

Testing the Intelligence of Barcelona's Schoolchildren in 1908

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ABSTRACT

The present study explores the pioneering application of the intelligence test by physicians in Barcelona, soon after the publication of Binet and Simon's scale in France. It was conducted in 1908 under the leadership of the physician Luis Comenge, within the framework of a general anthropometric health census of young citizens. A total of 5,800 schoolchildren were examined to select those who would take part in the subsidized summer camps (*colonias escolares*). We study the report of the anthropometric and psychometric measurements, which provides information on how the techniques were employed and why, e.g., the aims and social functions of the undertaking. Our work shows that, in this case, a diagnosis of feebleness or abnormality led to social privilege. Moreover, this mental and physical examination of children was part of a broader strategy adopted by physicians and local authorities to bring welfare and peace to those enduring the hard and strained life of the city.

Midiendo la inteligencia de los escolares de Barcelona en 1908

RESUMEN

El presente trabajo explora una aplicación pionera del test de inteligencia, realizada por médicos en Barcelona poco después de que se publicara la escala de Binet y Simon en Francia. Fue usada en 1908 bajo la dirección del médico Luis Comenge en el marco de un censo sanitario antropométrico de jóvenes ciudadanos. Un total de 5.800 escolares fueron examinados para la selección de un grupo que disfrutaría de una subvención para participar en las colonias escolares de verano. Examinamos el informe sobre las mediciones antropométricas y psicométricas que proporcionan información acerca de como se emplearon las pruebas y para qué, es decir, el objetivo y las funciones sociales de tal iniciativa. Nuestra investigación pone de manifiesto que, en este caso, el diagnóstico de debilidad o anormalidad estuvo asociado a un privilegio social. Además, este examen físico y mental de los niños, formaba parte de una estrategia más amplia que fue adoptada por los médicos y las autoridades locales para llevar algo de bienestar y paz a un sector de la sociedad que en estos años estaba sufriendo las consecuencias de una vida dura en la ciudad.

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Historiographical Comment

Our study builds on previous research into the history of mental testing. On the one hand, it follows Sokal (1987) in establishing a historical link between anthropometry and psychometry; on the other, it builds on research such as Carson's (2007), into the functionality intelligence testing acquired in specific local contexts. The case-study methodology helps to provide details of the circumstances around, reasons for and social uses of psychological testing (Mülberger, 2014). Moreover, this type of approach enables the research to move beyond the three traditional historiographical axes: it can challenge the dominant focus on British and American figures; it moves beyond debate on nativism versus environmentalism; and the denunciation of discrimination for eugenic purposes. Inspired by Foucault's work, human measurement and classification has been viewed as part of a medicalization process, linked to social differentiation and the desire of the medical (psychiatric) establishment to expand its social power (see, for example, in Spanish medical historiography: Huertas, 1998, 2002; Del Cura, 2011, 2008). These factors play a role in our research. Nevertheless, through examination of primary sources which had been ignored to date, new uses of psychological testing appear which allow us to refine this global assessment.

Previous research into the appropriation of mental testing by Spanish scholars has identified certain steps in the historical process. The first took place between 1907 and 1908, when the deputy director of the pedagogical museum of the Free Institution for Education (Institución Libre de Enseñanza, from now on abbreviated as ILE), Ricardo Rubio, visited the laboratory of experimental pedagogy run by the French psychologist Alfred Binet (1857-1911). During his stay in Paris, Rubio was informed of the psychometric work that had recently been carried out by Binet and his co-workers Simon and Vaney (Mülberger, 2013). Secondly, the intelligence test was initially recommended by the jurist Eugenio Cuello Calón (Mülberger et al., 2016). In 1908 and 1909, Cuello Calón visited France, Belgium and Germany with the help of a scholarship, to gather information on studies of the psychology of the "abnormal" (Cuello Calón, 1909). Then, in 1911, the philosopher Eugeni D'Ors, who at the time was still working in Barcelona, published the first summary of the test in Spanish in a pedagogical journal (Sáiz et al., 1996). He encouraged extensive use of the test in Spain:

"It would be highly interesting for work of this kind to be undertaken in Spanish schools, to offer a classification of and statistics on backward students. Such work could serve as the basis for legislative reform, today a mere aspiration, to adapt schools to the needs of backward groups and to introduce special teaching methods"¹ (D'Ors, 1911, p. 108; this and all the other translations are our own).

Moreover, the existing documentation indicates that during the second decade of the 20th century the intelligence test was

systematically employed at schools. The work of the pedagogue Anselmo González (1914) and the pedagogue² Domingo Barnés (1921) proof this. In 1920, the teacher Llorenç Cabós, working at a public school in Barcelona, examined large groups of children using intelligence testing, and promoted the method among his colleagues (Mülberger, Balltandre & Graus, 2014). Furthermore, the psychiatrists and psychologists Gonzalo Rodríguez Lafora (1917) and Emilio Mira (Mira, 1920, 1922) included the technique in their daily work at their respective institutions: the former was director of the Foundation for Abnormals (Patronato de Anormales) in Madrid; the latter, of the Institute for Professional Guidance (L'Institut d'Orientació Professional) in Barcelona. In 1923 the psychologists Mercedes Rodrigo and Pedro Roselló published a comparative analysis of several psychological tests, including the Binet and Simon test, as well as later versions. Finally, in 1930, Rodrigo and José Germain adapted the intelligence test based on the results of 4,000 children and adults (Herrero, 1997).

In the present article, we report an episode from this history which is not well known through exploring an early use of the Binet-Simon intelligence test in Spain. With the help of historical material, we aim to:

- a) Examine the way the psychological intelligence test was appropriated by local physicians, exploring their objectives and the social functions it acquired in this setting;
- b) Reveal the criteria used to classify a child as mentally "abnormal";
- c) Explore the relationship between psychological and anthropometric measurements; and finally
- d) Highlight gender differences introduced in the test.

"The Grand Client Called Urbe": The Sick City under Hygienic Control

In 1908, intelligence testing took place within the historical context of the city of Barcelona: a place where science and medicine had achieved great influence (Hochadel & Nieto-Galan, 2016). Two factors facilitated this process: the recurrence and constant threat of epidemics, which lent physicians prominence; and the effective public campaigning some hygienist physicians conducted through the press.

Barcelona City Council created a Municipal Microbiological Laboratory in 1886 to cope with recurrent infectious diseases. Cholera, for example, had repeatedly threatened life in the city; one of the attacks had taken place just the previous year (1885). The Laboratory had to be on the lookout for new outbreaks, seek the causes of the diseases, and design strategies for its control and prevention. Luis Comenge (1854-1916), the central subject of the present historical research, worked as the vice-director of the laboratory. Under the constant threat of new epidemics, Comenge managed to bring about the creation of an Urban Hygiene Institute. Under his direction, the Institute launched intensive anti-tuberculosis campaigns as well as systematic disinfection and sanitation (Rodríguez Ocaña, 1985), tasks for which it counted on an additional disinfection centre (Rodríguez Méndez, 1915). These facilities inspected travellers arriving at Barcelona's harbour, examined the quality of the city's wells and

¹ "Sería altamente interesante que en las escuelas españolas se emprendiese trabajos de este orden, con vista a la clasificación y a la estadística de los atrasados escolares. Estos trabajos podrían ser la base de la reforma legislativa, que hoy constituye únicamente una aspiración, en el sentido de adecuar a los atrasados grupos y métodos especiales de enseñanza" (D'Ors, 1911, p. 108).

² "Pedology" (*paidología* in Spanish) was a new discipline, defined as "the science of the child".

disinfected sewers as well as other potentially unhealthy installations.

Rodríguez Ocaña (1985) points out that in the 19th century Barcelona was the first Spanish city to use the civil registry for sanitary aims. Additionally, at that time medical demographic statistics were compiled (Porter, 1995), which revealed health problems of the population. Between 1899 and 1907 Comenge was responsible for devising such statistics as part of a section on "Demographic Studies of Barcelona" for the medical journal *La Gaceta Médica Catalana*. He presented quantitative comparisons between births and deaths as a succinct indication of the weak "urban vitality".

These figures were used by physicians in their effective campaign launched in the daily press to alarm society of the threats that life in the city posed for the health of its citizens. For example, Comenge's book "Infant mortality in Barcelona" (*Mortalidad infantil en Barcelona*, published 1900) drew attention to the dramatic situation of children suffering abandonment, poverty, illnesses and other deprivations. It also highlighted the fact that this situation was worse in the case of children from lower social classes (Rodríguez Méndez, 1915). Moreover, in order to obtain more precise information and a global vision of the health conditions in the city, his institute carried out a "sanitary census" that consisted of counting the number of houses and flats (and their sanitation facilities) and calculating the population density for each district.

Physicians Expanding their Control over Schools

At the beginning of the 20th century, school officially became compulsory for all children in Spain, although the level of attendance initially remained low. Historians, such as Mercedes Del Cura (2008, 2011, 2016) have shown that, between the end of the 19th century and the beginning of the 20th century, physicians expanded their sphere of intervention through colonizing new spaces such as schools. They viewed school as a place for regenerating the human race and as a key instrument for social progress. Soon, they would denounce the dirty conditions and demand systematic clinical and sanitary interventions (Huertas, 2002). In 1900, the Spanish government commissioned the Ministry of Public Education and Fine Arts (*Ministerio de Educación Pública y Bellas Artes*) to regulate and supervise educational matters. For this task, school inspectors and physicians would soon be hired; the former to supervise public education, and the latter to assess the hygiene of the facilities and the health status of the child population (Del Cura, 2011; Del Pozo, 2000).

Rodríguez Méndez (1915) explains that starting in 1893, the mayor gave Comenge and his team all the necessary support and authority to inspect schools, including hygienic studies of buildings and physical examinations of the children. It seems that these inspections were often somewhat annoying for teachers and parents. Nevertheless, in 1894 we encounter also some praise in the local press³. Despite such

positive reactions, teachers often viewed the imposition of hygienic norms in school as an interference with their own competences (Graus et al., 2012). Finally, in 1913, medical school inspection became mandatory for all (private and public) schools (Del Cura, 2011).

At the same time, the scope of medical intervention was extended via another initiative: summer camps (*colonias escolares*). Together with one-day excursions, summer camps are historically rooted in naturalist trends and early educational reforms of the mid-19th century (Soler, 2008; Cano & Revuelta, 1995). The camps were based on the idea that games, outdoor walks and other activities in the countryside would strengthen children and improve their health. Such new pedagogical currents were promoted by the ILE. The National Pedagogical Museum, linked to the ILE, was already organizing summer camps in 1887 (Rodríguez Pérez, 2001). Similar initiatives would soon also be undertaken in Barcelona (Pereyra, 1982); starting in 1893, the first were promoted by the Economic Society of the Friends of the Country (*Sociedad Económica de los Amigos del País*).



A group of schoolchildren (girls) at a summer camp⁴
(authorized reproduction; source: Arxiu Municipal Contemporani de Barcelona; Fons Ajuntament de Barcelona; K156 Activitats culturals i lúdiques; expedient general 1-10; carpeta 8, 1918-1925)

Following a move by the teacher Hermenegildo Giner de los Ríos (1847-1923)⁵, who was a member of the ILE and a republican politician, the Barcelona City Hall became more active, soon taking a leading role in the promotion of these camps. The first year (1906) a budget of 10,000 pesetas permitted 120 children to be sent to the countryside or sea for three weeks. The initiative was judged to be highly successful, leading to an expansion (with triple the budget) the following year. Thus, Barcelona came to organize more than twice as many summer camps as Madrid.

In the third year (1908), under the banner of the pedagogical movements and social politics, Barcelona City Hall became even more ambitious in its hygiene and culture policies (De la Arada, 2008); a permanent "Commission for School Hygiene" was established for the organization of the camps and the budget was doubled. Now, 525 schoolchildren (organized into eleven female and ten male groups), together with 42 teachers, could stay away from the city for one month (August).

⁴ No date is given but it is probably taken in the early 1920s

⁵ He was a member of a radical left-wing party and the brother of Francisco Giner de los Ríos: director of the ILE in Madrid. During 1906 and 1907, he was a member of the Barcelona City Council (*Consistori*), acting in some meetings as the stand-in mayor. He promoted the establishment of summer camps, school kitchens, open-air schools, and stipends for teachers' training; ideas which became reality in the following years.

³ See, for example, *La Publicidad*, 1st May 1894 (vol. XVIII), p. 3 and *La Vanguardia*, 13th July 1894, pp. 4-5. In *La Vanguardia*, the teacher Juan Pelegrí praised with "warm applause" the action of the municipal authorities. He highlighted the fact that Comenge carried out complete hygienic inspections of students and schools in three-week visits in a "disinterested and conscientious" manner, "with unusual delicacy", without provoking any kind of protest.

This meant that now, many more children had to be examined and selected. Moreover, the president of the Commission, the physician Salvador Roca i Ballber, was eager to promote the improvements in health and moral advancement of the citizens. To this end, precise statistics on the health conditions of each young citizen of Barcelona needed to be obtained (Roca et al., 1909; on Roca, see: Vallés, 2014). The huge task of collating such as census, together with the delicate charge of selecting children for the summer camps, was for the first time now entrusted to the hands of Luis Comenge. Facing the pressure exerted by parents to have their children selected, the City Hall entrusted this dispute selection to an experienced medical authority. As we have seen, Comenge already had some experience in compiling social statistics and enacting censuses. Moreover, he counted on the support of several other physicians who were responsible for public health matters in their respective districts⁶.

Anthropometry and Psychometry: Census and Selection of Schoolchildren for Summer Camps, 1908

Anthropometric Census

The report of the Commission for School Hygiene to the City Hall (Roca et al., 1909) made it clear that the starting point was to establish a 'school census' (*padrón escolar*):

On February 28th 1908, the Commission agreed (...) to establish a *School Census* to determine the various physiological, biological, psychological and anthropological aspects of the pupils at the municipal schools; to deduce their health status and take, in time, the necessary steps to improve the physical and mental health of the future citizens⁷ (Roca et al., 1909, p. 144; italics in the original).

It was necessary to gather information on all schoolchildren aged five to fourteen⁸ and to register them via a form⁹ indicating: (a) name, address, age, school and family data; (b) clinical history (including vaccinations); and (c) pedagogical assessments of the child's capacities and his or her general level of activity and education. Other information included: (d) anthropometric data, such as height, weight, head and thorax circumference, force, vision, hearing,

dental records, foot length, hair and eye colour, delicate organs and global evaluations of robustness¹⁰ and present sanitary state, with recommendations (in the case of deficiencies) (Roca et al., 1909, p. 152; see also Escudé, 1909).

Indexes were used to summarize the great number of data and qualitative assessments and to grade children's health and strength. The two most important indexes were the coefficients of vitality and robustness, calculated by taking into account the height and thorax circumference in the first case, and including weight in the second (Roca et al., 1909, p. 166). Comenge explains that the calculations and the conclusions of the anthropological-pedagogical forms offered "exact knowledge of each subject, his robustness and mentality, that is, the *personality* of the student"¹¹ (Comenge, 1909, p. 93; italics in the original). It was expected to be of use in advising parents of the child's hygienic needs, defects and predispositions, as well as "to announce (...), the best outcome for his conditions and the most suitable way to turn each child into a useful citizen for society and for himself"¹² (Roca et al., 1909, p. 149).

The census was of 5,800 school children; far below the total child population, as one of the first results evidenced the high rates of school absenteeism. A great number of children included in the census were found in bad shape, with signs of scrofula, pre-tuberculosis and under- or malnourishment. The criteria the physicians used for the selection show that they also took into consideration the child's living conditions. More precisely, in the selection process they gave preference to well-behaved children of poor robustness, deficient vitality, fragile health and from a background of poverty (Comenge, 1910). Thus, Comenge (1910) explained that: "the expert who performs the selection must choose, from the excessive number of aspirants, the weakest, diligent, well-mannered, and those suffering the pernicious influence of their homes, their neighbourhood, and the cumulative effects of bodily and social misery"¹³ (p. 385). The outcome was a recommendation to send 1,920 schoolchildren of both sexes to the summer camps.

A Second Check (Including Intelligence Testing)

As the municipal budget of 1908 did not allow for the expenses of such a large group to be covered, a second selection of 525 students (250 boys and 275 girls) had to be made. For this purpose, the physicians prepared a new form, instructing teachers and school directors to undertake a more detailed exploration (Comenge, 1909). It was necessary to constrain the selection and to determine the need of

⁶ The names of these physicians are: Quírico Espadaler, Antonio Puig y Alorda, Fernando Cosp, Eugenio Jaques, Francisco Beltri, Mariano Durán Farreras, Joaquín Homs, Manuel Masó, Enrique Robledo, José Jacas Mateu (Roca et al., 1909, p. 144).

⁷ "En 28 de Febrero de 1908 acordó la Comisión (...) la confección del *Padrón Escolar* para conocer á los alumnos de las escuelas municipales en sus diversos aspectos fisiológico, biológico, psicológico y antropológico, deducir su estado sanitario y realizar, con tiempo, gestiones encaminadas á mejorar la salud física y mental de los ciudadanos del porvenir"

⁸ It is important to keep in mind, that although the children examined in that study were aged 5 to 14, the test starts with exercises for a lower age. The reason is that it measures their mental age, which could be lower than their biological age.

⁹ The form was called "cédula sanitaria del escolar" in the report (Roca et al., 1909) and "célula antropológico-pedagógica" by Comenge (1909). Interestingly, although the report is written in Spanish, the form was written in Catalan. This could be due to the preferences of the local teachers, who collaborated with filling them out. For information on the growing awareness of Catalan culture and political interests of the time, see de la Arada, 2008.

¹⁰ "Robustness" would indicate firmness or functional strength, as well as the resistance of the organism against diseases. As Comenge indicates: "Integral robustness is the representation of psychophysical harmony of the healthy evolution of an organism" (Comenge, 1910, p. 382).

¹¹ "(...) el conocimiento exacto de cada sujeto, de su robustez y mentalidad, es decir, de la *personalidad* del alumno"

¹² "(...) anunciar (...), el mejor destino de las condiciones de éste y el más idóneo camino para, de cada niño, formar un ciudadano útil á la sociedad y á sí propio".

¹³ "(...) el perito selector, dentro del excesivo número de aspirantes debe escoger los más débiles, aplicados, modosos y los heridos por el pernicioso influjo del hogar, de la barriada y por los efectos acumulados de la miseria corporal y social."

each for "ruralization" (rusticación), altitude, sea breezes, ferruginous waters, etc., to remedy the kind of deficit that was diagnosed.

A 4-page form was now used for the register. The first page was entitled "anthropological study" and was to be filled out by the head of the school. It contained personal data, a clinical history and pedagogical assessments. The second page was called "clinical report" and included both a photograph and descriptive information of physical health conditions and some anthropometric measurements. It can be seen that these two pages offered similar information to that on the previous census form; but the third page was different. Under the title "psychological diagnostic", page 3 included a summary of the child's performance in the intelligence test and again a description of her/his behaviour, character, mentality, volition and moral (and religious) attitude. The last (fourth) page, called "anthropological form" (cédula antropológica), was filled out by the medical examiner (inspector médico) and contained a number of indexes and coefficients, a general appreciation of the child's mental and physical development, and a summary of the perceived child's needs. We will now focus on the most original part, the intelligence testing, reported on the third page.

The level of intelligence was measured in the case of 420 children with the help of the new Binet-Simon test (Comenge, 1910). The scale version had been published shortly before. Spanish physicians were already aware of its positive reception in other countries such as the U.K., Germany, Belgium and the Netherlands. The Commission's report (Roca et al., 1909) argued:

For the proper selection of children and for the purpose of classifying the pedagogically abnormal and the psychically abnormal, there are precise rules for determining these various states, with one of the best being the psychological tests already recognized in England, Germany, Belgium and Holland and defended by Binet in France. Avoiding all exclusivism, the technical director of this work Dr. Comenge adopted, as we said, after multiple tests, the appropriate formulas to establish the mental diagnosis, taking in essence the best and most practical of the attempts or tests which deserved the greatest acceptance and have produced beautiful results here in Barcelona, as will be seen when the time comes¹⁴ (p. 203).

It seems clear that the Commission was convinced of the usefulness of the test for many different purposes, one of them being a psychological census of the young population and another to aid in the recognition of abnormal children. Moreover, they indicate that they adapted the test and that it was probably the first time this method was used in Spain:

¹⁴ "Para la debida selección de los niños, á los efectos de la clasificación de los anormales pedagógicos y anormales psíquicos, existen reglas precisas y determinadas para fijar estos diversos estados, siendo una de las mejores ya reconocidas por Inglaterra, Alemania, Bélgica y Holanda y defendida por Binet en Francia los tests (sic!) psychiques. Salvando todo exclusivismo, el director técnico de estos trabajos Dr. Comenge adoptó, dijimos, después de múltiples ensayos, fórmulas apropiadas para establecer el diagnóstico mental tomando en esencia lo mejor y más práctico de los tanteos ó comprobaciones que merecieron mejor aceptación y aquí en Barcelona han producido bellos resultados como se verá en su día".

The Commission adopted an improved analytical guideline for research on the mind propounded by Binet and other authors ... We believe that this laborious and difficult improvement, carried out for the first time in Spain, using a respectable number of children, will undoubtedly result in remarkable advantages in its many applications¹⁵ (Roca et al., 1909, p. 183).

Local Appropriation: Comparison of the Binet-Simon Test with the Barcelona Testing

The report published by the Commission (Roca et al., 1909) is an exceptional historical source for the history of psychological measurement, because it includes the list of exercises and questions that the children were given. This allows us to make a comparison between the test in its original (second) French scale version (Binet and Simon, 1907) and its application in Barcelona.

The physicians translated the list of tasks and questions from the French test¹⁶. A first kind of changes immediately appeared, and it is difficult to know whether they were due to errors in the translation. For example, in the original test, the authors ask the children to count the fingers on both their hands. Comenge and his collaborators, however, asked them to count (and add) fingers and toes (Roca et al., 1909, p. 194). For small children, this greatly increases the difficulty of the test. Also, in one of the exercises for eight-year-old children, in the original test they had to read about some fact and commit two aspects to memory. In the testing in Barcelona, the children had to read a passage and remember four concepts (Roca et al., 1909, p. 195).

Additionally, in some cases, the Binet-Simon tasks and questions were substituted or accompanied by a series of "supplementary questions". They were meant to help refine the diagnosis of the mental level of the child by adapting the instrument to the local population and its customs. These exercises asked, for example, five-year-old girls to use thread and scissors, while boys of that age were asked to show how to dig, and drive in and remove nails; six-year-old children were asked: "Who wears shoes: the cat or the horse?" and "What are horns for?" (Roca et al., 1909, p. 194); at age seven: "What is more expensive, bread or shoes?" and "What do priests, soldiers, doctors, etc. do?"¹⁷ (Roca et al., 1909, p. 195). Sadly, we do not know how each answer was evaluated (Roca et al., 1909, p. 195). It seems to us that the supplementary tasks and questions again add a certain degree of difficulty to the test; they evaluate scholarly (biological)

¹⁵ "La Comisión adoptó una pauta analítica perfeccionada para la investigación mental preconizada por Binet y otros autores (...) Esta mejora laboriosa y difícil llevada á cabo por primera vez, según creemos, en España, en respetable número de criaturas, producirá sin duda notables ventajas en sus múltiples aplicaciones".

¹⁶ The questions and tasks in the revised version of the Binet-Simon include five or six exercises for each age. For example, for age eight the tasks are: to read a text about an event and remember two aspects; to count nine coins of two different types; to name four colours; to count backwards from 20 to 0; to compare two things (without seeing them); and to write a dictated text (the full list can be seen in Binet & Simon, 1907; for an English version see Binet & Simon, 1916).

¹⁷ "Quién usa calzado, el gato ó el caballo?" y "para qué sirven los cuernos?"; a los 7 años: "qué vale más, un pan ó un zapato?" y "¿qué hacen los curas, los soldados, los médicos, etc.?"

knowledge, as well as practical know-how, which depended on the social experience of the child.

A second aspect that is striking in these questions is the differentiation by gender, which is especially evident in the questions for small children (three to six years) and can already be appreciated from the examples cited above. Boys (three years old) were asked: "Are you brave?"; while the girls had to answer: "Are you pretty?"¹⁸. At age four, different objects were presented to the boys for them to recognize: weapons and mechanical toys; while girls had to name items related to grooming and appearance (Roca et al., 1909, p. 193). Finally, in these supplementary questions, the presence of moral topics stands out. In this section the test introduces concepts (to be defined) such as: docility, braveness, justice, goodness and maliciousness.

It is a shame that the report does not give any numbers with regard to the performance of the children in the test¹⁹. It only includes a complete 4-page form for an eight-year-old orphan girl called Salvadora Juan y García. On the first page, the school director (probably after consulting the teacher), judged the girl's behaviour to be very good (modest and docile), but her intelligence to be well below average (Roca et al., 1909, p. 185). When the physicians tested her intelligence, the outcome was a higher mental age than her biological age and, therefore, she was judged to be mentally an early developer. Binet liked to highlight this kind of contradictory judgement, to argue for the superiority of the test as a scientific (objective) device that was necessary to overcome the teacher's erroneous intuitive and biased judgment. In the report and in Comenge's writings no such comments are made, but the fact that they used precisely this case as an example could be seen as an insinuation into this direction.

The summary of Salvadora Juan's performance listed on page 191 of the report is reproduced in the following table (Table 1): for her age, she was able to resolve some tasks very well (see tasks 4, 7, 8), as well as some exercises aimed at children of eight-to-nine years (see tasks 1, 2, 3, 5, 6, 9, and 11²⁰). Other tasks appear to have been added at will, such as 10, 12 and 13; as they are not included in the list of tasks in the test itself, neither in the items copied from the Binet-Test nor in the section of supplementary questions (see Roca et al., 1909, pp. 193-197). Therefore, it is not possible to know to which mental age they correspond.

From the preceding analysis, it becomes clear that the appropriation of the Binet-Simon test in the hands of Comenge and his co-workers entailed variations. In short, these consisted of an increase in the degree of difficulty of some tasks or questions; adaptation to the local population with the help of "supplementary questions"; and, among these supplementary questions, some emphasized moral attitudes and distinguished tasks and questions according to gender.

Table 1.
Psychological diagnostic of Salvadora Juan y García, age eight, on the 1st October 1908

| | | |
|----|-----------------------|--|
| 1 | Reading | she read 52 words in 45 seconds, well pronounced and understood the text |
| 2 | Remembering | she remembered five aspects of the text |
| 3 | Distinguishing (sup)* | she distinguished correctly the sex of several zoological figures |
| 4 | Calculating | she was able to sum and substrate with four coins |
| 5 | Counting | she counted correctly from 20 to 0, in less than 20 seconds |
| 6 | Writing | she was able to write 7 familiar (known) words which were dictated |
| 7 | Differentiating (sup) | she differentiated between animals and objects (without seeing them) |
| 8 | Resolving (sup) | she resolved some basic religious and domestic problems |
| 9 | Interpreting (sup) | she understood correctly some expressive gestures |
| 10 | Sewing (sup) | she did it without hesitation |
| 11 | Copying | she was not able to copy a rhombus but she copied correctly a square |
| 12 | Knowing (sup) | she does not know the scriptures |
| 13 | Singing (sup) | she sang a semiquaver note, accentuated |

- Tasks for a mental level of 8 to 9 years
- Tasks for a mental level of 7 to 8 years
- Tasks not listed in the test

The Hygienic Function of the Test

What do these changes mean? In the first place, they indicate that the Barcelonan physicians did not want to replicate the French test in an exact and standardized way. Binet and Simon applied the test as a personalized interview, in which they observed the child, talked with him or her to see if he or she had understood the questions and, if necessary, added some explanation (Wolf, 1973). At the same time, they instructed test users to follow uniform guidelines to make the results obtained comparable. Despite being aware of the existence of individual differences, they considered it unnecessary to adapt the tasks to each individual or social groups, because they thought that such differences were balanced out by using a wide range of different exercises (Binet and Simon, 1907).

In the intelligence test carried out in Barcelona, no such effort towards uniformity was made, beyond the repetition of a large part of the tasks and questions. The emphasis lay more in adapting the test to each person and to her or his personal circumstances. The following quote is clear evidence of this concern: "it should be understood that this scale or scheme is not a yardstick for measuring intelligence, but rather a practical and useful guide that can be altered according to the conditions of the subject, the expertise and experience of the

¹⁸ "¿Eres valiente?" y a las niñas: "¿eres bonita?"

¹⁹ The report (Roca et al., 1909) mentions several times a very complete report of more than 500 pages containing all the results; but to date, this document has not been found.

²⁰ Although in the last task she was only able to copy correctly a square, which corresponds to a mental age of 5 to 6.

* With "sup" we mark the supplementary tasks and questions (which are not part of the Binet-Simon).

researcher and the place where the child lives or lived"²¹ (Roca et al., 1909, p. 197). It is clear that they tried to neutralize the interference of three types of differences: sex, social class, and origin (local customs and knowledge differ between a child living in the city and one from a family which had recently arrived from the countryside to the city).

It should be noted, though, that such free adaptations of the test were by no means an exception at the time. If we look at the way in which the Binet-Simon scale was applied in other places, we can see that in general researchers viewed it as a malleable device. Numerous adaptations and versions appeared, often named after the researcher who introduced the changes, such as, for example, the Dutch version of 1919 called the "Binet-Herderschêe test" (Mulder & Heyting, 1998).

Comenge and his team used the test as a clinical method, specifically to diagnose what they called "psychical abnormality". They used the same criterion as Binet and Simon: if a child failed to respond correctly to the set of tasks and questions corresponding to the two or more years previous to his or her age, then he or she was considered "backward". In contrast, if a child could provide correct answers and perform the tasks expected of children with a higher (biological) age, she or he would be considered "precocious", as in the case of Salvadora Juan (Roca et al., 1909, pp. 197-198).

Abnormality was an 'epidemic' that worried physicians of the time. Researchers distinguished, on the symptomatic level, between physical and psychological abnormality. Anthropometry was the technique used to determine the former type; the intelligence test (the Binet-Simon and other types of tests and methods) the instrument to detect symptoms of the latter. The term "abnormal" gained particular relevance when schooling became mandatory. It was precisely the interest clinicians took in infants and in controlling educational spaces that led, in the name of prevention, to extended use of the clinical category of "abnormal" (Canguilhem, 1986; Foucault, 2000). It was an ambiguous concept that was supposedly used to define a type of human being.

At the same time, the classification offered teachers the possibility of identifying children who did not fit into the class group and who made teaching difficult. Binet and Simon (1907) referred to pupils who were unable to follow normal instruction at school (Binet and Simon, 1907). Decroly understood abnormality in terms of deficit, which could be physical, sensory, intellectual or affective. In Spain, medical and pedagogical discourses on the topic reflect this variety and ambiguity of the definitions which were circulating inside Europe and beyond at the time (Mülberger et al., 2016). The forms used in the Barcelona testing of 1908 are evidence of the collaboration between physicians and teachers, and the role played by the latter's judgement of the child's correct (normal) or incorrect (abnormal) behaviour in class.

For the physicians, abnormality mainly represented a psychophysical condition that removed robustness from the organism, that is, it weakened the "Spanish race" and made the individual more vulnerable to all kinds of vices and diseases that

prevailed everywhere in cities undergoing industrialization, such as Barcelona. The topic represented a pressing concern for the Commission (see Chapter 8 in Roca et al., 1909). They drew the attention of the authorities to the fact that numerous children could be found in schools whose development was abnormal and therefore needed special care, e.g., Governmental tutelage and the establishment of specific (medical) institutions²².

Taking into account Comenge's hygienist background, as laid out in his biography above, we can deduce that when selecting children, he acted with the same rigor and forceful style he was used to adopting for his hygienic work of disinfection. In the urgent fight against epidemics, to ensure success, it was better to be too strict and burn more clothes than strictly necessary; for him, prophylaxis was an essential tool. Therefore, his tendency was to increase the level of demand of the test. Faced with the threats to the already poor urban health, he preferred to ensure early detection of any abnormality in the child, however weak the sign should be.

Conclusion: Anthropological and Psychological Selection as Opportunity?

The first application of the intelligence test in Barcelona took place at a time when medicine, using pro-hygiene discourses, had gained influence over urban life. The report of the Commission (Roca et al., 1909) provides evidence of the dominance of medicine over anthropology and pedagogy, by stating that the former discipline constitutes "by far the most important icon" in school inspection²³. Integral hygienic care of the infant, including physical and mental care, was evoked in the name of national honour and prosperity (Comenge, 1910). Since the crisis of 1898 (with the loss of the colonies) there had been deep concern in Spain about regenerating the national stock and increasing its "robustness" and vigour. Only a few years before, Comenge had declared: "Spanish society is sick, about this there is no doubt, everyone asserts this and unanimous opinion maintains it; the symptoms are serious (...); the suffering is deep, chronic and generalized"²⁴ (Comenge, 1902, p. 10). Thus, only the intervention of physicians in private and public spheres would be able to save the nation.

With the help of anthropometry and psychometrics, Catalan physicians wanted to take the pulse of Barcelona's offspring as part of their duty to take care of a sick people, some of who were suffering the ravages of an unhealthy life in the humble neighbourhoods of the

²² Apart from the summer camps, there were also different kinds of sanatoriums, open-air schools, clothing and food charities and other welfare services, which already existed or were being set up.

²³ "Faro principalísimo". Regarding the first case, they indicate: "The physician corrects the arithmetical conclusions of anthropology and especially craniometry every day" (Roca et al., 1909, p. 150); and with respect to the second: "School hygiene has two capital objectives, to sanitize the child and the teaching method, according to the individual conditions of the infant, this is the great support of the medical empire in the school, medical advice in instruction" (Roca et al., 1909, pp. 149-150).

²⁴ "La sociedad española está enferma, sobre esto no hay cuestión, lo aseveran todos y la opinión unánime lo mantiene; los síntomas son graves (...); el sufrimiento es hondo, crónico y general".

²¹ "Entiéndase que esta escala ó pauta no es una cinta métrica de la inteligencia sino una norma práctica, útil, pero alterable según las condiciones del sujeto, la penetración y experiencia del investigador y el punto donde el niño mora ó vivió".

city. Interventions, such as the selection of children for the summer camps, extended the medical-pedagogical custody of the physicians over Barcelona's population. The medical discourse "naturalized" the whole procedure through an organic analogy that equated the immunological defence of the individual organism against disease with defence against epidemics that spread by contagion within a society. It was in the interest of the physicians to detect as many abnormal and feeble children as possible, to expose the symptoms of the 'sick race' to the public, thus legitimizing medical intervention in schools and cities.

One way to save the nation was to strengthen its weak city offspring through a stay in the countryside. Ruiz y Palacio (1999) and others have shown that not only the pedagogues of the time, but also the physicians emphasized the importance of the child coming into contact with nature. The negative view that they spread of the city, contrasts with the positive view they had of life in the countryside, seen as a means to strengthen and regenerate the human race. Thus, the school summer camps should serve for weak children to gain health and strength through breathing pure air, eating healthy (and high-calorie) food, exercising and learning in a natural environment, supported by a disciplined and orderly collective life. Life in the countryside (more traditional, calm and uncrowded) was a kind of "medical treatment" which already had a long tradition.

In Spain the physicians, heir to the tradition of degeneration medicine and Lombrosian anthropology, looked for children with physical and psychological stigmas (Campos, Martínez and Huertas, 2000). During the first years in which the summer camps were organized, psychology barely appeared in the selection of students²⁵, or in the summer camps programmes. The citation of the old phrase "mens sana in corpore sano" in the report (Roca et al., 1909) seems to imply that the intellectual and psychological aspects are subsumed to the body. Nevertheless, Comenge states that the knowledge which must be gained to make the selections "should include the organic and the psychic concept; the *total* individual in function and evolution"²⁶ (Comenge, 1910, p. 382, italics in the original). Despite such a holistic approach, including the physical and the psychological, in practice the clinician's eye was mainly focused on two conditions: the bodies of girls and boys, and their living conditions. Moreover, when it came to organizing and "accounting for" the summer camps, the most important task of the physicians was, on the child's return, "to calculate the organic benefits obtained on their return"²⁷ (Rodríguez Pérez, 2001, p. 888), which in practice meant the registering of the increase of weight.

In the (1908) intelligence measuring in Barcelona, as explained above, Comenge and his collaborators varied some tasks and questions from the original French scale, to balance social and individual differences. Among other aspects, they used objects and tasks specifically linked to gender roles (and stereotypes), thinking that in this way individuals of both sexes would have the same chances

to being selected. The fact that 25 more girls than boys were sent to the summer camp in 1908, suggests that the selection was slightly inclined towards a preference for girls. This fact is surprising, because in Comenge's anthropometrical registers, more deficient development (in height and weight) was found among the boys than the girls (see, for example, Comenge, 1909, p. 96). Also, the cases presented by Comenge (1910, p. 385) reveal that a thin post-tuberculosis girl, close to sexual maturity, was urgently sent to the camps, even though she did not meet some other criteria, such as poverty.

Already, in previous writings (Comenge 1902, 1905), Comenge had presented himself as a defender of female education; a specific education, in accordance with the bourgeois vision of the social role of women. As a hygienist he also wanted to evaluate girls, as a crucial part of the human "pedigree". Moreover, the political spirit of the policy of Barcelonan City Hall at that time was progressive and republican. Comenge shared these attitudes, summarizing this spirit in the following paragraph:

Today everything has changed or marches along the path of its optimum benefit. A wise and integrated education is proposed, luxurious and hygienic palaces are built for education, with gyms, bathrooms, gardens and a profusion of educational elements; open-air schools are organized, schools for mentally and physically handicapped children are founded; (...) women are considered as sisters of men with equal rights and protected in respect²⁸ (Comenge, 1910, p 380).

The original Binet-Simon test does contain any gender difference and in the reports, gender is often not specified. It is highly probable that, in general, the primary focus of the measurements were boys, since their intellectual potential mattered more in terms of their academic future than that of girls. Elsewhere in those years, Belgian pedagogues examined 17 boys and 10 girls using the Binet-Simon intelligence test, without making any attempt to adapt the material or questions to the gender of the examinees (Decroly & Degand, 1906).

Following the Foucaultian tradition, historians often present anthropometry and psychometry as dangerous techniques which in the hands of physicians (e.g. members of the powerful bourgeoisie) were used to increase of any kind and strengthen control over the working class. The living conditions of many families in Barcelona were extremely difficult at the time we consider here. Many children attending the public schools came from a setting characterized by poverty and abandonment, and through the tests and registers received the scientific classification of "feeble" or "abnormal" as an additional confirmation of their social status. Nevertheless, we would like to argue here that these labels did not add much to their

²⁵ In general the anthropological forms used at that time in Spain did not include any psychological observation or testing (see: Ortiz, 2003; Rodríguez Pérez, 2001).

²⁶ "Que el conocimiento del escolar "abarque el concepto orgánico y psíquico, el total individuo en función y en evolución".

²⁷ "(...) deducir al regreso los beneficios orgánicos obtenidos".

²⁸ "Hoy todo ha cambiado ó marcha por la senda de su óptimo beneficio. Ya se propone la educación sabia é integral, se levantan palacios lujosos é higiénicos para la enseñanza, con gimnasios, baños, jardines y profusión, de elementos docentes; se organizan escuelas al aire libre, fundan colegios para anormales, físicos y mentales; se establecen intercambios escolares; se instituyen métodos selectos y caritativos para combatir la ignorancia y los perniciosos efectos de la miseria física y moral en todas sus manifestaciones, prosperan las enseñanzas de artes y oficios, se considera á la mujer como hermana del hombre é igual en derechos y protegida en respetos".

already marginalized and stigmatized status in the city. Selection did, however, at the same time offer an opportunity to stay for free in the countryside, which for poor families meant a great deal. It meant, in addition to the opportunity to participate in a group trip, the guarantee of sustenance and caloric nutrition for their children for several weeks.

We do not know if the experience was so desired or enjoyable for the children themselves in the end²⁹. It is probable that, at least initially, they shared their parents' enthusiasm. Upon arrival, they received a package containing some gifts and donations such as a straw hat, two aprons, a travel bag, two to four pairs of sandals, a towel, a toothbrush, a comb, a pencil, a notebook, a rubber, a bar of soap, several toys and postage stamps (Roca et al., 1909; Escudé, 1909). Often, their arrival in the villages and their return to the city were celebrated. They were welcomed by the local authorities with a band playing and, on their return, the City Hall organized an official reception (Roca et al., 1909).



Image published in the local press informing about the reception organized by the local authorities of the City Hall and Mancomunitat for the groups of children returning from the summer camps (authorized reproduction; source: Arxiu Municipal Contemporani de Barcelona; Fons Ajuntament de Barcelona; K156 Activitats culturals i lúdiques; expedient general 1-10; carpeta 8, 1918-1925)

Comenge and his colleagues did not miss the positive effect experience of such a summer camp might have in the long run, contributing to enhancing social peace. They viewed it as a way to influence and exert social control over the offspring of the working-class inhabitants of Barcelona. Three strategies seemed instrumental: fostering education in hygienic conditions, promoting the feeling of social cohesion (fraternity) and provoking enduring gratitude in the families for the help received (Roca, et al., 1909, p. 181; Comenge, 1910, p. 381).

²⁹ Other historians, such as Pereyra (1982), glorify the summer camps as great humanitarian acts, citing the much praise they received. Although we argue here that being able to participate in the camps was socially perceived as a great privilege, we prefer to be cautious when judging the benefits they had for each individual, since, on a personal level, there were probably numerous problematic aspects that are not reflected in the available documents.

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