

# The bipolarity of Alberto Santos-Dumont: flights and falls of the “Father of Aviation”

*A bipolaridade de Alberto Santos-Dumont: os voos e as quedas do “Pai da Aviação”*

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## ABSTRACT

**Objective:** Discussing the psychiatric diagnosis of Alberto Santos-Dumont, considered in Brazil to be the inventor of the airplane, who was admitted to psychiatric institutions several times and committed suicide. **Methods:** A narrative review was carried out on the psychopathological manifestations he presented, based on some of the most important biographies about the aviator. No scientific article on the topic was found. **Results:** Depressive episodes were well characterized. Behavioral changes that suggest manic episodes have also been reported. **Conclusion:** He probably suffered from bipolar disorder.

## KEYWORDS

Santos-Dumont, biography, history of psychiatry, bipolar disorder.

## RESUMO

**Objetivo:** Discutir o diagnóstico psiquiátrico de Alberto Santos-Dumont, considerado no Brasil o inventor do avião, que foi diversas vezes internado em instituições psiquiátricas e cometeu suicídio. **Métodos:** Foi realizada uma revisão narrativa sobre as manifestações psicopatológicas que ele apresentou, com base em algumas das mais importantes biografias sobre o aviator. Nenhum artigo científico sobre o tema foi encontrado. **Resultados:** Episódios depressivos ficaram bem caracterizados. Foram relatadas ainda alterações do comportamento que sugerem episódios maníacos. **Conclusão:** Provavelmente ele sofria de transtorno bipolar.

## PALAVRAS-CHAVE

Santos-Dumont, biografia, história da psiquiatria, transtorno bipolar.

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## INTRODUCTION

Alberto Santos-Dumont (ASD) is one of the great national heroes of Brazil. In this country, he is considered the inventor of the airplane, a merit that, however, in the rest of the world, is attributed to the Wright brothers, from the United States<sup>1</sup>. The history of ASD's mental illness is little known, and much information about it, deliberately or not, has been distorted. For example, when he killed himself, a fake was mounted, and the coroner, on the death certificate, fraudulently, pointed out "cardiac collapse" as the cause of death<sup>2</sup>. In addition, ASD's behavioral changes were attributed exclusively to a neurological disease, multiple sclerosis, and his depression was seen as a mere emotional reaction to the use of the airplane as a weapon in the First World War and the Constitutionalist Revolution of the Brazil<sup>3</sup>.

## METHODS

A narrative review was carried out on the psychopathological manifestations that ASD presented. The objective was to discuss whether he actually suffered from a mental disorder and what his psychiatric diagnosis would be. No scientific article on the topic was found in the researched databases: PubMed, Web of Science, SciELO and PsycINFO. Thus, the sources of the information obtained were some of the main ASD biographies.

## RESULTS

### Origins

The chronology of the ASD clinical case is summarized in table 1.

ASD was born on July 20, 1873, in Minas Gerais, in the city of Cabangu, which would later be called "Santos Dumont"<sup>3</sup>. He was the sixth child in an offspring of eight and the youngest of the three boys. The family had moved there because his father, engineer Henrique Dumont, had been hired to work on the construction of an extension of the Pedro II railway in the region. When ASD was six years old, his father buys a farm in São Paulo, where he begins to grow coffee. He mechanizes the entire production and, in a short time, he becomes rich, being nicknamed by the press "king of the coffee"<sup>2</sup>.

ASD, still a child, is interested in mechanics and learns to repair agricultural machinery. At the age of seven, he drives steam engines on wheels to transport coffee. At twelve, he guides the locomotive of a train used for the distribution of grain. At eighteen, he brings to Brazil a Peugeot car, bought in Paris, and becomes the first person to drive a car in South America<sup>2</sup>.

A reader of Jules Verne, from a young age ASD was fascinated by science fiction and believed that one day man could fly. At the age of ten, he made paper balloons, which he filled with hot air from the stove<sup>2</sup>.

In 1892, when ASD was 19 years old, his father suffered a fall from a horse, hit his head and became irreversibly hemiplegic. Disabled for work, he sells his farm and donates his inheritance to his children in life. ASD receives the equivalent of half a million dollars and is sent to Paris, where he should study mechanics, without worrying about guaranteeing his own livelihood<sup>2,4</sup>.

### Exploits, celebrity and forgetting

In Paris, in 1898, at the age of 24, ASD builds his first balloon, to which he gives the name of *Brazil*. That same year, he began to create airships, which were hydrogen balloons attached to an engine. In October 1901, with his airship number 6, he won the Deutsch prize, fulfilling the requirement to fly the balloon for eleven kilometers, get around the Eiffel tower and return to the starting point in thirty minutes<sup>5</sup>. In 1903, he built the number 9 airship, called *Baladeuse*, considered the first aerial car in the world. ASD uses it daily to visit friends, go to restaurants and shop<sup>2</sup>.

His greatest invention, without a doubt, was the 14-Bis, an aircraft, which, in 1906, travels a distance of 220 meters, at a height of six meters, for 21.02 seconds. This flight represents the first of a heavier-than-air machine in a public display. The 14-Bis gives ASD, at the age of 33, the award of the French

**Table 1.** Chronology of the Santos-Dumont clinical case

1873	Santos-Dumont is born
1892	He goes to Paris
1898	He builds his first balloon
1901	He wins the Deutsch prize
1903	He builds the first aerial car in the world
1906	14-bis flight
1907	The Wright brothers are recognized as the inventors of the plane
1909	He builds the first sports airplane in the world
1910	He decides to abandon aviation; physical complaints and possible depressive symptoms
1916	Inappropriate or risky behaviors; increased energy
1920 decade	Several psychiatric hospitalizations in France and Switzerland; depressive episodes
1920 decade	He invents bizarre gadgets
1926	He makes inappropriate marriage proposal
1930	Psychiatric hospitalization in France; suicide attempt with medication
1931	Other psychiatric hospitalization in France
1931	Suicide attempt during ship trip to Brazil
1931	Agitation and disinhibition
1931	He invents a bizarre individual flying device
1932	He kills himself in Guarujá (São Paulo)

aeroclub and consecrates him, at least at first, as the inventor of the airplane<sup>2,5</sup>.

Another important invention by ASD was the *Demoiselle*, the number 20, which was the first sports airplane in the world. The device, created in 1909, set a new speed record and achieved commercial success, with more than fifty units produced<sup>2,5</sup>.

The exploits of ASD made him world famous in the early years of the 20th century. Proof of his enormous prestige is that, in Paris, they were among his regular dinner partners and close friends: Louis Cartier, the jeweler; Princess Isabel, daughter of D. Pedro II; Gustave Eiffel, the tower architect; Antônio Prado Jr., son of a Brazilian ambassador; members of the Rothschild family of bankers; Empress Eugênia, a reclusive widow of Napoleon III; plus some kings, queens, dukes and duchesses<sup>2</sup>.

The situation, however, changes with the arrival of the brothers Orville and Wilbur Wright, from the United States, in 1907. They refer that, in North Carolina, in 1903, therefore three years before ASD, they had already flown with a machine heavier than air, the *Flyer*. They had worked in secret, and there was no verification of that flight by any accredited entity. In 1908, they went to France, where they demonstrated their aircraft, and in a short time, they ended up being recognized internationally as the true inventors of the airplane<sup>1,2</sup>. However, even today the primacy of Americans is contested in Brazil, with the claim that the *Flyer* needed the help of rails and a catapult to take off, unlike the 14-Bis, which took flight by its own means<sup>3</sup>.

Uncrowned by the Wright brothers, ASD complains about his friends, who, according to him, would have abandoned him. "It was, now I can say," he would write later, "a painful experience for me to see – after all my work with airships and machines heavier than air – the ingratitude of those who recently covered me with glory"<sup>2</sup>.

### Appearance and personality

ASD was a very slight man: his height was 1.52 meter, and his weight varied around 50 kilos<sup>3</sup>. He tried to disguise his short stature with his clothes: dark suits with vertical stripes, heels, high collars, a very tight tie knot, trousers rolled up at the hem and somewhat short<sup>2,3</sup>. All of this, added to the Panama hat, gave him an elegant but at the same time extravagant appearance<sup>2</sup>.

Fame and glory were the motivation for their achievements. ASD had no financial interests: he did not register the patents for his inventions and donated all the prizes he received. He was very concerned with his public image and took great pleasure in showing off, especially on his flights<sup>2</sup>. Paradoxically, he was very shy. In childhood, he was described as lonely and dreamer. In adulthood, at social gatherings, even with his family, he almost never opened his mouth. He had an intense fear of speaking in public<sup>2,3</sup>.

ASD never married or publicly assumed a romantic relationship. One of his biographers<sup>2</sup> believes that he was a homosexual. In childhood, he was not interested in the games and activities more typically of boys with their siblings. His voice and clothes were described by journalists as unmanly. In addition, he liked to embroider, to knit and to practice tapestry, habits traditionally more linked to the feminine sex. Another biographer<sup>1</sup>, in contrast, claims that he was a womanizer, as he was often seen in public situations in the company of beautiful young women and because of the references to love affairs with women in some letters he wrote to friends.

### Depression and suicide

There is a lack of information about ASD's mental illness, because at one point he burned many letters and documents<sup>3</sup>. In addition, the clinics he checked into did not keep medical records<sup>2</sup>. However, some information about what happened to him was provided by people around him and by the press of the time.

In 1910, at the age of 36, ASD decides to abandon aviation. Complaining of double vision and dizziness, he consults a doctor, who would have formulated the diagnosis of multiple sclerosis<sup>3</sup>. However, this diagnosis would later be challenged by several doctors, who believed that ASD was already presenting psychiatric manifestations<sup>2</sup>. In fact, at that time, he, feeling exhausted, stays at home, totally isolated<sup>3</sup>. A few years later, during the First World War, he said he felt guilty for using the airplane as a war weapon: "More infamous than the Devil", he would have said about himself<sup>2</sup>.

In the 1920s, ASD was admitted to psychiatric clinics in Europe several times: at the Prévile sanatorium, in Orthez, France; and the Valmont-sur-Territet sanatorium in Glion, Switzerland<sup>5</sup>. There are reports that he presented loss of appetite, lack of strength<sup>2</sup>, sadness and hopelessness<sup>5</sup>. In Brazil, the aviator consulted with two of the most eminent Brazilian psychiatrists: Juliano Moreira, in 1925, and Henrique Roxo, in 1927<sup>1,6</sup>. In 1927, he was removed by his nephew Jorge Dumont-Villares from the clinic in Switzerland, after a long hospitalization. In 1928, on his return to Brazil, he witnessed the death of twelve intellectuals and scientists who came to greet him on board an exploded seaplane. In the following weeks, he is locked up at the Copacabana Palace hotel, from where he only leaves to attend the funerals of the victims of the accident<sup>2</sup>.

In 1930, in Paris, ASD stops eating and talking and locks himself in his room. He is then readmitted to Orthez and, at the clinic, feels discouraged and attempts suicide with medication<sup>1</sup>. In 1931, another hospitalization, now in the Biarritz sanatorium, also in France<sup>5</sup>. That same year, Jorge again takes him out of the clinic, taking him back to Brazil, aboard the Lutetia steamboat. During the trip, ASD attempts suicide again, being saved by his nephew<sup>7</sup>.

In 1932, ASD returned to express remorse due to the use of the airplane as a weapon of war, this time in Brazil, during the Constitutionalist Revolution: "I invented a disgrace for the world", he complained<sup>1</sup>. At the suggestion of the doctor who was then assisting him, Dr. Sinésio Rangel Pestana, he will spend a season in the spa of Guarujá, in São Paulo, in the company of his nephew Jorge. In that city, on July 23 of the same year, he commits suicide. His body, extremely emaciated, is found hanging around his neck with two ties on the shower pipe in his room at the Grande Hotel La Plage. He was 59 years old<sup>3,5</sup>.

His mother had also killed herself, in 1902, in Portugal<sup>2</sup>.

### Other possible psychiatric manifestations

According to a survey carried out in 1899, until that year almost two hundred people had died in accidents with balloons<sup>2</sup>. Thus, the risks to which ASD underwent testing the flying machines he invented are very striking. In fact, he suffered several accidents, although he was never seriously injured. On several occasions he was seen, in mid-flight on an airship, coming out of the basket to fix a defect in the engine or cables. Once, his number 5 hit the roof of the Trocadero hotel in Paris. The balloon exploded, producing a frightening sound, and the aviator hung by a cable on the hotel's wall, at a height of fifteen meters, until it was lifted by the firemen with a rope to the ceiling. The amazing thing is that, in these situations, ASD did not express any fear and, often, right after the fall, he returned to work on the damaged device<sup>2,3</sup>.

Over the years, in periods when he did not seem to be depressed, ASD had several times exhibited behaviors considered inappropriate or surprising by those who witnessed them. Three episodes of this nature occur in 1916. The first was in January, at the Pan American Scientific Congress, held in the United States. During the event, the aviator, who had always been a militant pacifist, defends the use of the airplane as a weapon of war<sup>3</sup>, what he would do again in his book entitled *O que eu vi, o que nós veremos*<sup>8</sup>. In March of the same year, now at the Pan American Aeronautical Congress, in Chile, Brazilian diplomat Luís Gurgel do Amaral shocks when, unexpectedly, he asks the following question, referring to prostitutes: "Amaral, how are we here when it comes to little women?"<sup>3</sup>. And, in April 1916, at Iguazu Falls, he balances himself on a log on the edge of an abyss – the place is called "Garganta do Diabo" ["Devil's Throat"]. People around despair, but ASD seems to be extremely calm<sup>1</sup>. Years later, at a time when he resides in the city of Petrópolis, the inventor occasionally confides in young people who casually finds on the streets his "adventures in the cabarets of Paris"<sup>3</sup>. Finally, in 1926, in France, he paid a visit to Gabriel Voisin, his collaborator in the creation of 14-Bis, in which he asked to marry his daughter, although he barely knew her and she was more than thirty years younger than him<sup>2</sup>.

Some reports about ASD more clearly indicate the presence of changes in mood and motor activity. One of his biographers<sup>3</sup>, when talking about worsening aviator's disease, brings the following information: "... he became increasingly restless, nervous, agitated, unstable. He lived in constant motion, always traveling. Anything annoyed him, even the smallest noise". Yolanda Penteadó, lady of the São Paulo society who was a friend of ASD, in turn, makes this observation about him: "People who knew him better said that when he saw me, he would get electric. He walked a lot. He was mountain climbing, and when I met him he used to walk up and down Corcovado Hill on foot"<sup>3</sup>. In 1916, when he visited the Iguazu Falls, ASD decided to seek the president of the state of Paraná to suggest that the area be expropriated and transformed into a public park. To go from Foz do Iguazu to Curitiba, he rides for six days in a row, covering more than three hundred kilometers of virgin forest, and then he still takes a car and a train<sup>7</sup>. Finally, the description of how he was disembarking from a ship in Rio de Janeiro, coming from Europe, after a trip during which he had attempted suicide, is quite significant: "The journalists, as the others had already done on board, realized that the inventor was not the same withdrawn and discreet as always. He spoke, he was agitated, he was showing off. He wanted everyone to see and gawk"<sup>3</sup>.

After abandoning aviation, ASD is dedicated to other inventions. These inventions are said to be bizarre and appear to be the expression of a mental disorder. In the 1920s, during a hospitalization, he tries to fly with feathers glued to his arms and with mechanical wings attached to an engine that is inside a backpack hanging on his back. When he goes to jump out the window, he is saved by a nurse<sup>2</sup>. Other strange creations of his were: the Martian transformer, in 1928, in which a propeller placed on skiers' backs would help them climb snow-covered mountains<sup>3</sup>; a slingshot capable of launching a life jacket for a drowning person in the 1920s; a mechanism that dragged a snack in front of dogs in races, also in the 1920s<sup>2</sup>; and an individual flying device, tied to the back, in 1931<sup>3</sup>.

## DISCUSSION

Undoubtedly, formulating an individual's psychiatric diagnosis without examining him directly and based only on biographies about him has very limited value, especially when that individual is ASD. Firstly, because medical records about his case are very scarce. Furthermore, it is very likely that much information was deliberately hidden, since, in the case of a national hero, it would be detrimental to his image to associate it with something so stigmatized in society as a mental illness. The fraud in the elaboration of his death certificate, so that it was not known that he had committed suicide, supports this

speculation. Although recent biographies of the aviator have been consulted, none of them presented new information about his mental illness. However, based on the available reports on the life and behavior of ASD, it is possible to carry out a semiological and nosological exercise on his mental illness. This exercise, despite being merely speculative, would have a didactic or, at least, playful character.

Previously, it had been hypothesized that ASD have presented episodes of depression with psychotic symptoms<sup>9</sup>. In fact, it seems clear that he had, since he was 36 years old, several depressive symptoms. Prostration, discouragement, sadness, hopelessness, social isolation, mutism, anorexia, extreme weight loss, feeling of guilt and suicide attempts, all typical of depression, are mentioned<sup>10</sup>. From a clinical point of view, it makes no sense to attribute this picture to the use of the airplane as a weapon. ASD fell ill in 1910, therefore, four years before the beginning of the First World War. Guilt ideas, sometimes delusional ones, are common in depression<sup>10</sup>. Thus, the regrets he felt for inventing the airplane are probably symptoms of his illness and not its cause. In addition, as we have seen, the primacy of ASD over the first flight of a machine heavier than air was no longer widely accepted in 1910.

ASD's depression apparently had an episodic course. According to current classificatory systems in psychiatry, given the occurrence of recurrent depressive episodes, the doubt as to the nosological diagnosis lies between bipolar disorder, when there were also manic or hypomanic episodes, and major depressive disorder, when manic or hypomanic episodes are absent<sup>11</sup>.

There are several indications that ASD suffered from bipolar disorder. As already mentioned, on several occasions he experienced euphoria, irritability, increased motor activity, disinhibition and inappropriate behavior, which are typical symptoms of manic syndrome<sup>12</sup>. The risks in which he placed himself flying at great heights aboard his inventions may well be the expression of the courage and heroism of ASD. However, it must not be forgotten that the absence of fear and excessive self-confidence are clinical manifestations observed in mania. Finally, his latest inventions, considered bizarre, could be explained by a loss of critical ability, which also occurs in manic syndrome<sup>10</sup>.

DSM-5<sup>11</sup> subdivides bipolar disorder into two types: in type 1, there was at least one episode of mania; and, in type 2, there were episodes of hypomania and depression. Since episodes of depression may be absent in type 1, in practice the occurrence of episodes of mania or hypomania is what defines bipolar disorder in DSM-5. The symptoms of mania and hypomania are the same, the distinction between the two syndromes is made based on the intensity of symptoms and the severity of psychosocial impairment. It is unclear whether ASD would have suffered from type 1 or type 2 bipolar disorder, but he would likely meet the

diagnostic criteria of a manic or hypomanic episode. Surely, he presented the two mandatory changes according to DSM-5: elevation of mood and increase in motor activity. In addition, other symptoms listed in the classification were described: grandiosity, pressure to speak, agitation and excessive involvement in potentially dangerous activities.

Regarding the diagnosis of multiple sclerosis, it can be said that it is quite doubtful<sup>9</sup>. In this autoimmune inflammatory disease of the central nervous system<sup>13</sup>, in fact, double vision and vertigo may occur<sup>14</sup>. However, these were the only two symptoms of multiple sclerosis that ASD would have presented, which, in addition, are nonspecific. On the other hand, this neurological disease is associated with high rates of comorbidity with mental disorders: for example, 23.7% have depression; and 5.83%, bipolar disorder<sup>15</sup>.

ASD's mental illness had a tragic outcome: he killed himself at 59. Among mental disorders, bipolar disorder is the one that is most associated with suicide, especially during depressive and mixed episodes<sup>16</sup>. Family history of suicide is among the risk factors for suicide<sup>10</sup>, and, as mentioned, the aviator's mother had also taken her own life.

ASD, like all inventors, had a high creative capacity. There seems to be a relationship between bipolar disorder and creativity. In the study of the biographies of great artists, descriptions of what appear to be depressive and manic episodes, as well as suicides, are often found. When modern diagnostic criteria are applied in interviews with living artists, high rates of bipolar disorder are detected. In the evaluation of individuals with bipolar disorder, high levels of creativity are observed, higher than in those with other mental disorders. Finally, there are many similarities between creative behavior and manic or hypomanic states, which include increased activity, self-confidence, impulsiveness, excitement and accelerated thinking<sup>17</sup>.

## CONCLUSIONS

In the biographies about ASD, very typical depressive episodes were described. In addition, reports of increased mood and increased energy indicate that he also had manic symptoms. So it seems likely that he suffered from bipolar disorder.

## INDIVIDUAL CONTRIBUTIONS

EC is the only author.

## CONFLICTS OF INTEREST

The author declares no competing interests. The author did not receive funding for this work.

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