

**EXPERIENCES AND EXPECTATIONS OF THE SOCIAL ACTORS PARTICIPATING IN THE EVALUATION OF PSYCHOMOTOR DEVELOPMENT, IN RELATION TO THE EEDP AND TEPSEI SCALES USED IN LA ARAUCANIA, CHILE, IN 2017-2018**

VIVENCIAS Y EXPECTATIVAS DE LOS ACTORES SOCIALES PARTICÍPES EN EVALUACIÓN DEL DESARROLLO PSICOMOTOR, EN RELACIÓN A LAS ESCALAS EEDP Y TEPSEI UTILIZADAS EN LA ARAUCANÍA, CHILE, DURANTE LOS AÑOS 2017-2018

VIVÊNCIAS E EXPECTATIVAS DOS ACIONISTAS SOCIAIS PARTICÍPES NA AVALIAÇÃO DO DESENVOLVIMENTO DO PSICOMOTOR, EM RELAÇÃO ÀS ESCALAS EEDP E TEPSEI USADAS NO ARAUCANIA, CHILE, DURANTE O ANO 2017-2018

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**ABSTRACT:**

In Chile, the Psychomotor Development Evaluation Scale (EEDP in Spanish) and the Psychomotor Development Test (TEPSI in Spanish) are outdated tools that lack international reliability and validation. It is necessary to analyze the evaluation process from the point of view of the health and education professionals, that is, nurses and early childhood educators. The purpose was to reveal the experiences of these actors in the evaluation process of psychomotor development in children under three years of age, according to social determinants. This is a qualitative exploratory study based on the Alfred Schütz phenomenology, carried out in seven key informants, five nurses and two educators, through semi-structured interviews. The analysis was limited to transcription, coding, grouping into categories and synthesis. The meta categories revealed are: A: Dilemmas and uncertainties by critical nodes and intermediate categories: a) The gap between public policies and local reality does not favor the development of children, b) Outdated and decontextualized instruments, c) Myths and expectations of the parents regarding the evaluation, d) Instruments without social relevance; and B: Expectations and intermediate categories: a) Political framework update for continuous and effective progress, b) Parents incorporation and empowerment in the process, c) Professionals training and improvement. It was concluded that it is necessary to update the evaluation strategies and have validated, updated and socially relevant instruments that include the parents.

**Keywords:** Child Development; Evaluation Studies as Topic; Public Policy; Parents.

**RESUMEN:**

En Chile, la Escala de Evaluación del Desarrollo Psicomotor (EEDP) y Test de Desarrollo Psicomotor (TEPSI) son herramientas no actualizadas, que carecen de confiabilidad y validación internacional conocida; por ello se hace necesario analizar el proceso evaluativo desde los actores de salud y educación, Enfermeras y Educadoras de párvulos respectivamente. El objetivo fue develar las vivencias de estos actores sociales, partícipes en el proceso evaluativo del desarrollo psicomotor en menores de tres años, según determinantes sociales. Se trata de un estudio cualitativo exploratorio, basado en la fenomenología de Alfred Schütz, realizado en siete informantes claves, cinco enfermeras y dos educadoras de párvulos, por medio de la entrevista semiestructurada. El análisis se circunscribió a transcripción, codificación, agrupamiento en categorías y síntesis. Se develan las metacategorías: A: Dilemas e incertidumbres por nudos críticos y categorías intermedias: a) Brecha entre políticas públicas y realidad local, no favorece el desarrollo de los niños, b) Instrumentos desactualizados y descontextualizados, c) Mitos y expectativas de los padres frente a la evaluación, d) Instrumentos sin pertinencia social; y B: Expectativas y categorías intermedias: a) Actualización del marco político para un avance continuo y efectivo, b) Incorporación y empoderamiento de los padres en el proceso, c) Capacitación y perfeccionamiento de profesionales. Se concluye que es necesario la actualización de las estrategias evaluativas y disponer de instrumentos validados, actualizados, con pertinencia social y que consideren a los padres.

**Palabras Claves:** Desarrollo Infantil; Estudios de evaluación como asunto; Política pública; Padres.

**RESUMO:**

No Chile, as Escala de Avaliação do Desenvolvimento Psicomotor (EEDP) e Teste de Desenvolvimento Psicomotor (TEPSI) não são ferramentas atualizadas, que carecem de confiabilidade e validação internacionalmente conhecidas, por essa razão, é necessário analisar o processo de avaliação dos atores de saúde e educação, enfermeiros e educadoras de creches, respectivamente. Lo objetivo foi revelar as experiências dos atores sociais participantes, enfermeiros e educadoras de creches, no processo de avaliação do desenvolvimento psicomotor em crianças menores de 3 anos, segundo os determinantes sociais. Foi realizado um estudo qualitativo exploratório baseado na fenomenologia de Alfred Schütz, realizado em 7 informantes-chave, 5 enfermeiros e 2 educadoras de creches, por meio de entrevista semiestruturado. A análise foi limitada à transcrição; codificação; agrupamento em categorias e síntese. Dilemas e incertezas de nós críticos e categorias intermediárias: a) lacuna entre política pública e da realidade local, não favorece o desenvolvimento das crianças, b) instrumentos desatualizados e, c) Mitos descontextualizadas e expectativas dos metacategorias são revelados os pais na frente da avaliação, d) Instrumentos sem relevância social; e B: Expectativas e categorias intermediárias: a) Atualização do arcabouço político para o progresso contínuo e efetivo, b) Incorporação e empoderamento dos pais no processo, c) Treinamento e aperfeiçoamento dos profissionais. É necessário atualizar as estratégias de avaliação e validar instrumentos atualizados e de relevância social que considerem os pais.

**Palavras-chave:** Desenvolvimento Infantil; Estudos de Avaliação como Assunto; Políticas públicas; Pais.

**INTRODUCTION**

Psychomotor development (PMD) is defined as the set of skills that the child gradually acquires as a result of the maturation of the Central Nervous System and the interaction with the environment (1); its objective is the ability not only to interact but also to transform it (2). The normal evolution of the PMD requires the indemnity of the neurosensory organs, a favorable environment, as well as timely and effective stimulation (3). This is how, in the human brain, the “synaptic density” (the number of neuronal interconnections), is greater in the first three years of life, and gradually decreases until the age of ten; this level then remains until adulthood (4).

PMD is influenced in the extra-uterine phase by bio-psychosocial aspects (5) such as poverty, absence of a father, low maternal education, postpartum depression in the mother, among others (2, 6, 7, 8). It is also affected in the intrauterine stage and the first three years of life, the “critical periods” of greater plasticity where the child’s organism presents a higher rate of growth and differentiation (4). For this reason, adequate stimulation during this period of the infant’s life is essential to acquire the basic skills for learning and development.

The social aspects are present where this research takes place. According to CENSUM 2017, La Araucanía is one of the regions in Chile with the largest rural population, 29.1%, and with the largest number of Mapuche ethnic population, 34.3% (9). In Chile, the main instruments used to evaluate the PMD are the Psychomotor Development

Assessment Scale (EEDP) and the Psychomotor Development Test (TEPSI), established in the Psychomotor Development Stimulation and Evaluation Technical Standard (8, 10).

The EEDP was developed by a group of Chilean psychologists in 1974, with new editions in 1976 and 1978. This instrument evaluates four areas of development: Motor, Coordination, Social and Language. It consists of 75 items, five for each age; it establishes the categories of Normal, Risk and Retardation. In order to calculate the standard score per category the average scale between the medium-high socioeconomic level and the low socioeconomic level (11) is used. TEPSI is used for children between two and five years of age; it was created in 1985 and the latest update corresponds to the 10<sup>th</sup> edition in 2003 (12). TEPSI evaluates three areas of development: Coordination, Language and Motor. It consists of 52 items; it must be applied completely and in the order stipulated: starts in item 1 of the Coordination subtest, then the 24 items of the Language subtest follow, and finally the 12 items of the Motor subtest. It cannot be interrupted, even in case of failure in several successive items (13).

The nurse uses these instruments during the child's health check-ups, EEDP at 8 and 18 months of age, TEPSI at 36 months, evaluating the child's development through direct observation (10). Early childhood educators also apply them in the formal education system.

These two screening tools in Chile are not widely accepted, since their reliability and validation are unknown (2,6,7); they require a lot of time for their application (8), trained professionals, and they evaluate children outside their environment (6, 7, 8, 14, 15), so they consider the information that parents can provide just partially, in relation to behavior and the patterns of interaction of their children (16).

The American Academy of Pediatrics (AAP) indicates that there is no Gold Standard of detection with universal acceptance suitable for all populations and all ages, but it recommends that tests must be culturally and linguistically sensitive, reliable, with acceptable levels of sensitivity and specificity of to 70% and 80% respectively (17).

Regarding PMD deficit, in developed countries prevalence is between 12% and 16%. In South America, rates have been reported ranging from 29% to 60%, depending on the instrument used, the experience of the health team using it, the child's age, the socioeconomic status, rurality, participation in stimulation programs and pre-school education (18). In Chile, according to Public Health System records in 2015, 11.3% of children under five years of age presented risk or retardation, and in La Araucanía, a 16.93%, more than the national average (19).

The variability of the reported figures suggests that the strategies currently implemented in Primary Care could be under-identifying difficulties in the children evaluated (20) or could be biased by the quality of the instruments used.

Regarding the effectiveness of screening, a study monitoring the results of the activities planned by the *Chile Crece Contigo* (Chile Grows with You) program in relation to PMD in children aged 18 months to 3 years highlights the need to review the both the EEDP and TEPSI and the conditions of their application (15). Other research measuring child development between 0 and 72 months of age exposed the weaknesses of these

instruments, highlighting that they have not been updated or standardized in more than two decades (EEDP 36 years ago, TEPSI 27 years ago), greatly exceeding the 15 years conventionally estimated as the maximum to reestablish a development evaluation instrument (8,16).

The instruments do not include either indicators for development components currently considered highly relevant in the child development process, such as interest in learning and self-regulation, restricting the possibilities of monitoring child development from an integral perspective (7), and none has been compared with internationally considered Gold Standard tests, such as the Bayley Scale of Infant Development (BSID) (8, 16).

A comparison between EEDP and the Ages and Stages Questionnaires (ASQ) evidenced that the latter investigated significantly more deficits, 8.79% versus 12.73% respectively. In turn, the ASQ proved to be more modern and adjusted to the level of development of today's children; it is a finer and more complete scale, with greater coincidences with the clinical observation than the EEDP. It stimulated the participation of the parents, with an active role, unlike the EEDP that places the parents in a passive position (21).

Faced with the need to review the screening to evaluate SMD, the research question is: what are the experiences and expectations of the nurses and educators in the evaluation of the PMD in children under 3 years using EEDP and TEPSI in La Araucanía? In order to be able to evaluate their experience on the validity of the scales this research was developed, using qualitative exploratory methodology.

## **METHODOLOGY**

The exploratory qualitative methodology was used to investigate the reality of the experiences, with social phenomenological approach of Alfred Schütz (22).

Epistemologically, the experience constitutes a complex phenomenon with intervention of the historical-social determination of the psychic; as human subjectivity it is conditioned by culture, society, and the networks established as a phenomenon of social significance and value (23). It is interesting to find what the subject perceives in relation to the environment (the cognitive) and what this experience means to him (24); the social value attributed by the social actors to the experience and expectations, according to Schütz, intersubjectivity and knowledge reveal projections and expectations channeled into "reasons for", from past experiences and cultural heritage.

The sampling was intentional or selective, with seven informants: five professional nurses, from the teaching and clinical area, and two infant educators, all of them trained professionals in evaluation of PMD with 5 to 15 years of experience using EEDP and TEPSI in urban and rural population of La Araucanía, some with Postgrad and Master studies, closely related to the appreciation of child development.

Inclusion criteria: health and education professionals with experience in evaluation PMD using EEDP and TEPSI and interested in participating in the study. We worked with semi-structured interviews, field notes and audio recordings. The analysis was carried out in compliance with the stages of database organization and textual transcription; coding

(reading and re-reading the transcripts of the interviews); grouping into categories, dimensions or topics and synthesis.

Criteria of rigor: dependency, credibility, auditability and transferability of Guba and Lincoln (25).

Ezequiel Emanuel ethical principles in investigation were respected; an Informed Consent form was given, also the opportunity to raise questions and doubts; respect for the participants was considered, allowing them to withdraw from the study if they so wished (26).

## RESULTS

Characterization of the interviewed: seven persons, six of them female with ages between 28 and 40 years; five of these were professional nurses, two of them with Master's degree and a Practitioner, with work experience of 5 to 15 years and of 5 to 7 years applying EEDP and TEPSI tests; the other two were infant educators with Master's studies and 15 years of experience in the application of these and other evaluation instruments.

The meta-categories identified were: a) Experiences: Dilemmas and uncertainties by critical nodes and b) Expectations.

<b>Meta-category: Experiences</b>	
Dilemmas and uncertainty due to critical nodes	
Intermediate categories	Analysis Units
Gap between public policies and local reality, does not favor the development of children	<i>[Policies in Chile do not consider that children stay long periods with their parents]; [Extended working hours do not allow family development]; [Generate policies that allow spaces, so that parents can develop a better relationship and stimulation with their children]. [Children have not been investigated regarding how they have changed, their sociocultural environment, how the population has moved within this social dynamic. During these last years there have been no investigations, no new instruments have been produced].</i>

<p>Outdated and decontextualized instruments (do not consider parents and the environment).</p>	<p><i>[Not updated to the current needs of childhood]; [Must be adapted to the present time and also have some range of autonomy]; [The format in general is basic]; [It is too long, monotonous, does not incorporate the environment, is not representative and has no ethnic relevance]. [They do not challenge the child or keep his attention].</i></p> <p><i>[With the TEPSI it is difficult to capture the child's concentration]. [There was always a bias that made me doubt about the results I got]. [They are easy to understand, but they are not suitable for the population ... they are quite didactic but outdated, more than 20 years old]. [There are some aspects that are a little outdated ... elements that the children and their families do not use very often].</i></p>
<p>Myths and expectations of the parents facing the evaluation</p>	<p><i>[They think that they under evaluated their son, that the evaluation was too lapidary or very bad]. [That has improved, the parents now understand]; [Parents today ask for this evaluation, they ask you when it's due, whereas before they often did not care, now they get involved]. [Well in general, the father or mother attending the EEDP with the child try to get him to answer and urges him to do what you are asking him. Some times the mother says that for the next control they are going to do these things, to bring the child practically trained, so the parents condition that the instrument has a positive value].</i></p>
<p>Instruments without social relevance</p>	<p><i>[Some children have social deprivation, that is, there is no stimulating environment] [When the child belongs to the Mapuche ethnic group, they have spoken a lot in the Mapudungun language and it is difficult for them to understand the instruments]. [There is poverty, with a lack of options and opportunities for the child to speak and communicate well, to have options to visit other places or to go to school]; [The concept of alteration of the PMD due to social deprivation emerges here]. [Genetics influences, also the environment, the possibilities of access, the equal opportunities]. [Many times these children are left with the television on, they have no interaction with the environment]. [They do not present cultural relevance. We work with Mapuche children in Boyeco and in various items, especially those related to language and the social part, the EEDP and TEPSI fall short].</i></p>

Meta-category: Expectations	
Intermediate Categories	Analysis Units
Update of political framework, (strategies and instruments), for a continuous and effective progress.	<p><i>[It is necessary to modify the TEPSI, takes too long]; [It ends up exhausting the children before they finish the test].[Modify some parts that do not conform with the current reality, images that the child does not handle]; [Find another tool less time consuming].</i></p> <p><i>[It is still necessary to adapt it to local realities].</i></p> <p><i>[I think that it requires some adaptations].</i></p> <p><i>[It is more necessary to change the TEPSI than the EEDP. The EEDP is still an instrument that measures global characteristics, but the TEPSI is more specific, especially in the area of language. It must be adapted to different contexts, not all children are stimulated in the same way, some children do not recognize the sail or the umbrella as before. It must adapt above all the language area, the motor area is still fine and could continue].</i></p> <p><i>[The ministry started working five years ago in reviewing the application of another instrument].</i></p>
Incorporation and empowerment of parents in the process.	<p><i>[Failure to incorporate the work of parents]; [More accompaniment, interventions or education from the parents]; [Make parents more involved in care]; [Encourage more, the nurse should generate more interventions together with the parents].</i></p> <p><i>[More education and empowerment of parents, they are the ones who know their children]. [Consider their cultural background, their essence as a family and their dynamics]. [It is important to transmit to mothers that when children are born they can be stimulated; reinforce the affective plane, the motor, the language]; [Improve early stimulation in children from before birth].</i></p> <p><i>[The better parents or main caregiver do, the child will be better developed due to the concept of imitation].</i></p>
Training and professional development	<p><i>[There should be a better preparation of the professionals who apply these instruments]. [Instruments have to be applied by people who actually have training and experience].</i></p>



## DISCUSSION

Regarding the meta-category Dilemmas and uncertainty due to critical nodes and its intermediate category, Gap between public policies and local reality, does not favor the development of children: according to the interviews, long working hours do not allow children to spend enough time with their parents, limiting stimulation and contact with their family. It is clear in flow charts; however the workload of the evaluators does not permit reassessments. Likewise, the insertion of the nursery teacher in the stimulation room is of great help. Nowadays other instruments are being used, including tests that assess the PMD in the natural context of the child.

According to Santelices, when evaluating the impact of social and family variables in the PMD, it would be relevant in a single parent family headed by the mother only if she works full time (27). Likewise, a study carried out in Spain indicates that 46% of workers recognize that their children are alone for too many hours, without parental supervision and occasionally in the company of caregivers. When their parents finally return home they are exhausted after a full working day and children have been waiting for hours for them to help with school work. Besides there is bathing, preparing dinner, a lot of attention required in the little time available to parents (28).

In Outdated and decontextualized instruments, does not consider parents and environment: according to the stories, the instruments are decontextualized, not valid any more; they do not provide answers to the reality of the children and do not have ethnic relevance. TEPSI is described as an instrument of difficult application, because it is long and monotonous, failing to capture the concentration of the child. Children do not recognize many of the images because they are not familiar with them in the present time. Cardemil, Quilodran and Soto mention that the TEPSI is inadequately applied and its use is strongly influenced by the examiner's vision; it is not a culturally safe assessment, since it does not consider the characteristics of the children, their interests or their context (29).

According to Schonhaut, the language aspects that the TEPSI evaluates are quantitative (number of words, use of sentences); they are very generic, with basic vocabulary. In addition, the repeated application of the test could determine a learning process, diminishing its real utility (30).

Romo et al, in a systematic review of validation studies of neurodevelopmental screening tests for children under five years of age in the United States and Latin America, point out that both the EEDP and the TEPSI do not cover all domains of development, and that validation studies of these instruments are not available (31).

According to a Chilean study of 2009 about evaluating of child development with EEDP and TEPSI tests, their outdated and decontextualization was evidenced in relation to the socio-temporal elements and the characteristics of the current population, as well as their deficit when compared to an internationally established Gold Standard. This could imply that their psychometric properties are not adequate and that also requires the specialization of the people using it in the health and education fields, also highlighting that the TEPSI requires a long time for its application (14).

Schonhaut et al mention that the EEDP is an old test that does not adjust to the reality of children's development, especially in the area of language. According to its reliability, it is not necessary in the investigation of the levels of Risk and Retard, since its level of Retard is much lower than the reality. While it detects key milestones in the PMD areas it leaves out finer aspects also important. Furthermore, it is not considered as a follow-up instrument, because it does not detect progress in the child's skills (32).

Likewise, Pardo, Gómez and Edwards point out that the evaluation of PMD through these tests has limitations that hinder adequate follow-up, because their standardization is overdue; there is no continuity between them, they differ in some of the dimensions of development included and also in the age ranges, using a different management process. The EEDP is administered until the child fails in all the items of a certain age group and the TEPSI is administered entirely, regardless of the child's performance. Furthermore, they do not include indicators of high relevance in the child development process, such as interest in learning and self-regulation, which limits the possibilities of monitoring child development from an integral perspective (16).

Bachelet et al states that the difficulties of the TEPSI are related to the language and to a greater extent with the child's age, since it must be applied in its totality even when the child fails in successive items, leading to a tedious evaluation, exhausting and frustrating for the examiner, the companions and the child (33).

In Myths and expectations of parents facing the DSM evaluation, parents often think that the results were very lapidary, in relation to reality, within their environment. As these instruments have been systematized, parents have become more involved, understand the procedure and demand for it. In this regard, Bachelet et al. in 2016 refers that parents have doubts and concerns when the child does not show progress or does not respond accordingly to what was expected (33).

In Instruments without social relevance, the stories highlight the influence of social differences, social deprivation, ethnicity and the psychosocial and physical environment. Poverty emerges as an important determinant, associated with the lack of opportunities and possibilities of access in an environment lacking stimulation and early access to technology. According to Soler et al, children with higher socioeconomic status, higher schooling of the mother and compound families show a more advanced PMD (34).

Also Mathiesen, Herrera, Merino and Dominguez state that the mother's level of education influences in a better development of the child, since she shares more time with her children and has more knowledge, dedication and interest regarding the activities that her child must do in each stage. These factors influence gross and fine motor skills, language, cognition, personal and social interaction (35).

On the other hand, according to Santelices, Besoain and Escobar, single parenthood by itself does not explain the differences in the PMD; it would only be relevant when the mother works full time. In two-parent families, the PMD is not affected wether the mother works or not (27).

According to Arriagada and Contreras, children of families with highly educated parents obtain PMD higher scores, while parents with low schooling lack the skills to shape learning strategies at home to complement the work of teachers. The educational level of the parents, specifically of the mother, plays a fundamental role in the promotion of the cognitive development of their children. And the higher the per capita income, the higher the PMD scores (36).

Sadler et al., mapuche teachers La Araucanía, point out that mapuche children, when entering the school system, have greater difficulties in the language area than non-mapuche ones. They mention that this situation is not due to a possible delay in the psychomotor development of boys and girls, but rather to the bilingualism of the family and to the mapuche custom or protocol of speaking only when requested (37).

Cofré states that in order to incorporate mapuche culture into health care, attention protocols must be adapted to provide the best service to these children; also must exist validated evaluation instruments for them, since in many cases the results of the evaluations do not reflect their actual development (38).

Regarding the meta-category Expectations and their intermediate categories: in Update of the political framework, (strategies and instruments), for a continuous and effective progress: according to the stories the instruments are not adapted to the current reality and need to be updated according to the local realities and needs of children. The need to modify the TEPSI has been proposed, since it is decontextualized in its content, it is very time consuming and exhausts the children.

Athala et al stresses that there is a deficit rate of psychomotor development lower than expected, even under international prevalence, which determines the need to review the tests used, the reliability of their application by professionals and the conditions of their application (39).

In Incorporation and empowerment of parents in the process: it is stated that it is necessary to involve parents actively, making educational interventions. They also emphasize the importance of early stimulation since gestation. According to Schonhaut et al, when comparing the EEDP with the ASQ, with EEDP the mother adopts a passive role in an area where the ideal would be for her to actively participate and to be a protagonist. In relation to the mothers' reactions to the diagnosis of PMD deficit, indifference, lack of commitment and understanding predominate (32).

In Training and improvement of professionals: the stories expressed the need for more training of professionals who perform the assessment of PMD. According to Bachelet et al, regarding the norms, the stimulation rooms must be modified so that the didactic environment does not distract the child, avoiding delays, restlessness and loss of concentration. The professional experience of the evaluators is of outmost importance as a fundamental experience in the evaluation process (33). Angulo and Merino, in relation to human resource standards, state the need for more hours of training, supervision and evaluation, considering the theoretical and measurement aspects (40).

## CONCLUSION

The conclusion is that it is necessary to have up-to-date instruments that are relevant to the current social reality, easy to apply and that consider the parents and the environment of the children. It is essential the participation of parents, education and empowerment in the stimulation and development of their children since gestation.

Poverty is a relevant factor that determines low psychomotor development; together with other factors, especially mothers who are heads of the household with extended working hours, lead to a lack of opportunities and access.

It is necessary to update the political framework, modifying the strategies and instruments currently used, for a continuous and effective progress, considering the current needs of the children.

It is imperative to modify the policies and adapt them to the changes that families are going through and to favor the increase of human resources destined to health controls, training and improvement of professionals specialized in psychomotor development.

One of the limitations of the study is not having more study subjects, due to the availability of time of the social actors. We extend an invitation to continue studies from the perspective of the parents or caregivers to increase the quality of the development of the children.

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