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Electroconvulsive Therapy Applications on Children in the 1940s

The Italian Case

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Abstract: The existence of pediatric applications of electroconvulsive therapy (ECT) in the 1940s in Italy has been neglected by international literature. However, 2 case reports by Ferdinando Accornero and Mario Anderson, both assistants of Ugo Cerletti at the Sapienza Clinic for Nervous and Mental Diseases, should be brought to the attention of historians of ECT. The work presented therein began in Rome in September 1940, approximately at the same time of the first reported ECT administration on a child in Bristol, United Kingdom. The 2 reports described applications on 19 children and adolescents during 3 different sessions (1940–1941, 1944–1947, and 1947–1949), with a 3-year-long interruption due to the circumstances of World War II. Unfortunately, this research appeared belatedly in 2 articles from 1948 and 1950, respectively, in an Italian journal with limited distribution, when more extensive research contributions on pediatric ECT had already received international exposure. The Italian reports may cast light on the progress made by the early generation of ECT researchers in the 1940s toward the refinement of ECT techniques and the subsequent identification of diagnostic indicators for ECT among children.

Key Words: ECT, children, 1940s, Italy, Cerletti

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If we exclude historical precursors,¹ which may date back to Galen's suggestion of paralyzing an epileptic child with torpedo fish,² the first properly called electroconvulsive therapy (ECT) administration on a child was made public in April 1941 in Bristol, United Kingdom.³ The child was aged 3 and affected by epilepsy. Robert E. Hemphill and W. Gray Walter, the authors of this study, had reportedly treated more than 200 patients, ranging in age from 3 years to 74 years (a depressed woman). Other children might have been involved in the research. According to the text, the Bristol electroshock applications were performed “for rather more than a year” (p. 256) before the article was published, thus just a couple of years after Ugo Cerletti and his assistant Lucio Bini had introduced ECT at the Sapienza University Clinic for Nervous and Mental Diseases in Rome, Italy.⁴ Cerletti and Bini had originally used their new device on 2 inmates in 1938: Enrico S., a 40-year-old delusional man who was treated on April 11, and

Lucia F., a schizophrenic woman who received the treatment on April 20 of the same year.⁵ From then to December 1938, Lucio Bini took notes of observations on 21 patients treated with their ECT apparatus. These patients were 13 men, 5 women (including Lucia F.), and 3 patients of unidentified sex.⁶ Bini had not recorded all the patients' ages. From bibliographic sources, it may be retrieved that the early patients were all adults.⁷

The existence of pediatric applications of ECT therapy in Italy in the 1940s has been neglected by international literature. For example, some scholars have claimed that “the memoirs of the first generation of ECT exponents – Bini, Cerletti, Kalinowsky, and Fleischer – do not mention the treatment application to the young.”⁸ No mentions of Italian pediatric ECT during the early years of the technique appear in scholarly publications.^{9,10}

Beyond Hemphill and Gray Walter's work, medical historians cite 2 other reports on the use of ECT on children. Georges Heuyer and collaborators reported 2 sessions of ECT applications in Paris, France.^{11,12} The first series was performed on a group of 3 patients 13 to 14 years old in February 1942. The second included 40 children and adolescents ranging in age from 5½ to 19, who each received different diagnoses and were treated in 1943. After those experiences, Lauretta Bender produced the largest systematic study on 98 children treated with ECT in New York, United States, in 1947.^{13,14} By doing so, Bender gave start to pediatric ECT, which—after becoming routine in European and US hospitals in the 1950s—received much criticism in the 60s.⁹

However, 2 case reports by Ugo Cerletti's 2 assistants at the Roman Clinic, Ferdinando Accornero and Mario Anderson, should be brought to the attention of medical historians, especially historians of ECT. These reports are entitled *L'elettroshock nella psichiatria infantile* (Electroshock in child psychiatry)¹⁵ and *Considerazioni sull'uso dell'elettroshock in psichiatria e sul problema della schizofrenia infantile* (Considerations on the use of electroshock in psychiatry and on the problem of childhood schizophrenia).¹⁶ The work described therein started in Rome in September 1940, approximately at the same time of the Bristol study. Unfortunately, the 2 reports appeared belatedly in 1948 and 1950, respectively, on an Italian academic journal with limited distribution (*Il lavoro neuropsichiatrico*), after Lauretta Bender's work had already been published in the United States and received international exposure. These are supposedly why the relevance of these reports has been obscured by other international publications, and why they have been ignored by subsequent historical reviews.

In this article, I examine Accornero and Anderson's work on children in the 1940s. I will provide some historical background on the origins of their work. Afterward, I will present the content of their research and briefly discuss it.

MATERIALS AND METHODS

Historical data were collected through archival research at Sapienza University of Rome. Particularly, I made use of primary source documents stored at the Sapienza Historical Archive

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at the Archives of the Sapienza Library of the History of Medicine, and at the New Historical Archive (“E.S.” section of the Ugo Cerletti’s Archive and “N. Accornero” box) at the Sapienza Library of Human Neurosciences (former Sapienza Library of Child Neuropsychiatry).

Historical Background

In 1948 and 1950, Ferdinando Accornero and Mario Anderson published 2 articles describing ECT applications on a total of 19 young patients. The first article reported explicitly the dates of the 2 sessions taking place in Rome in 1940–1941 and then in 1944–1947, whereas the second article reported a third session, presumably from 1947 to 1949. More precisely, the dates of the observations contained in the 1950 article can be inferred from the approximate date of the hospitalization of the first recorded patient in the study (ie, after June 1947) and the date when the article was received by the journal (October 15, 1949).

Antonietta Fumagalli, an assistant of Pietro Bruna at the Provincial Institute of Child Protection and Assistance in Milan, had tested cardiazol on 13 convulsive newborns whose age was in the range from 53 days to 13 months,¹⁷ already in 1941. Electroshock had also been administered to pregnant women for 5 years, starting in 1941, in Bergamo after a single attempt in 1940 by Czech scholars A. Rostan and A. Chiabov.¹⁸

The 2 articles on pediatric ECT applications authored by Accornero and Anderson were hosted in *Il Lavoro Neuropsichiatrico*, a local academic journal founded in 1947 and coedited by Ugo Cerletti and Francesco Bonfiglio. The journal was based at *Santa Maria della Pietà* Hospital in Rome and published bimonthly, admitting original articles, reviews, and case studies, and it was sold at the yearly price of 1.500 Lire. In 1948, Ugo Cerletti (1877–1963), the father of ECT, was heading the Clinic for Nervous and Mental Diseases at Sapienza University of Rome for his last year in this office, after which he retired and became an emeritus.¹⁹ Francesco Bonfiglio (1883–1966) was at the time the director of *Santa Maria della Pietà*, which was the main mental asylum in Rome and the biggest in Europe.²⁰ Cerletti and Bonfiglio were linked by a long-standing friendship, as they had both been Augusto Tamburini’s assistants in Rome in 1907–1908. A popular photograph taken in Munich in 1909–1910 shows them together, both young trainees at Alois Alzheimer’s laboratory.

The first author of the articles, Ferdinando Accornero (1910–1985), was a close friend of Lucio Bini, the designer and builder of the ECT apparatus prototype, with whom he shared the beginnings of his career. Just a year after graduating, in 1936, Accornero joined Cerletti’s Roman team as an intern, and he ended up working closely with Bini. Five years later, in 1941, he was later confirmed as a tenured assistant (*assistente di ruolo*) at Sapienza. Bini and Accornero were both trained on existent shock therapies [eg, malaria therapy, insulin coma therapy (ICT), and cardiazol therapy], but Accornero was also specifically assigned to studies on ICT.^{10,21,22} “He organized, under my guidance, the first insulin therapy section [in Rome] and he has lead this unit since its foundation (1936),” stated Ugo Cerletti in a certification of Accornero’s activities written on May 15, 1948.²³ Moreover, a personal miscellany of Accornero’s stored at Sapienza under his name consisted mainly of articles on ICT and cardiazol.¹⁹ We also have records of Bini administering malaria therapy.²⁴ Cerletti also acknowledged Accornero as having “attended and participated in our work on ‘electroshock therapy’ since the beginning.”²³ Accornero and Bini presented their research at the Congress of Münsingen (Switzerland) in 1937,^{25,26} the conference where Bini announced that the Roman team of neuropsychiatrists had built a brand new electrical device and was ready to test it on human beings.^{10,27} After Cerletti’s insights,

Accornero and Bini had gone to observe hogs shocked by electricity at the Roman slaughterhouse, and they presumably had assembled the rudimental ECT device prototype together.²⁷ In 1970, Accornero left a famous written testimony of the very first ECT application that Cerletti’s team made on Enrico S. in April 1938.²⁸ From 1941 to 1944, Accornero served in World War II by directing a military hospital in Cagliari, Sardinia, and then was sent to Slovenia.²⁹ This is why the work conducted by him on pediatric ECT in Rome, after being initiated in 1940–1941, was suspended for 3 years and was then resumed and carried on until 1949.

No less importantly, it was during the years of work on ECT that Accornero took interest in child neuropsychiatry, to which he dedicated passionately the rest of his career. Beginning in 1944, he held courses within this disciplinary area at the Sapienza Clinic and led a little sanatorium named *Castello della Quiete* in Rome.²³

Not much is known of Mario Anderson (1920–1960), the other author of the case reports, who had been volunteering in Cerletti’s laboratory since November 1, 1947.³⁰ Anderson had graduated in medicine in Rome in 1943, and worked at the University Hospital from 1944, also performing research activities. Curiously, Anderson quit his job as an assistant at Sapienza exactly on the same date Lucio Bini did (November 1, 1956), which might lead us to presume that the 2 resignations were connected. After Cerletti’s retirement, because of friction with his mentor concerning intellectual property rights on the ECT invention and because the new Director Mario Gozzano was lining up his own team at the Clinic and thus keeping him apart, Bini gave up his academic career.^{6,27}

Cerletti mentioned Accornero and Anderson’s ECT applications on children in an international venue at least once, at the *Congrès international de psychiatrie* in Paris in 1950. After referencing his friend Heuyer’s research, Cerletti reported that “no results have been obtained” by his 2 assistants on “14 cases of ‘early dementia praecox.’”³¹ The patients actually numbered 19 in total, taking into account the 2 studies they conducted. “On the contrary” Cerletti continued, “they observed good improvements in children’s confusional states and a reduction of ‘absences’ in cases of ‘petit mal.’”³¹

Electroshock Applications on Children in Rome in 1940–1941 and 1944–1947

In their first 1948 article, Accornero and Anderson described ECT applications on 15 children and adolescents (ie, 5 girls and 10 boys) of various ages, from 6 to 14 years. The young patients received various psychiatric diagnoses (ie, child schizophrenia, catatonic pseudodementia, toxic-infective induced acute psychosis, manic excitement, and epilepsy) and were hospitalized at the University Hospital in Rome in 1940–1941 and 1944–1947. After a preamble, the authors presented each case individually. Null findings were reported for all of them, but no complications were reported either.

The cases were not listed in chronological order, and no specific listing criterion seems to emerge from the publication that classifies the young patients per diagnostic type. First name and first letter of the family name, age, and medical record number identify them. Dates of admission to the hospital were also reported for each patient, as well as a section of anamnestic data and another for the diagnosis.

Interestingly enough, we may infer from the hospitalization dates, reported in the text, that patient 2 was the first child who received electroshock applications in Italy (p. 294). The patient was a 7-year-old named Gianluigi V., admitted to the Sapienza Clinic on September 26, 1940, and dismissed on February 14, 1941. He had been diagnosed with “early dementia praecox,” attributed

to a postsurgical traumatic condition after a tonsillectomy and adenoidectomy. Past infective circumstances (whooping cough and measles) were also mentioned as possible etiological factors. The patient was described as “restless, messy,” and his behavior included “making faces and stereotypic movements.” It was said that [he] “did not participate in the games, he isolated himself, he wept.” He was depicted with preserved affect, but he was said to “reproduce signs and letters of the alphabet without distinguishing them,” whereas he “correctly executed orders” but he had “limited [ability to] talk.” The child received 24 electroconvulsive applications in a year, showing no improvement. He “was dismissed... in the same conditions he entered.” Almost 10 years later, his condition had not changed.¹⁶

The authors firstly reviewed family histories for all the young patients. For most patients (ie, patients 1, 2, 4, 8, 9, 10, 11, 12, 14, and 15), they recorded “nothing noteworthy in the family anamnesis.” They annotated information only for about 5 of them. It was reported that patient 3’s “mother died of pulmonary TBC in mental asylum...” and that “[She was] suffering from delusions of jealousy” (p. 234), a kind of delusion attributed to the patient himself concerning his stepmother. “Two brothers of the p. [patient],” an 11-year-old boy named Lucio P., “had psychopathic personalities. One does not profit much in school, loves wandering. The other is bizarre, whimsical, original, often drunk, is impulsive and hyperactive” (p. 234–235). Patient 5 (a girl named Caterina P., aged 12) had a “drinking father,” “a maternal uncle who died in a mental asylum,” and “psychopathic mother” (p. 236). Patient 6, a 12-year-boy with “subsequent dementia,” and patient 13, a 6-year-old girl with “petit mal” named Natalia, were both said to have a “lucetic father” (p. 237, 240). Of the two, the latter’s father “was treated before getting married” (p. 240), whereas it was also reported that patient 6’s “maternal grandmother suffered from melancholia” (p. 237). Patient 7 had an “epileptic grandfather” (p. 238).

The children’s symptomatology varied, and so did the diagnostic considerations. If we exclude diagnostic considerations on 3 boys (patients 1, 2, and 4) and a girl (patient 5), aged, respectively, 6, 7, 13, and 12 years, who had all been diagnosed with “precocious schizophrenia (very early dementia)” or “prepubertal schizophrenia” with “sufficient certainty,” the authors expressed perplexities about their diagnoses. The 4 children showed isolation and limited linguistic competence. Patient 1 (Alfredo F., 6) also hallucinated (he kept saying “keep calm, I am afraid,” p. 233), and patient 5 (Caterina P.) was bizarre, aggressive, and had visual and auditory hallucinations (she saw “the tail of a donkey,” p. 237). These patients showed catatonic symptoms as well. Patient 1 was characterized by “cold inexpressiveness,” was “not interested in anything,” and showed “echolalia and echopraxia” (p. 233). Patient 2 “presented grimacing and mannerism” (p. 234). Patient 4 showed mutism, was “more and more negativist,” and spent his “time in bed defecating and urinating without moving” (p. 236). Patient 5 “spent whole days in silence doing nothing” (p. 236).

However, with patient 3 (Lucio P., 11), who got the same diagnosis of “very early dementia,” the authors had “the clear impression, unfortunately not objectively documented, of being in front of a disease different from that of the two previous cases” (p. 235). He was apathetic and with oppositional character. “He laughs for no reason, he does not care about the environment, he does not worry about his hospitalization, he does not play games. He suddenly takes his mates by the throat for no reason”—the authors reported—and he did not respond to orders until “after repeated impositions” (p. 235), beyond showing “unbridled masturbation.” “Not easy” (p. 237) and “uncertain” (p. 238) were the diagnoses of 3 other children. One was a calm and speechless 13-year-old boy named Learco S. (patient 6), believed to be affected by “subsequent dementia.” The others, patient 7

(Antonio Q., 13) and patient 8 (Pasquale T., 14), were both delusional and considered affected by exogenous psychosis. They showed no improvement after remission of the infection (supposedly malaria in the second case). Marisa M., a 10-year-old girl (patient 9), is another undecided diagnostic case “between schizophrenia and acute catatonia” (p. 240), believed compatible with an “exogenous psychosis.” Her case is interesting. She began to behave strangely after she witnessed her cousin’s accidental murder by a bullet. She was described as “confused, restless, unstable, worn-out excitement...hostile to the environment” (p. 239). She gesticulated. After ECT, she was the only patient who also received ICT. She seemed to have benefited so rapidly from these inoculations that the authors supposed her condition could have a toxic-infectious etiology. Exogenous psychosis was, on the contrary, excluded for patient 10 (Attilia M., 14), a teen girl who had convulsions and was believed affected by “catatonic-amential state,” and for patient 11 (Silvana R., 12), another girl diagnosed with amnesia who was initially thought to have pellagra. Patient 12 (Gino C., 12) was also suspected of being in a maniac state due to some infection, which however was not confirmed by the tests done.

Natalina L. (patient 13), a 6-year-old who had convulsions since she was 2 and had absences from the age of 4, was diagnosed with petit mal. “Epileptic equivalents” was the diagnosis for patient 14, Benito S. (10), and patient 15, a 9-year-old girl named Elide C. The former was admitted in February 1947, traumatized by the war bombings, due to which he had started making nonsense runs and threats. The latter had crises with screams and motor agitation, followed by amnesia. She felt dejected about being “a cripple,” derided by her classmates, and felt unloved by her mother because of her infirmity.

The number of ECT applications on each child went from 1 or 2 for patients diagnosed with epileptic forms (patients 13, 14, and 15) to 25 for patients diagnosed with schizophrenia (eg, patients 1 and 3). For the epileptic patients (patients 13, 14, and 15), the authors claimed to follow other scholars’ idea (ie, “Caplan, Kalinowsky, Rondepierre”, but also “Barrera, Treves...and Kennedy...and Delay”, p. 243) of “raising the threshold of cerebral excitability with massive [electric] shocks such as those caused by ECT” (p. 243). However, patient 13 showed “scarce effects,” patient 14 did not show seizures for 2 months, and patient 15 only for 2 weeks.

Some of the patients received additional treatments. As mentioned, catatonic Marisa S. (patient 9) was treated with ICT. Natalina L. (patient 13), affected by petit mal, had been previously treated with different drugs (ie, “barbiturates, bromics, nightshades, sympathomimetics”) without success, and in the month before ECT, she was given Luminal. “Since we did not have the possibility of using ‘Tridione’ [AN: Trimethadone, an antiepileptic compound, introduced in the USA in 1946], we thought to use ECT” (p. 243), the authors said. Patient 14 (Benito S., 10) was given Luminal as well and underwent sleep therapy with Pentothal.

Two children forcefully rebelled against the electroshock treatment. One was patient 1, the 6-year-old with dementia praecox hospitalized on December 2, 1944. After the first ECT, the child opposed every other application “with all his strength, shouting with a mimic expression of terror” (p. 233–234). He received in total 25 administrations. The other was Caterina P. (patient 5), who was admitted on May 31, 1946, and then withdrawn from the treatment by her family after being given 5 applications. As for patient 4, who entered the hospital in January 8, 1947, he was taken away by his family.

Four Further Observations 1947–1949

In the second 1950 article, the authors briefly commented on the previous cases and discussed further observations, presumably

occurring from 1947 to 1949, of 4 other young boys all aged from 12 to 13 years and diagnosed with prepubertal schizophrenia.

As for the past cases, 4 of them (patients 9, 10, 11, and 12) were said to be in good health, whereas patients 1, 2, 3, 4, 5, and 6 showed the same psychiatric conditions. Patient 8, a 17-year-old boy who had gotten an uncertain diagnosis of malaria psychosis, was said to be healthy and conducting a normal life. This was interpreted as a validation of the authors' hypothesis concerning the infectious origin of his condition.

The new boys showed paranoid and delusional symptoms, as well as aggression, irritability, and conduct disorder. Case 1, Quinto B. (12), escaped from boarding school because "the priests stopped his heart, gave him an evil eye"¹⁶ (p. 5), then he attacked his mother at home as "she was ruining him" and tried to stab his brother who "was making him seem older." Case 2, named Armando Z. (12), listless at school and isolated from classmates, wished to escape from home by doing "the stork and flying" (p. 6). He did not eat much because "the devil wanted to take him away" (p. 6). Emilio, case 3, said that "his father was the cause of his ills" and that "the neighbors looked at him with malevolence" (p. 6). Case 4, Giovanni S., reported delusions and hallucinations, the most bizarre of which was that he claimed to see Mussolini's wife with a tail. Case 4 was withdrawn from the family. These patients received from 5 to 16 ECT applications.

DISCUSSION

The story of Accornero and Anderson's work in Italy in the 1940s adds another piece to the puzzle of the early pediatric ECT experiences. This pioneering research, which started in September 1940, was interrupted from 1941 to 1944 as Accornero was serving in the army during World War II and later continued after Accornero's return to Rome from 1944 to 1947 and from 1947 to 1949. Supposedly, because these research reports were published in Italian and belatedly after Lauretta Bender's massive contribution, their historical significance was largely ignored. The first ECT application on patient 2 was conducted in September 1940, more or less at the same time of the early British research. Considering that for the Bristol study the dates were not precisely indicated, it is hard to determine which among the British and the Italian experience might have come first. Because these studies were performed by Cerletti's assistants in Rome, and judging from the voltage and time of the electrical applications they reported (120 V, and 1/10 seconds), we may infer that the machines used in the study were Arcioni's alternating current devices, produced from the Bini-Cerletti original apparatus model.^{6,27,32} Cerletti and Bini's (1938) article introducing the apparatus⁴ was referenced by Hemphill and Walter's 1941 work, so we may wonder if Bini-Cerletti's device was the machine used in the United Kingdom as well. As for the French experience, Heuyer et al' 1942 article was referenced by Accornero and Anderson in 1948 and by Cerletti at the conference in Paris in 1950. Mail correspondence between Heuyer, the founder of child psychiatry in France, and Cerletti testifies to a friendship between the two.^{33,34} In 1932, Cerletti had joined the First International Congress of Child Psychiatry Heuyer had organized in Paris, and they continued to exchange mutual visits and collaborators, like the beloved Cerletti's pupil and future leading figure of child neuropsychiatry Giovanni Bollea, who was sent to Paris at Heuyer's Clinic in 1949. In 1942, surprisingly, the French psychiatrist did not administer Cerletti's device to his young patients but reported to have used Siemens concurrent ECT device.³²

As some scholars have noticed, "these early reports have little relevance to the practice of modern ECT mostly because of diagnostic uncertainties and out-of-date ECT techniques."³⁵ Others have criticized the brutality of the early applications on helpless

children at a time in which anesthesia was not routinely practiced. This early ECT research was framed by the trial-and-error approach of clinical psychiatry of the early 20th century, which admittedly may have led to sometimes-questionable practices both from a scientific and ethical standpoint, especially when looking back at them with today's eyes. It would be unfortunate, though, to diminish the historical significance of these experiences in the light of the scientific robustness and ethical standards of contemporary studies.

It is worth mentioning that from the 1948 report, Accornero and Anderson themselves expressed discomfort for the diagnostic ambiguities of their time, to which they explicitly attributed the scarce findings of their study, which was conducted on a very small sample of patients and thus was statistically unreliable. First, they stated that, because of erroneous or dubious diagnoses in child psychiatry, "every treatment, at least among those available until now, is probably more harmful than useful" and "too empirical" (p. 194). Remarkably, they were correct as ECT was a much safer treatment when compared with coeval shock therapies, which were performed by using extremely toxic inoculations (eg, malaria, cardiazol, metrazol, or insulin). Second, in another interesting remark, Accornero and Anderson pointed out that the diagnosis of maniac-depressive psychosis, for which electroshock treatment was already indicated in adults, is rare in children. In the 1948 report, they noticed that the 5 children diagnosed with schizophrenic forms did not respond well to the treatment. Two of them were labeled as cases of *dementia praecocissima*, a nosographic construct introduced by Sante De Sanctis defining hereditary early-onset schizophrenic forms to distinguish them from mental retardation, that at the time was referred to as *phrenastenia* or *oligophrenia*.³⁶ These diagnoses had been found resistant to other convulsive therapies as well. Although stating that the ECT effect was mediocre in child mania and that they had gotten moderate modifications in epileptic forms, the authors insisted that they had obtained "brilliant results" in the 2 catatonic-amentic conditions (patients 9 and 10) and in another patient with amentia (patient 11). The authors referred to catatonia in Wilhelm Weygand's terms.³⁷ These were remarkable preliminary findings, especially if we consider that the first description of the benefits of ECT in catatonic syndromes was attributed to the Austrian clinicians Otto Arnold and H. Stepan no sooner than in 1952.³⁸ In later years, the efficacy of ECT in pediatric catatonic cases was confirmed at very high response rates (80%).³⁵ Interestingly, in the 1950 report, the authors ended up affirming that although differential diagnosis in cases of early dementia was sometimes "more a scientific than a practical interest," therapeutic utility of ECT was shown specifically in "toxic-infectious processes with catatonic pictures" (p. 10). Even with these few fuzzy results, which made them conclude against ECT as an indication for pediatric schizophrenic conditions in general, Accornero and Anderson expressed a favorable verdict about the future use of ECT in pediatric psychiatry.

Besides, focusing on the ethical aspects of their early pediatric ECT studies would be a slippery slope. These aspects are controversial and difficult to discern. Nowadays, pediatric use of ECT is restricted in many countries and jurisdictions. After allegations of abuse exploded in the 1960s–1970s, after some court cases,³⁹ ECT in children has been publicly condemned in Italy, producing stigma. This received severe objections from advocates of ECT therapeutic efficacy also in pediatric psychiatry.⁴⁰ However, these lenses are not applicable to the 1940s, and it would be historically misleading to apply them. Both anesthesia and muscle relaxants are now recommended practice, minimum age being generally 12 years in many countries, and apart from parental consent, consent from the minors themselves—when possible—is required as

well.⁴¹ At the time of the events described above, before the Nuremberg Code's (1947) general acceptance and a couple of decades before the Helsinki Declaration (1964), these precautions were unfortunately not in place. In Italy, admissions to mental asylums for children, as for adults, were compulsory and regulated by Law 36/1904, which, under the name of the then Interior Minister Giovanni Giolitti, provided "dispositions for asylums and alienates." Relatives or tutors could request hospitalization for reasons of safety/security, including "public scandal" (art. 2), and the asylum manager had full authority over the treatment (art. 4). From the beginning of his research, Ugo Cerletti wished to make sure that his patients were consenting to electroshock treatment.⁴² Nevertheless, patients' consent was not legally introduced in Italian asylums until almost 2 decades later, with modifications that came with Law 431/1968, under which "compulsory" treatment could become "voluntary" by the will of the patient, and afterward, it was established by Law 180/1978 (so called "Basaglia"), which supplanted Giolitti's Law in a climate of social tensions against institutional psychiatry. Discussing this matter, however, would be far beyond the purposes of this article.

Albeit being peripheral to today's science on ECT, these reports are not of minor historical importance as they cast light on the steps made by the early generation of ECT researchers toward the refinement of ECT techniques and the subsequent identification of diagnostic indicators for ECT among children.

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