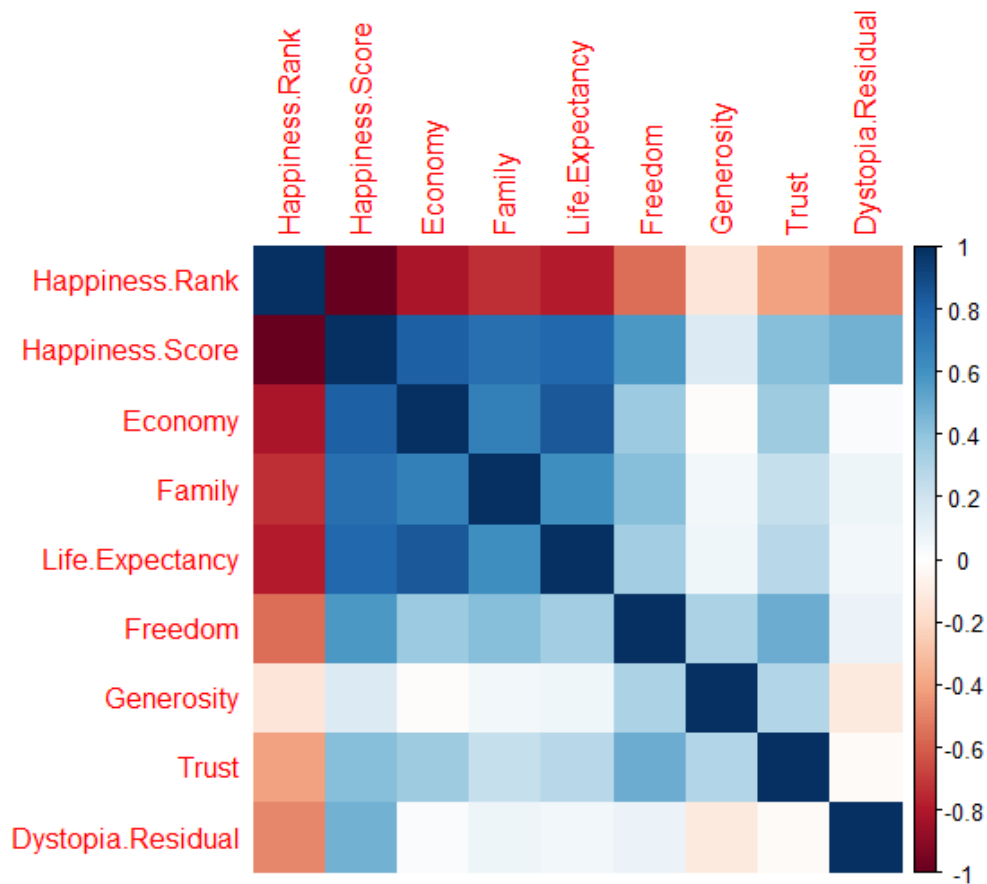


# REPORT

# 1) Correlation Plot

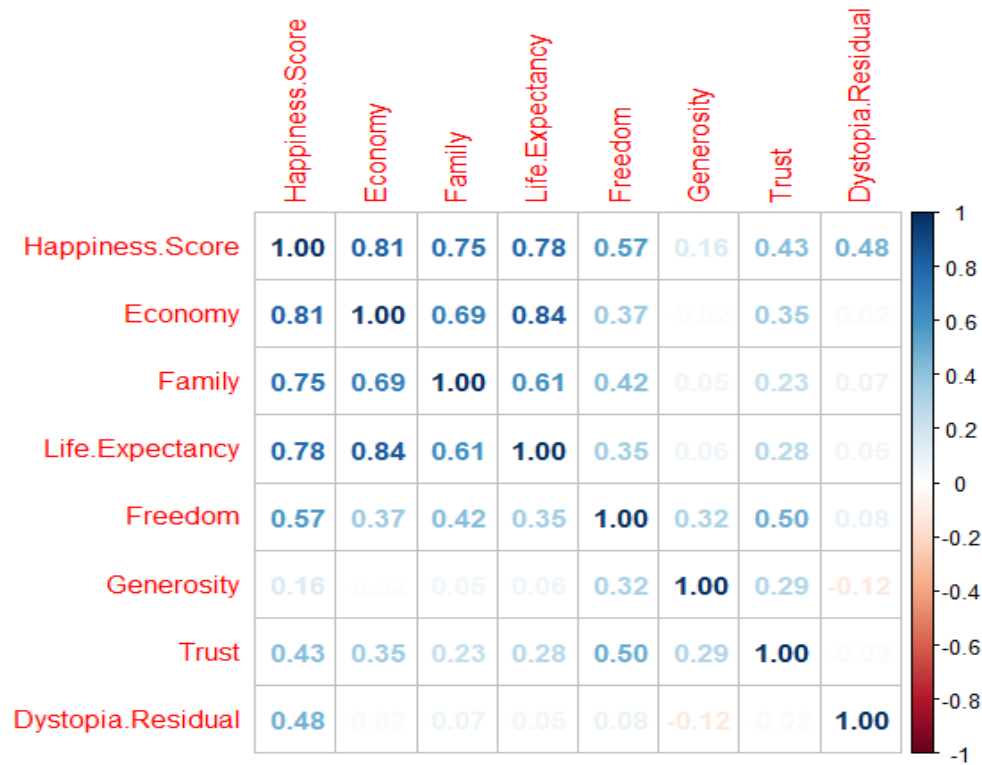
## i . correlation between numerical variables in our dataset.

there is an inverse correlation between “Happiness Rank” and all the other numerical variables. In other words, the lower the happiness rank, the higher the happiness score, and the higher the other seven factors that contribute to happiness.



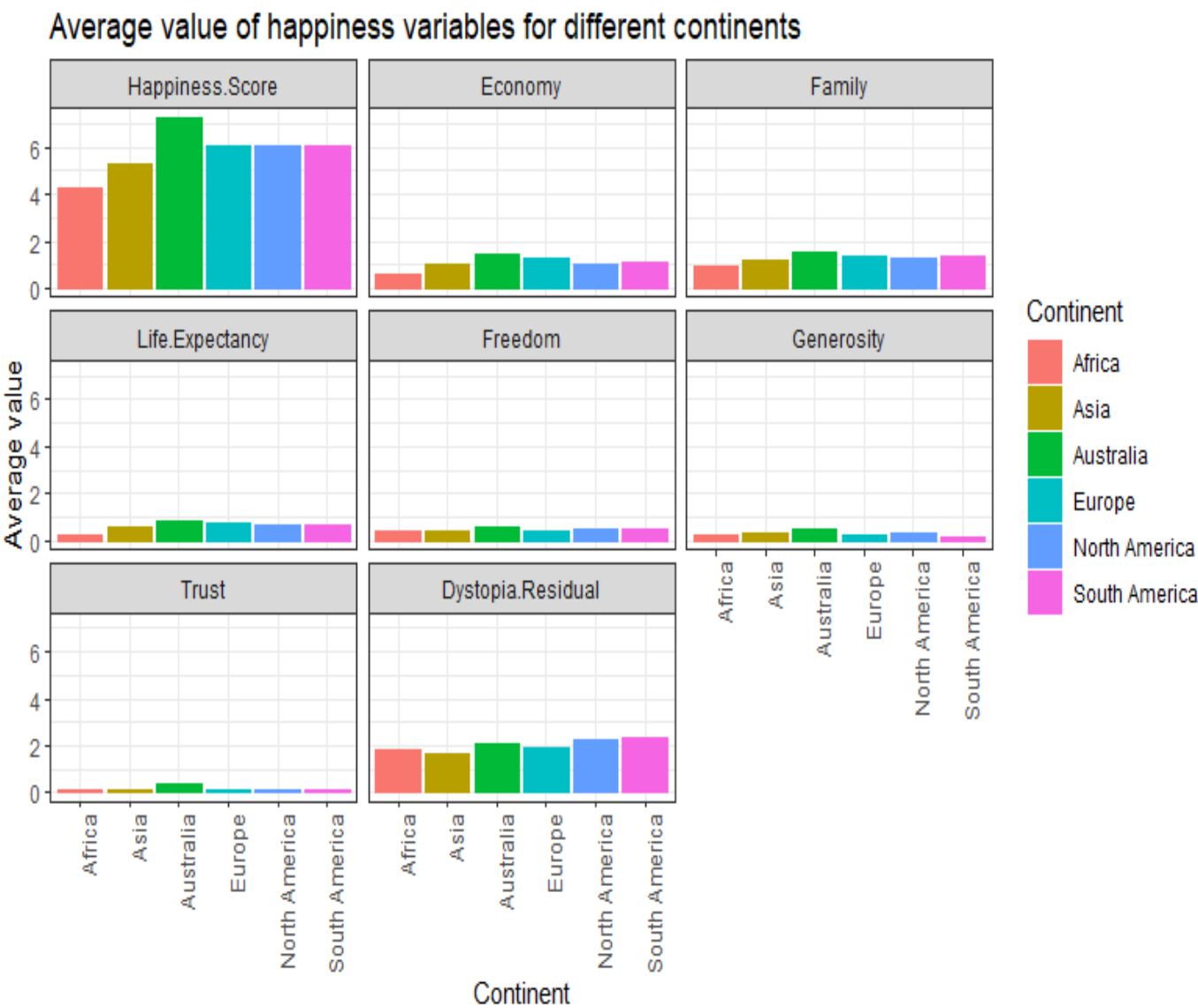
**ii. Removing the happiness rank, and observing the correlation again.**

According to the Below cor plot, Economy, life expectancy, and family play the most significant role in contributing to happiness. Trust and generosity have the lowest impact on the happiness score.



## 2) Comparing different continents regarding their happiness variables

We can see that Australia has approximately the highest average in all fields except dystopia residual, after that Europe, North America, and South America are roughly the same regarding happiness score and the other seven factors. Finally, Asia and Africa have the lowest scores in all fields.



### 3) Correlation plot for each continent

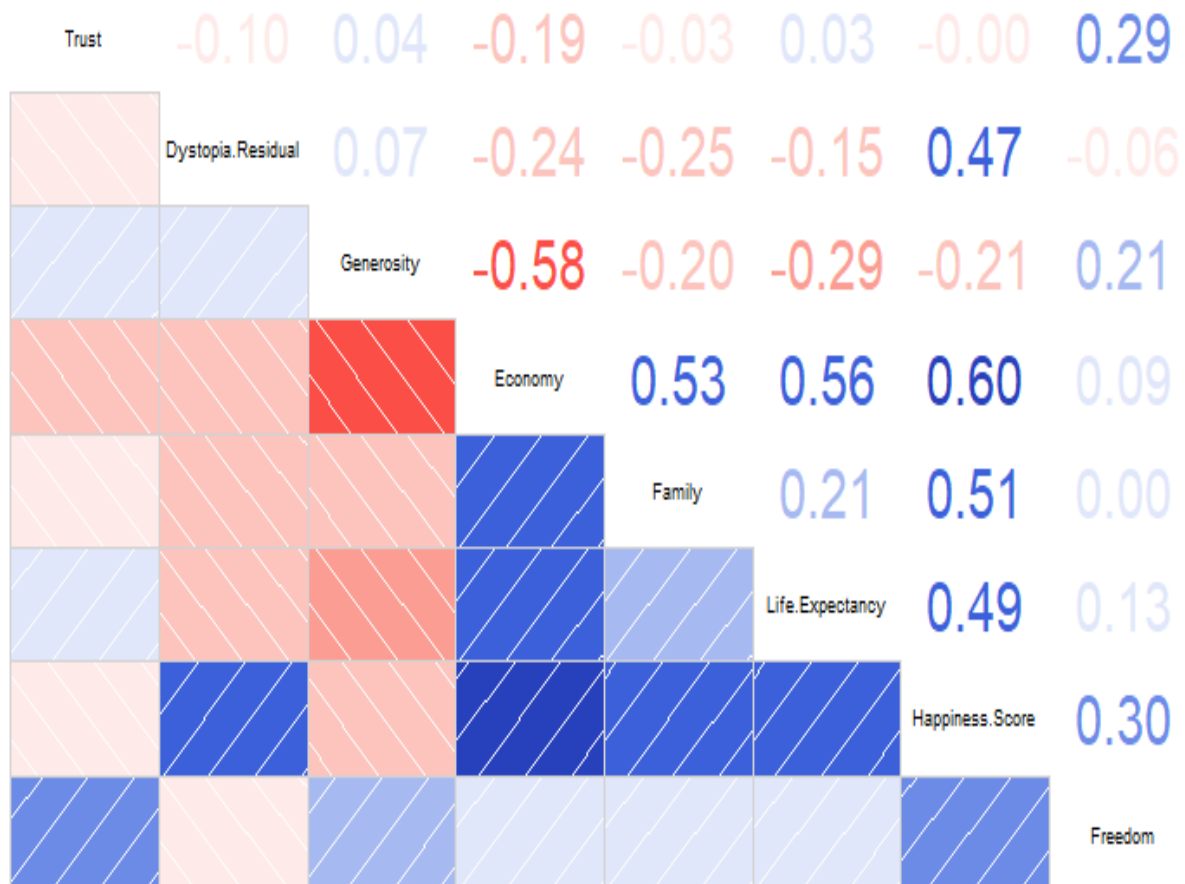
**i. Correlation between “Happiness Score” and the other variables in Africa-**

Economy > Family > Life. Expectancy > Dystopia. Residual > Freedom

There is no correlation between happiness score and trust.

There is an inverse correlation between happiness score and generosity.

### Happiness Matrix for Africa



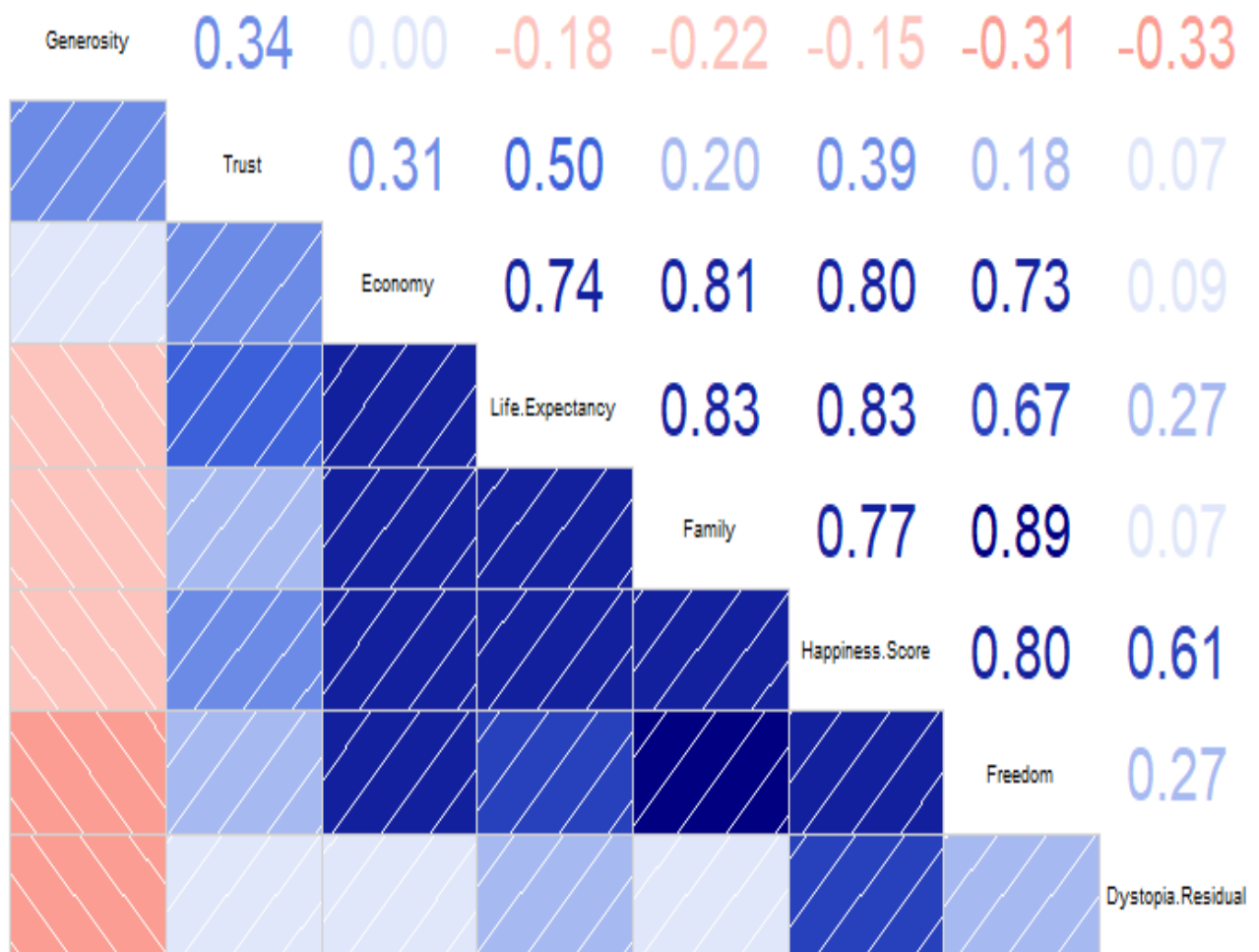




**iv. Correlation between “Happiness Score” and the other variables in North America**

Life. Expectancy > Economy > Freedom > Family > Dystopia. Residual > Trust  
There is an inverse correlation between happiness score and generosity.

### Happiness Matrix for North America



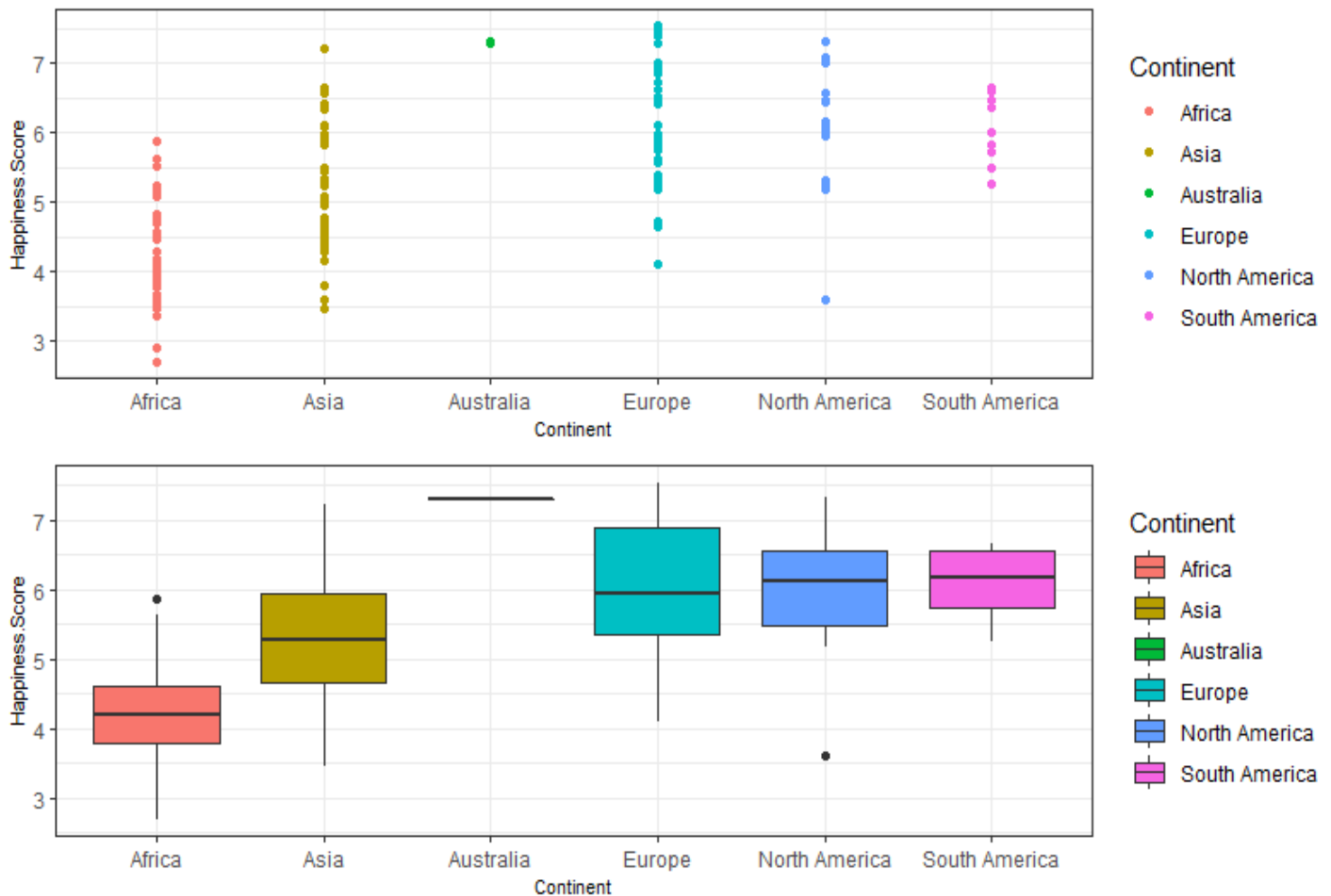




## 4) Happiness score for each continent

We will use scatter plot, box plot, and violin plot to see the happiness score distribution in different countries, how this score is populated in these continents and also will calculate the mean and median of happiness score for each of these continents.

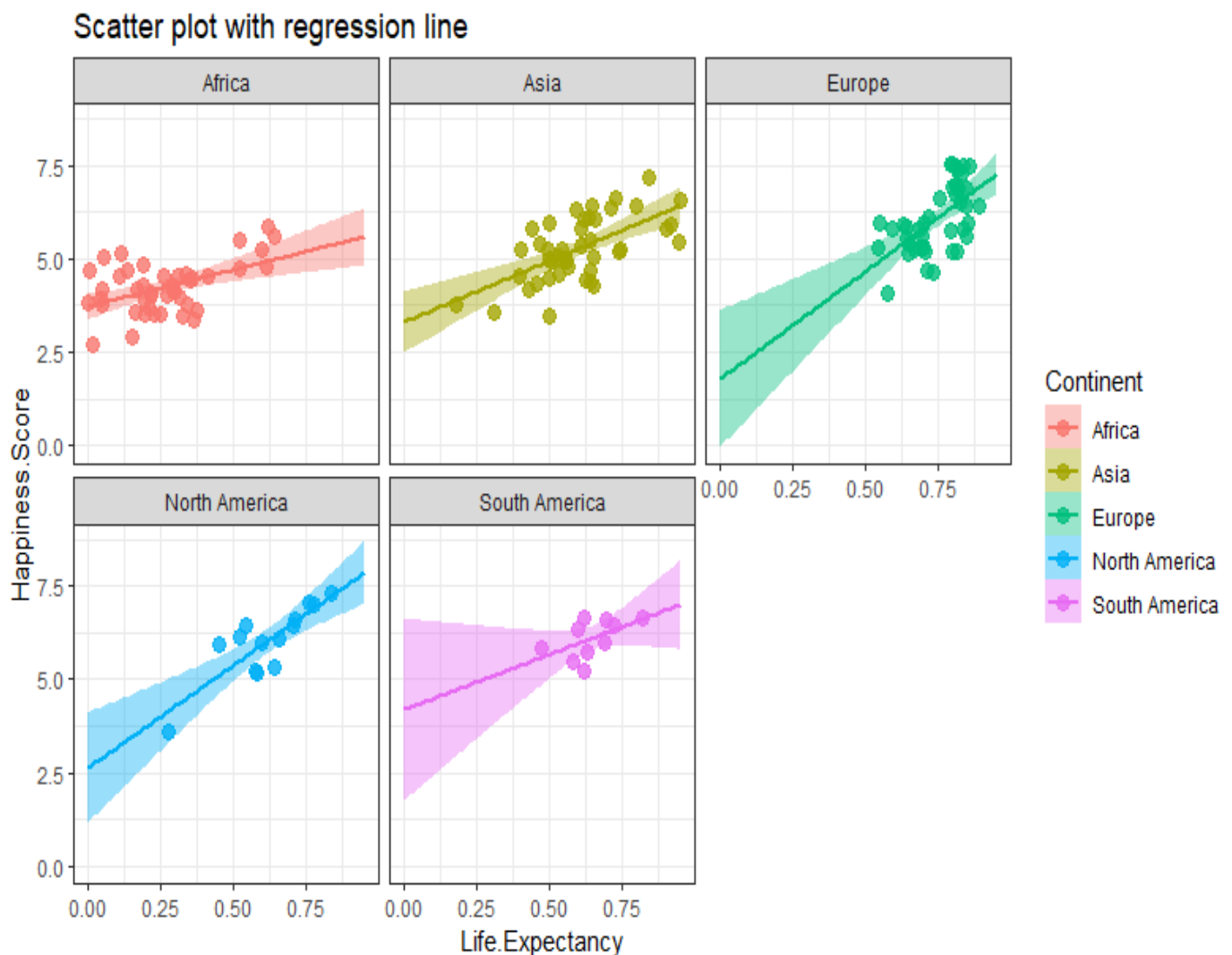
As we can see in plots, Australia has the highest median happiness score. Europe, South America, and North America are in the second place regarding median happiness score. Asia has the lowest median after Africa. We can see the range of happiness score for different continents, and also the concentration of happiness score.



## 5) Scatter plot with regression line

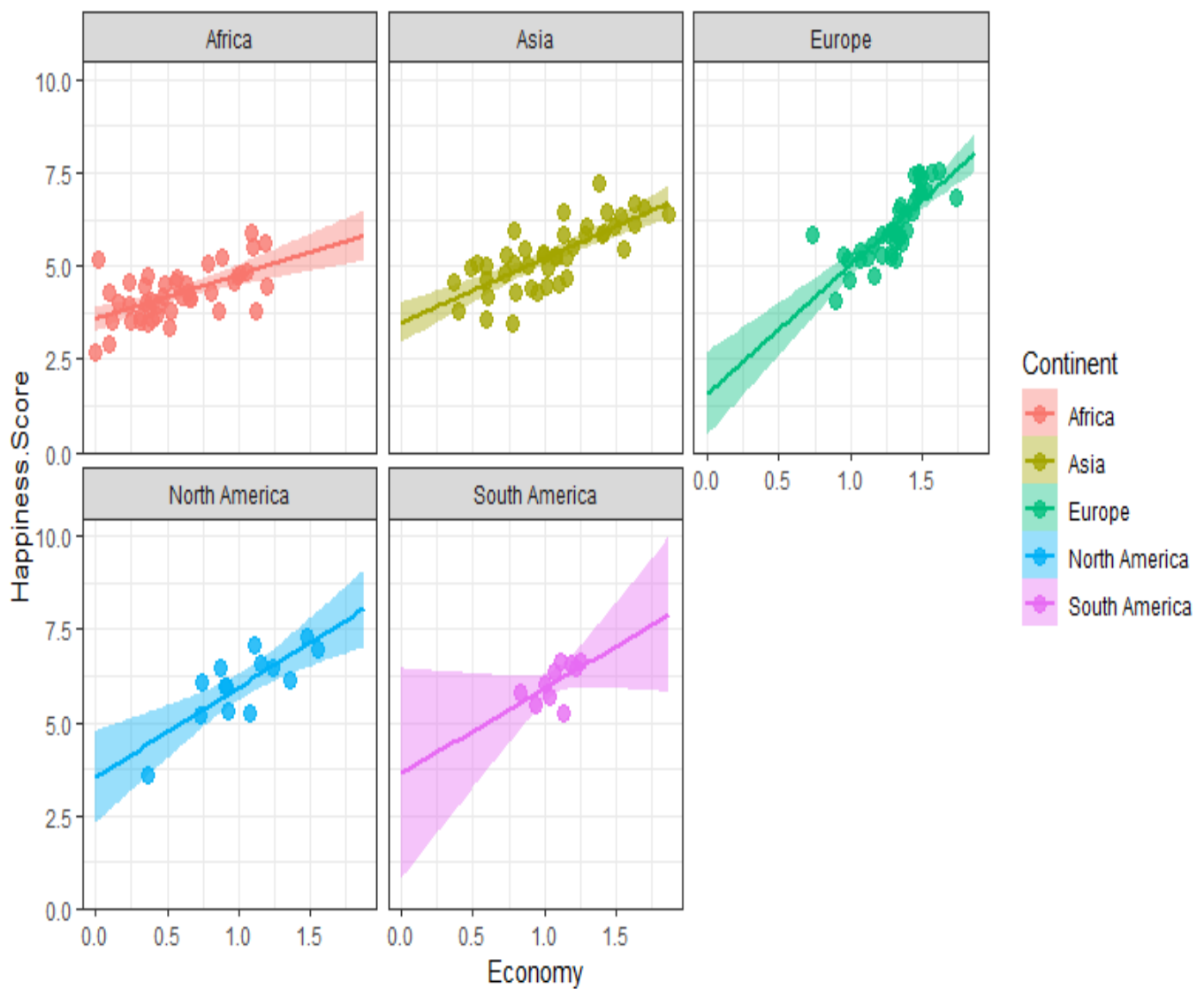
We can see the correlation between happiness score and the other seven factors in the happiness dataset for different continents by creating a scatter plot.

- i. The correlation between life expectancy and happiness score in Europe, North America, and Asia is more significant than the other continents. Worth mentioning that we will not take Australia into account because there are just two countries in Australia and creating scatter plot with the regression line for this continent will not give us any insight.

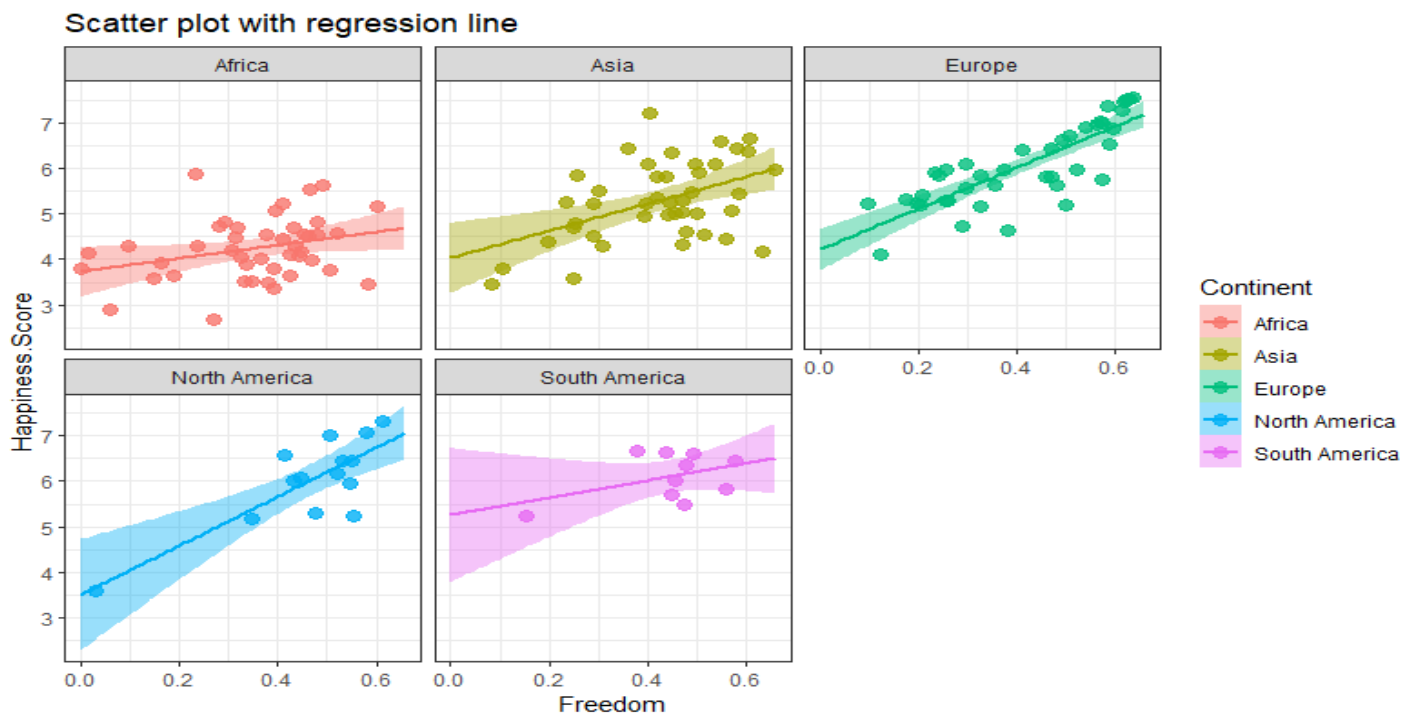


- ii. We can see pretty the same result here for the correlation between happiness score and economy. Africa has the lowest relationship in this regard.

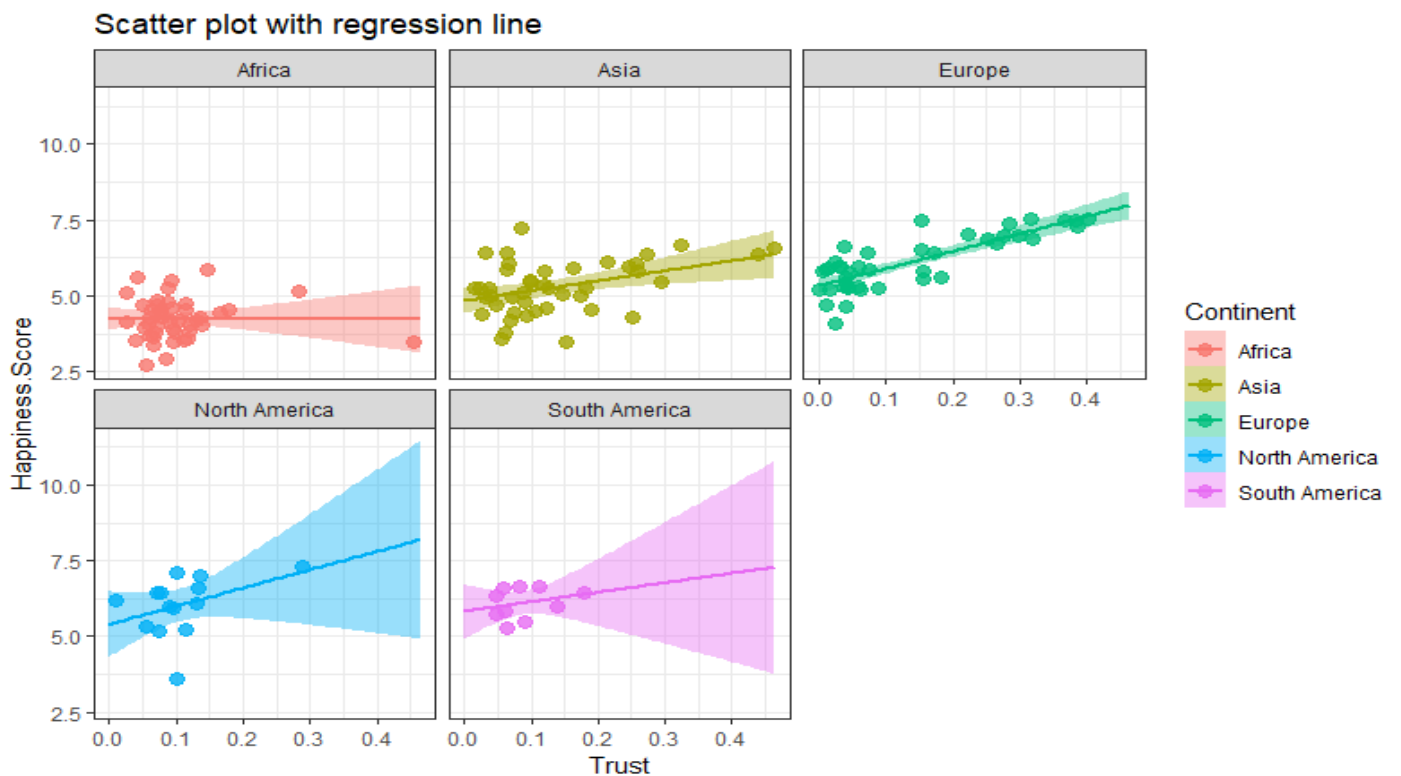
Scatter plot with regression line



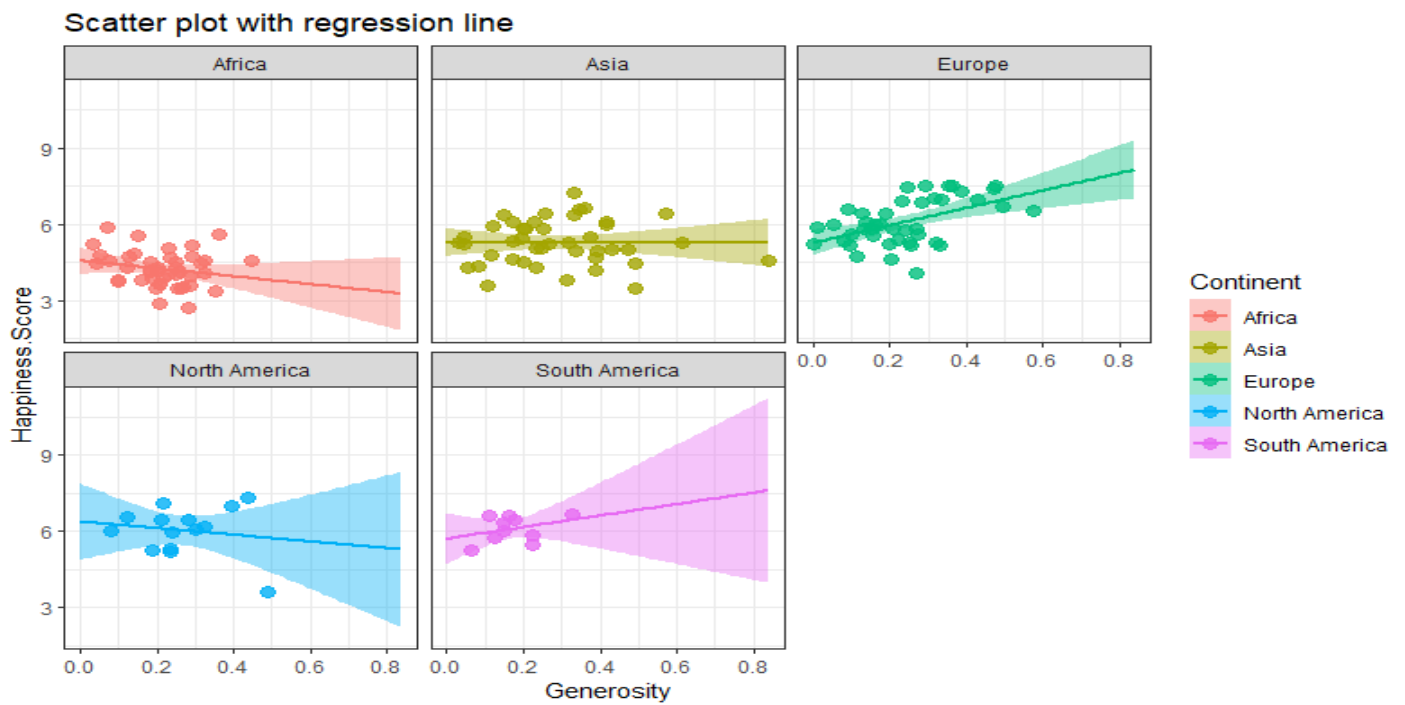
- iii. Freedom in Europe and North America is more correlated to happiness score than any other continents.



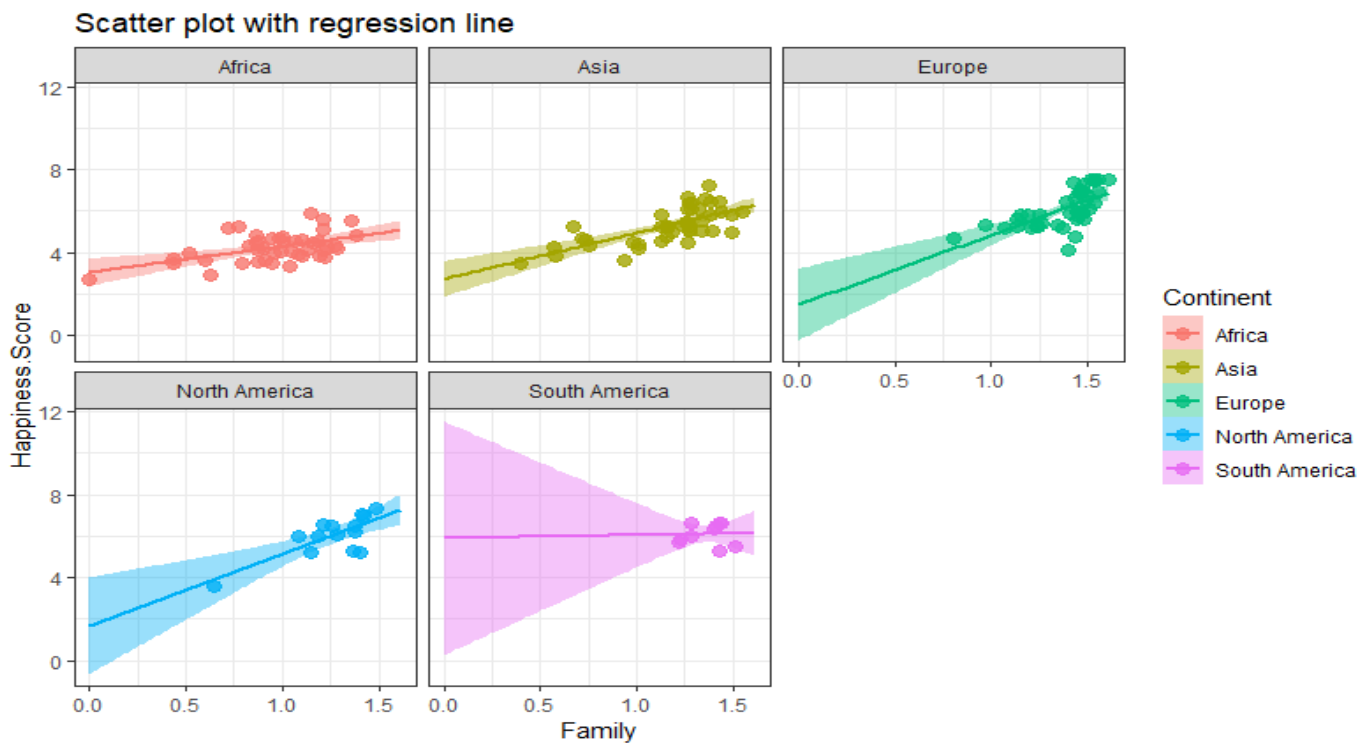
- iv. Approximately there is no correlation between trust and happiness score in Africa.



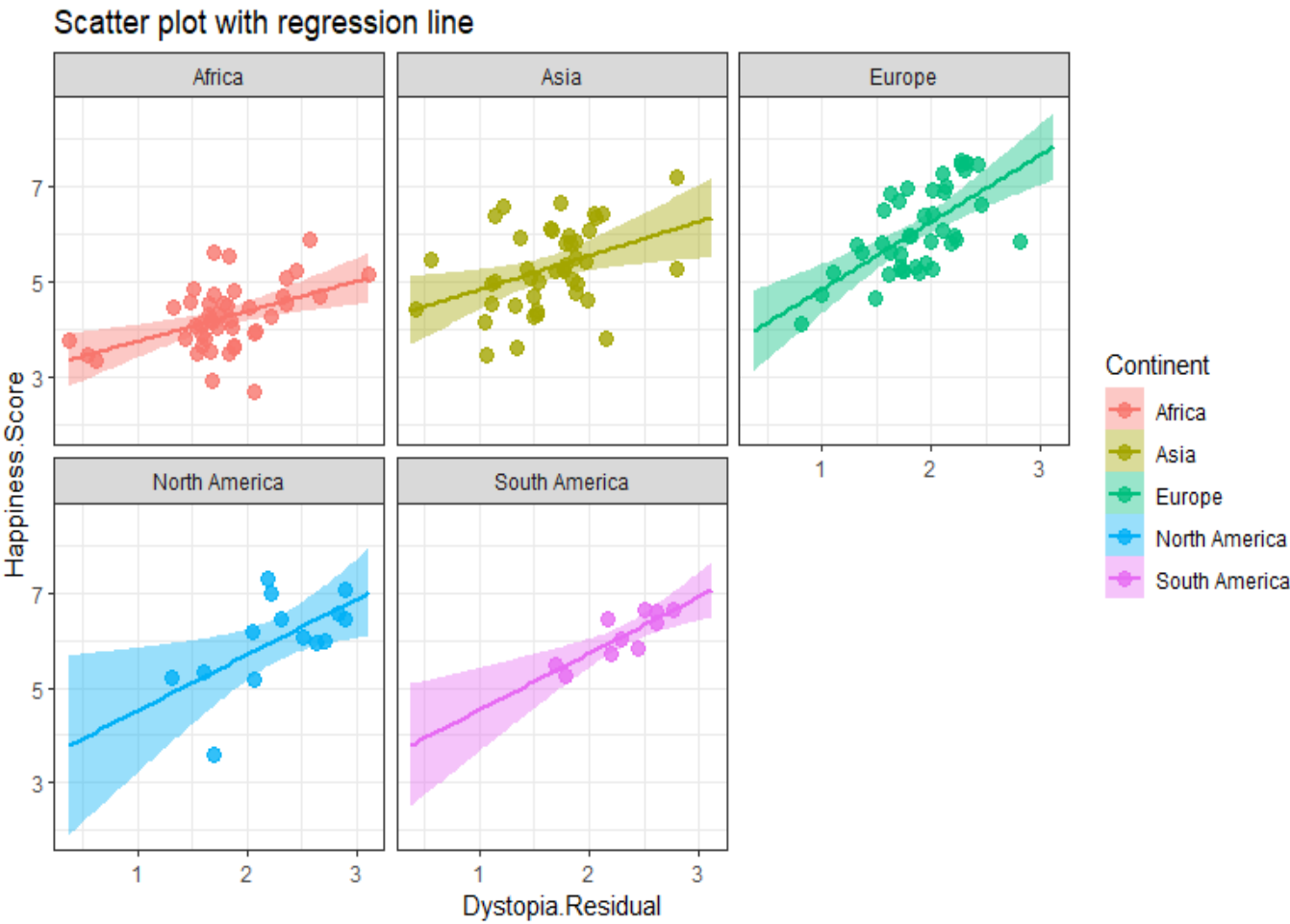
- v. The regression line has a positive slope only for Europe and South America. For Asia the line is horizontal, and for Africa and North America the slope is negative.



- vi. In South America with increase in the family score, the happiness score remains constant.



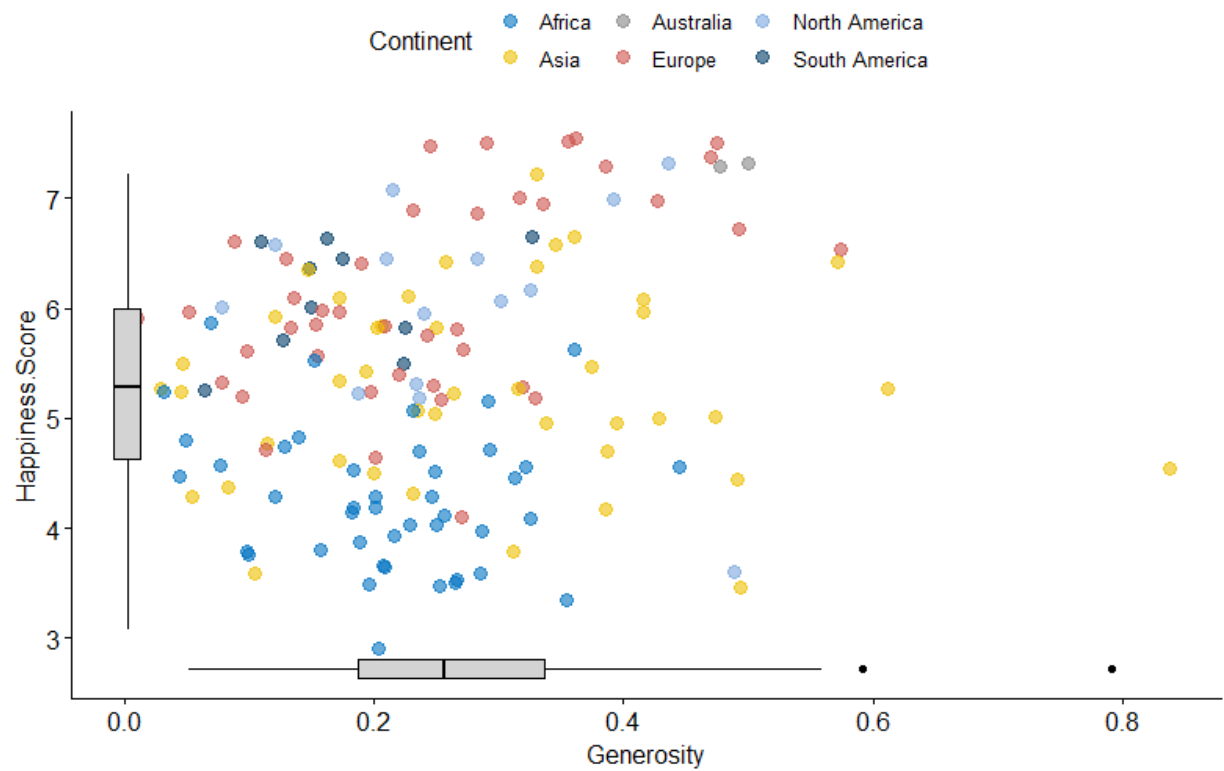
vii. All continents act pretty the same regarding dystopia residual.



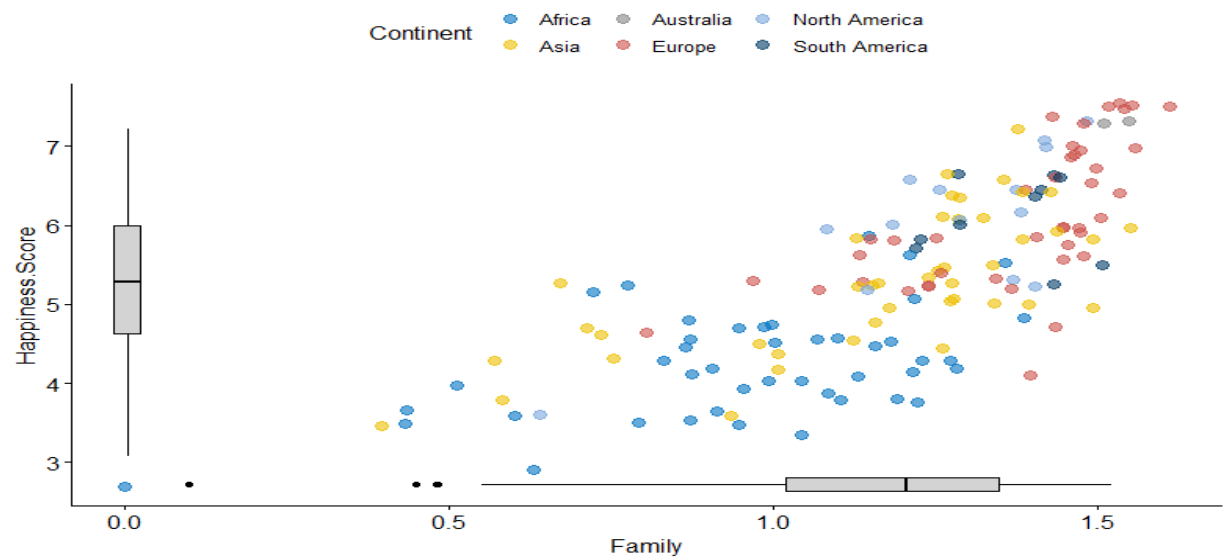
## 6) Scatter plot coloured by Continents

another way of seeing happiness score distribution on different continents when taking the correlation of happiness score with different variables into account.

### i. Generosity

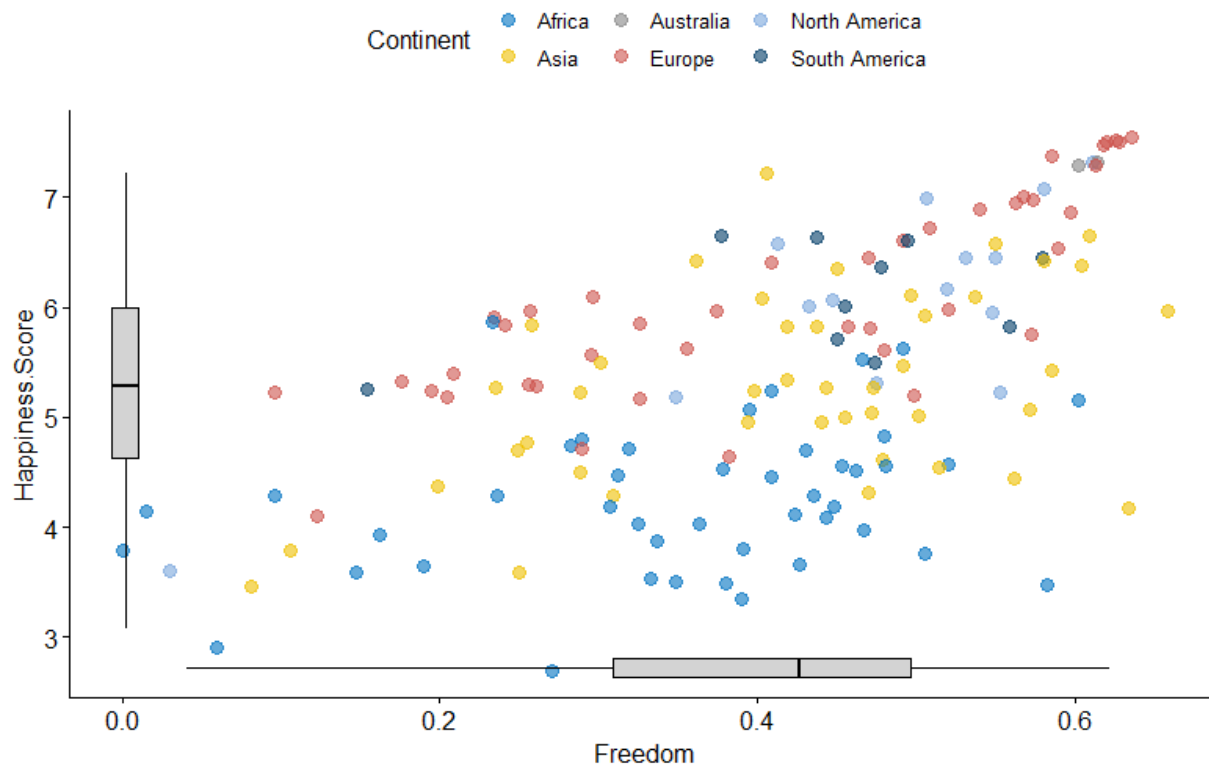


### ii. Family-

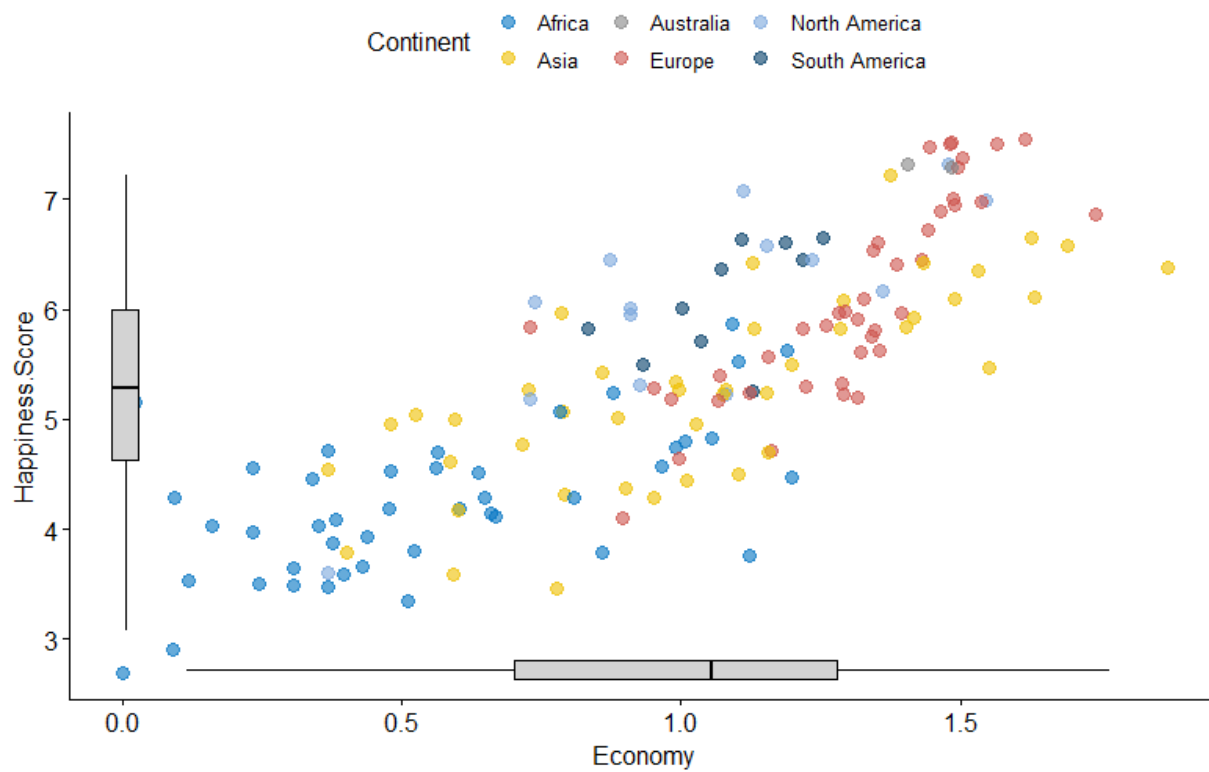




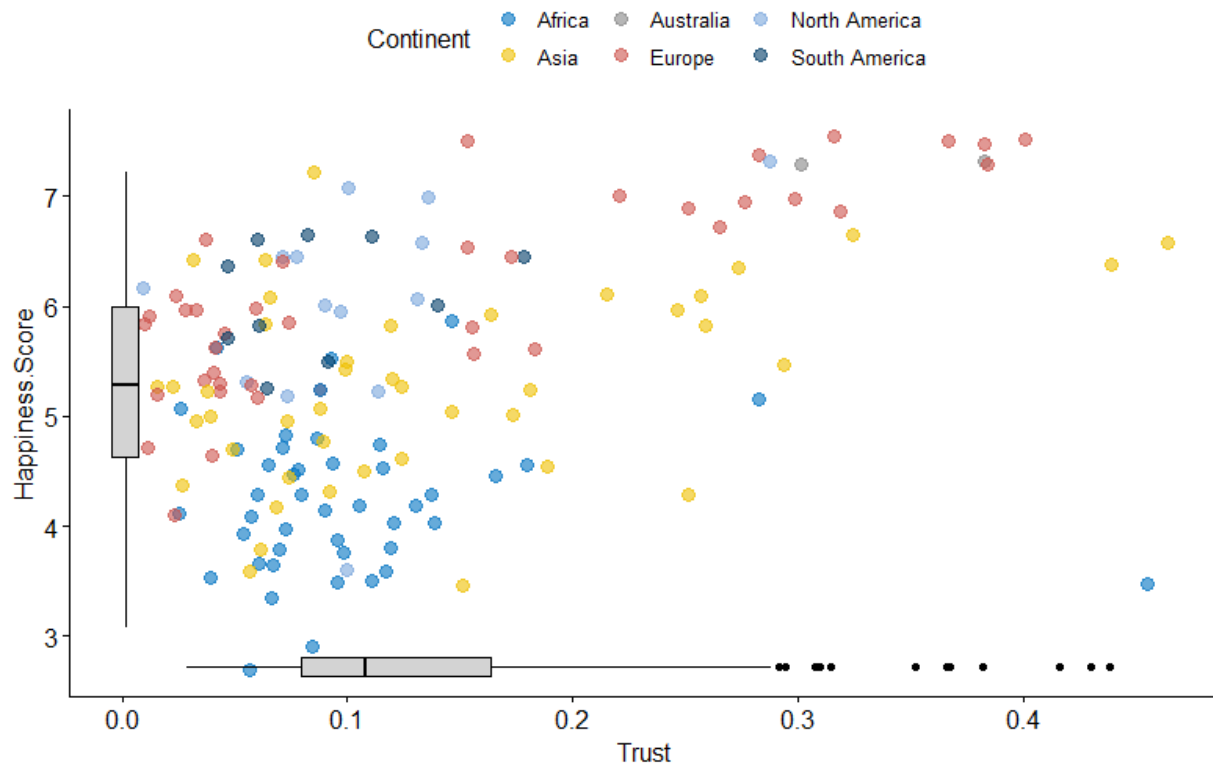
### iii. FREEDOM-



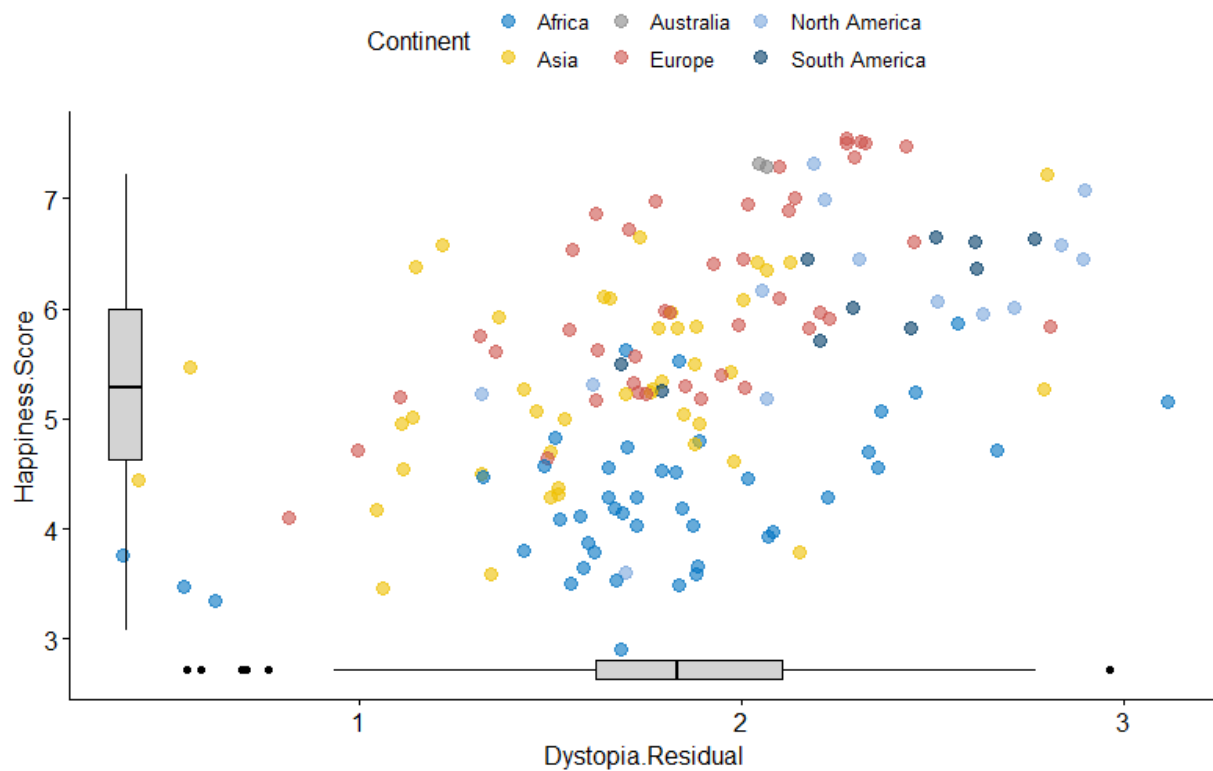
### iv. ECONOMY-



## v. TRUST -



## vi. DYSTOPIA-



## vii. Life expectancy-

