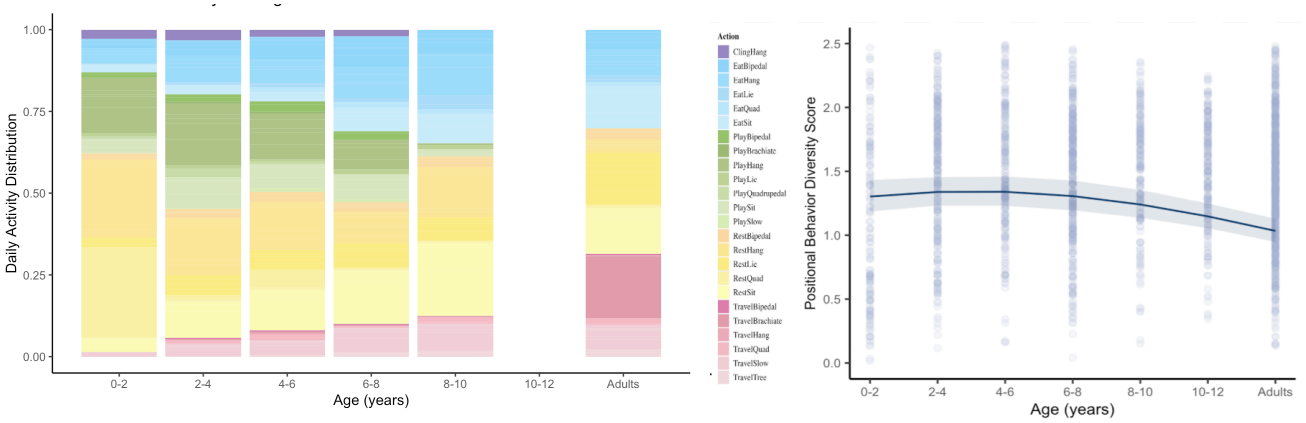
Paper Figures

Table 1

Act	Travel	*add desc*
	Play	*add desc*
	Rest	*add desc*
	Eat	*add desc*
	Cling	*add desc*
Body Position	Hang	*add desc*
	Bipedal	*add desc*
	Lie	*add desc*
	Quadrupedal	*add desc*
	Sit	*add desc*
	Brachiate	*add desc*
	Slow Clamber	*add desc*
Tree Position	Ibu	*add desc*
	Branch	*add desc*
	Crotch	*add desc*
	Ground	*add desc*
	Liana	*add desc*
	Nest	*add desc*
	Trunk	*add desc*

Figure 1



Statistic details:

Model Information (right graph) |

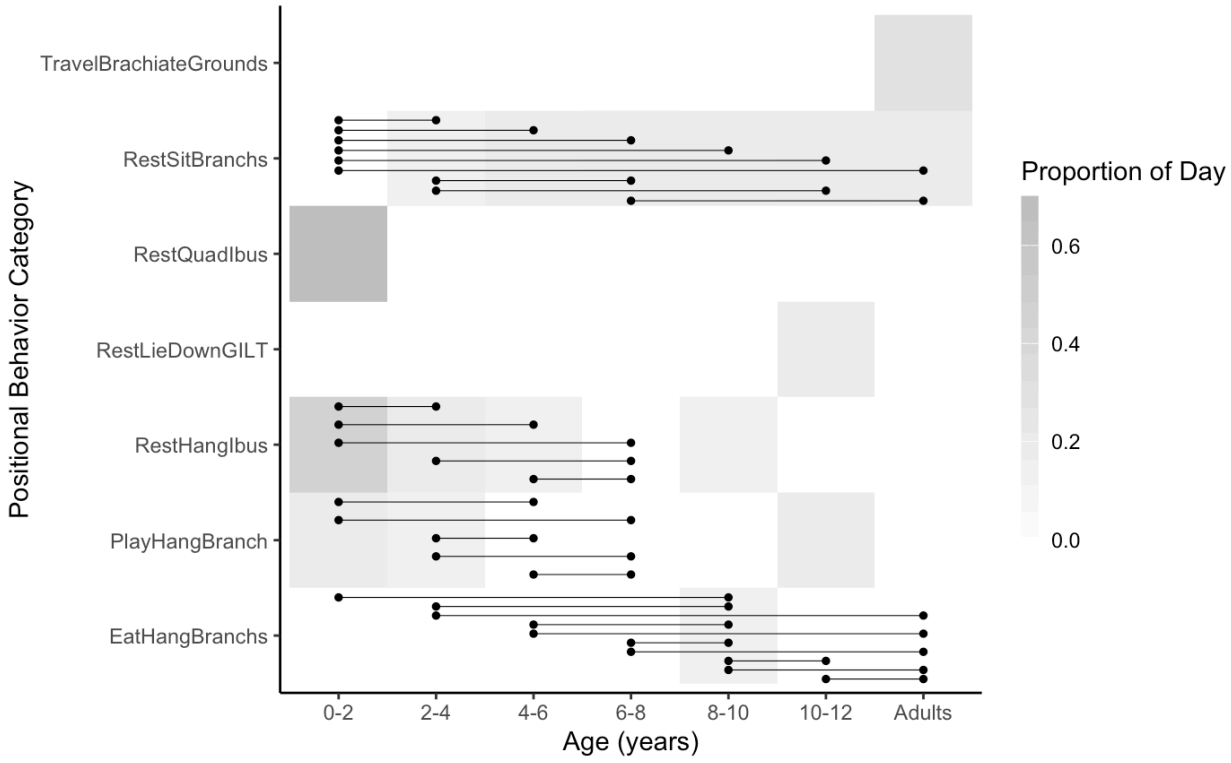
```
> summary(model)
 Family: gaussian  ( log )
Formula:          DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber)
Data: dive_d

     AIC      BIC   logLik deviance df.resid
  2858.6   2893.2  -1423.3   2846.6     2346

Random effects:

Conditional model:
 Groups       Name        Variance  Std.Dev.
 Name         (Intercept) 9.888e-02 3.144e-01
 FollowNumber (Intercept) 6.059e-10 2.462e-05
 Residual                 1.826e-01 4.273e-01
Number of obs: 2352, groups:  Name, 83; FollowNumber, 2339

Dispersion estimate for gaussian family (sigma^2): 0.183

Conditional model:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  0.210762   0.066167   3.185 0.001446 **
Age          0.066736   0.032439   2.057 0.039663 *
I(Age^2)    -0.013153   0.003802  -3.459 0.000542 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Age makes the model better (anova):

```
> # Test that adding age actually made the model better
> anova(model.test1,model2a)
Data: dive_d
Models:
model.test1: DiversityScore ~ (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model2a: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
           Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.test1  4 2953.2 2976.2 -1472.6   2945.2
model2a      5 2868.8 2897.6 -1429.4   2858.8 86.379      1  < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> anova(model2a,model2)
Data: dive_d
Models:
model2a: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model2: DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model2a  5 2868.8 2897.6 -1429.4   2858.8
model2   6 2858.6 2893.2 -1423.3   2846.6 12.139      1  0.0004938 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

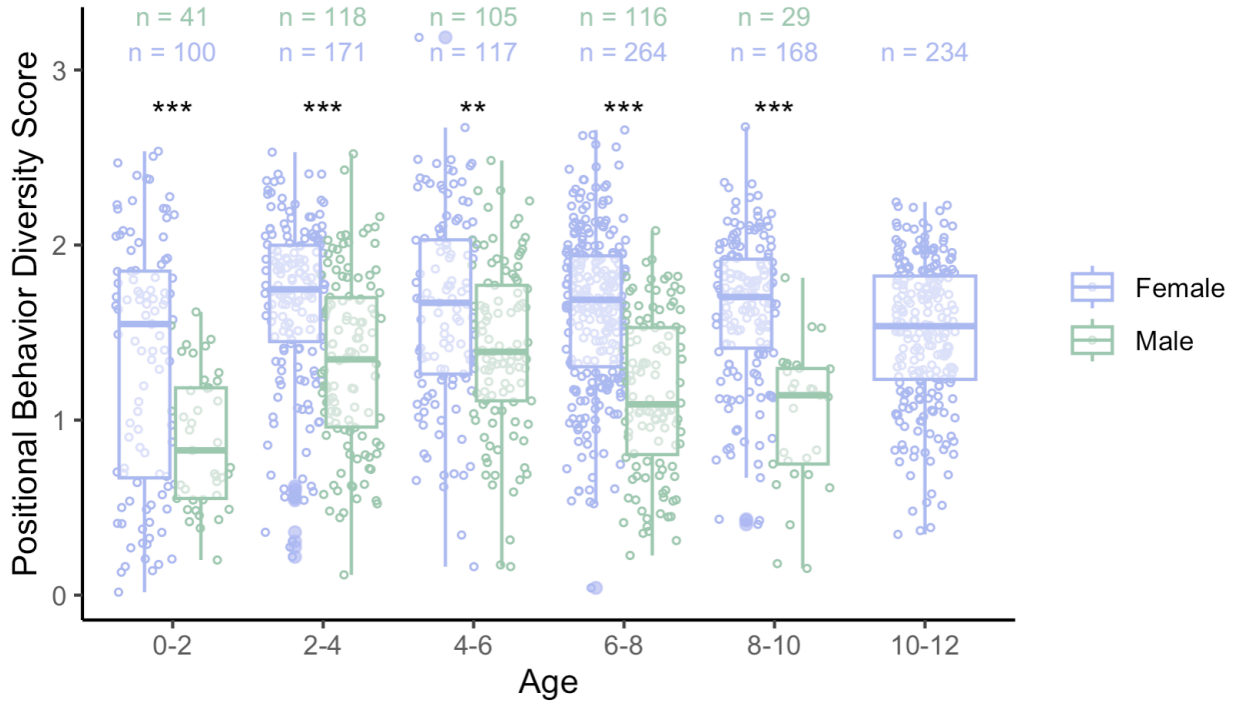
Figure 2

Only showing > 0.1 proportion of day spent, and p tests are all below 0.002 (bonferoni)



All data in Figure2_SummaryMatrix.xlsx. True if less than 0.002.

Figure 3

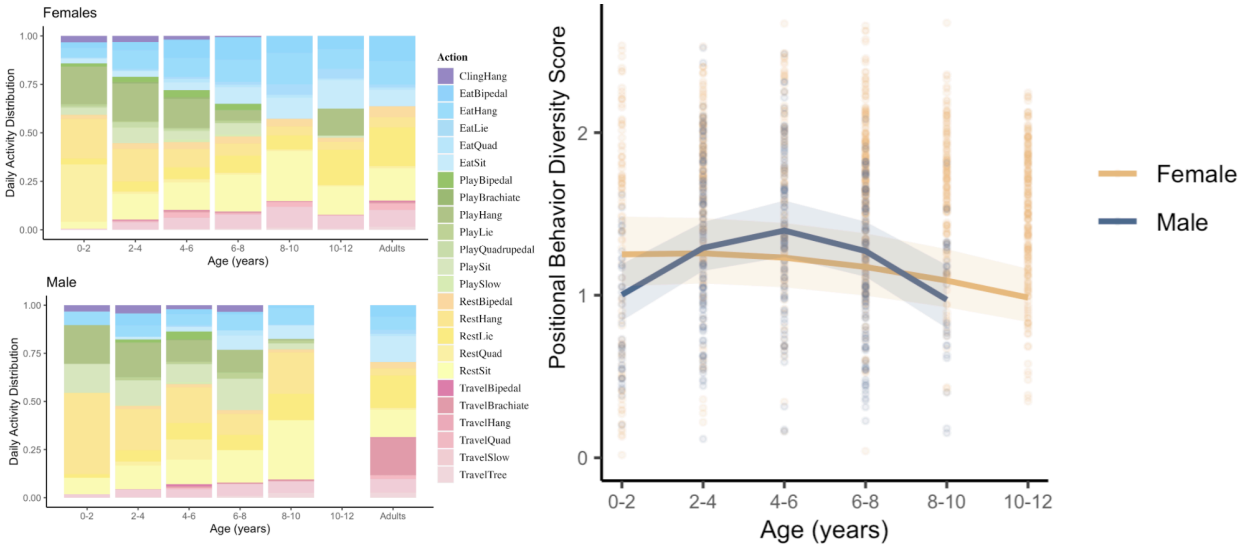


Statistic results:

T-test pvalues (1 = Age 0-2)

	x
1	3.342075e-06
2	2.645750e-08
3	1.092318e-03
4	7.151492e-19
5	2.902526e-09

Figure 4



Statistic results:

Females

Model Information (right graph) |

```
> summary(model_F)
 Family: gaussian  ( log )
Formula:          DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber)
Data: dive_d

     AIC      BIC   logLik deviance df.resid
  1122.9   1152.6   -555.4   1110.9     1048

Random effects:

Conditional model:
 Groups       Name        Variance  Std.Dev.
 Name         (Intercept) 1.436e-01 3.789e-01
 FollowNumber (Intercept) 3.435e-10 1.853e-05
 Residual                 1.566e-01 3.957e-01
Number of obs: 1054, groups:  Name, 28; FollowNumber, 1054

Dispersion estimate for gaussian family (sigma^2): 0.157

Conditional model:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  0.192654   0.104806   1.838  0.06603 .
Age          0.044793   0.040423   1.108  0.26782
I(Age^2)    -0.013219   0.004911  -2.692  0.00711 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Age makes the model better (anova):

```
Data: dive_d
Models:
model.1: DiversityScore ~ (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.1  4 1189.0 1208.8 -590.49   1181.0
model.2  5 1128.3 1153.1 -559.14   1118.3 62.704      1  2.402e-15 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

```
Data: dive_d
Models:
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.3: DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.2  5 1128.3 1153.1 -559.14   1118.3
model.3  6 1122.9 1152.6 -555.44   1110.9 7.3992      1   0.006525 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Males

Model Information (right graph) |

```
> summary(model_M)
 Family: gaussian  ( log )
Formula:          DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber)
Data: dive_d

     AIC      BIC   logLik deviance df.resid
   507.1    531.2   -247.5    495.1      403

Random effects:

Conditional model:
 Groups       Name        Variance  Std.Dev.
 Name         (Intercept) 3.430e-02 1.852e-01
 FollowNumber (Intercept) 3.143e-09 5.607e-05
 Residual                 1.848e-01 4.299e-01
Number of obs: 409, groups:  Name, 14; FollowNumber, 409

Dispersion estimate for gaussian family (sigma^2): 0.185

Conditional model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.42457    0.17578  -2.415   0.0157 *
Age          0.51400    0.12120   4.241 2.23e-05 ***
I(Age^2)    -0.08695    0.01993  -4.363 1.28e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

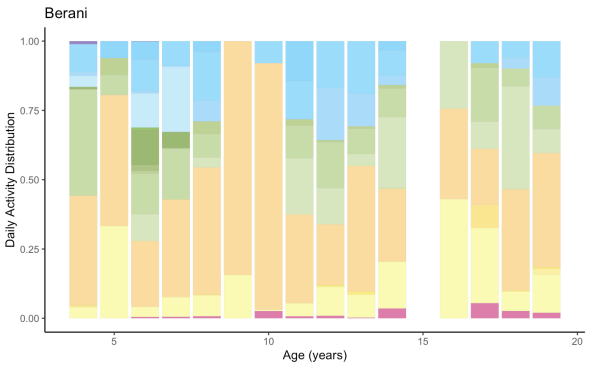
Age makes the model better (anova):

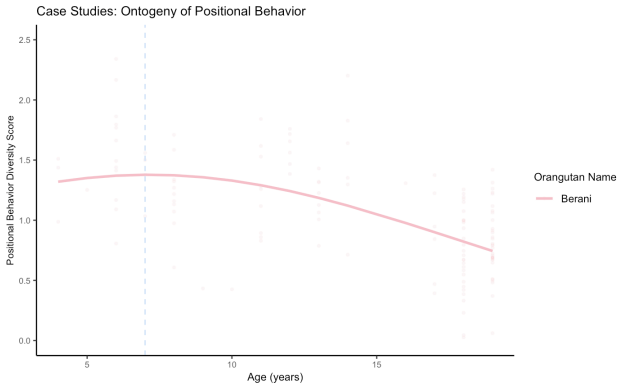
```
Data: dive_d
Models:
model.1: DiversityScore ~ (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.1  4 524.10 540.15 -258.05   516.10
model.2  5 525.98 546.05 -257.99   515.98 0.1171      1     0.7322
Data: dive_d
Models:
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.3: DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.2  5 525.98 546.05 -257.99   515.98
model.3  6 507.07 531.15 -247.54   495.07 20.908      1  4.818e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Figure 5

Only showing rows where atleast one comparison was significant
Bonferoni corrections done. All code in Figure5.rmd

Figure 6





Statistic results:

Berani

Model Information (right graph)

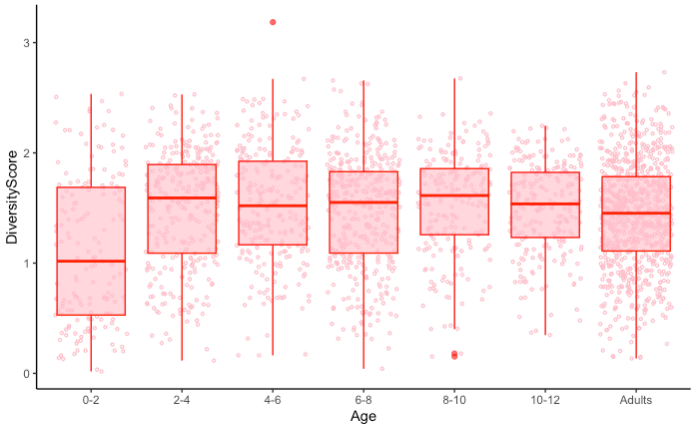
```
> summary(model_berani)
 Family: gaussian  ( log )
Formula:          DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber)
Data: dive_d

     AIC      BIC   logLik deviance df.resid
   118.1    135.3    -53.0    106.1      125

Random effects:

Conditional model:
 Groups       Name        Variance  Std.Dev.
 Name         (Intercept) 5.364e-12 2.316e-06
 FollowNumber (Intercept) 3.569e-02 1.889e-01
 Residual                 9.216e-02 3.036e-01
Number of obs: 131, groups:  Name, 1; FollowNumber, 131

Dispersion estimate for gaussian family (sigma^2): 0.0922

Conditional model:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  0.098249   0.227714   0.432  0.66614
Age          0.062407   0.041346   1.509  0.13120
I(Age^2)    -0.004374   0.001650  -2.651  0.00803 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

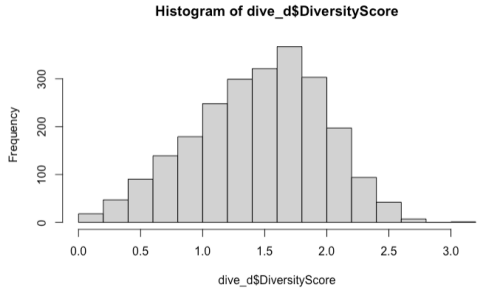
Age makes the model better (anova):

```
> model_berani <-  best_model(subset(dive_d, Name == "berani"))
Data: dive_d
Models:
model.1: DiversityScore ~ (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.1  4 169.47 180.97 -80.733   161.47
model.2  5 122.93 137.30 -56.464   112.93 48.537      1  3.241e-12 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Data: dive_d
Models:
model.2: DiversityScore ~ Age + (1 | Name) + (1 | FollowNumber), zi=~0, disp=~1
model.3: DiversityScore ~ Age + I(Age^2) + (1 | Name) + (1 | FollowNumber), zi=~0, disp
        Df    AIC    BIC  logLik deviance  Chisq Chi Df Pr(>Chisq)
model.2  5 122.93 137.30 -56.464   112.93
model.3  6 118.08 135.33 -53.037   106.08 6.8535      1   0.008847 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

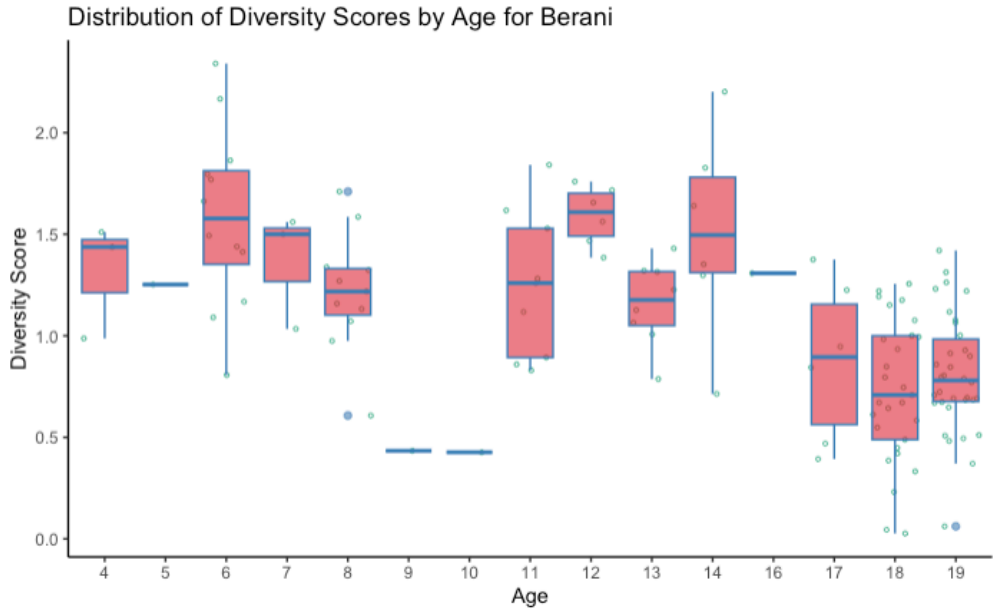
Supplemental Information

Distribution of diversity scores for combined dataset (both sex)





Distribution of diversity scores for Berani



Chi-squared testing of all ages

Code in Figure1.Rmd

	0-2	2-4	4-6	6-8	8-10	10-12	Adults
0-2	ns	***	***	***	***	***	***
2-4	***	ns	***	***	***	***	***
4-6	***	***	ns	***	***	***	***
6-8	***	***	***	ns	***	***	***
8-10	***	***	***	***	ns	***	***
10-12	***	***	***	***	***	ns	***
Adults	***	***	***	***	***	***	ns

Expected distribution = top row

Chi-squared testing of all ages of Female vs Male

In Figure 3&4.Rmd

	Class	stat	pval
1	Age 0-2	Inf	0
2	Age 2-4	Inf	0
3	Age 4-6	Inf	0
4	Age 6-8	Inf	0
5	Age 8-10	Inf	0

List of positional behavior categories

Nonpooled				**Pooled**	
TravelHangBranch	RestSitTrunk	RestHangTrunk	RestLieDownBranch	PlayBrachiate	BL
EatHangGround	EatBipedalTrunk	RestLieDownNest	RestLieDownCrotch	PlayQuadrupedal	BCLINT
RestHangGround	TravelBrachiateLiana	EatBipedalLiana	EatHangLiana	PlayHang	GNT
RestBipedalIbu	RestSitGround	EatBipedalCrotch	EatSitLiana	TravelBrachiate	NT
TravelSlowClamberNest	RestSitIbu	TravelSlowClamberLiana	PlayHangBranch	PlaySlowClamber	BCLT
EatSitIbu	EatSitGround	EatHangTrunk	EatBipedalBranch	TravelTreeSway	CGLN
TravelTreeSwayTrunk	TravelSlowClamberTrunk	TravelSlowClamberCrotc	RestHangBranch	PlayLieDown	BCLINT
EatQuadBranch	PlayHangIbu	PlaySitCrotch	RestHangIbu	EatBipedal	GIN
RestHangNest	RestQuadIbu	PlayHangCrotch	EatHangBranch	TravelQuad	CLNT
TravelBrachiateGround	EatSitTrunk	RestHangCrotch	TravelSlowClamberBranch	TravelBipedal	BCGLNT
EatLieDownBranch	RestQuadBranch	PlayHangLiana	RestSitBranch	EatQuad	CGILT
RestBipedalGround	RestBipedalLiana	TravelTreeSwayBranch		PlayBipedal	CILNT
RestBipedalTrunk	EatHangIbu	PlaySitBranch		EatLieDown	CGILNT
TravelSlowClamberGround	TravelQuadGround	RestHangLiana		PlaySit	ILNT
TravelQuadBranch	PlayBipedalBranch	RestSitLiana		RestLieDown	GILT
RestBipedalNest	EatSitNest	RestBipedalBranch		RestQuad	CGLNT
	RestBipedalCrotch	ClingHangIbu			