Main, Paxton, & Dale Data Analysis

Interest/Validation

```
setwd('/Main_Paxton_Dale-Analyses')

# preliminaries
rm(list=ls())
getwd()
```

```
## [1] "/Main_Paxton_Dale-Analyses"
```

```
source('globals_functions.R')
```

```
## Loading required package: Matrix
## Loading required package: tseriesChaos
## Loading required package: deSolve
##
## Attaching package: 'deSolve'
##
## The following object is masked from 'package:graphics':
##
##     matplot
##
## Loading required package: fields
## Loading required package: spam
## Loading required package: grid
## Spam version 1.3-0 (2015-10-24) is loaded.
## Type 'help( Spam)' or 'demo( spam)' for a short introduction
## and overview of this package.
## Help for individual functions is also obtained by adding the
## suffix '.spam' to the function name, e.g. 'help( chol.spam)'.
##
## Attaching package: 'spam'
##
## The following objects are masked from 'package:base':
##
##     backsolve, forwardsolve
##
## Loading required package: maps
##
##  # ATTENTION: maps v3.0 has an updated 'world' map.        #
##  # Many country borders and names have changed since 1990. #
##  # Type '?world' or 'news(package="maps")'. See README_v3. #
##
##
## Loading required package: plot3D
## Loading required package: pracma
##
## Attaching package: 'pracma'
##
## The following object is masked from 'package:deSolve':
##
##     rk4
##
## The following objects are masked from 'package:Matrix':
##
##     expm, lu, tril, triu
```

```
# specify parents' and adolescents' affect
a_target_emotion = c(int,val)
p_target_emotion = c(int,val)

# run RQA
source('get_rqa_measures.R')
```

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```

Let's look at the location of maximum lags. If one or the other is leading, we will find maximum lag location to be more on the left (parent leading) or right (adolescent leading). In general we do not find this imbalance: A one-sample t-test with maximum observed lag as the dependent variable is not significant less or greater than 0. In fact, it is centered around 0 (see plots); interestingly, in the interest/validation case, the maximum lags do show a bimodality, suggesting the turn taking pattern holds even in the maximum lag value.

```
# only include those for which a maximum RR is observed
descriptives = descriptives[descriptives$maxrec>0,]

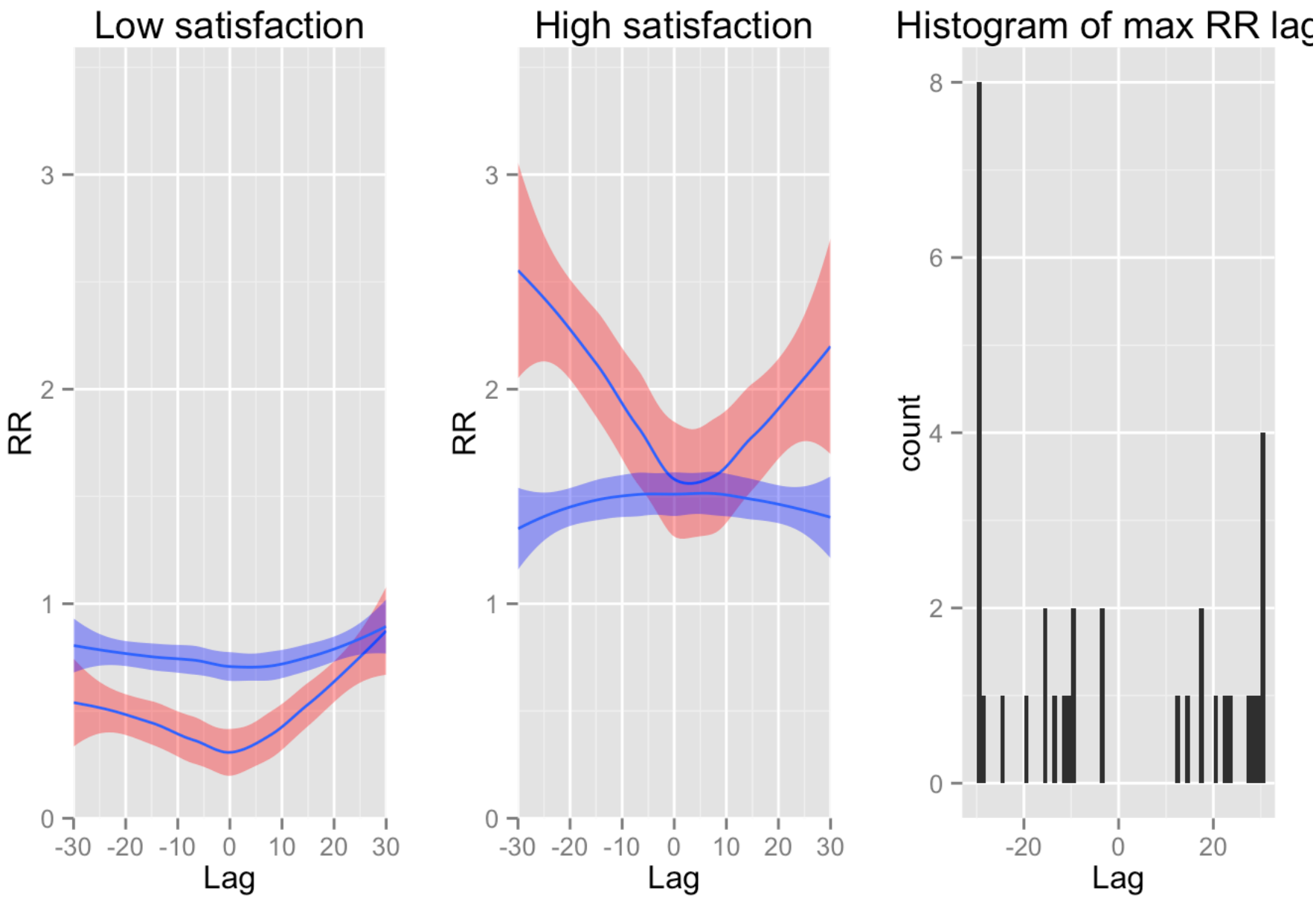
# print it out
pander(t.test(descriptives[descriptives$shuff=='observed',]$maxlag))
```

One Sample t-test:

```
descriptives[descriptives$shuff == "observed", ]$maxlag
```

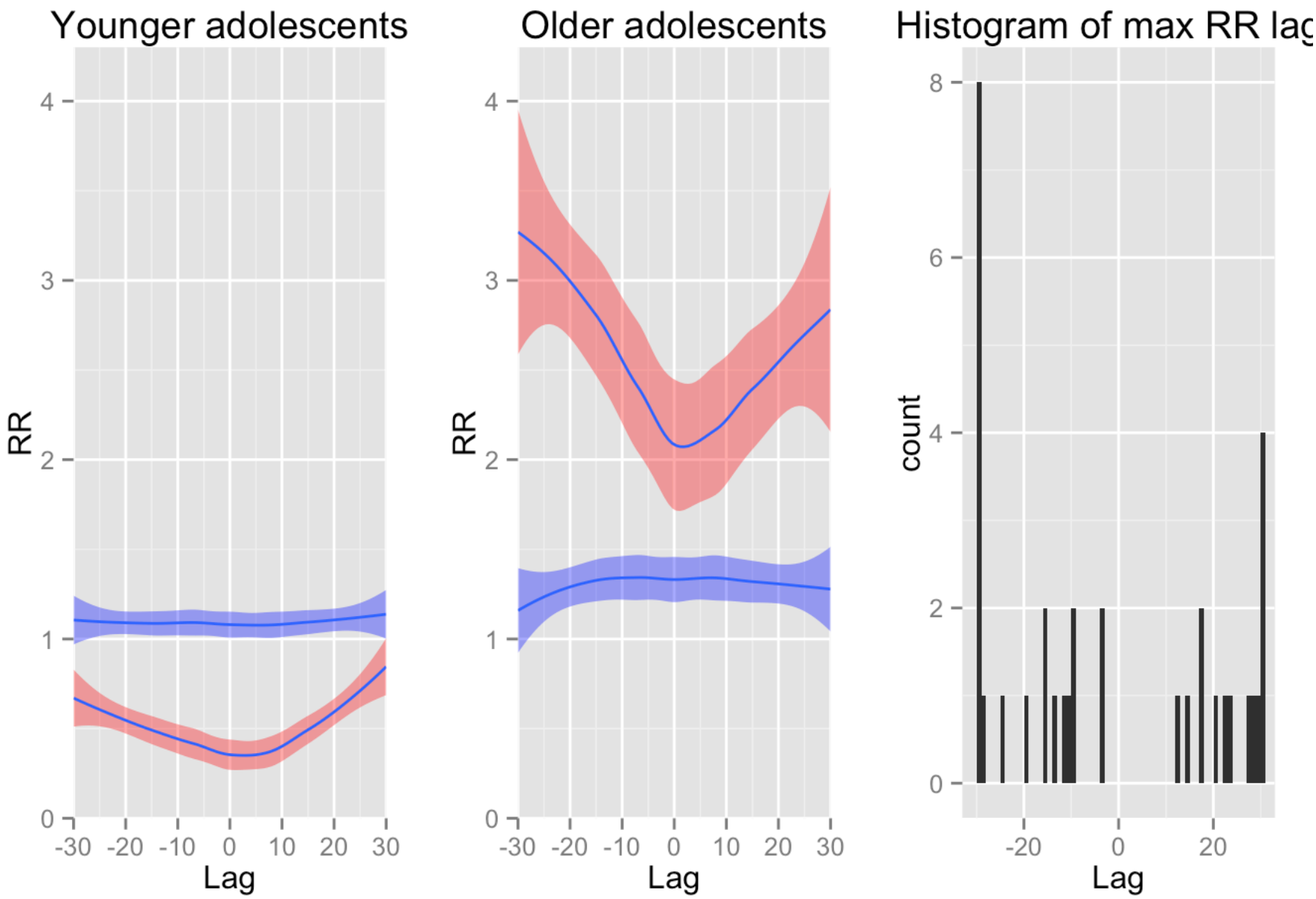
Test statistic	df	P value	Alternative hypothesis
-0.5962	33	0.5551	two.sided

```
# plot interaction with satisfaction -- use PDF if we want to save as a file in a sub directory
# pdf(file='plots/interestvalidation_satisfaction.pdf',width=8,height=5.25)
source('plot_drps_satisfaction.R')
```




```
# dev.off()

# plot interaction with age -- use PDF if we want to save as a file in a subdirectory
# pdf(file='plots/interestvalidation_age.pdf',width=8,height=5.25)
source('plot_drps_age.R')
```




```
# dev.off()

# print model results using standardized and unstandardized coefficients
source('lmer_stats.R')
pander(coefs.simple) # simple (just lag terms): standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-2.094e-12	0.1349	-1.552e-11	1
LinearLag	-0.02228	0.02984	-0.7466	0.4553
QuadLag	0.07685	0.03048	2.521	0.01169

```
pander(coefs.simple.raw) # simple (just lag terms): unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.01368	0.003341	4.095	4.214e-05
LinearLag	-0.004309	0.005772	-0.7466	0.4553

QuadLag	0.01486	0.005895	2.521	0.01169

```
pander(coefs.satisfaction) # lag terms and satisfaction: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-1.149e-12	0.1246	-9.223e-12	1
Satisfaction	0.3819	0.1226	3.116	0.001833
LinearLag	0.04341	0.1313	0.3305	0.741
QuadLag	-0.08813	0.06891	-1.279	0.2009
SatisXLinear	-0.06733	0.131	-0.5138	0.6074
SatisXQuad	0.1696	0.08094	2.095	0.03615

```
pander(coefs.satisfaction.raw) # lag terms and satisfaction: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-0.02837	0.01385	-2.049	0.04044
Satisfaction	0.01062	0.003407	3.116	0.001833
LinearLag	0.008396	0.0254	0.3305	0.741
QuadLag	-0.01704	0.01333	-1.279	0.2009
Satisfaction:LinearLag	-0.003207	0.006242	-0.5138	0.6074
Satisfaction:QuadLag	0.008078	0.003855	2.095	0.03615

```
pander(coefs.age) # lag terms and age: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-1.394e-12	0.124	-1.124e-11	1
Age	0.389	0.124	3.138	0.001701
LinearLag	0.2818	0.2089	1.349	0.1773
QuadLag	-0.1678	0.2161	-0.7765	0.4374
AgeXLinear	-0.3069	0.2161	-1.42	0.1556
AgeXQuad	0.2469	0.2236	1.104	0.2695

```
pander(coefs.age.raw) # lag terms and age: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-0.05825	0.02313	-2.519	0.01178
Age	0.004842	0.001543	3.138	0.001701
LinearLag	0.05451	0.04041	1.349	0.1773
QuadLag	-0.03246	0.04181	-0.7765	0.4374
Age:LinearLag	-0.003959	0.002789	-1.42	0.1556
Age:QuadLag	0.003186	0.002885	1.104	0.2695

Negative Emotion

```
# preliminaries
rm(list=ls())
source('globals_functions.R')

# set the target emotion for these analyses and then run RQA
a_target_emotion = neg
p_target_emotion = neg
source('get_rqa_measures.R')
```

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```

```
# only include those for which a maximum RR is observed
descriptives = descriptives[descriptives$maxrec>0,]

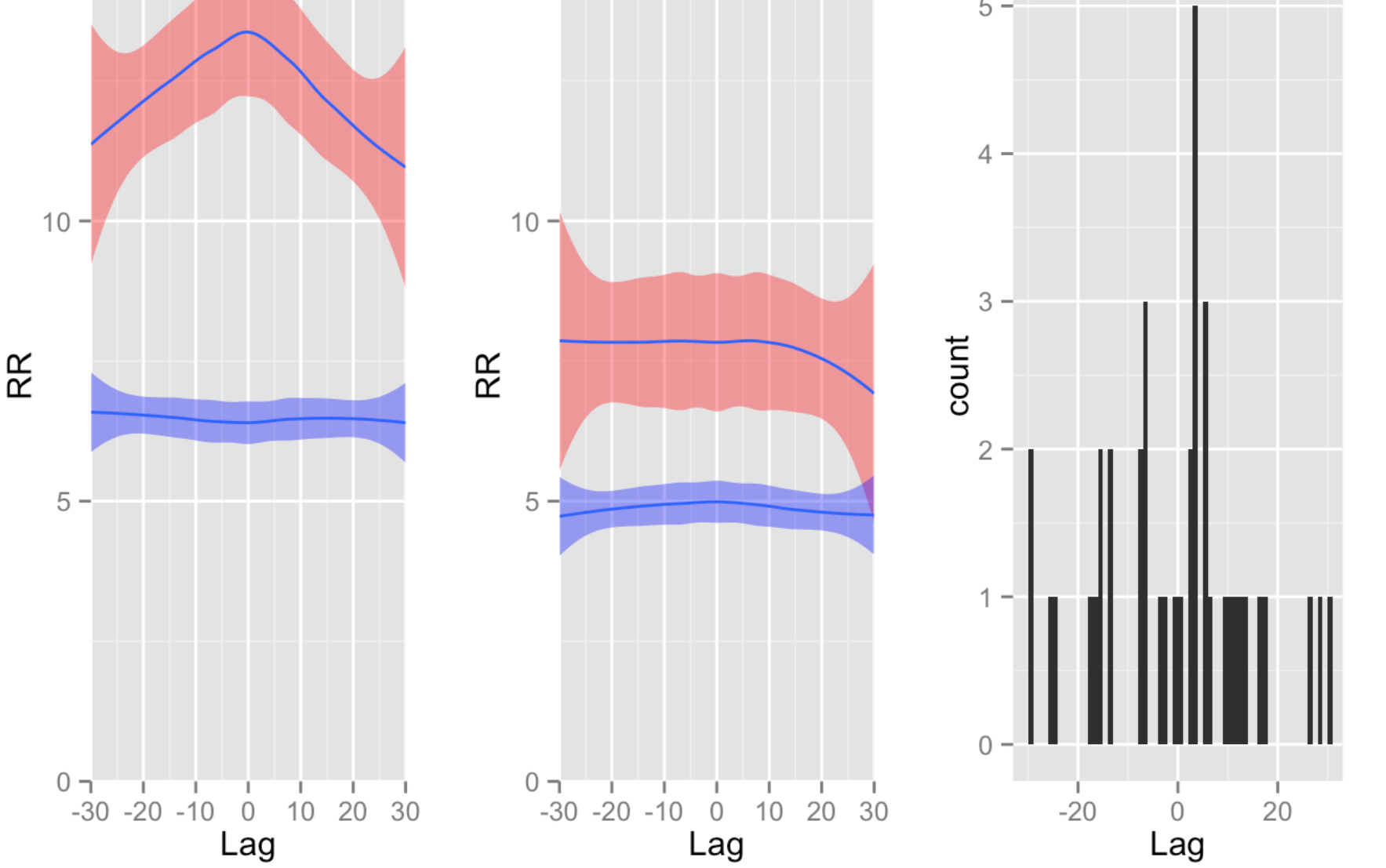
# print it out
pander(t.test(descriptives[descriptives$shuff=='observed',]$maxlag))
```

One Sample t-test:

```
descriptives[descriptives$shuff == "observed", ]$maxlag
```

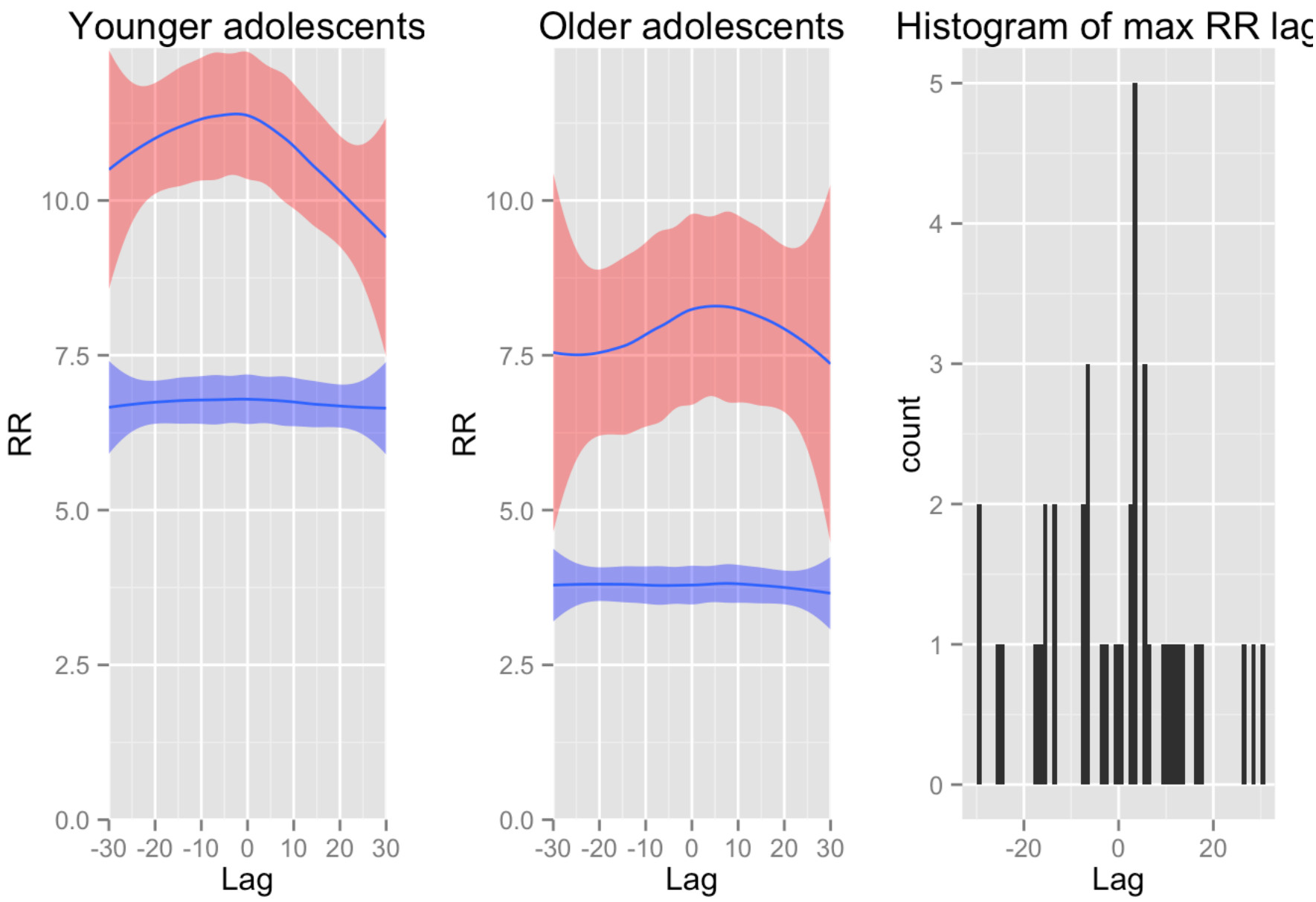
Test statistic	df	P value	Alternative hypothesis
-0.4161	39	0.6796	two.sided

```
# plot interaction with satisfaction -- use PDF if we want to save as a file in a sub directory
# pdf(file='plots/negative_satisfaction.pdf',width=8,height=5.25)
source('plot_drps_satisfaction.R')
```



```
# dev.off()

# plot interaction with age -- use PDF if we want to save as a file in a subdirectory
# pdf(file='plots/negative_age.pdf',width=8,height=5.25)
source('plot_drps_age.R')
```




```
# dev.off()

# print model results using standardized and unstandardized ("raw") coefficients
source('lmer_stats.R')
pander(coefs.simple) # simple (just lag terms): standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-5.873e-12	0.1432	-4.1e-11	1
LinearLag	-0.01346	0.01003	-1.342	0.1797
QuadLag	-0.02796	0.008803	-3.176	0.001494

```
pander(coefs.simple.raw) # simple (just lag terms): unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.0958	0.01809	5.297	1.18e-07
LinearLag	-0.01328	0.009894	-1.342	0.1797
QuadLag	-0.02757	0.00868	-3.176	0.001494

```
pander(coefs.satisfaction) # lag terms and satisfaction: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-9.807e-12	0.1324	-7.41e-11	1
Satisfaction	-0.4053	0.1324	-3.063	0.002194
LinearLag	0.00563	0.04612	0.1221	0.9028
QuadLag	-0.04619	0.02463	-1.875	0.06074
SatisXLinear	-0.01957	0.04612	-0.4243	0.6713
SatisXQuad	0.01752	0.0287	0.6104	0.5416

```
pander(coefs.satisfaction.raw) # lag terms and satisfaction: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.3234	0.07617	4.246	2.179e-05
Satisfaction	-0.05745	0.01876	-3.063	0.002195
LinearLag	0.005551	0.04548	0.1221	0.9028
QuadLag	-0.04554	0.02428	-1.875	0.06074
Satisfaction:LinearLag	-0.004752	0.0112	-0.4243	0.6713
Satisfaction:QuadLag	0.004254	0.006969	0.6104	0.5416

```
pander(coefs.age) # lag terms and age: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-7.619e-12	0.1438	-5.299e-11	1
Age	-0.1152	0.1438	-0.8007	0.4233
LinearLag	-0.1639	0.07314	-2.241	0.02502
QuadLag	-0.06263	0.06878	-0.9106	0.3625

AgeXLinear	0.1518	0.07314	2.075	0.03795
AgeXQuad	0.03492	0.07113	0.4909	0.6235

```
pander(coefs.age.raw) # lag terms and age: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.2043	0.1368	1.494	0.1351
Age	-0.007306	0.009124	-0.8007	0.4233
LinearLag	-0.1616	0.07211	-2.241	0.02502
QuadLag	-0.06175	0.06781	-0.9106	0.3625
Age:LinearLag	0.009985	0.004811	2.075	0.03795
Age:QuadLag	0.002297	0.004679	0.4909	0.6235

Positive Emotion

```
# preliminaries
rm(list=ls())
source('globals_functions.R')

# set the target emotion for these analyses and then run RQA
a_target_emotion = pos
p_target_emotion = pos
source('get_rqa_measures.R')
```

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```

```
# only include those for which a maximum RR is observed
descriptives = descriptives[descriptives$maxrec>0,]

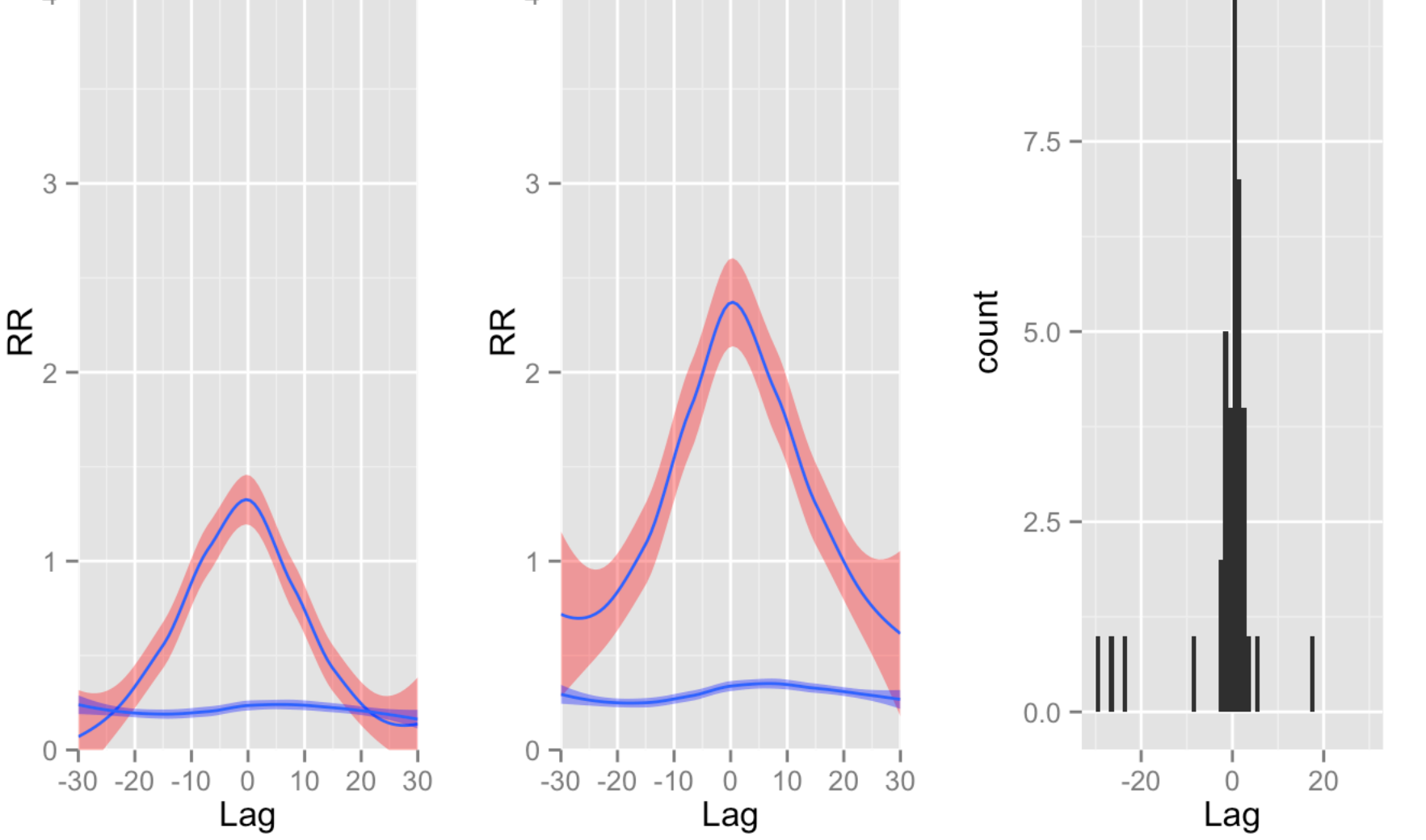
# print it out
pander(t.test(descriptives[descriptives$shuff=='observed',]$maxlag))
```

One Sample t-test:

```
descriptives[descriptives$shuff == "observed", ]$maxlag
```

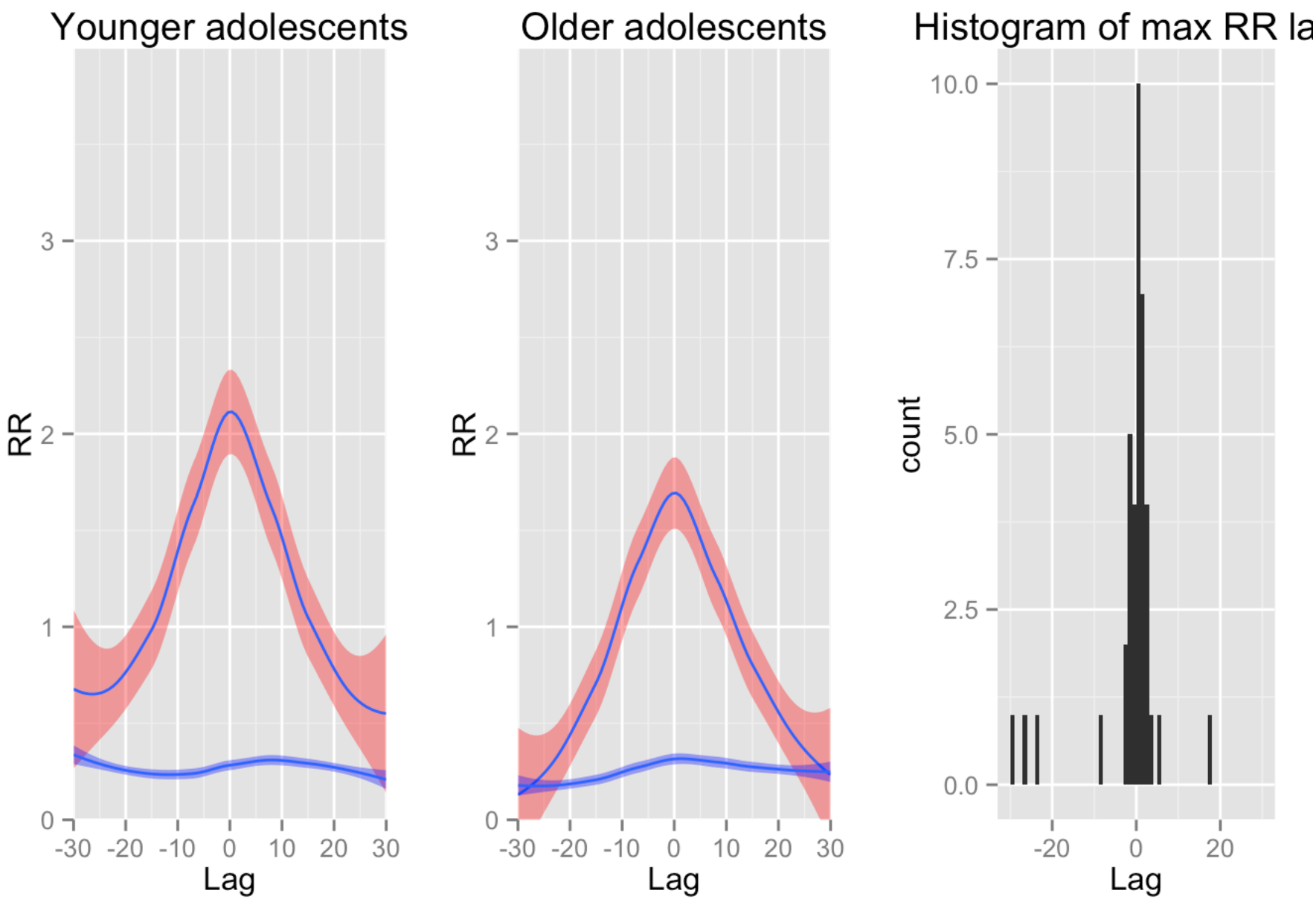
Test statistic	df	P value	Alternative hypothesis
-1.369	38	0.1791	two.sided

```
# plot interaction with satisfaction -- use PDF if we want to save as a file in a sub directory
# pdf(file='plots/positive_satisfaction.pdf',width=8,height=5.25)
source('plot_drps_satisfaction.R')
```



```
# dev.off()

# plot interaction with age -- use PDF if we want to save as a file in a subdirectory
# pdf(file='plots/positive_age.pdf',width=8,height=5.25)
source('plot_drps_age.R')
```




```
# dev.off()

# print model results using standardized and unstandardized ("raw") coefficients
source('lmer_stats.R')
pander(coefs.simple) # simple (just lag terms): standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	2.632e-13	0.1225	2.148e-12	1
LinearLag	0.007195	0.01379	0.5217	0.6018
QuadLag	-0.196	0.04619	-4.243	2.201e-05

```
pander(coefs.simple.raw) # simple (just lag terms): unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.009871	0.00273	3.616	0.0002991
LinearLag	0.001251	0.002399	0.5217	0.6018
QuadLag	-0.03409	0.008035	-4.243	2.201e-05

```
pander(coefs.satisfaction) # lag terms and satisfaction: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	2.788e-13	0.1213	2.297e-12	1
Satisfaction	0.1739	0.1093	1.591	0.1117
LinearLag	-0.09852	0.06148	-1.602	0.1091
QuadLag	-0.07803	0.1235	-0.6318	0.5275
SatisXLinear	0.1084	0.06148	1.762	0.07801
SatisXQuad	-0.1225	0.1454	-0.8422	0.3997

```
pander(coefs.satisfaction.raw) # lag terms and satisfaction: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	-0.007355	0.01116	-0.659	0.5099
Satisfaction	0.004348	0.002733	1.591	0.1117
LinearLag	-0.01714	0.01069	-1.602	0.1091
QuadLag	-0.01357	0.02148	-0.6318	0.5275
Satisfaction:LinearLag	0.004641	0.002634	1.762	0.07801
Satisfaction:QuadLag	-0.005247	0.00623	-0.8422	0.3997

```
pander(coefs.age) # lag terms and age: standardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	3.156e-13	0.123	2.566e-12	1
Age	-0.1107	0.1223	-0.9053	0.3653
LinearLag	-0.07085	0.1057	-0.67	0.5028
QuadLag	-0.3491	0.3627	-0.9626	0.3357

AgeXLinear	0.07869	0.1086	0.7246	0.4687
AgeXQuad	0.155	0.3752	0.4133	0.6794

```
pander(coefs.age.raw) # lag terms and age: unstandardized
```

	Estimate	Std..Error	t.value	p
(Intercept)	0.02828	0.02052	1.378	0.1681
Age	-0.001239	0.001369	-0.9053	0.3653
LinearLag	-0.01232	0.01839	-0.67	0.5028
QuadLag	-0.06073	0.06309	-0.9626	0.3357
Age:LinearLag	0.0009131	0.00126	0.7246	0.4687
Age:QuadLag	0.001799	0.004353	0.4133	0.6794

Correlation between Dyad Satisfaction and Adolescent Age

Given systematic similarities between the age and satisfaction models, we checked for but did not find a reliable correlation between adolescent age and dyad satisfaction score.

```
# grab only one slice from each dyad
corr_check = drps_raw[drps_raw$RawLag==0,]
pander(cor.test(corr_check$Satisfaction,corr_check$Age))
```

Pearson's product-moment correlation: `corr_check$Satisfaction` and `corr_check$Age`

Test statistic	df	P value	Alternative hypothesis
1.077	47	0.2868	two.sided