

1 **Free-ranging dogs show age related plasticity in their ability to follow human pointing**

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22 **S3 Text. Effect of frequency of gaze alternation on pup's point-following behaviour**

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We calculated generalized linear models (GLM) to check the effect of duration and frequency of gaze alternation behaviour on the pointing followed and not followed behaviour with a binomial distribution. We selected model 3 based on the lowest AIC value. Fixed effects and the response variables have been incorporated in the models. ANOVA test between the models did not give any significant result. Following are the models -

Model 1:

```
lrfit115 <- glm(pf ~ freq*dura , data=pup, family = binomial)
```

```
> summary(lrfit115)
```

Call:

```
glm(formula = pf ~ freq * dura, family = binomial, data = pup)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.0963	0.0000	0.4854	0.4854	1.4823

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	2.079	0.750	2.773	0.00556 **
freq	-4.159	4.250	-0.979	0.32780
dura	3.495	533.895	0.007	0.99478
freq:dura	-2.802	533.893	-0.005	0.99581

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

```

55     Null deviance: 43.230  on 31  degrees of freedom
56 Residual deviance: 21.922  on 28  degrees of freedom
57 AIC: 29.922
58
59 Number of Fisher Scoring iterations: 20
60
61 Model 2:
62
63
64 > lrfit116 <- glm(pf ~ freq+dura , data=pup, family = binomial(link = "log
65 it"))
66 > summary(lrfit116)
67
68 call:
69 glm(formula = pf ~ freq + dura, family = binomial(link = "logit"),
70     data = pup)
71
72 Deviance Residuals:
73     Min       1Q   Median       3Q      Max
74 -2.1230  -0.1825   0.4711   0.4711   1.3886
75
76 Coefficients:
77             Estimate Std. Error z value Pr(>|z|)
78 (Intercept)   2.1425     0.7553   2.837  0.00456 **
79 freq          -2.1560     1.9468  -1.107  0.26809
80 dura          -0.1568     0.5553  -0.282  0.77760
81 ---
82 Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
83
84 (Dispersion parameter for binomial family taken to be 1)
85
86     Null deviance: 43.230  on 31  degrees of freedom
87 Residual deviance: 22.475  on 29  degrees of freedom
88 AIC: 28.475
89

```

```

90  Number of Fisher Scoring iterations: 8
91
92  Model 3:
93
94
95  > lrfit117 <- glm(pf ~ freq , data=pup, family = binomial(link = "logit"))
96  > summary(lrfit117)
97
98  Call:
99  glm(formula = pf ~ freq, family = binomial(link = "logit"), data = pup)
100
101  Deviance Residuals:
102      Min       1Q   Median       3Q      Max
103  -2.1457  -0.2772   0.4592   0.4592   1.4054
104
105  Coefficients:
106              Estimate Std. Error z value Pr(>|z|)
107 (Intercept)    2.1965     0.7541   2.913  0.00358 **
108 freq          -2.7180     0.9017  -3.014  0.00258 **
109 ---
110 signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
111
112  (Dispersion parameter for binomial family taken to be 1)
113
114      Null deviance: 43.230  on 31  degrees of freedom
115  Residual deviance: 22.629  on 30  degrees of freedom
116  AIC: 26.629
117
118  Number of Fisher Scoring iterations: 5
119
120  anova(lrfit117,lrfit116,lrfit115)
121  Analysis of Deviance Table
122
123  Model 1: pf ~ freq
124  Model 2: pf ~ freq + dura

```

```
125 Model 3: pf ~ freq * dura
126   Resid. Df Resid. Dev Df Deviance
127  1      30    22.630
128  2      29    22.475  1  0.15478
129  3      28    21.922  1  0.55247
```