Does High Solar Activity at Birth Affect Human Development?

Jahan Razavi, and Norm Brennan

***Abstract*— Previous studies have shown that there is a correlation between solar activity during gestation/infancy and physical development. Our study investigates whether the level of solar activity at birth affects intellectual and physical traits in humans. We chose five groups of the elite: Nobel laureates, Pulitzer Prize winners, the most popular classical music composers, Oscar-winning actors and actresses, and the top 100 Olympic gold medalists. These groups are objectively selected, have a relatively large number, and their birth years cover about 11-17 solar cycles. We found that 53% to 68% were born in years with very low solar activity (0-20 sunspots). Our findings suggest that children born in years with low solar activity have a higher chance of success in life.**

***Keywords*—solar activity, solar spots, human traits**

I. Introduction

High levels of ultraviolet radiation (UVR) can affect human development, physically and possibly mentally. Our exposure to UVR varies with solar cycles and latitude/altitude **[1]**, and past work suggests correlation between both of these factors and biological traits. For example, Davis et al have observed that solar cycles affect gender ratios **[2]**. In other studies, Davis et al have found that the level of solar activity at birth can influence the human immune system **[3]** and Richardson-Andrews has found evidence of a link between sunspots and schizophrenia **[4]**. In a recent paper, Skjærvø et al have investigated the infant survival rate in Norway according to the sunspot number at birth **[5]**.

These studies naturally raise the question of whether solar activity at birth affects intellectual and physical traits. Our hypothesis is that people who were born in years with few sunspots would be stronger in these traits. To test this hypothesis, we sought sample populations that were objectively chosen for their intellectual and physical accomplishments. We selected five groups for this study. The Nobel laureates are the first: they have three attributes that make them particularly suited to our study: (1) Their relatively large number, about 860, provides plausible statistics; (2) Their birth years range from 1817 to 1997, covering about 17 solar cycles; (3) They come from across the globe, with varying levels of UVR. We also extend our analysis to Pulitzer Prize winners, but noting that their number is not as large and they are limited to only the United States. Our secondary hypothesis is that the Pulitzer Prize winners follow the same distribution as the Nobel literature laureates. The third group, the classical music composers, also covers a range of 186 years, and the composers were born in different continents. The fourth group, Oscar winners, covers a range of about 120 years. To examine the physical attributes, we selected Olympic gold medalists. Even though we chose the top 100, they pose a new facet for the effect of sunspot levels on physical abilities.

II. Materials and Methods

We collected Nobel laureates' birth dates from the official Nobel Prize website **[6]**. The Nobel Prize categories include physics, chemistry, medicine, literature, peace, and economics, with the first five starting in 1901 and last one in 1969. The data for the birth dates of the Pulitzer Prize winners were obtained from the Pulitzer Prize official website **[7].** Among the Pulitzer Prize categories, we chose drama and fiction because of their longest history. We obtained our data for the classical composers from **[8]**, which measures their popularity according to the number of downloads. We collected data for the Oscar winners from **[9, 10]**. They were born in years from 1868 to 1990. The top Olympic winners were chosen according to the number of gold medals they had received **[11]**, and were born in the years 1873-1999. Some medalists received the same number of gold medals, but we ordered them according to how they appeared on the list.

The number of sunspots came from the National Oceanic and Atmospheric Administration **[12].** Fig. 1 shows the average sunspot numbers. Superimposed on the figure is a line corresponding to 20 sunspots, which we define as a "very low level." Solar activity, measured in terms of the number of sunspots, goes through 11-year cycles, with the peak varying from about 100 to about 250. Note that about 30% of the years had 0 to 20 sunspots.

III. Results

We created two distributions for Nobel Laureates. Shown in Fig. 2 is the aggregate distribution, including all the categories. We make the following observations: (a) 53% of the winners were born in years with 0-20 sunspots, and (b) very few, 7%, were born in years with over 100 sunspots.

Manuscript received Feb. 28, 2016.
Jahan Razavi is with the Mirman School, Los Angeles, 90049, USA,.
Norm Brennan is with the Mirman School, Los Angeles, 90049, USA.

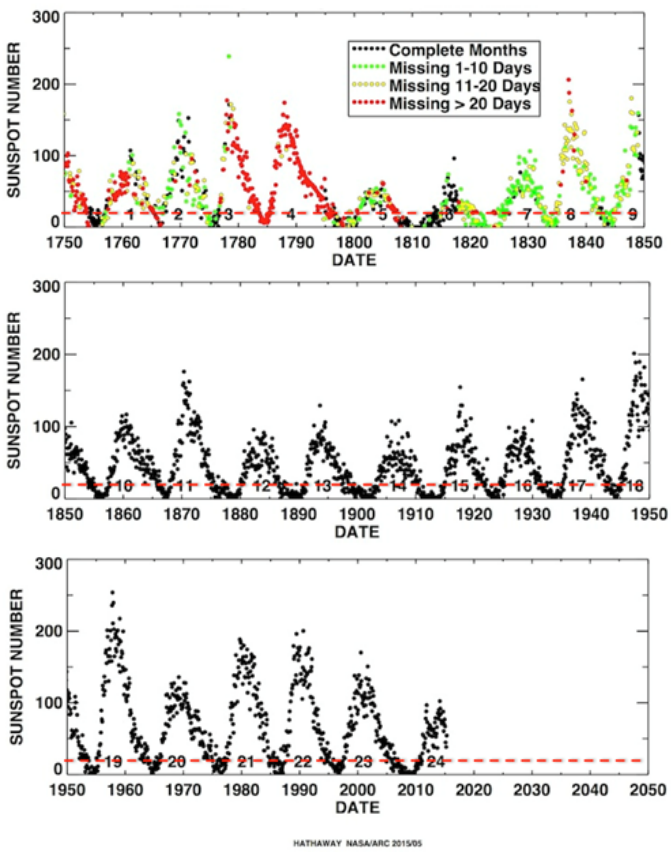

Fig. 1. Monthly averaged sunspot numbers.

The second distribution separates the laureates by categories and is shown in Fig. 3. We note a similar trend here as in the aggregate distribution, namely, the 20 spots bin holds about 50% of each category winners, and the population falls rapidly after 100 sunspots.

We created a combined distribution for the two categories of Pulitzer Prize winners in drama and fiction. Shown in Fig. 4 is the distribution of the 168 winners, indicating that approximately 68% were born in years with 0-20 sunspots. It is interesting to note that this percentage is very close to that of the Nobel literature distribution, shown in Fig. 3.

The next distribution consists of 144 top classical composers, shown in Fig. 5. We see a similar trend here as the Nobel distribution, specifically the 20 sunspots bin bears about 60% of the top classical composers. In addition, the population decreases quickly after 100 sunspots.

The fifth distribution consists of the 176 Oscar-winning actors and actresses, shown in Fig. 6. The distribution indicates a trend similar to the other distributions: approximately 54% of the Oscar winners were born in years with 0-20 sunspots.

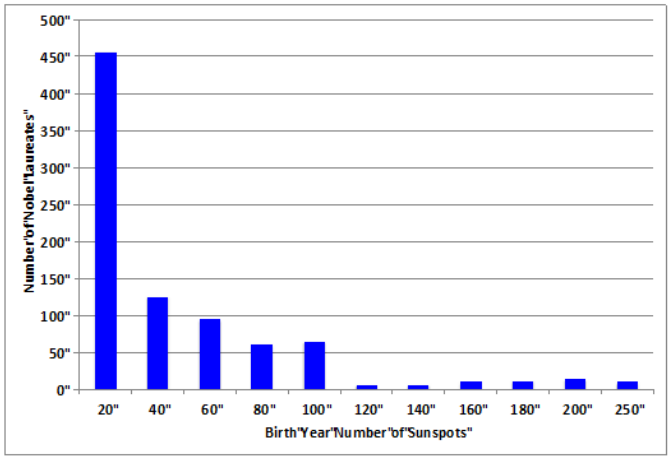

Fig. 2. Aggregate distribution of Nobel Laureates

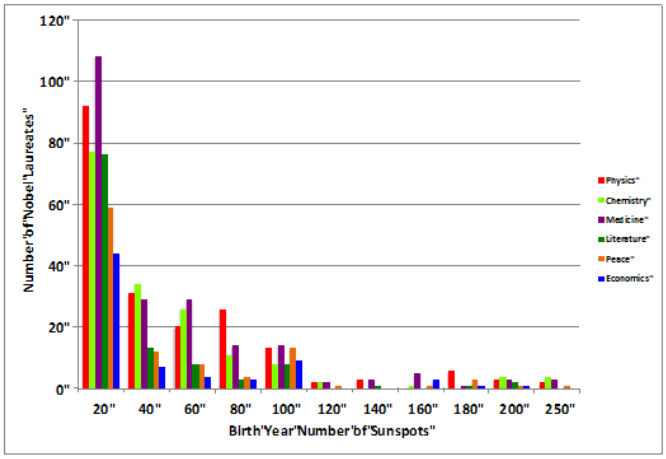

Fig. 3: Distribution by categories

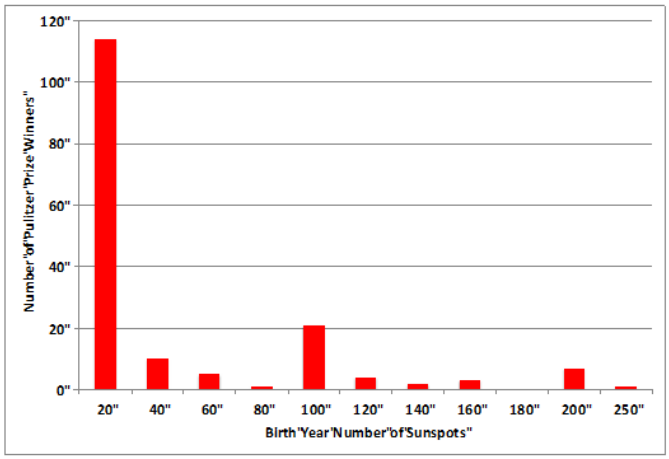

Fig. 4: Combined Pulitzer distribution

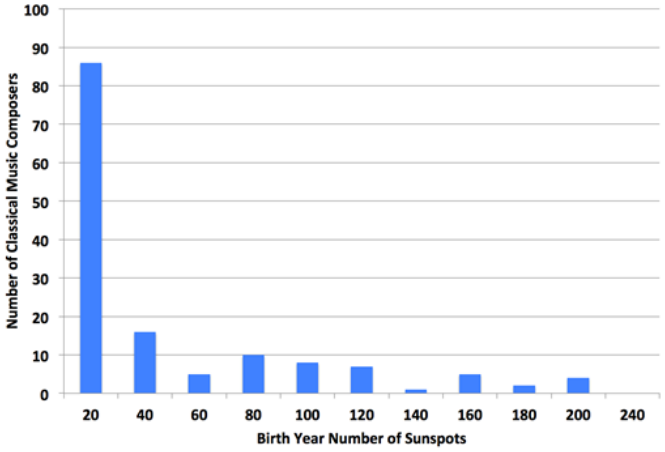

Fig. 5: Top classical composer distribution

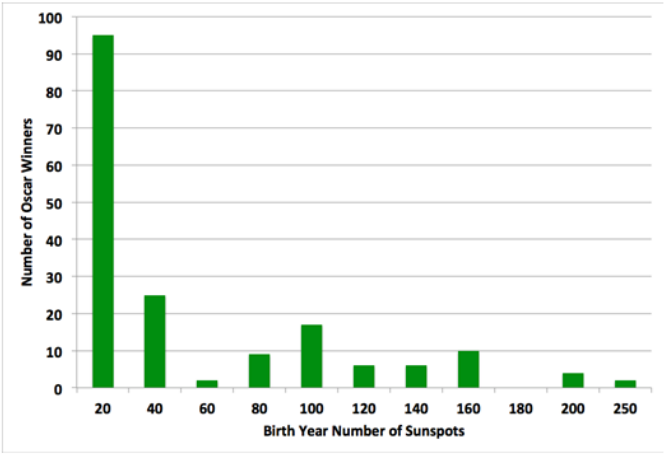

Fig. 6: Oscar-winning actors and actresses distribution

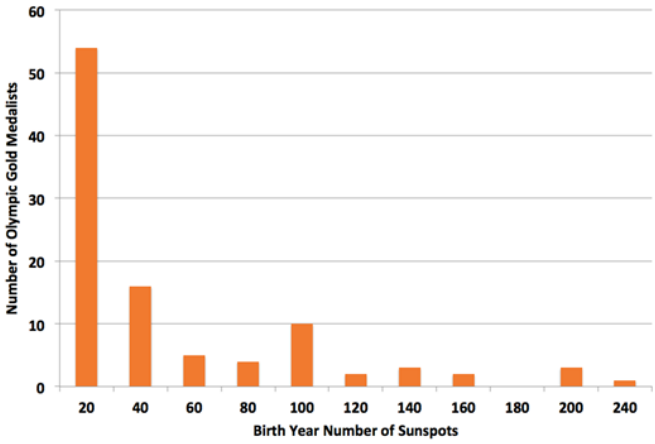

Fig. 7: Olympic gold medalist distribution

The sixth distribution consists of the top 100 Olympic gold medalists, shown in Fig. 7. We note a similar trend here as in the previous distributions; that is, the 20 sunspots bin holds more than half of the Olympic gold medalists, and the population falls rapidly after 100 sunspots.

IV. Conclusion

We have studied the levels of solar activity at birth for five elite groups, namely, Nobel laureates, Pulitzer Prize winners, the top classical composers, Oscar-award winning actors and actresses, and the top 100 Olympic gold medalists. Our observations suggest that intellectual and physical traits may be affected by solar cycles during gestation and infancy. It is possible that similar trends apply to other elite groups as well.

References

[1] B. L. Diffey "Solar ultraviolet radiation effects on biological systems," *Phys. Med. Biol*, vol. 36, pp. 299-328, 1991 http://dx.doi.org/10.1088/0031-9155/36/3/001

[2] G. E. Davis and W. E. Lowell "Peaks of solar cycles affect the gender ratio," *Med. Hypotheses*, vol. 71, pp. 829–838, 2008 http://dx.doi.org/10.1016/j.mehy.2008.07.020

[3] G. E. Davis and W. E. Lowell, "Solar cycles and their relationship to human disease and adaptability," *Med. Hypotheses* vol. 67, pp. 447–461, 2006 http://dx.doi.org/10.1016/j.mehy.2006.03.011

[4] R. C. Richardson-Andrews "The sunspot theory of schizophrenia: further evidence, a change of mechanism, and a strategy for the elimination of the disorder," *Med. Hypotheses*, vol. 72, pp. 95-98, 2009 http://dx.doi.org/10.1016/j.mehy.2008.07.053

[5] G. Roll Skjærvø, F. Fossøy, E. Røskaft, "Solar activity at birth predicted infant survival and women's fertility in historical Norway." *Proc. R. Soc. B*, vol. 282: 20142032, 2015

[6] Nobel Prize website: http://www.nobelprize.org/nobel_prizes/lists/birthdays.html?day=0&month=0&year=&photo=1#birthday_result

[7] Pulitzer Prize website: http://www.pulitzer.org/bycat

[8] Classical music composer list: http://www.classiccat.net/composers-p.php

[9] Male Oscar Winners: https://en.wikipedia.org/wiki/List_of_Academy_Award_Best_Actor_winners_by_age

[10] Female Oscar Winners: https://en.wikipedia.org/wiki/List_of_Academy_Award_Best_Actress_winners_by_age

[11] Top Olympic gold medalists: https://en.wikipedia.org/wiki/List_of_multiple_Olympic_gold_medalists

[12] NOAA website: http://solarscience.msfc.nasa.gov/SunspotCycle.shtml