Data analysis

This data analysis is conducted using the R language and the data is stored in a .csv file.

Dataset

```
##         team     org team_size response_rate response_count mean_age mean_tenure
## 1   VxWVZXy qXOd3XD         3          0.67              2    26.00        7.00
## 2   OlvA1P1 ml4MwXj         4          0.75              3    25.33        6.00
## 3   5xOnMXW oXoqePO         3          1.00              3    24.00        4.00
## 4   JlBq3PN Kl3zeP6         4          0.75              3    25.00        2.00
## 5   rX1wnPb ylrepPL         6          0.83              5    29.20        4.00
## 6   KPjegx7 VxWvAXy         4          0.75              3    24.33        3.00
## 7   WXzOpPm OxAoGlQ         4          0.75              3    28.67        4.67
## 8   zP7KKP8 5xO2qXW         6          0.67              4    24.00        3.75
## 9   5P88oP9 5xO2qXW         7          0.86              6    26.50        6.42
## 10  4xdmYPE 5P8oox9         3          1.00              3    29.67        8.33
## 11  YXmyDXN k7lkqxD         3          0.67              2    25.00        3.00
## 12  DPpkGx8 k7lkqxD         4          0.75              3    23.00        1.67
## 13  8xNAJXm yEXnYlg         5          1.00              5    23.80        5.00
## 14  ml4MwXj GVX26X9         5          0.80              4    22.75        4.00
## 15  gxwyalv M8xNJxm         3          1.00              3    28.67        4.00
## 16  ylrepPL M8xNJxm         3          0.67              2    30.00        4.50
## 17  2PJKklO M8xNJxm         3          1.00              3    23.00        0.33
## 18  VxWvAXy M8xNJxm         6          0.83              5    30.20        7.20
## 19  OxAoGlQ 3Bl6Nlb         3          0.67              2    27.00        4.50
## 20  rX1dnlb 3Bl6Nlb         5          0.80              4    26.25        5.75
## 21  5xO2qXW 3Bl6Nlb         6          0.50              3    24.67        3.33
## 22  JlBJYlN 3Bl6Nlb         6          1.00              6    35.33        6.25
##     mean_overconfidence_score mean_team_history mean_voice_behavior
## 1                        4.00              6.50                3.92
## 2                        4.00             12.67                4.72
## 3                        5.67             20.33                3.45
## 4                        7.33             14.00                3.28
## 5                        3.20             11.60                3.77
## 6                        6.67              8.33                4.55
## 7                        4.33             11.67                3.61
## 8                        3.25              4.25                4.17
## 9                        5.83             19.67                4.28
## 10                       3.33              5.00                4.33
## 11                       6.00             14.00                4.17
## 12                       4.67              5.67                3.78
## 13                       4.00             32.40                3.57
## 14                       6.00             29.50                3.62
## 15                       6.33             11.00                4.33
## 16                       5.00             19.00                3.83
## 17                       4.33              3.00                4.39
## 18                       4.60             13.40                4.07
```
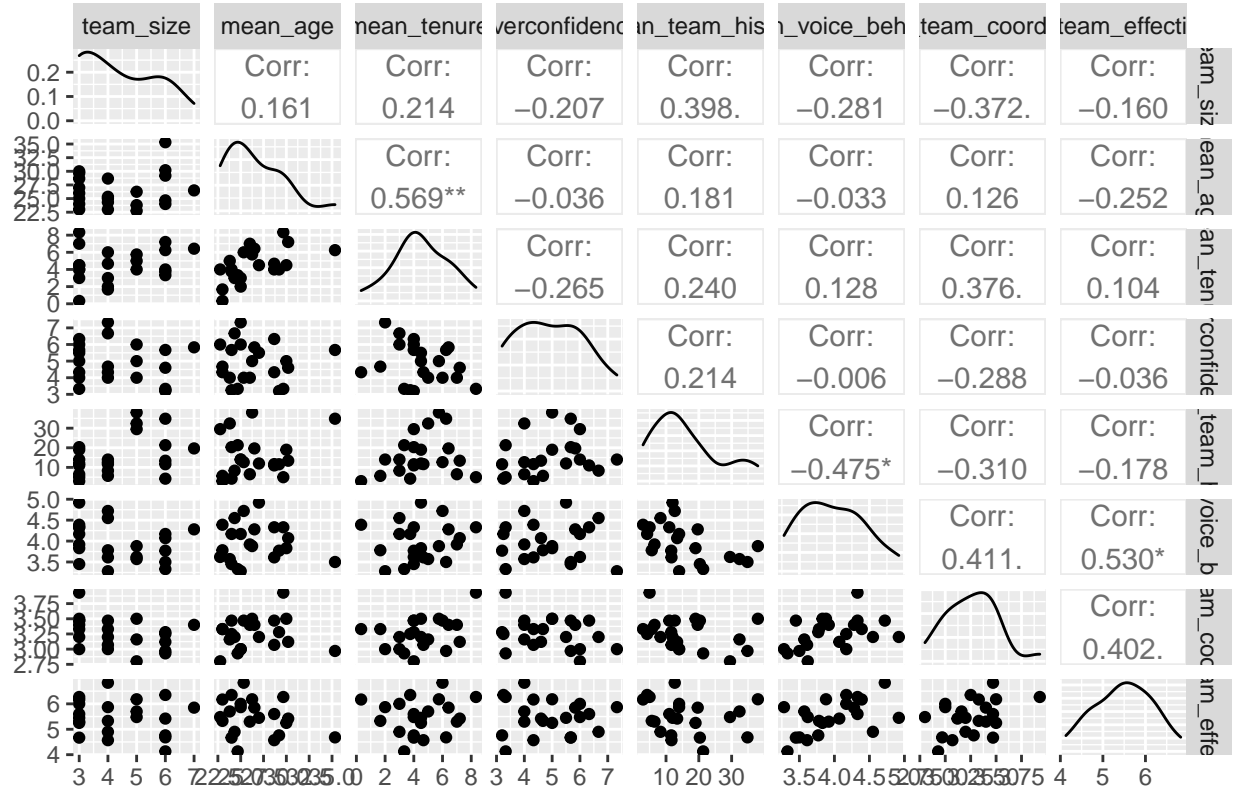
```
## 19                          5.50            12.00                  4.92
## 20                          5.00            38.00                  3.88
## 21                          3.33            21.33                  3.33
## 22                          5.67            34.83                  3.50
##    mean_team_coordination mean_team_effectiveness
## 1                    3.40                    5.30
## 2                    3.47                    6.83
## 3                    3.47                    4.67
## 4                    3.00                    5.87
## 5                    3.28                    4.76
## 6                    3.20                    4.90
## 7                    3.07                    4.57
## 8                    3.25                    6.35
## 9                    3.40                    5.85
## 10                   3.93                    6.27
## 11                   3.00                    6.00
## 12                   3.33                    5.33
## 13                   3.16                    5.70
## 14                   2.80                    5.48
## 15                   3.47                    5.60
## 16                   3.50                    5.25
## 17                   3.33                    6.17
## 18                   3.12                    5.42
## 19                   3.20                    5.45
## 20                   3.50                    6.18
## 21                   2.93                    4.13
## 22                   2.97                    4.68
```

General Analysis

Correlogram of core variables

Pairwise Correlation Matrix

	team_size	mean_age	mean_tenure	overconfidence	an_team_his	n_voice_beh	team_coord	team_effecti	
		Corr: 0.161	Corr: 0.214	Corr: −0.207	Corr: 0.398.	Corr: −0.281	Corr: −0.372.	Corr: −0.160	eam_siz
			Corr: 0.569**	Corr: −0.036	Corr: 0.181	Corr: −0.033	Corr: 0.126	Corr: −0.252	ean_ag
				Corr: −0.265	Corr: 0.240	Corr: 0.128	Corr: 0.376.	Corr: 0.104	an_ten
					Corr: 0.214	Corr: −0.006	Corr: −0.288	Corr: −0.036	confide
						Corr: −0.475*	Corr: −0.310	Corr: −0.178	team_
							Corr: 0.411.	Corr: 0.530*	/oice_b
								Corr: 0.402.	am_coc
									am_effe

Multiple Linear Regression of all variables against team effectiveness

```
##
## Call:
## lm(formula = mean_team_effectiveness ~ ., data = core_data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.03124 -0.25415  0.06252  0.29934  1.00788
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                1.54565    3.25897   0.474   0.6426
## team_size                  0.04067    0.13321   0.305   0.7646
## mean_age                  -0.08096    0.05469  -1.480   0.1610
## mean_tenure                0.03772    0.10823   0.349   0.7326
## mean_overconfidence_score  0.03276    0.14083   0.233   0.8194
## mean_team_history          0.00907    0.01878   0.483   0.6367
## mean_voice_behavior        0.69866    0.38103   1.834   0.0881 .
## mean_team_coordination     0.81453    0.74870   1.088   0.2950
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6257 on 14 degrees of freedom
## Multiple R-squared:  0.4352, Adjusted R-squared:  0.1529
## F-statistic: 1.541 on 7 and 14 DF,  p-value: 0.2322
```
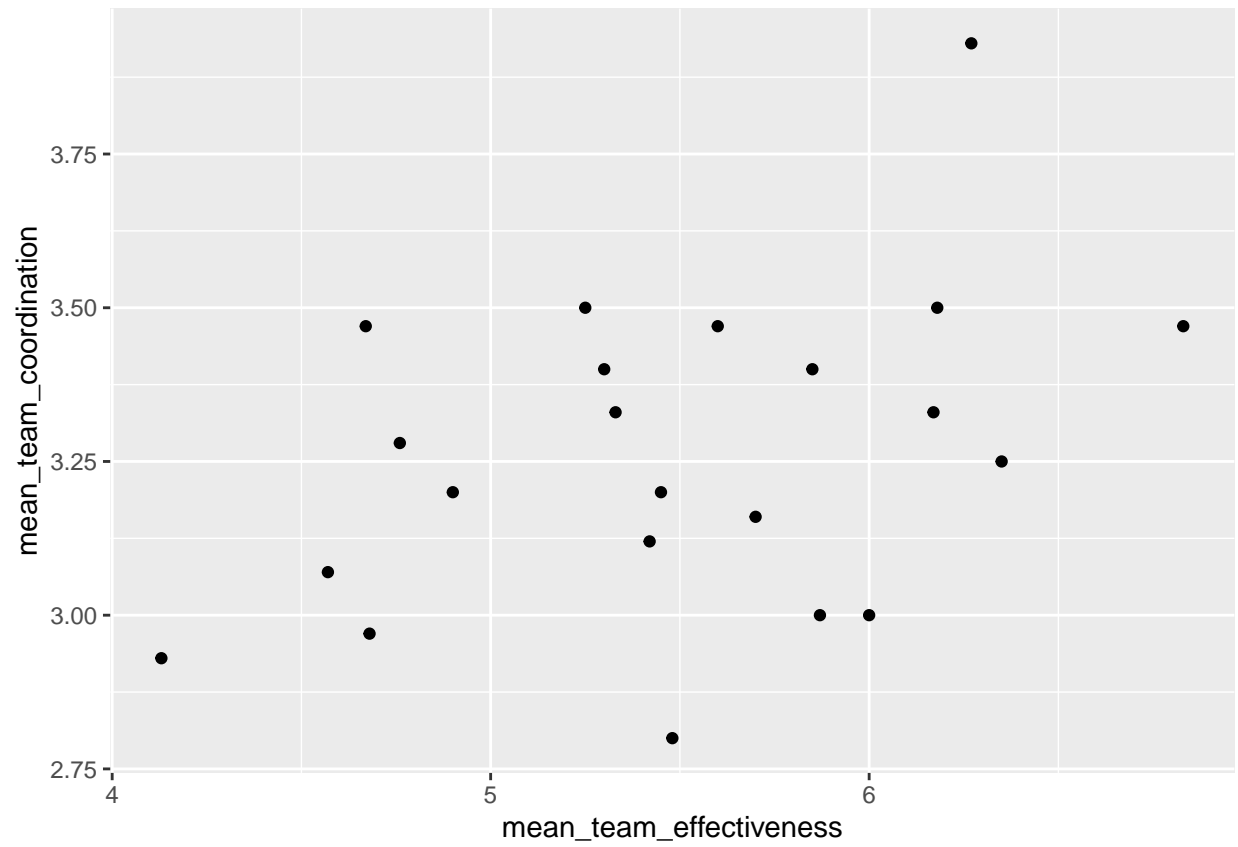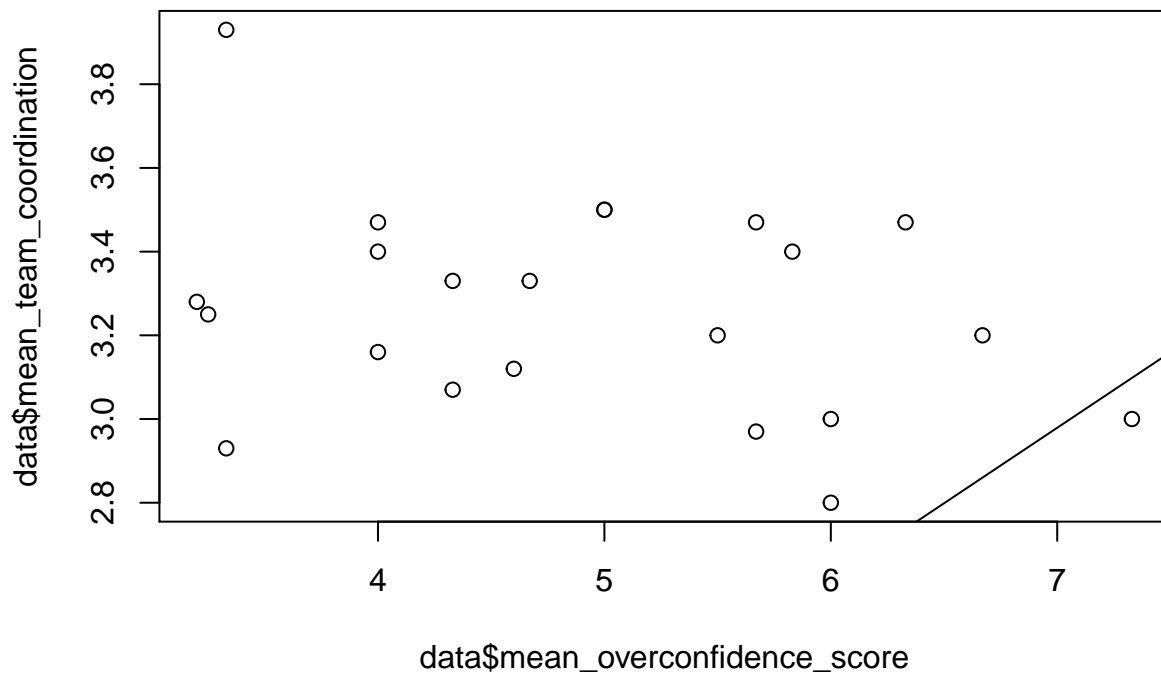
Hypothesis testing

Hypothesis No. 1

H1: Team Overconfidence has a negative effect on team coordination

```
##
## Call:
## lm(formula = mean_overconfidence_score ~ mean_team_coordination,
##     data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.0296 -0.7146  0.1071  0.6772  2.0648
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 9.310      3.276   2.842   0.0101 *
## mean_team_coordination     -1.348      1.001  -1.347   0.1930
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.167 on 20 degrees of freedom
## Multiple R-squared:  0.08318,    Adjusted R-squared:  0.03734
## F-statistic: 1.814 on 1 and 20 DF,  p-value: 0.193
```
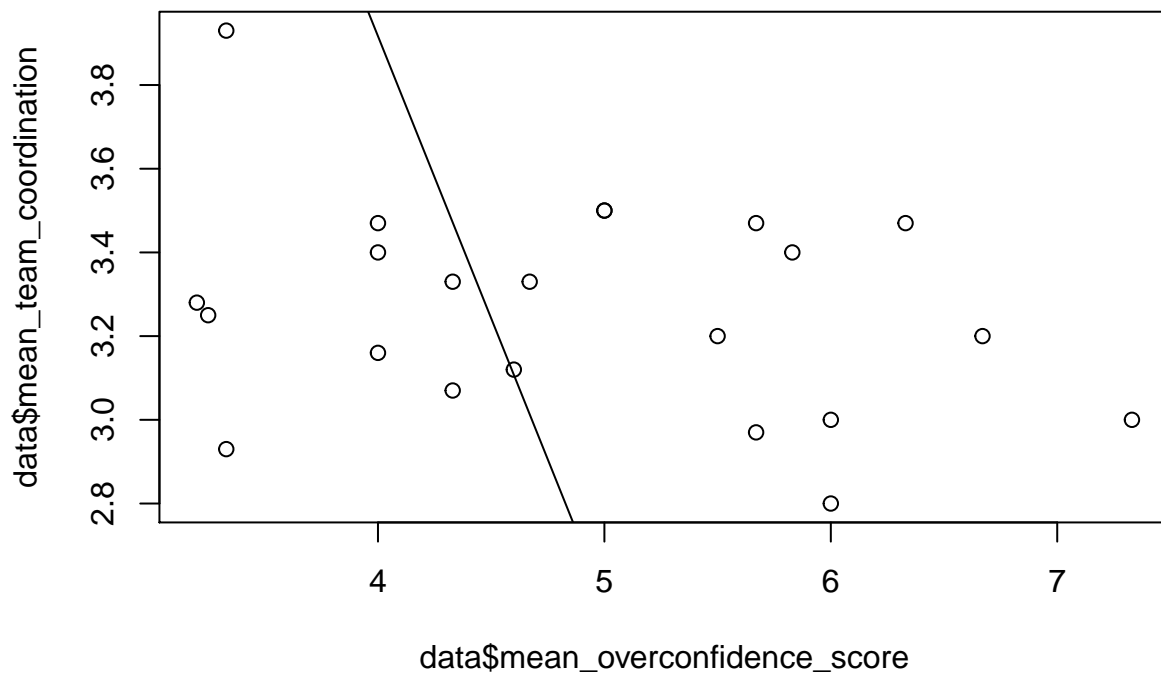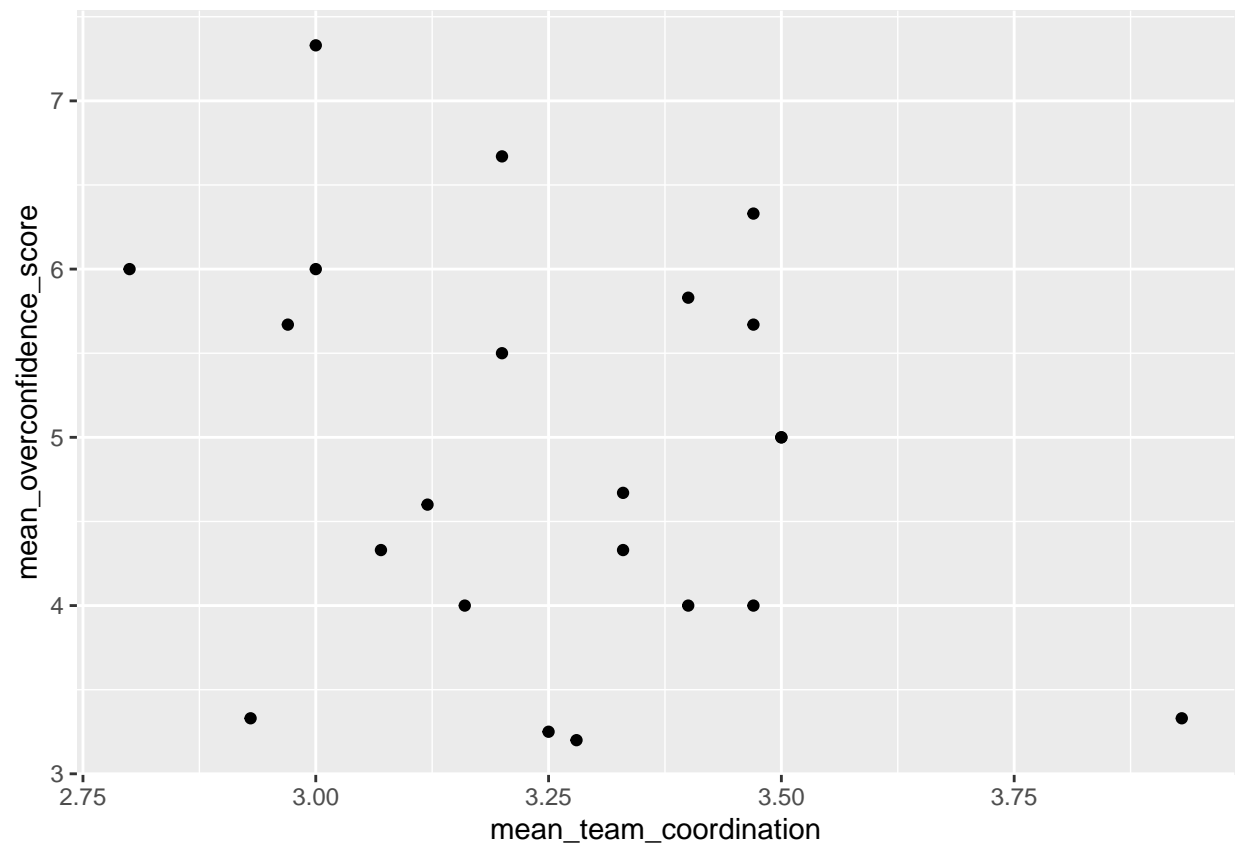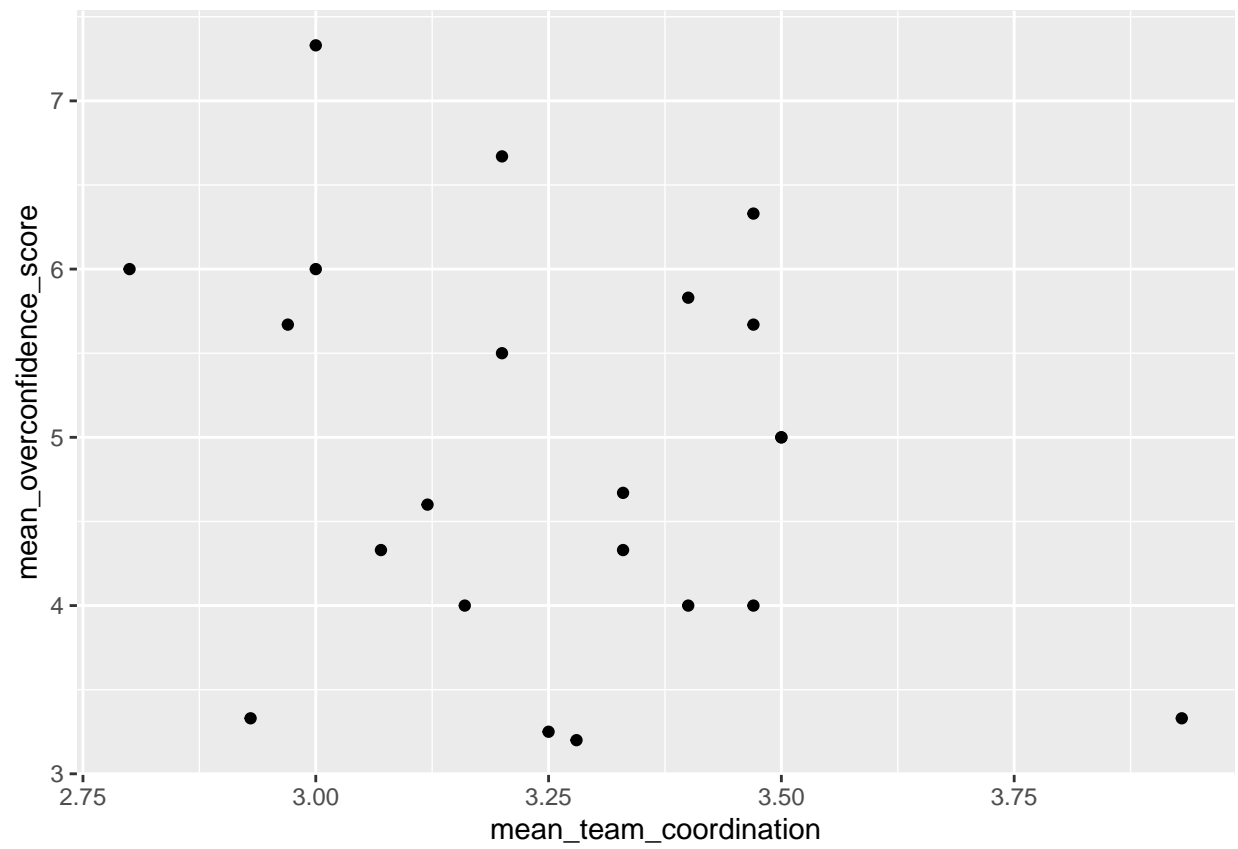
Hypothesis No. 2

H2: Team Overconfidence has a positive effect on team effectiveness

```
##
## Call:
## lm(formula = mean_team_effectiveness ~ mean_team_coordination,
##     data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.04159 -0.49459  0.04643  0.47478  1.11841
##
## Coefficients:
##                        Estimate Std. Error t value Pr(>|t|)
## (Intercept)              1.9866     1.7909   1.109   0.2805
## mean_team_coordination   1.0735     0.5473   1.961   0.0639 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6379 on 20 degrees of freedom
## Multiple R-squared:  0.1613, Adjusted R-squared:  0.1194
## F-statistic: 3.847 on 1 and 20 DF,  p-value: 0.06391
```
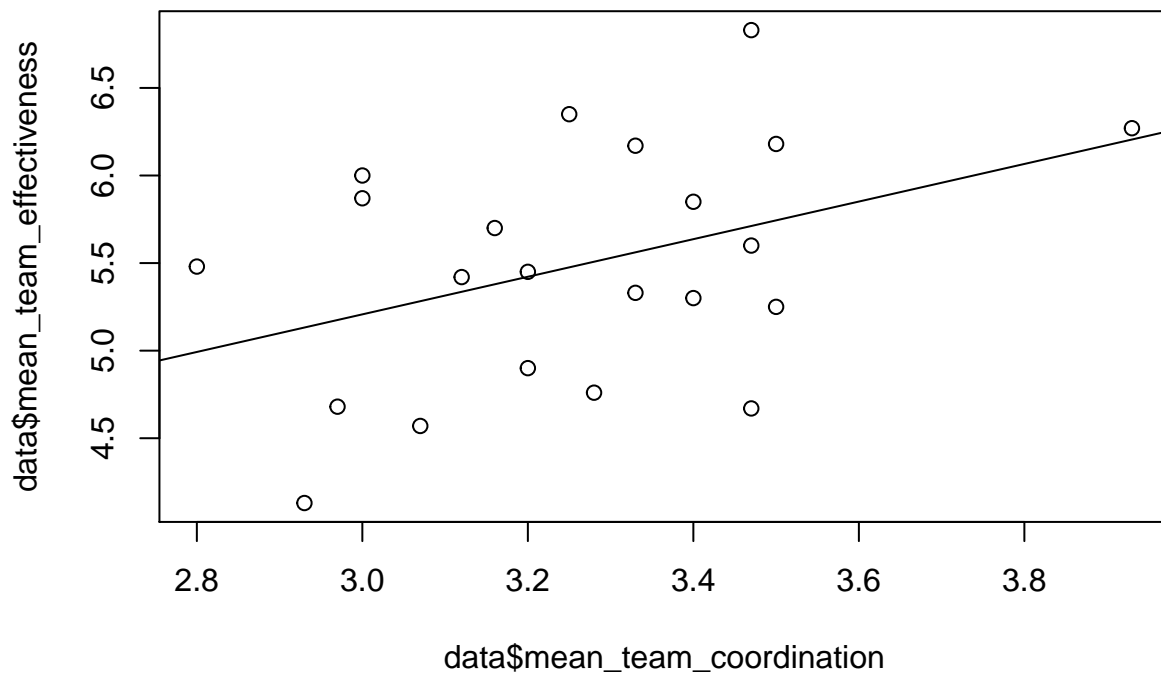
Hypothesis No. 3

H3: Team Overconfidence has a positive effect on team response rate

```
##
## Call:
## lm(formula = mean_team_coordination ~ mean_overconfidence_score +
##     mean_voice_behavior + inter, data = data)
##
## Residuals:
##      Min      1Q   Median      3Q      Max
## -0.33578 -0.16106 -0.05734  0.14110  0.40472
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                0.45259    1.85472   0.244    0.810
## mean_overconfidence_score  0.36093    0.34614   1.043    0.311
## mean_voice_behavior        0.79258    0.47149   1.681    0.110
## inter                     -0.10827    0.08813  -1.228    0.235
##
## Residual standard error: 0.2285 on 18 degrees of freedom
## Multiple R-squared:  0.3084, Adjusted R-squared:  0.1931
## F-statistic: 2.675 on 3 and 18 DF,  p-value: 0.07818

## Warning in abline(lm_voice_coordination): only using the first two of 4
## regression coefficients
```
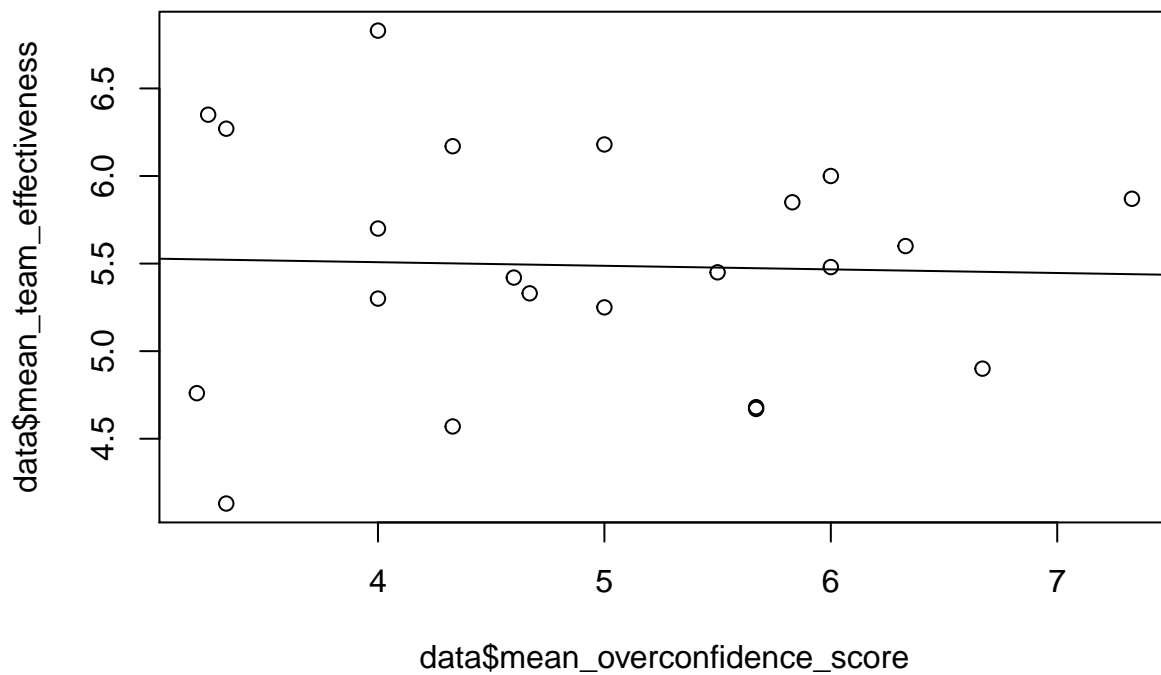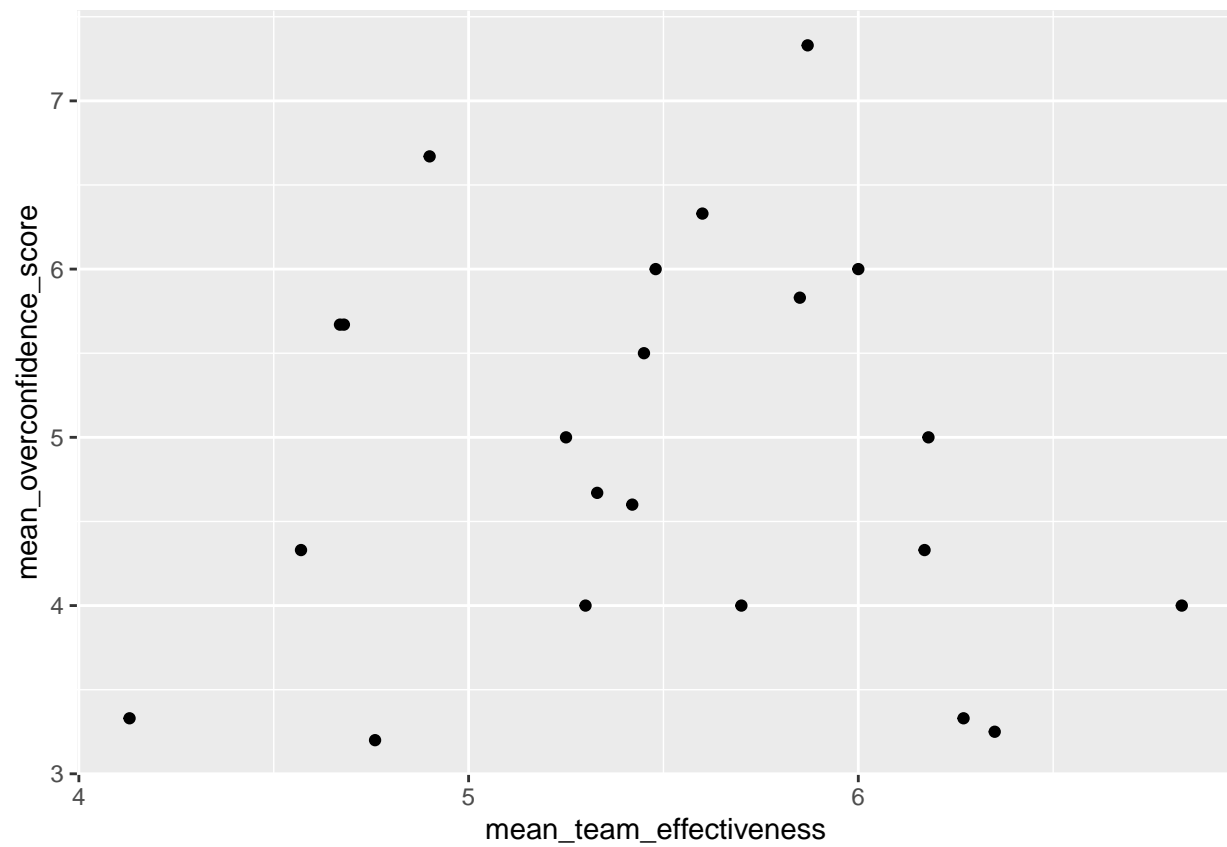
Extra Hypotheses

Hypothesis No. 1 - a

Hx1a: Team Overconfidence has a negative effect on team Effectiveness

```
##
## Call:
## lm(formula = mean_team_effectiveness ~ mean_overconfidence_score,
##     data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.39154 -0.47406 -0.00687  0.50759  1.32221
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                5.58988    0.64464   8.671 3.28e-08 ***
## mean_overconfidence_score -0.02052    0.12774  -0.161    0.874
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6961 on 20 degrees of freedom
## Multiple R-squared:  0.001289,   Adjusted R-squared:  -0.04865
## F-statistic: 0.02582 on 1 and 20 DF,  p-value: 0.874
```

Hypothesis No. 1 - b

Hx1b: Team Overconfidence has a reverse effect on team Effectiveness mediated by team Coordination

```
##
## Call:
## lm(formula = mean_team_effectiveness ~ mean_overconfidence_score +
##     mean_team_coordination + inter2, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.82638 -0.56431  0.06479  0.43270  1.07702
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -9.9264     6.6484  -1.493   0.1527
## mean_overconfidence_score   2.5229     1.3713   1.840   0.0824 .
## mean_team_coordination      4.6957     2.0400   2.302   0.0335 *
## inter2                     -0.7713     0.4261  -1.810   0.0870 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6159 on 18 degrees of freedom
## Multiple R-squared:  0.2964, Adjusted R-squared:  0.1791
## F-statistic: 2.527 on 3 and 18 DF,  p-value: 0.08991

## Warning in abline(lm_overconfidence_effectiveness_coordination): only using the
## first two of 4 regression coefficients
```