedures. To begin the clustering procedure, a Cubic Clustering Criterion (CCC) plot was used to judge the number of clusters underlying the data set (Sarle, 1983). The CCC plot is similar to a screen plot in factor analysis, showing the number of clusters needed to reduce the larger data set into a smaller number of groups. The CCC plot information suggested that between five-clusters and eleven-clusters were underlying the SRP-C data set.

Cluster analysis methodology has been criticized as an internally driven analysis method with few criteria to evaluate a solution (Aldenderfer & Blashfield, 1984; Hartigan, 1975). While it is ideal to replicate a solution in an independent sample from the same population, it was not possible to do so with this limited sample. The current results, however, were compared to those for the national U.S. sample, which was internally cross-validated (Kamphaus et al., 2003).

Interpretation of the cluster analysis solution involved two main components. First, the centroid information for each of the clusters was examined. For each cluster, the centroid states the arithmetic mean values across the set of 12 variables used in the clustering process. By evaluating the centroids, it can be determined if a cluster's pattern of mean values on a set of variables identifies a particular subgroup of children. Second, supporting information about each cluster's characteristics, such as gender distributions, SES distribution, and cluster size relative to the total sample were examined. Finally, each cluster was "named" by comparing the centroid information and cluster characteristics to previous studies, especially the Kamphaus et al. (2003).

Results

Four to seven cluster solutions were run and interpreted for the Colombian sample. After evaluating each of the clusters solutions, a six-cluster solution was identified as reasonable due to interpretability of the obtained clusters and their match to the previous cluster solution of Kamphaus et al. (2003). Moreover, the solution was analyzed in accordance with previous knowledge of child behavioral theories, cluster characteristics such as gender and SES distribution, and cluster

size. Table 2 provides information about size, proportion and demographics for the six clusters. Figure 1 shows the SES distribution.

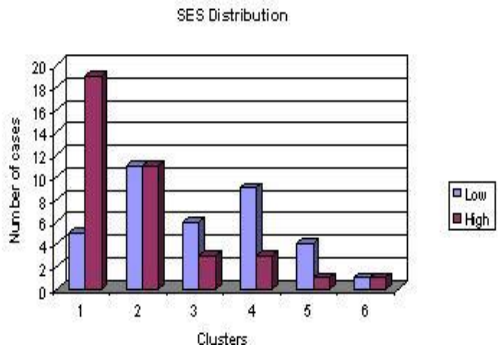

Figure 1. The six clusters in the two analyzed SES.

Of the 74 students, 24 or 32.4% were identified as "Well adapted". This group was characterized by the absence of behavioral problems and the presence of self-esteem, self-reliance and good interpersonal relationships with T scores approximately ½ to 1/3 standard deviation above the mean. As was the case in other investigations (e.g. Kamphaus et al., 2003) this largest cluster included more females than males and a tendency to have more children of higher socioeconomic status (see Table 2).

The second cluster was named "average" and it represented 30% of the sample (see Table 2). The adaptive scales were again above the mean but to a lesser extent (2 to 7 T score points). Gender differences were again evident; however, males outnumbered females in this cluster. In addition, socioeconomic status differences were not found. This cluster was also reported in previous studies (Kamphaus et al., 1997, 1999, 2003).

A third cluster was identified as "Physical complaints – Worry," with 9 members or 12% of the sample. This group was characterized by significant reports of anxiety, feelings of social stress, locus of control, and atypical feelings and thoughts. In contrast to previous studies for the U.S. sample (Kamphaus et al., 1997, 1999, 2003), this cluster was more represented by males than females. In addition, the low SES group was strongly represented in this cluster (see Table 2).

The fourth cluster, "Internalizing," included 16% of the sample. These children reported significantly high levels of social stress, anxiety, depression, locus of control, atypical feelings and thoughts and, more particularly, a strong sense of inadequacy. Their interpersonal relationships were below average. Girls outnumbered boys in this cluster, and as it was expected, low SES members characterized this cluster. A similar cluster has appeared in parent reports and self-reports in U.S. samples (Kamphaus et al. 1999, 2003).

A fifth cluster, "Attitude toward teachers" comprised of 7% of the sample. Children in this cluster mainly reported that they disliked their teachers. The gender distribution showed more girls than boys in this cluster, and more children from the lower SES group. Interestingly, a previous study with the SRP-C (Kamphaus et al., 2003) showed a similar cluster labeled "attitude toward school" with negative attitude and feelings toward school rather than toward teachers. The cluster found in the Colombian sample was characterized by a normal attitude toward school and negative attitude toward teachers specifically.

Table 2

Cluster information for the SRP-C Six-Cluster Typology contrasted with U.S. SRP-C Ten-Cluster Typology

	Cluster					
Scales	1 (1)	2 (2)	3 (7)	4 (9)	5 (8)	6 (6)
N	24 (1139)	22 (880)	9 (586)	12 (368)	5 (450)	2 (316)
Frequency	32 (23)	30 (18)	12 (12)	16 (7)	7 (9)	3 (6)
Attitude to School	**40.66 (41.55)**	43.77 **(43.24)**	42.44 (46.48)	50.08 (55.09)	48.60 **(60.32)**	**42.00** (49.15)
Attitude to Teachers	**42.20 (42.24)**	47.54 (43.88)	44.33 (47.28)	52.08 (54.60)	**63.60 (59.22)**	48.50 (51.50)
Atypicality	**42.79 (40.54)**	45.95 (46.89)	53.44 **(57.65)**	**61.00 (63.28)**	49.00 (54.11)	45.50 (45.35)
Locus of Control	44.41 **(39.52)**	50.27 (45.15)	55.88 (54.39)	**61.25 (62.44)**	55.00 (57.12)	50.00 (46.04)
Social Stress	**43.04 (39.32)**	44.04 (47.60)	55.11 (55.36)	**60.58 (65.05)**	54.20 (54.19)	**42.00** (45.69)
Anxiety	44.66 **(38.80)**	44.90 (51.03)	**59.77 (58.19)**	**61.83 (62.77)**	53.60 (53.97)	47.50 (44.90)
Depression	**42.83 (41.94)**	46.18 (44.09)	48.00 (50.27)	**58.41 (65.96)**	47.20 (53.92)	49.50 (47.24)
Sense of Inadequacy	45.54 **(41.74)**	52.13 (44.89)	46.88 (50.23)	**68.25 (63.26)**	52.60 (56.50)	51.00 (47.85)
Relationship with Parents	53.50 (55.28)	51.04 (55.07)	49.00 (52.88)	46.08 (47.46)	49.80 (48.57)	**57.00** (45.75)
Interpersonal Relationships	**57.00 (56.57)**	52.50 (54.80)	53.77 (50.37)	**36.41 (37.27)**	46.00 (50.57)	**58.00** (49.57)
Self-Esteem	55.87 (55.98)	54.22 (54.68)	52.11 (53.19)	50.58 **(43.06)**	50.40 (51.36)	54.50 (49.20)
Self-Reliance	**58.54 (56.32)**	**57.22** (54.89)	53.77 (53.04)	51.58 (48.13)	50.00 (49.17)	**18.50 (37.00)**
Colombian sample						
Frequency SES (Low/High)	21/79	50/50	67/33	75/25	80/20	50/50
Frequency Gender (Male/Female)	33/67	77/23	78/22	33/67	40/60	0/100

Notes: The parentheses show cluster information for the SRP-C ten-cluster U.S. typology. Highlighted means represent approximately either a 7-point increase or decrease from mean of 50. Cluster 1 = Well Adapted, Cluster 2 = Average, Cluster 3 = Physical Complaints/Worry, Cluster 4 = Internalizing, Cluster 5 = Attitude to Teacher, Cluster 6 = Low Self-Reliance; N = 74 Colombian sample; N = 4,981 U.S. sample.

A sixth and final cluster was labeled “Low Self-reliance” and was represented by a small part (3%) of the children. Its value becomes important in the analyses since a similar cluster was found in the previous SRP-C study (Kamphaus et al., 2003). The children in this cluster reported strong relationships with parents and peers, but curiously, a significantly low score in self-reliance.

Discussion

In his classic article, “Canalization of development and the inheritance of acquired characters,” Waddington (1942) introduced the concept of “canalization of development,” adapted from embryology and genetics to explain the tendency in the developmental process for individuals from same species to develop species typical behavioral repertoires, in spite of small changes in environmental conditions. Based on this concept, Waddington developed a

biopsychosocial descriptive theory of development to harmonize geneticist's and naturalist's theories of the inheritance of behavior. His introduced the concept of the "Chreod- a self-stabilizing time-trajectory of change in a multicomponent system (or multidimensional space)" (Waddington, 1971). We think that the well-adapted group of individuals found in several of our studies and now in a very different culture is evidence of the existence of a chreod of normal development. Further, more this chreode exists in different cultures independent of the environmental or system in which its development has occurred.

Waddington's theory is supported by the identification of the well-adapted cluster in previous studies as well as in this one. Not only was the well adapted cluster clearly identified in both cultures it also possessed the same pattern of adjustment. One example of the pattern of similarity is the finding that both groups demonstrated relative strengths in interpersonal relations. This finding is important because it is supported by the results of a prior cross-cultural investigation of Colombian and U.S. first graders (Pilgrim & Rueda-Riedle, 2002). These authors concluded that friendship was an important predictor of prosocial behavior in both groups of children.

In total, six common clusters were found between the U.S. and the Colombian samples, which were phenomenologically virtually identical in both samples. The finding an "internalizing" cluster was expected according with previous research that describes the existence of common depressive behaviors among different cultures (Brewis & Pineda, 2001; Evans & Lee, 1998; Kleinman, 1988). In spite of the fact that four clusters were not cross-validated and based on Waddington's theory, some different clusters of adjustment could be expected to occur in children from new samples and from other cultural groups. According to the theory of convergence, cultures are becoming similar over time; however, this convergence may occur in only a few aspects of culture, whereas divergence remains in others (Triandis, 2001).

These results demonstrated the need for more in depth studies of the patterns of adjustment and behavior in children from different cultures. Moreover, and as an implication for practice in psychology, translations of popular teacher, parent, and self-report rating scales may be used on an experimental basis in North and South American cultures. Certainly, however, more local validation studies are warranted.

However, one of the limitations for this study is the small sample size that is limited to one metropolitan area of Colombia. Therefore, these results may not generalize to other areas of the country. Another limitation when analyzing our data is the lack of works using cluster analysis and cross-cultural models to study behavior and trans-cultural patterns of child adjustment.

Conclusions

In previous studies of cross-cultural comparisons among Colombian and American samples using BASC, it was unclear if the findings reflected cultural differences or similarities among parental and teacher interpretations of child behavioral rather than the childhood behavior itself. The current findings suggest the presence of substantial similarities

between raters of child behavior, including children as raters of their own behavior. The results of the present study provide evidence of common trans-cultural patterns of child adjustment in Colombian and United States school children.

References

Achenbach, T. M., Howell, C. T., McConaughy, S. H., & Stanger, C. (1995). Six-year predictors of problems in a national sample:III. Transitions to young adult syndromes*. Journal of the American Acadamy of Child and Adolescent Psychiatry, 34*(5), 658-669.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.), Text Revision. Washington, DC: American Psychiatric Association.

Aldenderfer, M. S., & Blashfield, R. K. (1984). *Cluster Analysis.* Beverly Hills, CA: Sage.

Anderberg, M. R. (1973). *Cluster Analysis for Applications.* New York: Academic Press.

Blashfield, R. K., & Aldenderfer, M. S. (1988). The methods and problems of cluster analysis. In J. R. Nesslerode & R. B. Cattell (Eds.), *International handbook of multivariate experimental psychology.* New York: Plenum Press.

Brewis, A. A., & Pineda, D. (2001). Population variation in children's behavioral symptomatology. *American Journal of Physical Anthropology, 114*(1), 54-60.

Caron, C., & Rutter, M. (1991). Comorbidity in child psychopathology: Concepts, issues, and research strategies. *Journal of Child Psychology and Psychiatry, 32*(7), 1063-1080.

Curry, J. F., & Thompson, R. J. (1985). Patterns of behavioral disturbance in developmentally disabled and psychiatrically referred children: A cluster analytic approach. J*ournal of Pediatric Psychology, 10*(2), 151–167.

Evans, B., & Lee, B. (1998). Culture and child psychopathology. In S. Kazarian & D. Evans (Eds.), *Cultural clinical psychology* (pp. 289-315). New York: Oxford University Press.

Hartigan, J. A. (1975). *Clustering Algorithms.* New York: Wiley.

Huberty, C. J., DiStefano, C., & Kamphaus, R. W. (1997). Behavioral clustering of school children. *Multivariate Behavioral Research , 32*(2), 105-134.

Jensen, P. S., Koretz, D., Locke, B. Z., Schneider, S., Radke-Yarrow, M., Ritchers, J.E., & Rumsey, J.M. (1993). Child and adolescence psychopathology research: Problems and prospects for the 1990s. *Journal of Abnormal Child Psychology, 21*(5), 551-580.

Kamphaus, R. W., & DiStefano, C. (2001). Evaluación de la psicopatología infantil. *Revista de Neuropsicología, Neuropsiquiatría y Neurociencias, 3*(1), 85-98.

Kamphaus, R. W., DiStefano, C., & Lease, A. M. (2003). A self-report typology of behavioral adjustment for young children.

Psychological Assessment, 15(1),17-28.

Kamphaus, R. W., & Frick, P. J. (1996). *Clinical assessment of child and adolescent personality and behavior.* Needham Heights, MA: Allyn & Bacon.

Kamphaus, R. W., & Frick, P. J. (2002). *Clinical assessment of child and adolescent personality and behavior* (2nd ed.). Needham Heights, MA: Allyn & Bacon.

Kamphaus, R. W., Huberty, C. J., DiStefano, C., & Petoskey, M. D. (1997). A typology of teacher-rated child behavior for a national U.S. Sample. *Journal of Abnormal Child Psychology, 25*(6), 453-463.

Kamphaus, R. W., Petoskey, M. D., Cody, A. H., Rowe, E. W., Huberty, C. J., & Reynolds, C. R. (1999). A typology of parent rated child behavior for a national U.S. sample. *Journal of Child Psychology and Psychiatry, 40*(4), 607-616.

Kleinman, A. (1988). *Rethinking psychiatry*. New York: Free Press.

MacQueen, J. B. (1967). Some methods for classification and analysis of multivariate observations. *Proceedings of the fifth Berkeley Symposium on Mathematical Statistics and Probability, 1*, 211-297.

Milligan, G. W., & Cooper, M. C. (1987). Methodology review: clustering methods. *Applied Psychological Measurement, 11*, 329-354.

Pagano, M. E., Cassidy, L. J., Little, M., Murphy, J. M., & Jellinek, M. S. (2000). Identifying psychosocial dysfunction in school-age children: The Pediatric Symptom Checklist as a self-report measure. *Psychology in the Schools, 37*(2), 91-106.

Pilgrim, C., & Rueda-Riedle, A. (2002). The importance of social context in cross-cultural comparisons: First grades in Colombia and the United States. *The Journal of Genetic Psychology, 163*(3), 283-295.

Pineda, D. A., Kamphaus, R. W., Mora, O., Puerta, I. C., Palacio, L. G., Jiménez, I., et al. (1999). Uso de una escala multidimensional para padres de niños de 6-11 años en el diagnóstico de deficiencia atencional con hiperactividad. *Revista de Neurología, 28*(10), 952-959.

Pineda, D. A., Kamphaus, R. W., Mora, O., Restrepo, M. A., Puerta, I. C., Palacio, L. G., et al. (1999). Sistema de evaluación multidimensional de la conducta. Escala para padres de niños de 6-11 años, versión colombiana. *Revista de Neurología, 28*(7), 672-681.

Reynolds, C. R., & Kamphaus, R. W. (1992). *The Behavior Assessment System for Children. Manual*. Minnesota: American Guidance Service.

Reynolds, C. R., & Kamphaus, R. W. (2002). *The Clinician's guide to the Behavior Assessment System for Children*. New York: The Guildford Press.

Richters, J. E. (1997). The Hubble hypothesis and the developmentalists' dilemma. *Development and Psychopathology, 9*(2), 193-229.

Sarle, W. S. (1983). *Cubic Clustering Criterion* (SAS Technical Report A-108). Cary, NC: SAS Institute.

Triandis, H. C. (2001). Cross-Cultural Psychology. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 2994-2999). New York: Elsevier.

Waddington, C. H. (1942). Canalization of development and the inheritance of acquired characters. *Nature, 150*(3811), 563-565

Waddington, C. H. (1953). Genetic assimilation of an acquired character. *Evolution, 7*, 118-126.

Waddington, C. H. (1971). Concepts of development. In E. Tobach, L. R. Aronson, & E. Shaw (Eds.), *The biopsychology of development* (pp. 17-23). New York: Academic Press.

Ward, J. H. (1963). Hierarchial grouping to optimize an objective function. *Journal of the American Statistical Association, 58*, 236-244.