WLS Report

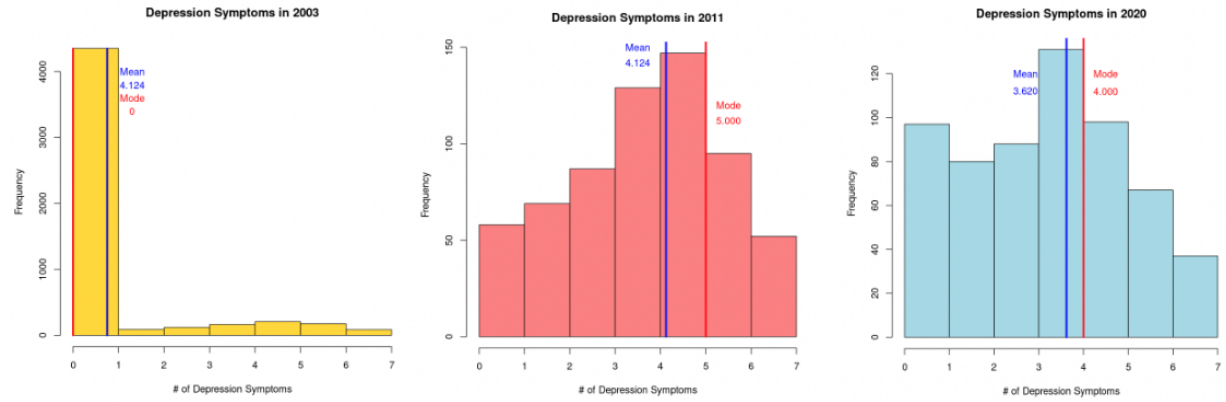

Figure 1. Histogram of the depression symptoms in 2003, 2011, and 2020. Note that depression symptoms decrease during 2020.

(Figure 1) Between 2011 and 2020, a substantial decrease in the mean number of depression symptoms was found, with at least 0.26 less depression symptoms in 2020 with a 99% likelihood. Furthermore, the proportion of individuals reporting zero depression symptoms was found to be significantly higher in 2003 compared to the later years of 2011 and 2020.

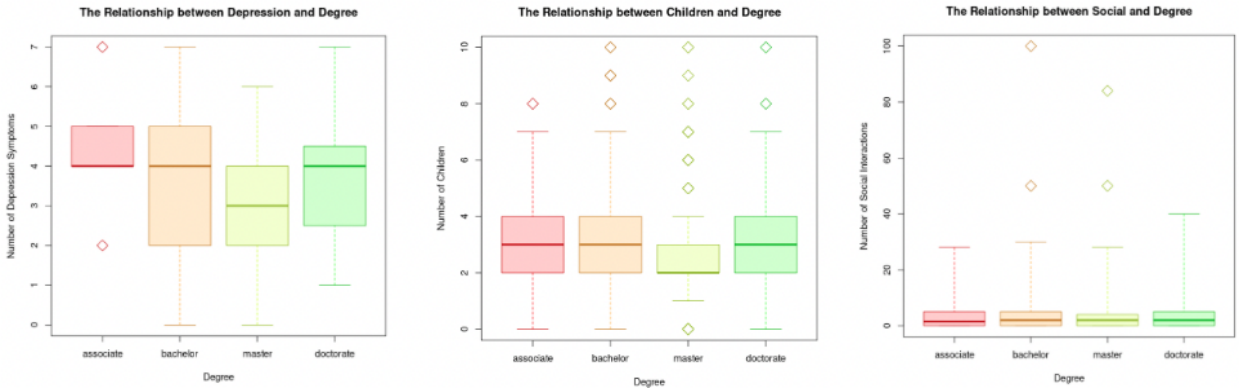

Figure 2. Boxplots comparing the type of degree with depression symptoms, number of children, and number of social interactions, respectively.

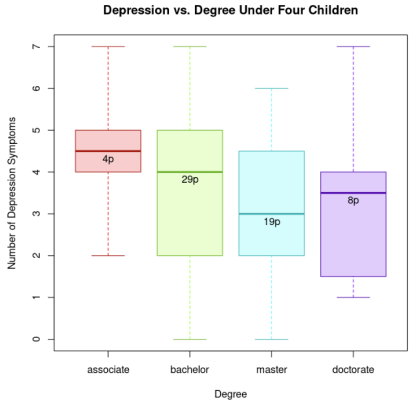

Figure 3. Boxplot with number of observations comparing the type of degree with number of depression symptoms with the condition of having less than 4 children

(Figure 2) When comparing the type of degree with the number of reported depression symptoms first (left), I found that the mean number of reported depression symptoms for associates (with only 10 observations) was at least 0.17 greater than the mean for masters, with a 99% likelihood. Keep in mind this data is from 2020. Additionally, when comparing the type of degree with the number of children (middle), I found that the mean number of children for associates was at least 0.24 greater than the mean for masters, with a 99% likelihood. However, there are no significant differences in means or variance when comparing the type of degree with the number of social interactions (right). As a note, p stands for the number of observations or people included in the sub-category.

(Figure 3) To investigate whether there is a specific threshold in the number of children that influences the distribution (seeking a balanced distribution) of reported depression symptoms across different degrees, I compared the type of degree and reported depression symptoms using a gradually decreasing range of children (7 to 1). When conducting the analysis for the individuals who had four to seven children, a significant difference in means between associates and masters lasted. At three or less, the individuals with associate degrees had a 99% chance of having a mean at least 0.047. However, as soon as the individuals had two or less children, there was no longer a significant difference in means between these two degrees. Nevertheless, it should be mentioned that when the condition of equal to or less than 1 child was applied, there were not enough observations to make statistical inferences.

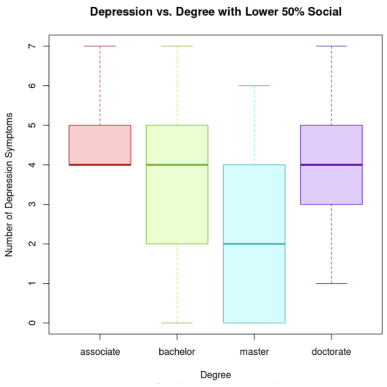

Figure 4. Histogram illustrating the relationship between education levels with the number of reported depression symptoms, under the condition of reduced social interactions.

(Figure 4) I also examined the relationship between education levels and the number of depression symptoms reported under conditions of limited social interactions (lower 50%). Under the same context, it was found that there is a 99% chance that the mean of associates is at least 0.38 greater than masters. However, this was the only significant difference in means found when comparing the type of degree with the number of reported depression symptoms with reduced social interactions. The same experiment was conducted with the upper 50% of social interactions and no significant differences were found amongst those degrees. The datasets (upper 50% and lower 50%) were compared against each other as well with no significant difference in the means of the degree components.

To check if any variables correlated with a higher degree at face value, a multitude of correlation tests were conducted. A moderate to strong association would provide a value anywhere in between 0.5 and 1.0. This applies negatively as well. A positive correlation value would indicate that with increasing degree is an increasing compared variable such as number of children. A negative correlation value would indicate the same but with a decreasing compared variable. However, all variables submitted weak correlation with degree as they were all in between -0.2 and 0.2. In other words, it can be extracted that higher degrees do not necessarily promise more or less depression symptoms, social interactions, marriages, and children. Additionally, a higher degree may not implicate a higher or lower functioning brain. Even though the correlation values are very low, it should be noted that the number of depression counts and children both account for the larger negative correlation values.

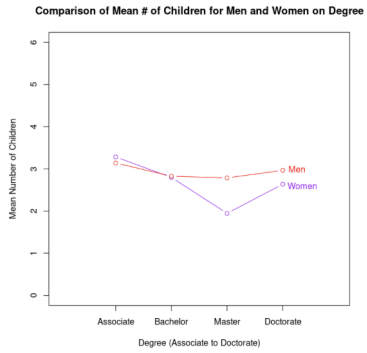

Figure 5. Line graph comparing the average number of children for men and women based on the education level (associate, bachelor, master, and doctorate).

(Figure 5) When comparing the degree with the number of children between men and women, only women had a 99% chance of a significant difference in means of at least 0.46 between a bachelor's degree and masters. In other words, women with bachelor's degrees have significantly more children than women with master's in 2020. However, there was no significant difference in means between men with masters and women with masters in accordance with the number of children they have. There was no significant difference in the proportion of masters who were men to all men with degrees. Furthermore, there was no significant difference in the proportion of masters who were women to all women with degrees.