

Variance in Condition vs Nest Size Instar As Number

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AIC Values of all possible models with instar included and sample size as weight

Rows removed with 2 or fewer data points

[1] "Using a standardized sample size as weight in model"

Warning in optwrap(optimizer, devfun, getStart(start, rho\$lower, rho\$pp), :
convergence code 3 from bobyqa: bobyqa -- a trust region step failed to
reduce q

AIC_Diff	AIC	model	num.predictors
0	1097	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	9
0.08	1097	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	9
0.46	1097	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	8
1.41	1098	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	10
1.49	1098	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
1.92	1099	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	10
2.04	1099	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
2.44	1099	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
2.97	1100	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
3	1100	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	11
3.08	1100	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	11
3.21	1100	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
3.39	1100	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + (1 NestID)	8

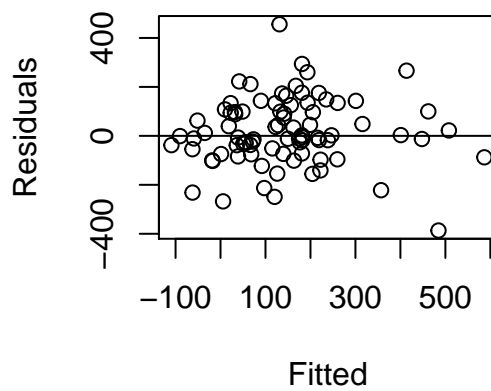
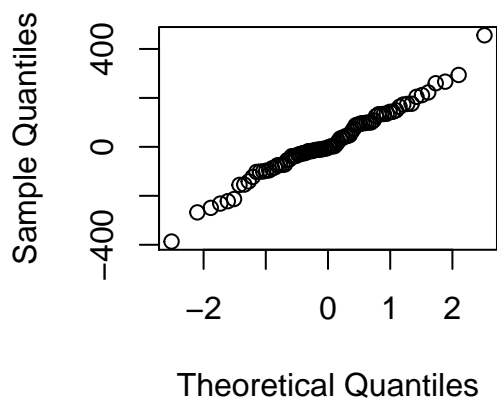
AIC_Diff	AIC	model	num.predictors
3.53	1100	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + (1 NestID)	8
3.63	1101	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	8
3.67	1101	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + (1 NestID)	7
3.96	1101	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
4.02	1101	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	8
4.13	1101	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	11
4.13	1101	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	8
4.14	1101	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	7
4.22	1101	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + (1 NestID)	6
4.22	1101	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + (1 NestID)	7
4.22	1101	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	11
4.34	1101	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	7
4.52	1101	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	12
4.76	1102	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	7
4.95	1102	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	9
4.96	1102	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
5.08	1102	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	9
5.2	1102	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
5.21	1102	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	7
5.35	1102	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	9
5.39	1102	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + (1 NestID)	9

AIC_Diff	AIC	model	num.predictors
5.51	1102	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
5.59	1103	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
5.7	1103	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + (1 NestID)	8
5.79	1103	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + (1 NestID)	6
5.83	1103	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	9
5.88	1103	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	8
5.95	1103	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	8
5.95	1103	myIndex ~ logCtFm + InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
6.1	1103	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	8
6.28	1103	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	10
6.35	1103	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
6.45	1103	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	8
6.56	1103	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
6.97	1104	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + (1 NestID)	7
7.05	1104	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	10
7.19	1104	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	7
7.35	1104	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
7.42	1104	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	10
7.43	1104	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
7.7	1105	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	9
8.04	1105	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	9

AIC_Diff	AIC	model	num.predictors
8.45	1105	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	9
17.85	1115	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	7
18.67	1116	myIndex ~ logCtFm + InstarNumber + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	7
19.76	1117	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
20	1117	myIndex ~ logCtFm + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	6
20.57	1118	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1 NestID)	6
20.77	1118	myIndex ~ logCtFm + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	6
21.13	1118	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + (1 NestID)	6
21.58	1119	myIndex ~ logCtFm + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + (1 NestID)	7
21.67	1119	myIndex ~ logCtFm + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	7
21.94	1119	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + (1 NestID)	7
22.12	1119	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1 NestID)	7
22.2	1119	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + (1 NestID)	7
22.75	1120	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	7
23.5	1120	myIndex ~ logCtFm + InstarNumber + logCtFm:I(InstarNumber^2) + (1 NestID)	6
23.53	1120	myIndex ~ logCtFm + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + logCtFm:I(InstarNumber^2) + logCtFm:I(InstarNumber^2):InstarSex + (1 NestID)	8
23.9	1121	myIndex ~ logCtFm + InstarNumber + InstarNumber:InstarSex + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + (1 NestID)	8
24.18	1121	myIndex ~ logCtFm + logCtFm:InstarNumber + logCtFm:InstarNumber:InstarSex + I(InstarNumber^2) + I(InstarNumber^2):InstarSex + (1 NestID)	8
25.27	1122	myIndex ~ logCtFm + logCtFm:I(InstarNumber^2) + (1 NestID)	5
25.92	1123	myIndex ~ logCtFm + I(InstarNumber^2) + (1 NestID)	5
26.51	1123	myIndex ~ logCtFm + logCtFm:InstarNumber + (1 NestID)	5
27.03	1124	myIndex ~ logCtFm + I(InstarNumber^2) + logCtFm:I(InstarNumber^2) + (1 NestID)	6
27.05	1124	myIndex ~ logCtFm + InstarNumber + (1 NestID)	5
27.72	1125	myIndex ~ logCtFm + logCtFm:InstarNumber + I(InstarNumber^2) + (1 NestID)	6
28.17	1125	myIndex ~ logCtFm + InstarNumber + logCtFm:InstarNumber + (1 NestID)	6

Checking full model fit

myIndex = logCtFm + InstarAge + InstarAge:InstarSex + logCtFm:InstarAge + sqr(InstarAge) + sqr(InstarAge):Instar



Graph

note: blue line just lm model

Note: If line on graph is blue R could not plot the lmer, plotting a simple lm instead

Warning: Removed 1 rows containing missing values (geom_path).

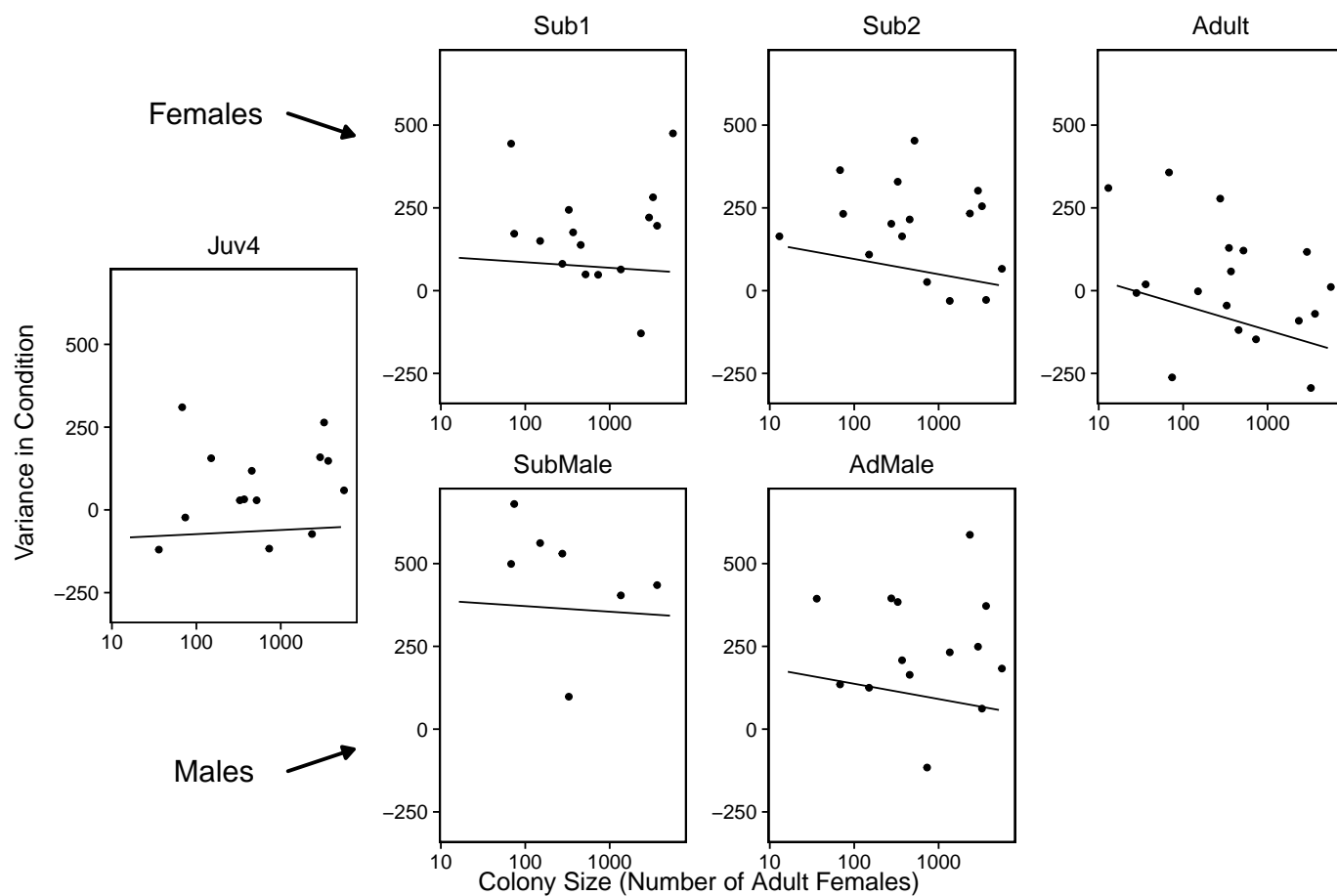
Warning: Removed 1 rows containing missing values (geom_path).

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Warning: Removed 1 rows containing missing values (geom_path).



Statistics using model with the almost lowest AIC as full model

Full Model: $\text{myIndex} \sim \log\text{CtFm} + \text{InstarNumber} + \text{InstarNumber}:\text{InstarSex} + \log\text{CtFm}:\text{InstarNumber} + \text{I}(\text{InstarNumber}^2) + \text{I}(\text{InstarNumber}^2):\text{InstarSex} + (1 \mid \text{NestID})$

Testing Individual Variables by performing an Anova of full vs reduced model

Table 2: Anova of full model alone

	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)
logCtFm	239.519	239.519	1	82.545	1.328	0.252
InstarNumber	5,613.209	5,613.209	1	72.726	31.121	0.00000
I(InstarNumber^2)	5,383.264	5,383.264	1	72.076	29.846	0.00000
InstarNumber:InstarSex	1,132.415	1,132.415	1	68.373	6.278	0.015
logCtFm:InstarNumber	450.581	450.581	1	74.234	2.498	0.118
I(InstarNumber^2):InstarSex	1,035.961	1,035.961	1	68.407	5.744	0.019

Table 3: Testing NestSize against full model. - NOT significant

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	7	1,097.144	1,114.160	-541.572	1,083.144			
object	9	1,096.929	1,118.806	-539.464	1,078.929	4.215	2	0.122

Reduced Model: myIndex = InstarAge + sqr(InstarAge) + (1|Nest) + InstarAge:InstarSex + InstarSex:sqr(InstarAge)

Table 4: Testing Instar age against full model. - p < 0.001 SIGNIFICANT ***

	Df	AIC	BIC	logLik	deviance	Chisq	Chi Df	Pr(>Chisq)
..1	6	1,117.698	1,132.283	-552.849	1,105.698			
object	9	1,096.929	1,118.806	-539.464	1,078.929	26.769	3	0.00001

Reduced Model: myIndex = logCtFm + (1|Nest) + InstarSex:sqr(InstarAge)

Graph of condition variance against instar

