



The mother-infant relationships of aye-aye (*Daubentonia madagascariensis*), Classified Forest of Kianjavato, Madagascar

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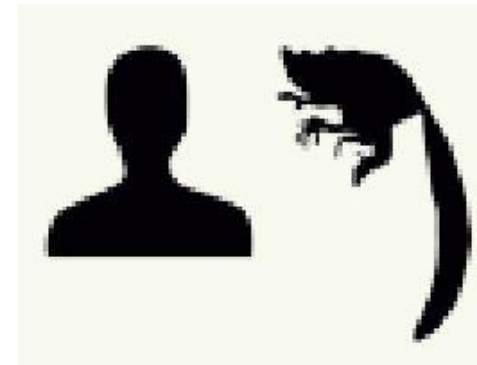
MADAGASCAR
Biodiversity Partnership



Introduction



- **Solitary nocturnal** lemur
- The largest nocturnal primate
- Wide distribution in Madagascar
- Among the **world's 25 most endangered primates** for 2016-2018 and 2018-2020



Other countries



Madagascar

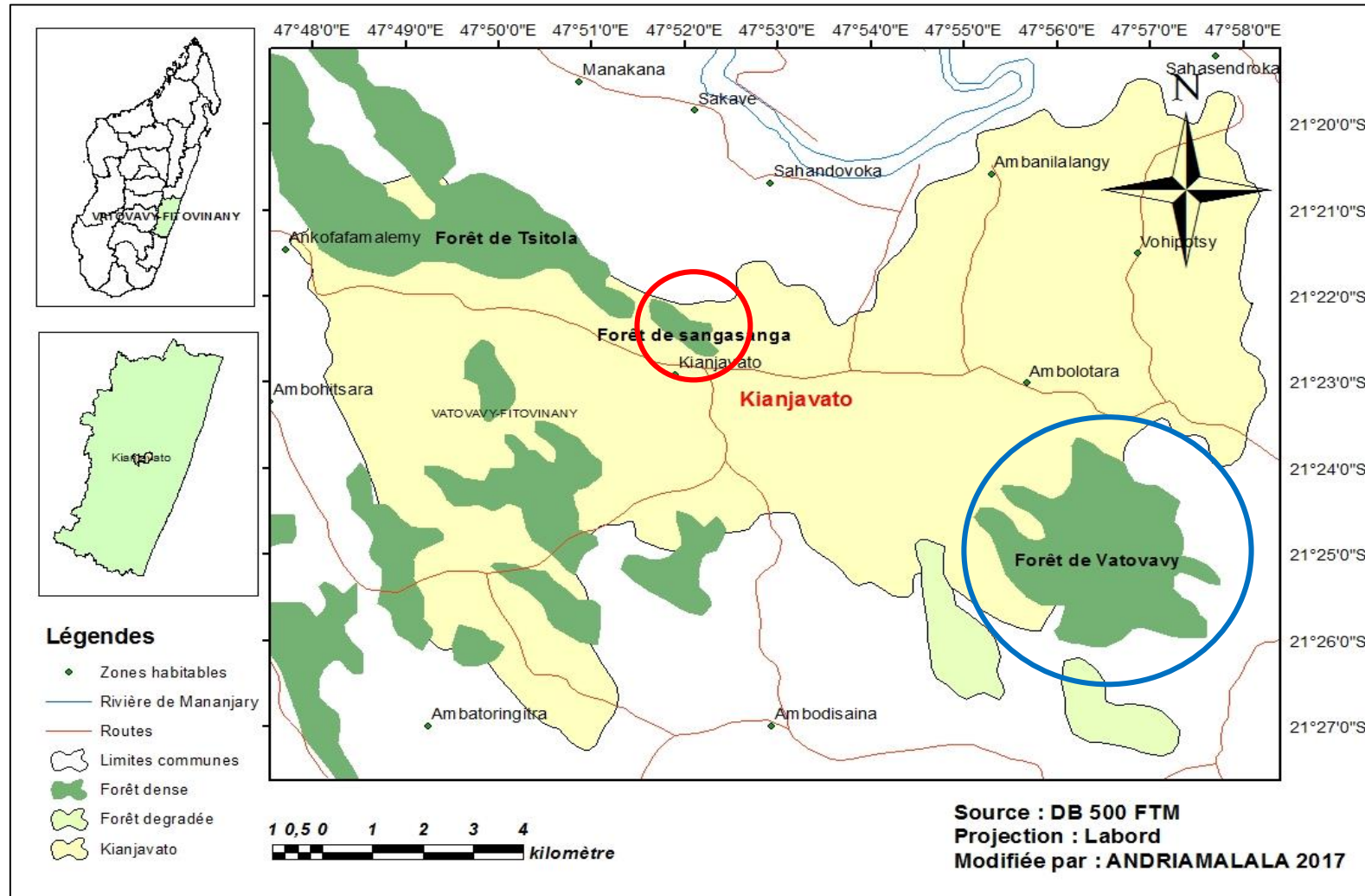


Q1: Who is the responsible to maintain the relationship between the mother and infant?

Q2: What is the change of the mother-infant interaction (duration, frequency) of three behaviors (groom, play, vocalize) over the first two years of the infant ?



Study sites



Methods

1- Follow:

- **Radio tracking** method (Honest & MacDonald, 2011):
- Radio collared aye-aye

2- Data collection:

- Three hours and two days per week in the forest
- **Continuous data sampling** method (Altmann, 1974)
- Follow starts approximately at 6:00 p.m when they go out from their nest.



Dataset

Mother	Infant	Sex	Birth date	Age of follow	Location
Bozy	Emerald	Male	October 2017	Second year	Sangasanga
Bozy	Quartz	Male	December 2019	First year	Sangasanga
Ruby	Corundum	Male	December 2019	First year	Vatovavy

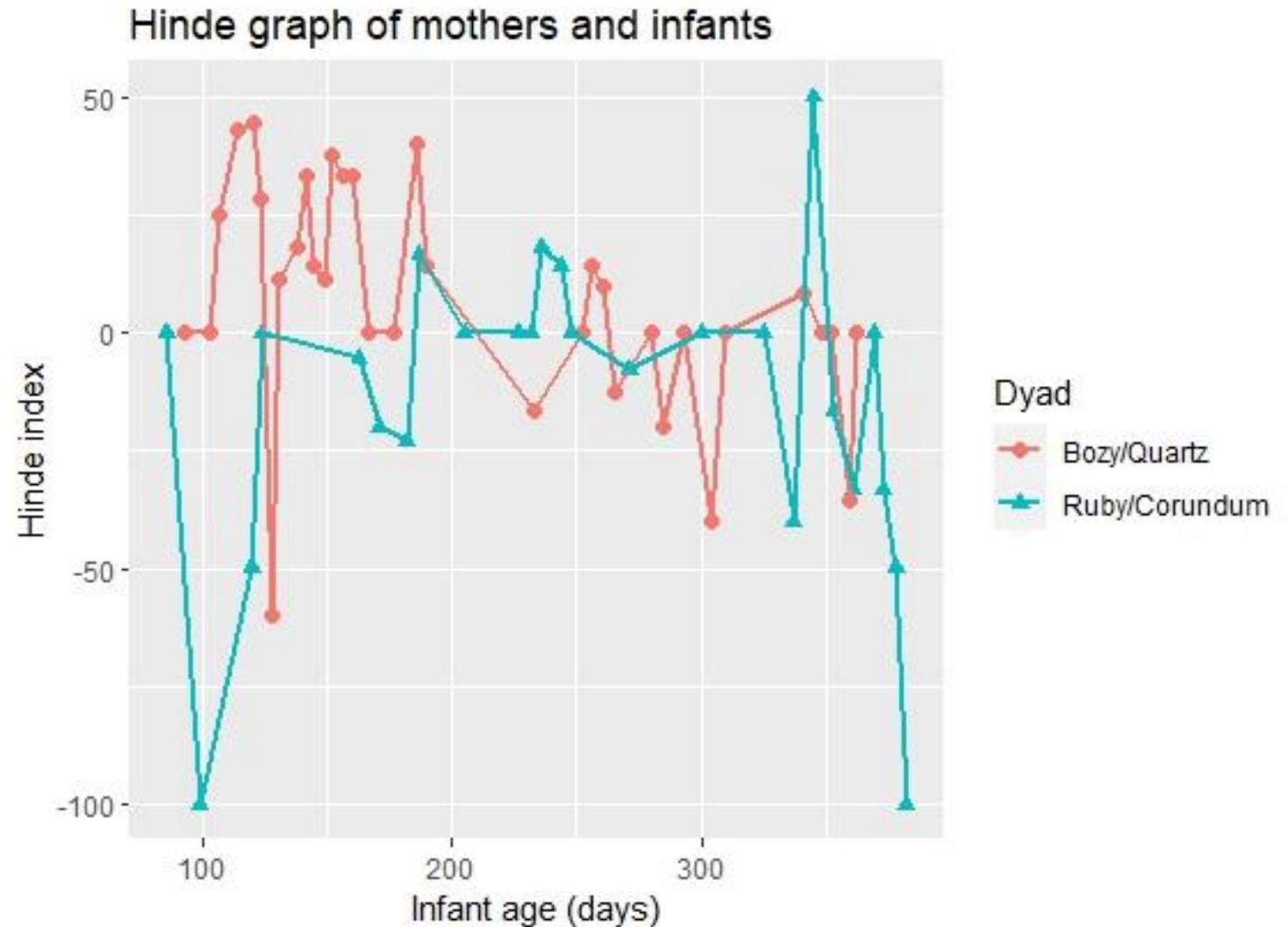
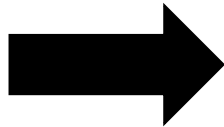
Date	Site	Focal animal (dyad)	Start time	End time	SA	FA	Activity	Producer	Receiver	Initiates	Ends
4/1/2020	Sangasanga	Bozy/Quartz	18:25	19:25	18:40:00	18:40:53	Allogrooming	Bozy	Quartz	Quartz	Bozy
4/1/2020	Sangasanga	Bozy/Quartz			19:05:27	19:06:31	Allogrooming	Bozy	Quartz	Bozy	Quartz
4/1/2020	Sangasanga	Bozy/Quartz			19:10:45	19:10:58	Allogrooming	Quartz	Bozy	Quartz	Quartz
4/1/2020	Sangasanga	Bozy/Quartz			19:12:56	19:13:19	Allogrooming	Quartz	Bozy	Quartz	Bozy
4/1/2020	Sangasanga	Bozy/Quartz			19:20:22	19:20:39	Allogrooming	Bozy	Quartz	Bozy	Quartz
4/1/2020	Sangasanga	Bozy/Quartz			19:22:11	19:23:24	Allogrooming	Quartz	Bozy	Quartz	Quartz
4/1/2020	Sangasanga	Bozy/Quartz			19:23:47	19:25:01	Allogrooming	Quartz	Bozy	Quartz	Quartz
4/10/2020	Sangasanga	Bozy/Quartz	18:16	19:35	18:20:11	18:22:01	Allogrooming	Bozy	Quartz	Quartz	Quartz
4/10/2020	Sangasanga	Bozy/Quartz			18:22:36	18:23:18	Allogrooming	Bozy	Quartz	Bozy	Quartz
4/10/2020	Sangasanga	Bozy/Quartz			18:25:31	18:26:10	Allogrooming	Bozy	Quartz	Quartz	Bozy
4/14/2020	Sangasanga	Bozy/Quartz	18:25	19:45	18:35:13	18:36:47	Playing	Quartz	Bozy	Quartz	Quartz
4/14/2020	Sangasanga	Bozy/Quartz			18:37:11	18:37:49	Playing	Quartz	Bozy	Bozy	Quartz

Results: Hinde index

Hinde index formula:

$$100 \times \left(\frac{C_i}{C_i + C_m} - \frac{B_i}{B_i + B_m} \right)$$

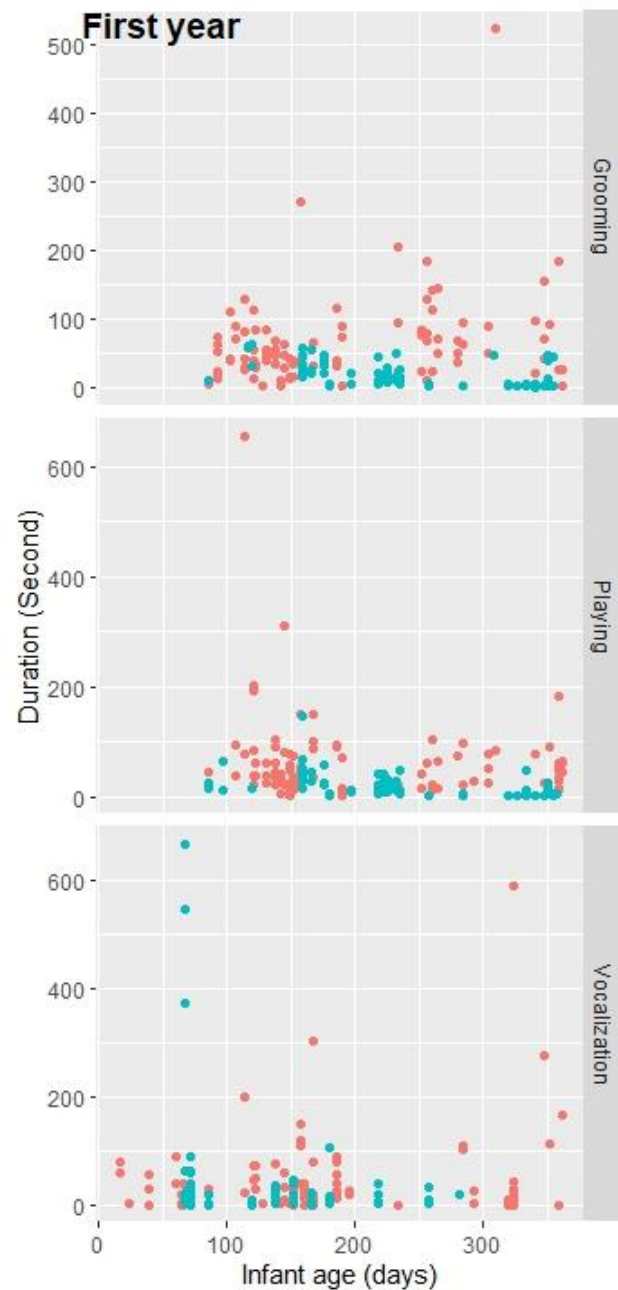
ggplot



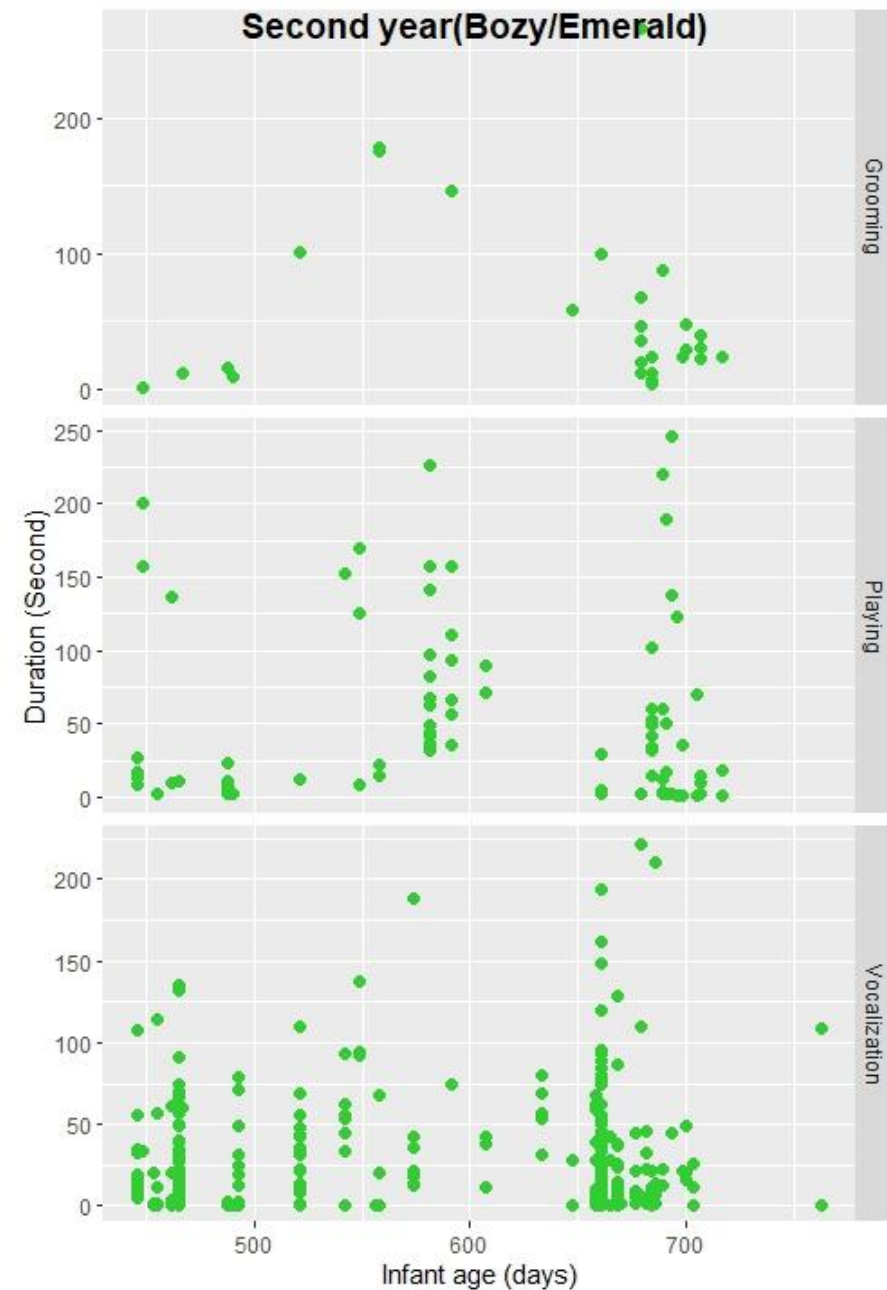
Results

Packages: ggplot2, cowplot

ggplot
+
cowplot



Evolution of duration over time



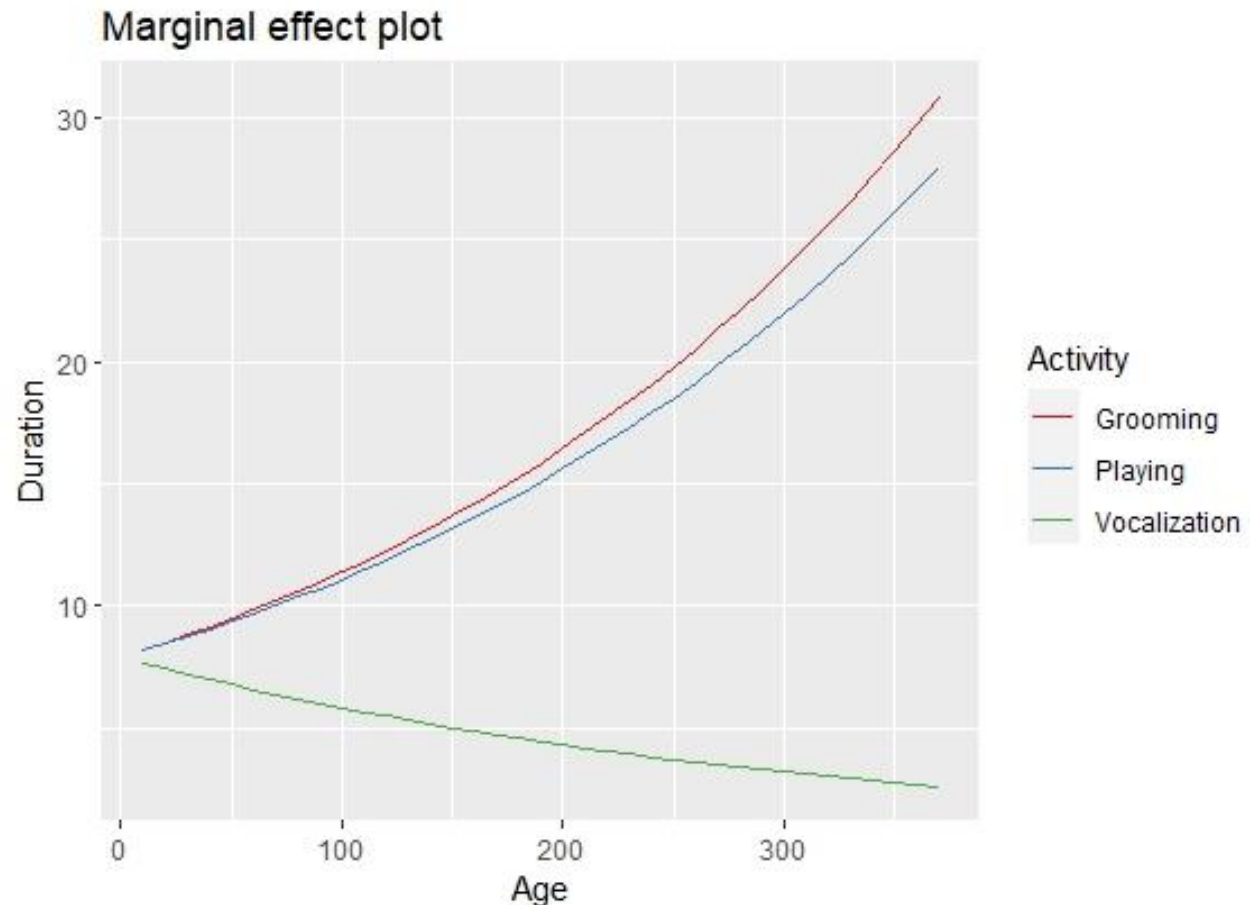
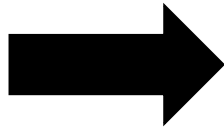
LME model, First year

Fixed effects: Age, activity

Random effect: Dyad

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.062e+00	8.097e-01	1.031e+00	2.546	0.232232	
Age:ActivityGrooming	3.695e-03	6.370e-04	8.074e+02	5.801	9.47e-09	***
Age:ActivityPlaying	3.431e-03	6.616e-04	8.075e+02	5.186	2.72e-07	***
Age:Activityvocalization	-3.033e-03	8.098e-04	8.075e+02	-3.746	0.000193	***

`plot_model`



Next step:

- Nest mother/infant instead of dyad as a random effect in model
- Add direction as fixed effect in model
- Expand model to two years



```
lmer(Duration~Age:Activity:Direction+ (1 | M/I))
```



Thank you 😊

