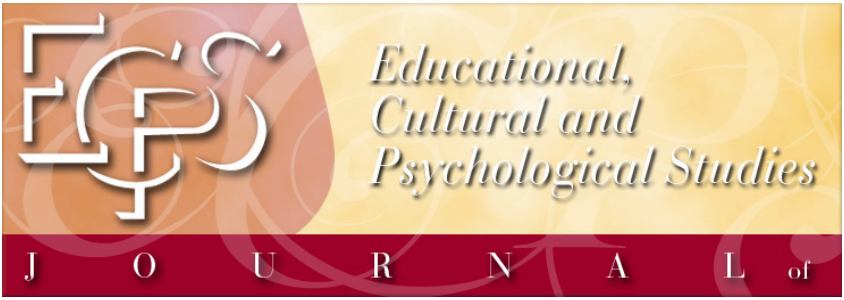

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The Learning Potential Assessment-2 in Yaqui Native American Children

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LA LEARNING POTENTIAL ASSESSMENT-2
NEI BAMBINI YAQUI NATIVI AMERICANI

Abstract

The aim of this study was to determine if the Learning Potential Assessment-2 (EPA-2) can be an adequate instrument for assessing the learning potential in Yaqui Native American children living in Sonora, Mexico. The participants were 89 students from three second grade primary schools divided into an experimental and control groups matched on IQ and age. Both groups were assessed by tests of intelligence. The experimental group was trained with a dynamic testing methodology. The results show a significant difference between the means of the posttest gain scores in the experimental and control groups with a high effect size. There was a temporary stability of the gained scores, because no significant difference between the posttest and the retest were found in a period of three months in the experimental group. In conclusion, the EPA-2 may be useful as dynamic testing for learning potential for this ethnic group and educational level.

Keywords: Dynamic testing; EPA-2; Learning potential; Validity; Yaqui Native American children.

1. Introduction

The conventional static testing estimates the achievement involving skills and knowledge learned from school or at home, whereby the examiner assumes a neutral stance and does not provide the examinee any feedback on performance during the testing session (Elliott, Grigorenko, & Resing, 2010). Cultural differences and socioeconomically disadvantaged children may perform poorly on this type of testing (Samuda, 1998; Molano, 2007; Calero, 2012; Tzuriel, 2013; Calero, Fernandéz-Parra *et al.*, 2013; Stevenson, Heiser, & Resing, 2016). One of the reasons may be that it focuses on the product, the children's present level of performance relating to learning that has taken place in the past, and it does not provide information about how children learn or their learning potential (Tzuriel, 2001; Elliott *et al.*, 2010). An alternative to this framework of intellectual assessment is dynamic testing. According to Elliott, Resing, and Beckmann (2018) it is a «methodological approach to the psychometric assessment of intellectual functioning that uses systematic variations of task characteristics and/or situational characteristics in the presentation of test items with the intention to evoke intraindividual variability in test performance» (p. 9). This approach integrates the learning process, seen as a component of intelligence, during the assessment procedure to estimate the learning potential (Kozulin, 2011; Stevenson *et al.*, 2016). Calero (2004) mentioned that the objective of dynamic testing is not to measure the performance of children, but their possibility of learning, not as an academic prognosis, understood in the traditional way, but as the estimation of the possibility of taking advantage of different cognitive training programs. Therefore, this type of assessment is directed to the population susceptible to improve, in development, or in decline (De Beer, 2006; Robles, 2007).

The origin of dynamic testing can be based on the concepts of the Zone of Proximal Development (ZPD) of Vygotsky (1978) and the Mediated Learning Experience (MLE) of Feuerstein, Rand, and Hoffman (1979), along with Budoff's research design (1970). Vygotsky (1978) tried to measure the ability to benefit from instruction and proposed the concept of ZPD, or potential development, defined as the distance between the success obtained by an individual in solving for themselves certain cognitive problems (current cognitive level) and the success that can be obtained when it is helped in such a task by an adult or a peer more capable than them (potential cognitive level; Forns *et al.*, 2011). Feuerstein *et al.* (1979) define MLE as the process between an experienced «adult who, by interposing himself between the child and external sources of stimulation, mediates the world to the child by framing, selecting, focusing, and feed-

ing back environmental experiences in such a way as to produce in him appropriate learning sets and habits» (p. 71). Budoff (as cited in Sternberg & Grigorenko, 2003) based his work on the assumption that disadvantaged children (e.g., mentally disabled or impoverished children) may have a higher learning capacity than that obtained through conventional tests. Budoff (1972) takes as a central method of his analysis the pretest-training-posttest scheme in order to analyze the differences of execution between the pretest and posttest, after a period of planned instruction.

The methodological structure proposed by Budoff is generally applied in dynamic testing. The tasks traditionally used in the pretest and in the posttest come from psychometric visuospatial intelligence tests considered to have low cultural influence. Some of these tasks in dynamic testing have been: progressive matrices, Koh's Block Design test and the organization of points, among others (Battery of Cognitive Modifiability [CMB], Tzuriel, 2000; Learning Potential Assessment-2 [EPA-2], Fernández-Ballesteros *et al.*, 2010; Corman & Budoff, 1973; Learning Potential Assessment Device [LPAD], Feuerstein *et al.*, 1979). In the training phase, the examiner interacts with the individual «mediating» in the resolution of a similar task (never identical) to that of the pretest. This training or mediation involves the use of clues, reinforcement, feedback on results, and various types of mediation that help children perform the task. It has been found that children in an experimental group have significantly improving their performance compared to the control group, which did not receive the training, thus providing evidence of its effectiveness (as cited in Fernández-Ballesteros, 1989; Malowitsky, 2001; Robles, 2007; Resing *et al.*, 2009; Resing & Elliott, 2011). In the posttest, the same test or a parallel test to the first one is administered again. The difference between the posttest and the pretest is considered a measure of learning potential (Fernández-Ballesteros, 1989). Although using this gained scored has received some criticisms (Calero, 2012).

Some of the main researchers that have worked and developed dynamic testing procedures have been: Feuerstein and Tzuriel (Feuerstein *et al.*, 1979; Tzuriel, 2001) in Israel; Budoff (1972), Brown and French (1979); Haywood and Lidz (2007) in the United States; Hessels (1997), Lidz and Van der Aalsvoort (2005), and Resing *et al.* (2009) in the Netherlands; Wiedl (Wiedl, Schottke, & Calero, 2006; Wiedl *et al.*, 2014) in Germany; Skuy and collaborators in South Africa (Skuy *et al.*, 2001); Chaffey and Bailey (2003) in Australia, and Fernández-Ballesteros *et al.* (2010) in Spain. The bibliographic review of the scientific literature on dynamic testing revealed that there were no studies on the learning potential of Native Americans in Mexico.

Diverse studies have shown that dynamic testing is more sensitive than traditional/static-based mode of testing for detecting potential strengths and weaknesses of children from different ethnic backgrounds (Chaffey & Bailey, 2003; Caffrey, Fuchs, & Fuchs, 2008; Calero, Mata *et al.*, 2013; Riós & Murcia, 2013; Resing *et al.*, 2016). For example, Chaffey and Bailey (2003) demonstrated the effectiveness of a dynamic testing when the mean score of the experimental group was significantly higher than the mean score of the control group in Australian Aboriginal children. Calero, Mata *et al.* (2013) also found that although there were initial differences in execution between the indigenous Spanish children and immigrants, there were no differences with regard to learning potential. Similarly, Resing *et al.* (2016) established that children, from a non-indigenous ethnic background, starting a lower level, profited as much from dynamic testing as did indigenous children in the Netherlands, but were unable to progress to same standard of this latter group.

An instrument for dynamic testing used in the Spanish language is the EPA-2 (Fernández-Ballesteros *et al.*, 2010). This instrument was created in the 1980s with the objective of quantitatively and qualitatively assess the degree to which a child can benefit from a long-term training in intellectual skills or cognitive strategies, and help identify psychopedagogical interventions aimed at enhancing and realizing that potential. This instrument is based on the work of Budoff (1972) and Feuerstein *et al.* (1979). The application is made according to the pretest-training-posttest sequence. The Raven's Progressive Matrices Test (RPM; Raven, Court, & Raven, 1993), in its general (Standard Progressive Matrices [SPM]) or color form (Colored Progressive Matrices [CPM]), according to the child's age (from 5 to 14 years) and/or intellectual level, is used for the pretest and the posttest as the complementary material. The training phase consists of presenting designs of matrix problems, and a training method that presents the following procedure: (a) show the design-stimulus, (b) request a response to the child (or children, if the application is collective), (c) immediately reinforce the correct answers, (d) request verbal explanations about why the different response alternatives are correct or incorrect, (e) draw all the possible answers on the board and (f) end the response design by verbally emphasizing why it is correct. The EPA-2 is a measure of the learning potential that allows the orientation of individuals with a view to improving their intellectual performances (Fernández-Ballesteros *et al.*, 2010).

In relation to the psychometric properties of EPA-2, several studies (as cited in Fernández-Ballesteros *et al.*, 2010) have proven the effectiveness of training; they found that there was a gain in RPM's scores after training, which was due to this training and not to other factors, or to

the single repetition of the application. Fernández-Ballesteros and Calero (1993) have found significant improvements obtained in this test after training, in a sample of children aged 10 to 14 years, with an IQ (obtained from the Wechsler's scale) between 55 and 80. This result has subsequently been the same with elderly people, finding (after training) significant gains in all the groups (Fernández-Ballesteros & Calero, 1995). In relation to the temporary stability of the gained scores, Fernández-Ballesteros *et al.* (2010) mentioned that the studies that measured the learning potential with techniques similar to this instrument, both with collective and individual procedures, have obtained gains that show stability over a period of time of several months. This is reflected in the work of Fernández-Ballesteros and Calero (1993) for a period of one year with a sample of Spanish children from a special education school from 10 to 14 years of age and Fernández-Ballesteros and Calero (1995) for a period of three months with a sample of elderly people from 59 to 87 years of age. These results provided evidence of the reliability of EPA-2.

The Standards for educational and psychological testing (American Educational Research Association [AERA], American Psychological Association [APA], and the National Council on Measurement in Education [NCME], 2014) established the need for evidence of the validity of score interpretations independently for any population with cultural differences (ethnicity, or socioeconomic level) with respect to the population for which the test was constructed. In this way, it is ensured that the test presents the same metric properties in different populations. According to Lidz and Peña (1996) the model of dynamic testing was introduced to try to reduce the effect of cultural «bias». Because it should not be assumed that a procedure designed within a cultural context can be useful with children from other cultural backgrounds, it is necessary to research such intercultural applications (Lidz & Van der Aalsvoort, 2005).

There is no validity evidence of the EPA-2 instrument in Yaqui Native American children living in Mexico. For this reason, the aim of this study was to determine if EPA-2 was an adequate instrument for evaluating the learning potential in Yaqui Native American children between six and seven years of age, through the determination of the effectiveness of the training/mediation phase, in order to verify its usefulness in this infant population.

Based on previous results of similar studies on the validity and reliability of dynamic testing (Fernández-Ballesteros, 1989; Malowitsky, 2001; Robles, 2007; Resing *et al.*, 2009) the following hypothesis were formulated: (a) there will be significant differences between the posttest scores of EPA-2 in a group of children who were trained as part of the test proce-

dure (experimental group) and another group to which a repeated test was simply given (control group) and (b) there will be a temporary stability in the scores (understood as the maintenance of the gains obtained after training) of the EPA-2 in the experimental group for a period of three months.

The results obtained in this study will provide data on the validity of the score interpretations of the EPA-2 in children from the Yaqui communities. These results can provide data on the information gap that currently exists regarding the dynamic testing approach for this population. It can also help guide the decision-making process on the most appropriate type of educational intervention in order to favor personal and school development for these children.

2. Method

2.1. *Participants*

The participants were 89 students (47 boys and 42 girls) with ages ranging from 6 to 8 years (M = 7.47, SD = 0.35) from three second grade primary schools located in Yaqui communities that live in the south region of Sonora, Mexico. The sample was randomly matched into the experimental and control groups based on scores on the Wechsler Intelligence Scale for Children - Fourth Edition (WISC-IV; Weschler, 2007) and age. The experimental group (N = 46) consisted of 22 boys and 24 girls whose mean age was 7.49 years (SD = 0.38) with a mean IQ of 82.80 (SD = 10.83). The control group (N = 43) consisted of 25 boys and 18 girls whose mean age was 7.45 years (SD = 0.33) with a mean IQ of 80.84 (SD = 10.93).

The Yaqui (or Yoemem as they refer to themselves) are Native Americans that speak a dialect of Cahita, which belongs to the Uto-Aztecan language family (Fabila, 1978). They live by the Yaqui River in Sonora (northwest of Mexico) in what is mainly known as the «Eight Towns» (Yaqui, 2012). These towns have a village council that makes all the tribal decisions. In 2010, the Mexican Census Bureau (Instituto Nacional de Estadística y Informática, 2011) reported that 33,000 people claimed to be Yaqui or from Yaqui descent. There is also a Yaqui community living in Arizona (southwest of the United States).

They usually live in a family neighborhood, that is, the multigenerational family members live side by side in the same land. The economic activities within their community are varied, highlighting agriculture,

livestock farming and fishing. The Mexican Ministry of Education and Culture (Secretaria de Educación y Cultura, 2013) mentioned that in the Yaqui region they offer basic, upper secondary and higher education. However, the social welfare indicators are poor, particularly in education, health, infrastructure and the degree of industrialization (Lerma, 2014).

2.2. *Instruments*

2.2.1. Wechsler Intelligence Scale for Children - Fourth Edition (WISC-IV; Weschler, 2007)

It is a clinical instrument of children's (between 6 to 16 years of age) cognitive ability assessment that is administrated individually. The WISC-IV provides four index scores that represent the intellectual functioning of specific cognitive domains (i.e., Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed), as well as a composite score that represents a child's general intellectual ability (i.e., Full Scale IQ). The WISC-IV battery consists of ten essential subtests and five supplementary subtests. This battery was translated and standardized in Mexico by the *Manual Moderno* [*Modern Manual*] for children and adolescents living in urban and suburban areas of the Mexican Republic. However, there are no normative data for children and adolescents in rural areas, marginalized or in a situation of extreme physical, mental and social disadvantage, or for those whose Spanish is not their mother tongue (Wechsler, 2007).

2.2.2. The Evaluación del Potencial de Aprendizaje-2 (Learning Potential Assessment-2; Fernández-Ballesteros *et al.*, 2010)

It measures the possibility to benefit from long-term training in intellectual skills or cognitive strategies for individuals between the ages of five to fourteen years, with or without intellectual deficit or learning problems, as well as elderly people with or without cognitive impairment. The materials consist in a series of matrix problems and a structured training program aimed to teach the problem-solving strategies needed. It also requires the administration-before and after the training-of the Raven's Progressive Matrices Test (Raven *et al.*, 1993), the CPM or the SPM scale depending on the age or intellectual level of the individual. The test can be applied individually or collectively (small groups).

2.3. *Design and procedure*

A pretest-training-posttest control-group design with randomly matched participants was employed in this study. We went to three primary schools through the collaboration of the Regular Education Support Services Unit (USAER) to request authorization and explain the purpose, utility and benefits of the research for the population. The application of the instruments was carried out in the 2014/2015 school year. In the first session, the WISC-IV was administered to all students in order to randomly match into the experimental and control groups. In the second session, as part of the EPA-2 procedure, the CPM test was applied to all participants in the pretest. In the next two sessions, the complete training of the EPA-2 procedure was administered to the experimental group. The control group completed activities about the alphabet. In the last session, the CPM was re-applied to all students. After three months, the students of the experimental and control group were administered the CPM. The study met the ethical standards for research with human beings of the American Psychological Association (institutional authorization, confidentiality, informed consent and consent of the student). The informed consent of the parents was dispensed with based on the standards 8.05 (disregard of informed consent for research) and 9.03 (informed consent in evaluations) of this code (American Psychological Association, 2017), since the application of EPA-2 integrated within USAER's own activities. The data were entered into the statistical package SPSS (Statistical Package for the Social Sciences, version 21.0) and the statistical treatment was performed.

3. Results

Table 1 shows the statistics of central tendency and dispersion in the pretest of the CPM (as part of the EPA-2 procedure). As it can be seen, the average raw score in the CPM of the experimental and the control groups were similar in the pretest (16.65 and 16.88, respectively). The results indicated, through the Student's *t* test for independent samples, that there were no significant differences, $t(87) = -.275$, $p = .784$, in the pretest raw scores of the CPM between the experimental and the control groups. The analysis of the Levene test showed the homogeneity of variances in both groups, $F(1, 87) = .281$, $p = .598$.

Table 1. – Descriptive statistics in the pretest of the CPM in the experimental and control groups.

Groups	N	M (SD)	*Mdn*	Min	Max	95% CI
Experimental	46	16.65 (3.92)	15.50	12	27	[15.49, 17.82]
Control	43	16.88 (4.00)	17.00	8	28	[15.65, 18.12]
Total	89	16.76 (3.94)	16.00	8	28	[15.93, 17.59]

Note: CI = Confidence Interval.

The results obtained in each of the two specific hypotheses proposed in the study are presented.

The first hypothesis of this study was to establish that there were significant differences between the posttest scores of the EPA-2 of an experimental and a control group to determine the effectiveness of the training/mediation phase of the EPA-2. The analysis between the experimental and the control groups consists of: (a) comparison of the raw scores in the CPM in the posttest; (b) comparison of the direct gain score; and c) comparison between gainers and non-gainers.

Table 2 shows the comparison between the CPM scores in the posttest (as part of the EPA-2 procedure) in the experimental and the control groups. The results obtained with the Student's *t* test for independent samples reflect a significant difference between the total raw scores in the experimental and control groups in the Ab and B series, with the experimental group obtaining higher scores than the control group. The effect sizes (Cohen's *d*) for these significant differences were moderate, considering that 0.20 to 0.49 indicates a low effect, values between 0.50 to 0.79 a moderate effect and 0.80 and above a high effect (Cohen, 1988). No significant differences were found in the A series.

Table 2. – Comparison between the scores in the CPM (posttest) in experimental and control groups.

	Experimental[a]	Control[b]				
Series	M (SD)	M (SD)	*t*(87)	*p*	Cohen's *d*	95% CI
A	8.70 (1.29)	8.14 (1.65)	1.770	.080	-0.38	[-0.80, 0.04]
Ab	6.93 (2.35)	5.88 (2.31)	2.125	.036*	-0.45	[-0.87, -0.03]
B	5.50 (1.99)	4.23 (1.63)	3.266	.002*	-0.70	[-1.12, -0.27]
Total	21.13 (4.42)	18.26 (4.47)	3.047	.003*	-0.65	[-1.07, -0.22]

Note: CI = Confidence Interval; [a]N = 46; [b]N = 43; * $p < .05$.

Table 3 shows the mean direct gain scores (difference between the scores in the posttest and pretest of the CPM) in the experimental and the control groups. The results obtained with the Student's *t* test for independent samples showed that there were significant differences between the mean gain scores in the experimental and the control groups in the total score, $t(1, 87) = 5.016$, $p = .000$, and in all the CPM series, the experimental group obtained higher scores than the control group. The effect sizes (Cohen's *d*) for these significant differences were high for the total score (-1.21) and moderate for the A, Ab and B series (-.78, -.49 and -.61, respectively).

Table 3. – Comparison between direct gain scores in EPA-2 of the experimental and the control groups.

	Experimental[a]	Control[b]				
Serie	M (SD)	M (SD)	*t(87)*	*p*	Cohen's *d*	95% CI
A	1.15 (1.15)	0.07 (1.59)	3.686	.000*	-0.78	[-1.21, -0.35]
Ab	1.93 (2.38)	0.91 (1.67)	2.342	.021*	-0.49	[-0.92, -0.07]
B	1.39 (1.79)	0.40 (1.41)	2.893	.005*	-0.61	[-1.04, -0.19]
Total	4.48 (3.41)	1.37 (1.15)	5.016	.000*	-1.21	[-1.66, -0.75]

Note: CI = Confidence Interval; [a]N = 46; [b]N = 43; * $p < .05$.

In order to guarantee the value of the modifiability index established by the posttest-pretest difference, and to determine useful modifiability criteria for the diagnosis, typological criteria of the EPA-2 were used. According to Calero (2012) these criteria correspond to three groups: (a) high scorers (children with a score higher than 33 in the pretest, which prevents significant gains in the posttest because they are close to the test's ceiling), (b) gainers (children with a significant improvement from pretest to posttest) and (c) non-gainers (children showing no significant gains from pretest to posttest). A cut point of six points was considered as a criterion of differential gain among «gainers» or «non-gainers» students (Fernández-Ballesteros *et al.*, 2010). Applying these criteria, no «high scorer» students were found in any of the groups. The students identified as «gainers» were 20 in the experimental group and one in the control group. In relation to the «non-gainers», 26 and 42 students were identified in the experimental and control groups, respectively (see *Fig. 1*).

Significant differences were found in the distribution of «gainers» and «non-gainers» students between the experimental and control groups, $\chi^2 = (1, N = 89) = 20.87$, $p < .05$, $V = .48$, the effect size for this significant difference was moderate.

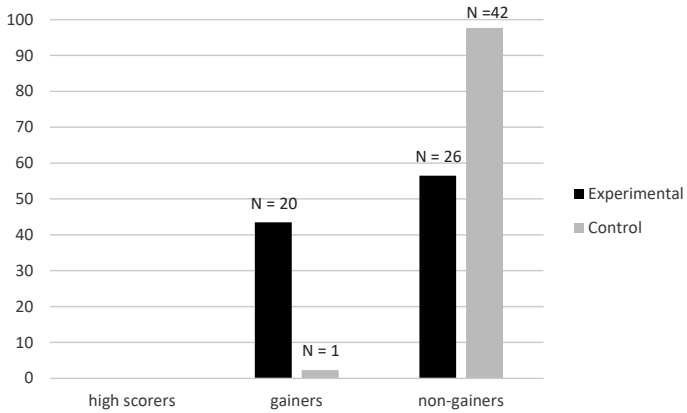

Figure 1. – Percentage of students as «high scorers», «gainers» and «non-gainers» in the experimental and the control groups.

A higher frequency of students in the experimental group were «gainers» (43.5%) than the control group (2.3%), and a higher frequency of students in the control group were «non-gainers» (97.7%), than the experimental group (56.5%).

The second hypothesis aimed to analyze the test-retest reliability (understood as the maintenance of the gains scores obtained after training) of the EPA-2 in a period of three months. The results obtained with the Student's *t* test for related samples indicated that there were no significant differences between the posttest and the retest scores in CPM after three months for the experimental and the control groups (see *Tab. 4*). This indicates a temporary stability of the results of the training/mediation phase of the test for a period of three months.

Table 4. – Comparison between the posttest and the retest in the CPM in the experimental and control groups.

	Posttest		Retest (3m)					
Groups	N	M (SD)	N	M (SD)	*t(df)*	*p*	Cohen's *d*	95% CI
Experimental	46	21.33 (4.50)	43	21.14 (4.73)	-.382 (42)	.704	-0.41	[-0.46, 0.38]
Control	43	18.17 (4.49)	42	18.62 (3.87)	.975 (41)	.335	0.11	[-0.32, 0.53]

Note: CI = Confidence Interval; m = months; * $p < .05$.

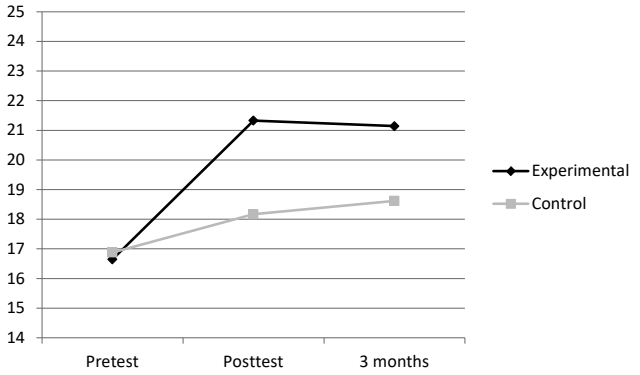

Figure 2. – Direct mean score in CPM at three different times in the experimental and control groups.

In *Figure 2* you can see the mean scores of the CPM in three different times (pretest, posttest and retest) for the experimental and control groups. The results indicated an increase in the mean scores in the pretest to the posttest in both groups; however the experimental had a significant higher mean score than the control group. After three months, the scores remained relatively similar in experimental and control groups.

4. Discussion

The general objective of this study was to analyze the validity and reliability of the EPA-2 (Fernández-Ballesteros *et al.*, 2010) in a sample of Yaqui Native American children in the second grade to determine its usefulness in this infant population. Two hypotheses were proposed, the first one are related to validity, through the determination of the effectiveness of the training/mediation phase, and the second one with the test-retest reliability of the instrument.

In relation to the first hypothesis that involved the existence of significant differences between the posttest scores of the EPA-2 of a group of children who were trained as part of the test procedure and another group to which a repeated assessment was simply given, the results indicated significant differences between the gain scores in the experimental and control groups, $t(1, 87) = 5.016$, $p = .000$, with a high effect size (d of Cohen = -1.22). This shows that the single repetition of the CPM does not improve its execution and that the training of the EPA-2 produces significant effects

in these participants. This result is consistent with the first studies carried out by the team of Fernández-Ballesteros and Campllonch on the EPA (as cited in Fernández-Ballesteros & Calero, 2000) where the trained children obtained a better performance in the posttest than the children of the control group. A recent study conducted with a sample of Colombian children diagnosed with a cognitive disability from 8 to 18 years of age (Ríos & Murcia, 2013) also found a significant improvement in some of the participants after the EPA-2 training. Previous studies that used other dynamic testing for learning potential (Malowitsky, 2001; Robles, 2007; Resing *et al.*, 2009; Resing & Elliott, 2011) obtained the same results. For example, using the Application of Cognitive Functions Scale (ACFS) of Lidz and Jepsen (2003), both Malowisky (2001) with a sample of American children aged 3 to 5 years, and Robles (2007) with a sample of Spanish children aged 3 to 6 years, found significant gains in the participants with this technique of learning potential assessment.

In relation to the second hypothesis to analyze the existence of the test-retest reliability of the EPA-2, understood as the maintenance of the gains obtained after the training, the results indicated that there were no significant differences between the post-test and the retest, $t(2, 42) = -.382$, $p = .704$. Therefore, it can be concluded that there was a temporary stability of the gained scores in a period of three months. Previous studies have also found a stability of the gain scores in the EPA over a period of one year with a sample of Spanish children from a special education school from 10 to 14 years of age (Fernández-Ballesteros & Calero, 1993) and for a three-month period with a sample of elderly people from 59 to 87 years of age (Fernández-Ballesteros & Calero, 1995).

The limitations of the present study were, first, that the IQ obtained through the WISC-IV was made using Mexican scales (Wechsler, 2007) in which the Yaqui Native of American population was not represented, given that the execution of the Yaqui children was lower than the data of the scale, the results are questionable. Normative data for this community should be available to overcome this limitation. Secondly, this study was carried out with a sample that is not representative of the population of Yaqui students of the second grade of primary school. To generalize the results of the first hypothesis, a larger sample is required to guarantee the stability of the results.

Finally, this paper shows the usefulness of EPA-2, for this educational level, compared to traditional methods of assessment, due to: (1) it allows to identify weak points in the learning of children from minority populations, (2) it contributes important information on cognitive functioning, learning potential and behavioral and attitudinal variables of the child

while performing the learning tasks (Fernández-Ballesteros *et al.*, 2010) and (3) it allows to guide the decision-making process on the type of educational intervention more adequate to favor the personal and school development of children of the Yaqui communities. An alternative assessment to standardized intelligence tests such as the EPA-2 benefits the quality of the practice of psychological assessment.

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Riassunto

Lo scopo di questo studio è stato quello di determinare se la Learning Potential Assessment-2 (EPA-2) può essere uno strumento adeguato per valutare il potenziale di apprendimento dei bambini Yaqui nativi americani che vivono a Sonora, in Messico. I partecipanti coinvolti sono stati 89 studenti di tre scuole elementari di secondo grado divise in gruppo sperimentale e di controllo abbinati secondo il QI e l'età. Entrambi i gruppi sono stati valutati mediante test di intelligenza. Il gruppo sperimentale è stato formato con l'applicazione del suddetto test dinamico. I risultati mostrano una differenza significativa nell'ambito dei punteggi post-test ottenuti nel gruppo sperimentale rispetto a quello di controllo. Si è registrata una buona stabilità dei punteggi ottenuti, poiché nessuna differenza significativa tra il post-test e il test è stata trovata in un periodo di tre mesi nel gruppo sperimentale. In conclusione, l'EPA-2 può essere utile come test dinamico per questo gruppo etnico per lo sviluppo del potenziale di apprendimento.

Parole chiave: Bambini nativi americani Yaqui; EPA-2; Potenziale di apprendimento; Test dinamici; Validità.

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