

Ole Ivar Lovaas - His Life, Merits and Legacy¹

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Received: March, 2016 / Revised: June, 2016/ Accepted: August, 2016

Abstract

Ole Ivar Lovaas (1927-2010) is known worldwide for his research within the field of Applied Behavior Analysis, and is probably the most influential researcher within the field of treatment of children with autism. In the first part of this biographically oriented paper, we inform the readers about his family background, childhood, elementary and secondary school years, and his adolescent years during World War II in his first homeland, Norway, based on archival research and interviews. In the second part, we describe his life, academic studies, research and successes in his second home country, the United States. Finally, we briefly recount the impact Lovaas has had on the field of Applied Behavior Analysis and the treatment of and services for children with autism spectrum disorders in Norway and in the North America.

Keywords: Ole Ivar Lovaas, Autism, Applied behavior analysis

Introduction

Ole Ivar Lovaas (1927–2010) was one of the pioneers in the field of treatment of children with autism spectrum disorders. He is among the most cited researchers within this field because of his well-documented research, particularly the results of the early and intensive behavioral intervention program he designed as a part of the UCLA Young Autism Project. During his academic career, especially when he taught, his students

¹ We want to express our deep gratitude to Nina Watthen Lovaas for providing information about some parts of Løvaas' life, to Ingrid Aubell and Nina Warne of Drammen High School for giving us access to the Buskerud County's school archive, to late Kate Agnes Eastwood Hagen and late Ingar Dahl for the interviews, to Lars Ingar Dahl for helping us to get in touch with his father, to nephew Ivar Løvaas for his kind encouragements and information, to psychologist Arne Brekstad for informing us about Løvaas' visit at the University of Oslo and to Judy Riha, Alumni Records Coordinator, Luther College, for her help. We also thank Brittany Disanti for helpful comments. We also want to mention here that the letter Ø or (minuscule: ø) is a vowel and a letter used in the Norwegian and Danish language. In other languages that do not have the letter as part of the alphabet, ø is frequently replaced with the two-letter combination "oe", or as in Løvaas' case, with the letter "o" (Lovaas).

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learned that he had an immigrant background and that he was originally from Norway. In this paper, we highlight his family background, childhood, elementary and secondary school years, his adolescent years during the World War II and his subsequent military service. In the second part we highlight his immigration to the United States, academic studies, researches and merits in his second home country. At the end of our paper we briefly recount the impact Lovaas has had on field of Applied Behavior Analysis and on the treatment of and services for children with autism spectrum disorders in Norway and in the North America.

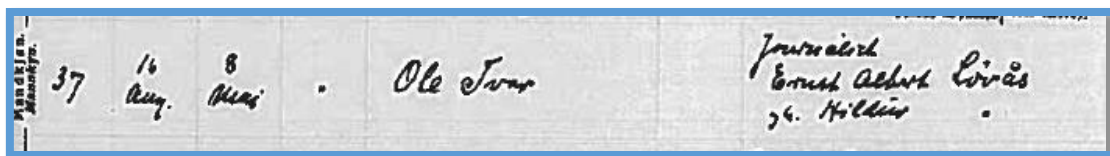
PART I: Ole Ivar Lovaas' first 20 years in Norway

Ole Ivar Lovaas' childhood

Lovaas was born on May 8, 1927. His parents were Hildur and Ernst Albert Løvaas. He was baptized on Sunday August 21, 1927 in Tranby Church in Lier, and his aunt and his father were among the sponsors (Ministerialbook and birth register of the county). Lovaas was the second of three children in the family; he had an older sister, Nora, and a younger brother, Hans Erik.

From birth until he finished high school he lived in the agricultural municipality of Lier, located about 20 miles west of the capital city of Oslo, Norway. The largest neighboring town is Drammen. Lier is situated in the county of Buskerud, which is one of the 19 counties in Norway.

His mother, Hildur, *née* Berg, was born in 1894 in Stokke, in the county of Vestfold. She came from a farming family. His father, Ernst Albert Løvaas was born in 1886 in Moss, Østfold County. Lovaas' grandfather was a watchmaker. According to the 1900 census, his father Ernst Albert Løvaas was also a watchmaker as a 14 year old boy. The 1910 census, however, lists Ernst Albert Løvaas as a worker at a cellulose fabric, and he later became a journalist.



Nr	Date of reg.	Date of birth	Name	Complete Name of Parents and occupation
37	16. August	8. May	Ole Ivar	Journalist Ernst Albert Løvås Hildur -"-

Figure 1. Facsimile from Ole Ivar Lovaas' birth register

As a young man, Ole Ivar's father, Ernst Albert Løvaas, was involved in the labor movement and the Norwegian Labour Party (DNA), and was often engaged as a speaker. His name was mentioned in connection with a) the rally in the Municipality of Rygge near his birthplace, Moss, in 1913 (Kristiansen & Skartlien, 2010), b) a meeting in the Eastern Telemark circle of the DNA in Seljord in 1914, and c) several meetings at the Vestfold branch of the DNA in 1921. He was also for a short period party secretary in Vestfold Labour (Hjertholm, 1956). As a journalist, Ernst Albert Løvaas was mentioned in 1919 as an editor for the local newspaper, the *Bratsberg Democrat*, in Rjukan, and in the period from 1921 to May 1922 for the local newspaper, the *People's Daily*, in Sandefjord. Rjukan and Sandefjord are municipalities in Telemark and Vestfold, two neighboring counties of

Buskerud County, where Lovaas' birth place Lier is located. Ernst Albert Løvaas and Hildür Berg got married in 1922.

Ole Ivar Lovaas – Elementary school years

In the school year of 1934–1935, at the age of seven, Lovaas began at Hegg Elementary School in Lier. At that time, elementary education lasted seven years. Each school year had two semesters: fall semester from August to the Christmas holiday, and spring semester from the end of Christmas holiday to the end of June.



Figure 2. Hegg Elementary School, Lier, where Ole Ivar Lovaas was a student

At that time, there were 14 elementary schools in Lier. In accordance with the Educational Act of 1889, the schools had their own local curriculum and local school councils. The elementary schools did not only provide high standards of general education for the children, they were also available to the members of the community for meetings, parties, and the celebration of Holidays. Many of the graduates from the elementary school, as 13–14 year olds, did not continue with the subsequent three-year middle school (junior high school). Many parents could not afford having their children at school because they needed their labor at home or they needed their children to take some other employment to support the family, even though the schools were free of charge. Another reason for not entering middle school was that the students did not pass the entrance exam (Rønneksen, 1995).

Nazi occupation of Norway

At the time when the German troops occupied Norway on April 9, 1940, Lovaas was in the 6th grade, almost 13 years old. That afternoon, the people in Lier noticed fires and fighting between the British and German warplanes in the air above Lier and over the nearby fjord. This fighting ended with the explosion of one of the warplanes, and nine young men were killed in the air over Lier. The war in Norway had begun to take lives (Jacobsen, 2004).

This was a fateful day for everyone, both adults and children: a day that no one would forget. This was also true also for the children at Hegg Elementary School. Lovaas, for example, never forgot that day. In an interview 34 years later, Lovaas formulated his memories in this way:

“I remember going to school that morning and the teachers were standing there, crying, and they told us to go home. That afternoon, the green-colored men in their funny helmets crawled all over my valley. They were like aphids in a Garden of Eden” (Chance, 1974, p. 78).

By invading Norway, the German forces joined their ideological friends in Norway: a political party known as the *Nasjonal Samling* (NS). It was a small fascist party founded in

1933 by former minister of defense Vidkun Quisling and a group of supporters. With the help of the Nazis, the NS took over all the government offices. The Norwegian King Haakon VII, Prince Olav (later King Olav V) and the Government of Norway decided to leave the country. They went to England, and with the help of British authorities, they established an exile Norwegian Government there.

Rønneksen (1995) writes that one of the first things the new nazi-oriented NS Government did in the Department of Education was to send circulars and orders to the local school administrations. The school administration in Lier reluctantly followed the orders that were given. Among the new obligations for local administrations were a) mandatory announcement of teacher vacancies in the NS newspaper *Freedom People*, b) posting of NS propaganda posters and a picture of Vidkun Quisling on the school walls and c) mandatory purchase of the book *Family and Individual* by every school as a handbook for the teachers in teaching the "racial doctrine" (a theory of race).

Vidkun Quisling and his nazi-oriented NS government had a clear goal: ideological control of the schools and education. On November 20, 1940, Quisling's NS regime sent a circular to all the teachers in the country. The teachers were asked to sign a declaration that they would positively and actively support the creation of an understanding among students of the new life and community vision of Nazism. The overwhelming majority of the teachers started planning a resistance movement, and the NS regime decided not to insist on this matter.

A year after the Nazi German occupation, in the school year 1940–1941, Lovaas graduated from Hegg Elementary School at the age of 14. Despite the economic and social difficulties in the country, he continued on to middle school (junior high school). There was no academically oriented junior high schools in Lier. The closest one was in the city of Drammen.

Ole Ivar Lovaas at Drammen Realskole (Junior High)

Lovaas passed the entrance exam and entered the three-year Drammen Realskole in the school year 1941–1942. The school was a public school and prepared students for high school. At that time, the school was run under very difficult circumstances. The German forces had seized the school building already in 1940.



Figure 3. *Drammen realskole – now a shopping center*

Due to enthusiasm among teachers and students, the school continued in a different borrowed premise in the city. Some classes were taught in the morning and the rest in the afternoon (Pettersen & Evanger, 2012). However, things worsened in spring 1942 after Quisling's NS regime proclaimed a law aimed at making membership in a Nazi-oriented teacher's association (Norwegian Teacher Liaison) mandatory. Indoctrination of the teachers was the main aim. At the same time, Quisling's regime passed a law for national

youth service and made membership in his NS party compulsory for all young people between the ages of 10 and 18. This resulted in illegally organized collective anti-actions by the teachers. The teachers sent identical letters of resignation from the teachers union to the Ministry of Education (Skodvin, 1991). About 85% of the country's 14,000 teachers signed this letter. The Quisling regime responded to this action by arresting 1,200 teachers.

In Drammen where Lovaas went to school, 35 male teachers were arrested by the NS police (Gløersen, 1966). The majority of the arrested teachers were deported to Finnmark, the northernmost county in Norway, as forced labor. The other teachers decided to support their colleagues and other arrested people economically, using illegally collected money. During this period, the remaining teachers—mostly females—kept classes running as well as they could, until the Quisling regime gave up and let the deported teachers return to their homes and jobs (Pettersen & Evanger, 2012).

Ole Ivar Lovaas enters Drammen Latin School (High School). Fall 1944 to Spring 1947

Lovaas graduated from Drammen Realskole during the spring of 1944 at the age of 17. In the Fall the same year, he started at Drammen Latin School. As in the previous school, the teaching was disrupted by the Nazi German forces because they wanted to use the school building for their own purposes. The Germans' saw the school as "die idealische Barracks" because of its central location and its wide corridors (Gløersen, 1966, p. 180).



Figure 4. *Drammen Latin School*

Hence, the teaching had to move to other buildings in Drammen. It was a demanding period, but on May 8th, 1945, five years after the occupation, the Germans capitulated and the war in Norway ended. We can get some idea about the feelings of the community as we read how Jacobsen (2004) describes the events of that day:

"Precisely at 3 o'clock on Tuesday May 8th, 1945, the heavy sound of church bells from all the churches in the village started, to signify the freedom from the Nazi occupation. All priests in Norway had received a telegram from Bishop Berggrav to ring their church bells in all Norwegian churches to mark the end of the war. For one hour, Norway was filled with the blessed sound of church bells signifying that five horrible years was over. Earlier in the day, King Haakon, Crown Prince Olav and Prime Minister Mr. Johan Nygaardsvold had spoken to the Norwegian people from London" (p. 188).

These events, particularly the voices of the Royal highnesses and the voice of the prime minister of the exiled Norwegian Government in London, left a great impression on the Norwegian people.

Jacobsen (2004) also cites a man from Lier who told his memories and expressed feelings from the day of freedom:

The radio was brought out of hiding. The next day it was announced that the Norwegian Broadcasting could again begin their broadcasts. At 6 PM family sat by the radio and listened to the Chief Justice Paal's speech. Before the war we had two radio sets. One was delivered to the Germans. The other, we retained ourselves illegally (p.188).

Rønniksen (1995) describes what the people of Lier did on that day:

Anyone who witnessed the liberation day in 1945 will never forget it. The Germans withdrew gradually and returned to central camps outside Lier and home forces moved in, took over guarding and performing policing missions. Throughout Lier, schools celebrated liberation with festive events (p. 91).

Ole Ivar Lovaas – a social, humorous, popular and smart high school student

We conducted archival research for this article at the National Archive of Norway, the County Archive of Drammen, Buskerud, and at the archive of Drammen High School (the successor of Drammen Latin School,). In Figure 5, one can see the grades that Lovaas obtained in different core subjects.

Løp nr.	Namn	Måttan i skola	Skola	Skola	Tryk	Matr.	Englisk	Historia	Löpare nr.	Namn	Måttan i skola	Skola	Skola	Tryk	Matr.	Englisk	Historia
8722	Berg, Olga Elisabeth	t	t	t	sv	ng			8787	Lindegren, Mona Maria	t	t	ng	ng	t		
8723	Berg, Björn Edmond	t	t	t	m	ml			8788	Lovaas, Ole Ivar	t	t	t	ng	t		
8724	Björns, Björg	t	t	ng	ng	t			8789	Skarvén, Axel Sten	t	m	m	m	m		
8725	Björnsd., Axel	t	t	m	t	t			8790	Skov, Maria Louise	t	m	ng	t	t		
8726	Dahl, Ingar	t	t	t	ng	ng			8791	Stenlund, Ingrid	t	t	ng	t	ng		
8727	Eastwood, Kate Agnes	m	m	t	m	m			8792	Pöines, Inger & Lin	t	m	m	t	t		

Figure 5. Class records and marks

At the same time we found and interviewed two of Lovaas' classmates: Ingar Dahl (M) and Kate Agnes Eastwood (F). Their names are marked in Figure 4. Ingar Dahl remembered Lovaas very well from their student time at Drammen Latin School. Dahl had only positive memories to tell us about his acquaintance with Lovaas and their life at Drammen Latin School. Like Ingar Dahl, Kate Agnes Eastwood had only good memories from their teenage years in Drammen. As a high school student, Lovaas was "social, humorous, popular and smart at school," his classmates Ingar Dahl and Kate Agnes Eastwood remembered. Kate Agnes Eastwood told us that:

Lovaas was very interested in music, played violin...I met him [for the] first time at the Drammen Latin School. He was a lively boy... He used to visit me at our house frequently...

Lovaas' nephew, Ivar Løvaas, told us that his uncle used to visit his family in Lier and enjoyed being back in his first homeland.

Ole Ivar Lovaas – his performance at the Drammen Latin School

In addition to our interviews, we did some archival research about his student life at Drammen Latin School. We found some of the records about the school subjects he studied and the marks he got in different classes. Lovaas studied in what then was called the New Language program. This means that he chose a high school program with an emphasize on English as a foreign language

Nr.	Navn	Født hvor og når?	Foreldrenes navn, stilling og bosted	2. klasses prøver når og hvor?
17	Lovaas, Ole Ivar	Lier 8. mai 1927	Før. journalist Knut Skjeltne og h. Hildur f. Berg	1943 Drammens Realskole

Figure 6. Personal records of Lovaas at high school graduation register 1947

In figure 6, one can see his birthdate, parents’ names, his father’s profession (journalist), and his junior high school background from Drammen Realskole (1943), before enrolling in Drammen Latin School. In the following facsimile, we can see his graduation marks from the different subjects.

Skriftlig prøve						Muntlig prøve										Høvedskarakter	Poengsum Vektosum		
No. H.	No. T.	Ty.	Eng.	Ma.	Kr. A.	No. 2	Ty.	Eng.	Fr.	Hi. I	Hi. II	G.	Kj. P.	El.	Ma.	Kr. A.			
2	1	T	Ng	M	M	M	T	T	M	M	M	M	M	M	M	M	M	M	60

<p>Written exams Norwegian (2 exams) TT German T, English T and Maths Ng</p>	<p>Oral exams Christianity M, Norwegian M, German M English T, French T, History (2 exams) MM Geography M, Chemistry M, Biology M Math M and P.E. M</p>	<p>Graduation mark: M Sum of the marks=60</p>
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Figure 7. His graduation marks in different subjects

As one can see in Figure 7, Lovaas obtained good results and graduated with an average of VERY GOOD (M=Meget GODT) from Drammen Latin School in 1947.

Ole Ivar Lovaas life in the period 1947–1950

In 1948, after finishing Drammen Latin School, Lovaas joined the Norwegian Air force. He served for 18 months. His initial training was as a medic on Tromøy, an island outside the city of Arendal, in the south of Norway. In the evenings, after a sunny day, Lovaas often took his violin to the top of a small mountain on the island, and played the violin as the sun set into the sea.

After finishing his training as a medic, he spent the rest of his military duty on two different airports in the area of the capital city of Oslo: Fornebu Airport (closed down in 1998), and Gardermoen Airport (the one which was developed and is currently the main Norwegian international airport). Some three decades later, after he had met his second wife Nina Watthen Lovaas, they realized that Lovaas had walked past Nina's house several times while serving at Gardermoen. They both had a good laugh about this.

While in the military on Tromøy, Lovaas met Arne Brekke, and the friendship they developed turned out to shape Lovaas' future. As it turned out, Arne Brekke had an uncle in Decorah, Iowa, USA who had provided Arne with an application for admission to Luther College, to which Arne Brekke applied and was later admitted. After some discussions, Arne Brekke convinced Lovaas to apply, but Lovaas was afraid that his high school grades were not high enough to be admitted. But Brekke was persistent, and Lovaas eventually applied for a violin scholarship at Luther College.

At the same time, a music teacher from Luther College was visiting Oslo, and Lovaas was asked to audition for her. Lovaas had a pianist girlfriend named Ellen Johansen, who accompanied him. Lovaas later told Nina Watthen Lovaas that he was sure that if Ellen had not accompanied him he would never have won the scholarship. Lovaas also told Nina that when he finally received the answer from Luther College, he brought the envelope to his room and sat for a long time just staring at it. He eventually opened the envelope and covered the letter with a blank sheet of paper so only the letterhead was visible. His heart was beating as he pulled the blank sheet down to where he could read: Dear Ole Ivar. He then stopped and thought that he must have been admitted, for otherwise, they would not have started the letter with "Dear Ole Ivar".

PART II: Ole Ivar Lovaas' life in US and his academic life and achievements

Lovaas at Luther College, Decorah, Iowa, USA

In 1950, after finishing his military service, Lovaas moved to the United States. He had been admitted to Luther College, on a violin scholarship. The information we got from Judy Riha, Alumni Records Coordinator at Luther College (11/09/2012), shows that his Medic Training Courses from the Norwegian Air Force helped him to receive the acceptance and scholarship.

He traveled to the United States with the passenger ship *Oslofjord*. When he arrived at Ellis Island, New York, the immigration officers suggested that he should change his family name because it contained the Norwegian letter "ø". The immigration officer lent him a book of names to help him find a name that he liked, but Lovaas insisted on keeping his name thinking that his father would not like that he changed his name. The immigration officer also told Lovaas that he had never heard of Luther College, and Lovaas was trembling as he showed inspectors on Ellis Island the paperwork from the school. After this somewhat rough meeting with the US immigration, Lovaas brought his violin, his suitcase and his tennis racket, and took the train from New York to Decorah where he was met by Arne Brekke. It must have been a relief to be reunited with his friend after completing the long, uncertain and sometimes difficult journey.

Lovaas was a successful student at Luther College. As the Alumni Records Coordinator, Judy Riha, writes to us in her e-mail (11/09/2012), Lovaas "...graduated with a bachelor's degree after only one year. He received his BA in sociology from Luther College after transferring in and attending from 1950 to 1951."

In 1974, Lovaas told Paul Chance, a reporter from *Psychology Today*, that to be able to get his BA in one year, he slept only three to four hours per night. After graduating in 1951,

Lovaas had planned a trip to Norway to visit his family, but when the time came he had no money to return home. Rather he searched for what to do next:

"I was sitting down in the dorm one night looking at a newspaper and I saw a picture of Seattle. It looked pretty because of all the mountains around it. The next day I borrowed \$50.00 from the school's loan office and took a Greyhound to Seattle. I arrived there about three in the afternoon and I had about \$1.50 left. I bought a hamburger and a milk shake and that took my capital down to about 60 cents. Then I went to a street near the university and I just knocked on doors" (Chance, 1974, p.78).

After a few tries, Lovaas found a family willing to exchange room and board for household chores.

Ole Ivar Lovaas as a graduate student at the University of Washington, 1951–1958

Lovaas started training as a clinical psychologist at the Graduate School, University of Washington in 1951. To support himself, he held several jobs, such as a receptionist job at a hotel in Seattle and subsequently a job at the Pinel Foundation, where he received most of his clinical training. While working at the Pinel foundation, Lovaas met Beryl Scoles, a psychiatric nurse. They married in 1955 and had four children. The Pinel Foundation was based on the Menninger Foundation in Topeka, Kansas, which was considered to be a premiere institution based on Freudian psychoanalysis. During his time at the Pinel Foundation, there were a number of suicides amongst patients in a short period of time, and for that and other reasons, the hospital was later closed (Lovaas, 2003). After an enthusiastic start, Lovaas lost his interest in psychology's preoccupation with theoretical issues, and over the years his tolerance for such academic calisthenics diminished still further.

The researcher should be controlled by his data, not by what his colleagues tell him or what a theory tells him. I am suspicious of all theoretical notions; what I am attached to is a procedure for finding out what works. I went through the theoretical games. I was trained analytically and I saw all of life through the eyes of a psychoanalyst. I had everybody analyzed, even my own parents and my sister and brother, even my own dentist (Chance, 1974, p. 80).

In addition to psychoanalytic training, Lovaas was also trained in Hullian experimental psychology. Eysenck (1952) had just published on the ineffectiveness of psychotherapy and argued that clinicians should be more concerned with data. At that time there was a strong split between experimental psychologists and clinical psychologists. They were, "like enemies in two opposing camps" (Lovaas, 2003, p. 225), and Lovaas had initially one foot in each camp.

After finishing his Master's Degree in 1954, Lovaas applied for a position in the Psychology Department at the University of Oslo, Norway. He was called for an interview, but was subsequently not offered the job. Instead, Lovaas stayed on to do his Ph.D. at the University of Washington, finishing in 1958.

Ole Ivar Lovaas an assistant Professor at Child Development Institute, University of Washington, 1958–1961

After receiving his Ph.D., Lovaas stayed at the University of Washington as an acting assistant professor for another three years. During those three years, Lovaas taught and conducted research at the Child Development Institute, under Dr. Sid Bijou. Bijou, who previously had worked with Dr. B. F. Skinner for two years at Indiana University, applied Skinner's natural science approach to child development and intellectual disabilities. At that time, Bijou, colleagues, and students conducted numerous landmark studies applying the principle of operant conditioning (which previously had been studied mostly with rats

and pigeons) to young children and individuals with intellectual disabilities. They pioneered numerous methods for managing problem behavior, teaching academic skills to students with intellectual disabilities, training parents to work as therapists with their own children, and conducting research in natural settings (Green, 2001). This work was seminal in the subsequent establishment of the discipline of Applied Behavior Analysis (Baer, Wolf, & Risley, 1968).

Another member of the Child Institute Laboratory was Dr. Don Baer. Baer had come from The University of Chicago where he had been a student of Jacob Gewirtz, a pioneer of behavior analysis and child development. Lovaas described Don Baer as one of his most significant mentors. Their offices were located across the hall from each other, and “it would be impossible for anyone to be that close to Don without learning something significant from him” (Lovaas, 2003, p. 227).

Initially, Lovaas attempted to use some of his psychodynamic training while working at the Child Development Institute, but in the behavioral lab this was not very popular, and Sid Bijou and Don Baer consistently ignored his attempts. As a result, his attempts to use psychoanalysis gradually tapered off. This extinction curve was also strongly influenced by what had become Lovaas’ own view on psychology—namely that psychology was a natural science to be guided by experimental data. The following anecdote from the Child Development Laboratory may illustrate this. During one of the experiments, Lovaas sat behind the one-way screen and a child, who had been instructed to sit and to talk to a box that dispensed toy trinkets as reinforcers, was sitting in the adjacent room:

“At some point he said, “What shall I say?” As per protocol, the child was reinforced for making that utterance. To my surprise, he then got out of his chair and walked over to the attending adult to ask this question of her. Halfway through his walk across the room, I was about to tell my assistant to, “Get the kid back in his chair,” when it dawned on me that the child was leading me to an important discovery....He had not been instructed to get up; rather, he had been told to sit. In short, he probably would not have walked across the room had it not been for his question “What shall I say?” (Lovaas, 2003, p. 226).

It was these observations that helped Lovaas to make sense out of his discussions some five years earlier with his graduate advisor, Esper, regarding the theories proposed by Benjamin Whorf and Dollard and Miller. Whorf had argued that language may influence the way a person perceives, thinks, and behaves (nonverbally). Similarly, Dollard and Miller had proposed that in order for a treatment to be effective, the patient must acquire a “new language” (Lovaas, 1993). Lovaas’ interest in the importance of language stemmed from his clinical practice. “Like most clinicians, I administered ‘talking therapies.’ My clients would ask me, ‘Do you mean that by sitting here talking to you, I will get better?’ I answered ‘yes,’ placing my faith on the hypotheses of Whorf and Dollard and Miller” (Lovaas, 1993, p. 619).

Lovaas was also strongly influenced by the research of Ted Ayllon and Israel Goldiamond conducted in the 1950s. They studied clinically significant problems such as schizophrenia and speech difficulties in real-life settings.

“They were clinicians and researchers ‘in one,’ presenting as good examples of reinforcement and stimulus control as anyone could want. Psychoanalytic theories of stuttering and Harry Stack Sullivan’s theory of schizophrenia were both more entertaining to me. Sadly, they were both failing to generate effective treatments. By the early 1960s, a number of studies had been published that represented the first steps in gaining experimental control over behavior in real-life environments, perhaps the most important achievements in the history of applied behavior analysis. It was a development that helped the early behaviorists, and later B. F. Skinner, to realize their

hopes of applying experimental designs to solving social problems” (Lovaas, 1993, p. 619).

Because of his interest in language, Lovaas conducted a series of studies on verbal control over nonverbal behavior (Lovaas, 1961ab; 1964ab). As a result of this research, Lovaas came to the conclusion that there was some evidence for the notion that the reinforcement of aggressive language in children could result in an increase in aggressive (nonverbal) behavior. He also concluded that this control was short lived, and the amount of verbal control over nonverbal behavior varied considerably across children. This variability, Lovaas realized, depended on the individual child’s reinforcement history. This research also helped to lead Lovaas away from highly contrived laboratory settings to conducting research in real-world environments (Lovaas, 1993).

Ole Ivar Lovaas moves to the University of California, Los Angeles (UCLA) in 1961

In 1961, Lovaas left the University of Washington after being offered a position at the UCLA Psychology Department as an assistant professor. He spent the remainder of his career at UCLA. At UCLA, Lovaas wanted to pursue his interest in language, specifically by studying children with language delays. His aim was to build language in these children and then to observe how the acquisition of language would affect the development other behaviors such as social, emotional, and intellectual skills. “My attempts to isolate the pivotal role of language in controlling other behaviors still had not extinguished” (Lovaas 1993, p. 620). In searching for a child who was old enough to talk but had failed to do so, Lovaas and his students were referred to a clinic for children with autism. “As if in a dream, I had found the ideal persons to study” (Lovaas, 1993, p. 620).

During the next year, Lovaas and his students devoted six hours per day, five days a week, to Beth, who had exhibited self-injurious behaviors 10 of her 13 years. Previously, she had been institutionalized and received psychodynamic treatment for more than one year. Because Lovaas and his students carefully measured Beth’s self-injurious behavior, they discovered that the treatment did in fact accelerate such behavior. The treatment of choice at that time was derived from psychodynamic theory and consisted of delivering sympathetic comments and demonstrations of affection when Beth engaged in self-injurious behaviors. Moreover, they found that withholding the treatment when Beth engaged in self-injury whilst building alternate behavior lowered the rate.

Beginning in 1965, based on this early work, Lovaas, his colleagues, and students published a number of groundbreaking studies. One pioneering investigation identified antecedents and consequences that maintained self-injurious behavior, a forerunner of what is now called *experimental functional analysis* (Lovaas, Freitag, Gold, & Kassorla, 1965a). Another article presented a system for coding behaviors during a free play setting (Lovaas, Freitag, Gold, & Kassorla, 1965b). The following years, they published the first demonstration of an effective way to teach nonverbal children to speak (Lovaas, Berberich, Perloff, & Schaeffer, 1966), a study on establishing social (secondary) reinforcers in children with autism (Lovaas, Freitag, Kinder, Rubenstein, Schaefer, & Simmons, 1966), a study teaching children with autism to learn by imitation (Lovaas, Freitag, Nelson, & Whalen, 1967), and several studies on interventions to reduce life-threatening self-injury and aggression (e.g., Lovaas & Simmons, 1969).

In 1969, Lovaas also produced one of the first films on behavior analysis to show interventions for teaching language to children with autism. This film, along with a 1988 film on the UCLA Young Autism Project, introduced generations of undergraduates to Applied Behavior Analysis (ABA).

In 1971, together with Dr. Robert Koegel and Dr. Laura Schreibman, they discovered that children with autism may show a specific learning style that could hinder acquisition of

adaptive skills. They called this stimulus overselectivity (Lovaas, Schreibman, Koegel, & Rehm, 1971), which is demonstrated when participants respond to only one detail of a multifaceted antecedent stimulus, such as when responding only to a person's shoes when learning the differences between a boy and a girl (Lovaas, Koegel, & Schreibman, 1979). They published several additional studies on this topic during the 1970s (c.f., Lovaas & Newsom, 1976).

Lovaas and his colleagues also conducted a number experimental studies to understand and treat stereotyped behavior, as this type of behavior seemed to hinder attention to and motivation for learning language and other adaptive skills (Lovaas, Litronick, & Mann, 1971; Lovaas, Newsom, & Hickman, 1987). Altogether, these studies came to strongly influence the field of applied behavior analysis and to transform services for individuals with autism.

Ole Ivar Lovaas' thoughts about and use of aversive interventions

Although Lovaas emphasized the importance of using positive reinforcement to teach children with autism adaptive language and social skills, he also investigated the effects of using contingent aversives in an attempt to help children to get rid of serious disabling behaviors. This included low doses of electric shock for life-threatening self-injury or aggression displayed by institutionalized children with autism in the 1960s, and slaps on the thigh for less urgent, but still devastating problem behaviors in the 1970s and 1980s. The used of contingent electric shock produced a rapid reduction of even the most horrifying behaviors such as children punching themselves hard in the face thousands of times every hour, chewing off their fingertips, smashing their heads against the sharpest object available, or poking their eyes. It was demonstrated that effective interventions could be designed to relieve the highly disabling and often life threatening behavior, and this was crucial in showing that individuals with autism did not need to be confined to a hospital but could live in their communities.

Lovaas told Chance (1974):

"What typically happens is this—we shock the child once and he stops for about 30 seconds and then he tries it again. It is as though he says, "I have to replicate this to be sure." Like a scientist. He tries it once more and we punish again and that is pretty much it. So we can cure self-destructive behavior — even long-standing, self-destructive behavior — in a matter of minutes. We know the shocks are painful; we have tried them on ourselves and we know that they hurt. But it is stressful for the person who does the shocking too. You may have used shock successfully with a hundred kids, but you are still apprehensive about it; you always think that maybe this kid will be the exception; maybe you will hurt him and it won't do any good. But then when you shock him and you see the self-destructive behavior stop, it is tremendously rewarding....I remember a kid named John who had been in restraints for years. We took him out of restraints at 9:00 a.m. He hit himself in the face and we shocked him. He hit himself a few more times and each time we shocked him; that was the end of his self-injury. Then he just sat in a corner until about 9:30, when he got up and looked out the door into the hallway. Then he darted back to his corner. About 10:00 he walked over to the door again and then returned to his corner. About 10:15 he moved around the room again, but this time he didn't run back to his corner. By 10:30 he actually stepped out into the hallway and by 11:00 he moved about the room freely. Then he discovered several nice things. He had been in restraints for so long he had forgotten how good it feels to scratch yourself. So he spent about half an hour scratching himself—his stomach, his butt, his head, his back. Sheer luxury. Then he jumped up and down several times to stretch his muscles. About 12:00 we decided to give him a bath. You can't give the severely self-destructive child a bath because he will hit his head on the bath tub and when the blood hits the water it looks awful. So they just get sponged down in bed. Now that John was no longer self-destructive, he could have a real bath.

He loved it. He lay completely submerged in the water with his eyes open, just loving it. After the bath we gave him food and he fed himself; in restraints he had to be spoon-fed. So you see, after we got rid of the self-destructive behavior, John could start to do things he hadn't done for years. He had a ball. It is because of experiences like that that I can't wait to get at self-destructive kids. [...] No one punishes who isn't prepared to devote a major part of his life to that child. Nobody punishes a child who doesn't also love that child. As soon as you suppress self-mutilation you start building appropriate behaviors. You reward the child for doing other things instead of hurting himself" (p. 79-80).

As Bernard Rimland (1978) wrote, "Like all behavior modification programs, his was 98% positive reinforcement, with only a trace of aversive control" (p. 100). Chance (1974) described Lovaas as:

"... doing something about the suffering he sees in children. It would be easy to believe that he shocks them because he enjoys it, or that he gets pleasure out of inflicting pain. Nothing could be further from the truth. He uses punishment with considerable reluctance, because he genuinely loves children. He shocks them because the alternative is to tie them down to a bed and let them vegetate. And that, he is convinced, would be truly sadistic" (p.84).

It is important to remember this research was conducted in a time where individuals with autism were suffering because of poor services and treatment, and that all procedures were approved by the UCLA Human Subjects Committee, and approved and funded by the National Institute of Mental Health. By the late 1980's, Lovaas had decided that the use of aversives had become moot because non-aversive interventions had become so sophisticated and successful that aversives were no longer necessary.

Ole Ivar Lovaas and Early and Intensive Behavioral Intervention (EIBI)

In 1973, Lovaas and his colleagues published one of the first long-term follow-ups of ABA intervention (Lovaas, Koegel, Simmons, & Long, 1973). In that study, Lovaas found that most of the participants had lost their gains in language, social interaction, and play made during the behavioral treatment when they went back, after treatment, to the hospital settings where they and most other children with autism lived at the time. Based on this finding, he coined what were to become the most central elements of what is now known as EIBI, such as starting intervention during the children's preschool years instead of later in childhood or adolescence, involving parents in the intervention, and implementing the intervention in the family home rather than an institutional setting. Indeed, Lovaas was the first researcher to suggest that for at least some children, autism is treatable.

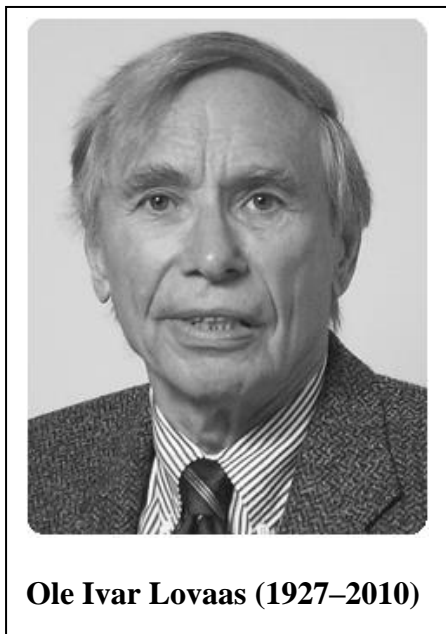
This research also prompted Lovaas to advocate for moving individuals with autism from large institutions into small, community based group homes. Later, Lovaas and colleagues took on a research project to support this movement by instructing group home providers to implement ABA interventions (Smith, Parker, Taubman, & Lovaas, 1992). Also, as many preschool-aged children in his subsequent research acquired enough skills to successfully enter regular classes in public schools, he also became a proponent of inclusion in these classes.

By 1973, when the Lovaas et al. (1973) paper was published, Lovaas had already stopped working in hospitals and started his home-based early intervention clinic, the UCLA Young Autism Project. The results of the 1973 study reviled, in contrast to what Lovaas had believed, that the children did not become more social after learning language. Nor did learning language change emotional behaviors and intellectual skills. This finding led Lovaas to abandon the hypothesis that brought him into studying autism in the first place, namely that language is a pivotal behavior. Rather, he began arguing that treatment

needed to target all of the children's excess and deficit behaviors and not only key behaviors, such as language and communication.

In 1987, Lovaas published his groundbreaking outcome study entitled "Behavioral Treatment and Normal Educational and Intellectual Functioning in Young Autistic Children." This report indicated that children with autism who received early intensive behavioral intervention achieved vastly better outcomes than similar children who received little or no behavioral intervention. Lovaas described 9 of the 19 intensively treated children as "normal-functioning" and possibly even recovered. In so doing, he challenged the prevailing belief that, although children with autism might be able to learn isolated skills, they would always be delayed and socially isolated. The study sparked passionate debate. While some hailed it as a breakthrough, others vigorously criticized the methodology and argued that it was an exaggeration to describe the children with the most favorable outcomes as "normal functioning." Lovaas did not claim that he cured the children: "A cure would mean we removed the neurological deviation," he told the *Wisconsin State Journal* in 1994. "We don't do that. What we do is help them obtain a normal life."

In the 1990s, Lovaas conducted a long-term follow-up of children in the 1987 study (McEachin, Smith, & Lovaas, 1993). He also obtained a federal grant to support a replication by other investigators (Smith, Groen, & Wynn, 2000), as well as conducting a replication study evaluating EIBI for children with moderate to severe intellectual disabilities (Smith, Eikeseth, Klevstrand, & Lovaas, 1997). These efforts helped gain widespread acceptance for EIBI (also called "the Lovaas Method"), despite ongoing debate over the quality of research on this intervention and the magnitude of its effects.



Ole Ivar Lovaas (1927–2010)

Lovaas as a university teacher at UCLA

Lovaas taught several graduate and undergraduate classes at UCLA. One of his undergraduate classes was called Psychology 170A: Behavior Modification. This was amongst the most popular classes in the UCLA psychology department. With his booming voice, he entertained his students with stories from Norway, often talking about life during the Second World War. From *Bruinwalk.com*, a website operated by the students and staff of Student Media UCLA, students evaluated the 170A class as follows:

Dr. Lovaas is an incredible person and professor. He is genuine and open. His wisdom hits you, as if you had no other choice but to agree with his words. He has an Einstein-like presence about him with his Norwegian accent and sense of humor. The main lesson you will learn when leaving Dr. Lovaas' ... class is: All humans, whether Autistic, mildly retarded or "normal" differ only in degree and not in kind (Posted 11/18/2001).

Lovaas' interest in the nature-nurture problem can be traced back World War II. In Lovaas' own words: "As a child, I wondered whether such destructive behaviors were genetically or environmentally determined. I hoped for the latter." (Lovaas, 1993, p. 617). To introduce his lesson on human malleability, he often played the song "Dust in the Wind". Lovaas was known to go off track with his stories, as one student writes: "Ivar is an amazing story teller. He gets off track often, and sometimes you'll walk out of your class not knowing what you learned. That's why going to the TA discussions are essential. Get a good one early, and you'll be fine" (Posted 03/09/2001).

As a university teacher, Lovaas also inspired his students to pursue their academic career. One student wrote: "Professor Lovaas inspired me to stay in school. I was at the end of my rope when I took his class but afterwards I was motivated to finish my time at UCLA" (Posted 02/28/2001). Another student wrote: "I was majoring in chemistry, and couldn't see myself in chemistry field ...I took Lovaas' class in order to fulfil my 12 unit requirement...Guess what? Now I changed my major to Psychology ... and I still remember this...We're same in kind but different in degree..." (Posted 03/05/2002).

Of course, not all students agreed with this, and one student wrote:

"This may be one of the few negative reviews posted for Prof. Lovaas, but I'm going to voice my opinion regardless. Granted, he's extremely funny, and keeps the class interesting. But, I don't think he's even in my top favorite professors at UCLA. Okay, so maybe I'm one of a small minority at college who enjoy a professor who spends the majority of the time lecturing and expanding upon textbook readings. Professor Lovaas, in my opinion, spends too much time just goofing around and telling stories. After an hour and a half of lecture, I would end up with maybe, 1/4 of a page of notes. I think I could have opened the textbook and read less than 20 pages of select pages and would have learned the same amount of material he lectured about in class" (Posted 06/04/2002).

When teaching his graduate students about research, Lovaas often emphasized the importance of learning scientific writing, something he claimed he had learned himself the hard way. He often credited Don Baer for his careful editing of his early papers, hence helping him by modelling to learn scientific writing. Even late in his career, after producing a first draft of a paper, Lovaas reported to his students that he still always edited the manuscript at least seven more times until he felt it was ready for submission. He also told a story about the editorial feedback he received on the first paper he submitted for publication. The feedback was written in red ink in the manuscript and when he got it back from the editor, the paper looked more red than black. The feedback was harsh, and the editor asked him to never attempt publishing a paper again. However, Lovaas persevered and ended up writing some of the most influential books and papers in behavior analysis and autism, including three treatment manuals (Lovaas, 1977, 2003; Lovaas et al., 1981), and several of his papers became citation classics.

Ole Ivar Lovaas as Professor Emeritus at UCLA

Lovaas became Professor Emeritus at UCLA in 1994. However, he continued to teach and to publish important work until he was in his late seventies, notably, a long-awaited intervention manual (Lovaas, 2003). He also established the Lovaas Institute for Early Intervention (LIFE), a private organization providing services to children with autism. In 1995, Lovaas was awarded funding from the National Institute of Mental Health (NIMH) to coordinate a more comprehensive replication of the 1987 Lovaas study (Lovaas, 1987). He devoted a lot of time and energy to assist and train young researchers. Replication sites were established in the United States, Europe and Japan. As the replication results were published (e.g., Cohen, et al, 2006; Eikeseth et al. 2002, 2007; Hayward, Eikeseth, Gale, & Morgan, 2009; Sallows & Graupner, 2005), Lovaas was increasingly able to enjoy a true retirement with his wife Nina, his children and his grandchildren.

Awards

Lovaas received many honors for his work, including the Edgar Doll Award from the American Psychological Association (APA). The Doll Award is the APA Division 33 highest recognition of a career marked by outstanding scientific contributions to the field of intellectual and developmental disabilities. From the APA, Lovaas was also awarded the Lifetime Research Achievement Award from Division 53, and a Fellow from Division 7.

From the Association for Behavior Analysis International, Lovaas received an Award for Effective Presentation of Behavior Analysis in the Mass Media. He received an honorary doctorate from the California Senate Award, the Champion of Mental Health Award from *Psychology Today*, and a Guggenheim fellowship.

Lovaas' Impact on the Norwegian Behavioral Community and his Impact on Services for Children with Autism in Norway

Lovaas was often invited to Norway to give lectures. The first time was in 1969. He was invited by the Department of Education at the University of Oslo to lecture about his work on establishing language and reducing problem behaviors in individuals with autism. The title of his lecture was "Learning through imitation." Already at that time Lovaas was able to explain autistic/psychotic behavior using a behavioral framework. In his charismatic way, Lovaas argued strongly against the psychodynamic view, resulting in both supporters and opponents. It was after this lecture that a few Norwegian psychologists started using behavioral principles when working with children with autism. Lovaas' visit to the University of Oslo inspired several psychologists and led to the establishment of the Norwegian Association for Behavior Analysis in 1973 (Psychologist Arne Brekstad, personal communication, October 4, 2014). Initially, Lovaas influenced clinicians more than researchers, but approximately two decades later, a number of Norwegian psychologists became involved in research, and now there is a relatively strong group of behavioral researchers in Norway. Currently, Oslo and Akershus University College offers a Bachelor, a Master, and a Ph.D. program in behavior analysis (Ozerk & Ozerk 2013). Only a few institutions in the world are offering a Ph.D. program in behavior analysis, and the Ph.D. program in Norway is the only one in Europe.

In the clinical settings, Early and Intensive Behavioral Intervention and other interventions based on behavior analysis are now for the most part considered the treatment of choice for preschool aged children with autism. For that and other reasons, it is reasonable to conclude that Lovaas has had an enormous impact on both behavior analysis in Norway and the services offered to individuals with autism in Norway.

Lovaas' Impact on the American Behavioral Community and his Impact on Services for Children with Autism in North America

Much has already been said about Lovaas' impact in the behavioral community and his impact on services for autism in North America. This section will focus mostly on changes at the policy level that has occurred as a result of the work that Lovaas pioneered. The first change at the policy level came in 1999, when the Surgeon General endorsed EIBI. According to the Surgeon General, "thirty years of research" has demonstrated "the efficacy of applied behavioral methods in reducing inappropriate behavior and in increasing communication, learning, and appropriate social behavior" for children with autism (Surgeon General, 1999). Since then, EIBI has been endorsed by a number of other academies, institutes, among them, the American Academy of Pediatrics (2001), the National Institute of Mental Health (2007), the National Research Council (2001), and Task Force Report for Administrators of Services for Children with Disabilities (1999).

EIBI is now considered medically and educationally necessary and hence funded through government or health care systems by the vast majority of the states. Indiana was the first state to found EIBI and this happened in 2001. By 2007, 2 more states followed, and currently 43 states plus the District of Columbia and US Virgin Islands found EIBI programs. Another state, Iowa, have endorsed an autism insurance reform bill and will be pursuing an autism insurance reform in 2015. Only five states are currently not working on an insurance reform legislation (Autism Speaks, 2015).

In addition, an increasing number of the nation's top companies are voluntarily offering their employees autism coverage in their health plans. With the addition of JPMorgan Chase, General Motor, Microsoft, Apple, Goldman Sachs, and Intel, more than a dozen of the Fortune Top 100 firms now provide the coverage in addition to federal bodies, such as the Office for Personnel Management and Medicare (Autism Speaks, 2015). Similarly, in Canada, EIBI is viewed as providing the foundation for effective treatment and EIBI are also widely available, although the extent of coverage varies across Provinces.

Summary and Conclusions

Ole Ivar Lovaas (1927–2010) is one of the pioneers in the field of treatment of children with ASD. He is among the most cited researchers within this field because of his well-documented research, particularly the results of the early and intensive behavioral intervention program he designed. From birth until finishing high school, he lived in the agricultural municipality of Lier, located about 20 miles west of the capital city of Oslo, Norway. During his teenaged years, he experienced the four years of Nazi occupation of Norway. After finishing high school, he joined the Norwegian air force. In 1950, after finishing his military service, Lovaas moved to the United States. He was admitted to Luther College in Decorah, Iowa, on a violin scholarship. He finished his bachelor degree in sociology in one year, and started training as a clinical psychologist at the University of Washington, where he was initially trained in psychoanalysis and Hullian experimental psychology. After receiving his Ph.D. (1958), Lovaas stayed on at the University of Washington as an acting assistant professor for another three years, teaching and conducting research at the Child Development Institute under Dr. Sid Bijou. At that time, Bijou, colleagues, and students conducted numerous landmark studies applying the principle of operant conditioning (which previously had been studied mostly with rats and pigeons) to young children and individuals with intellectual disabilities. In 1961, Lovaas left the University of Washington after being offered a position at the UCLA Psychology Department as an assistant professor. He spent the remainder of his career at UCLA. At UCLA, Lovaas wanted to pursue his interest in language, specifically by studying children with language delays. Beginning in 1965, based on this early work, Lovaas, his colleagues, and students published a remarkable series of research which subsequently came to transform behavior analysis and services for individuals with autism. In 1973, Lovaas and his colleagues published one of the first long-term follow-ups of ABA intervention. In that study, Lovaas found that most of the participants had lost their improvements in language, social interaction, and play made during the behavioral treatment when they went back, after treatment. Based on this finding, he coined what were to become the most central elements of what is now known as EIBI. In 1987, Lovaas published his groundbreaking outcome study indicating that children with autism who received early intensive behavioral intervention achieved vastly better outcomes than similar children who received little or no behavioral intervention. Based on this study, Lovaas was the first researcher to suggest that for at least some children, autism is treatable. His research has also affected government- and insurance policies. The first change was in 1999, when the Surgeon General endorsed EIBI. Since then, EIBI has been endorsed by a number of other academies, institutes, among them, the American Academy of Pediatrics (2001), the National Institute of Mental Health (2007), the National Research Council (2001), and Task Force Report for Administrators of Services for Children with Disabilities (1999). EIBI is now considered medically and educationally necessary and hence funded through government or health care systems by the vast majority of the states. Similarly, in Norway and in Canada, EIBI is viewed as providing the foundation for effective treatment and is widely available, although the extent of coverage varies across counties and provinces.

Lovaas taught several graduate and undergraduate classes at UCLA. One of his undergraduate classes was amongst the most popular classes in the UCLA psychology department.

After becoming Professor Emeritus in 1994, he continued to teach and to publish important work until he was in his late seventies.



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