# Report 1

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## Trial data structure

### Remarks

### missing values

as per preregistration: if measurements were forgotten and cannot be done (e.g. weight not measure immediately before the test), the group average (e.g. among red averse females or among males with red face and red pedipalps)will be attributed to that individual FID 18401 has no weight (had a typo in the weight of both (before after) that could not be corrected)

FID 18401 has no weight (had a typo in the weight of both (before after) that could not be corrected) MID 18228 (paired with FID 18072) and MID 18390 (paired with FID 18478) have no weight averages as described were given to them

note: companion males were IDed but not weighted (only measured at maturity like all spiders)

### dependent variables explanations

**CopulateYN**: copulation that occur at any time, during the video, seen after on the shelf, or extrapolated from the fact that spiderlings emerged
**CannibaliseYN**: cannibalism that accour during the 2h video or the 46 hours after that (after which male and female were separated)
**CopDuringVideo**: copulation that occured within the 2h video
**EatDuringVideo**: cannibalism that occured during the 2h video

### decision of dependent variable as preregistered

### is frequency of cannibalism within 48h between 15% and 85%?

```
## [1] 36.1991
```

### is frequency of copulation during video between 17% and 83%?

```
## [1] 57.91855
```

### as per preregistration, FTrt and MTrt were recoded as:

### Female diet/training

**red accustomed/preference group** [code (relative to their preference for red) = +0.5]
**red averse group** [code (relative to their preference for red) = -0.5]

### Male color manipulation

**AllRed**: (face and pedipalps painted red [code (amount of red body parts) = 2]
**RedGrey**: face painted red and pedipalps painted grey [code (amount of red body parts) = 1]
**AllGrey**: face and pedipalps painted grey [code (amount of red body parts) = 0]

### Covariables explanations

**M and Fcondition** were calculated as resid(lm(Mass~CarapaceWidth))
**DelayToLay** is the difference between the lay date and the trial end date in days

## Table structure

### Remarks

this table does not include the *20 trials with unmanipulated males*
Out of 221 females tested with a painted male,
221-54 = 167 females laid clutched, of which
221-74 = 147 led to spiderlings (for which the brood size is always known - but for 4 of them the emergence date is not known)

```
##       FID                   FTrt          TrialDate     CopulateYN
##  Min.   :18064   RedAverse    :109   2018-06-10:  9   Min.   :0.0000
##  1st Qu.:18127   RedPreference:112   2018-06-24:  8   1st Qu.:0.0000
##  Median :18327                       2018-07-10:  8   Median :1.0000
##  Mean   :18306                       2018-06-04:  6   Mean   :0.6199
##  3rd Qu.:18474                       2018-06-29:  6   3rd Qu.:1.0000
##  Max.   :18577                       2018-07-11:  6   Max.   :1.0000
##                                      (Other)   :178
##  CopDuringVideo   CannibalizeYN   EatDuringVideo
##  Min.   :0.0000   Min.   :0.000   Min.   :0.0000
##  1st Qu.:0.0000   1st Qu.:0.000   1st Qu.:0.0000
##  Median :1.0000   Median :0.000   Median :0.0000
##  Mean   :0.5792   Mean   :0.362   Mean   :0.1176
##  3rd Qu.:1.0000   3rd Qu.:1.000   3rd Qu.:0.0000
##  Max.   :1.0000   Max.   :1.000   Max.   :1.0000
##
##             CannibalismTime   CannibalismDate
##  1899-12-30 08:00:00:  8    2018-06-11:  4
##  1899-12-30 08:30:00:  7    2018-07-10:  4
##  1899-12-30 08:15:00:  4    2018-06-05:  3
##  1899-12-30 09:30:00:  3    2018-06-29:  3
##  1899-12-30 16:00:00:  3    2018-07-01:  3
##  (Other)            : 48    (Other)   : 57
##  NA's               :148    NA's      :147
##                                       TestRemarks      FMass
##  copulation right after 2h video             :  2   Min.   :0.00970
##  24h < cannibalism < 48h                     :  1   1st Qu.:0.01660
##  6/26 copulation 8:45AM                      :  1   Median :0.01830
##  camera died for one min between 8:30 and 8:31:  1   Mean   :0.01878
##  camera tilted up                            :  1   3rd Qu.:0.02110
##  (Other)                                     : 27   Max.   :0.03390
##  NA's                                        :188
##  FCarapaceWidth       MID                   MTrt
##  Min.   :1.209   Min.   :18140   AllGrey      :73
##  1st Qu.:1.501   1st Qu.:18221   AllRed       :75
##  Median :1.548   Median :18295   RedGrey      :73
##  Mean   :1.556   Mean   :18320   Unmanipulated: 0
##  3rd Qu.:1.616   3rd Qu.:18408
##  Max.   :1.847   Max.   :18584
##
```

```
##                                  MalePaintingRemarks MCarapaceWidth
##  picture with scale                          : 54      Min.   :1.072
##  put to sleep twice                          :  9      1st Qu.:1.282
##  clean eye with thinner                      :  2      Median :1.339
##  put to sleep twice, clean eye with thinner:  2      Mean   :1.332
##   a tiny bit of paint on top one chelicerae:  1      3rd Qu.:1.375
##  (Other)                                     : 26      Max.   :1.580
##  NA's                                        :127
##      MMass          CompanionID        TrialDateEnd    EmergenceDate
##  Min.   :0.0056   Min.   :18140   2018-06-12:  8   2018-09-09:  8
##  1st Qu.:0.0111   1st Qu.:18245   2018-06-24:  7   2018-07-13:  5
##  Median :0.0121   Median :18364   2018-07-01:  7   2018-07-26:  5
##  Mean   :0.0125   Mean   :18354   2018-07-10:  6   2018-08-06:  5
##  3rd Qu.:0.0131   3rd Qu.:18439   2018-07-19:  6   2018-08-14:  5
##  Max.   :0.0651   Max.   :18584   2018-07-30:  6   (Other)   :115
##                                   (Other)   :181   NA's      : 78
##    BroodSize       DelaytoLay
##  Min.   : 1.00   Min.   :  8.00
##  1st Qu.:16.00   1st Qu.: 12.00
##  Median :22.00   Median : 15.00
##  Mean   :23.49   Mean   : 21.44
##  3rd Qu.:28.50   3rd Qu.: 18.00
##  Max.   :62.00   Max.   :194.00
##  NA's   :74      NA's   :54
##                                          BroodRemarks   Fcondition
##  unsure of hatch date                          :  5   Min.   :-1.166e-02
##  end date ealier                               :  4   1st Qu.:-1.282e-03
##  end date earlier                              :  3   Median :-2.292e-04
##  a lot of dried out eggs                       :  1   Mean   :-6.833e-05
##  about two weeks prior to 7/2. end date ealier:  1   3rd Qu.: 1.063e-03
##  (Other)                                       : 10   Max.   : 1.629e-02
##  NA's                                          :197
##    Mcondition            FTrtCode            MTrtCode
##  Min.   :-4.861e-03   Min.   :-0.500000   Min.   :0.000
##  1st Qu.:-1.127e-03   1st Qu.:-0.500000   1st Qu.:0.000
##  Median :-4.316e-04   Median : 0.500000   Median :1.000
##  Mean   : 1.878e-05   Mean   : 0.006787   Mean   :1.009
##  3rd Qu.: 3.694e-04   3rd Qu.: 0.500000   3rd Qu.:2.000
##  Max.   : 4.848e-02   Max.   : 0.500000   Max.   :2.000
##
```

## Results Raw Data

Sample sizes of tests

```
##            FTrt AllGrey AllRed RedGrey Unmanipulated
## 1     RedAverse      36     37      36            10
## 2 RedPreference      37     38      37            10
```

Number of tests (and percentages) where copulation was seen during the video (note that this may change sligthly as we havent finish watching them so we may have misidentified a copulation when watching live or missed one - both these events are rare)

```
##            FTrt AllGrey AllRed RedGrey Unmanipulated
## 1     RedAverse      23     18      25             6
## 2 RedPreference      22     22      18             6
```

```
##            FTrt  AllGrey   AllRed  RedGrey Unmanipulated
## 1     RedAverse 63.88889 48.64865 69.44444            60
## 2 RedPreference 59.45946 57.89474 48.64865            60
```

Number of tests where cannibalism occured during the 48h allocated

```
##            FTrt AllGrey AllRed RedGrey Unmanipulated
## 1     RedAverse      12     15      16             6
## 2 RedPreference      12     10      15             4
```

```
##            FTrt  AllGrey   AllRed  RedGrey Unmanipulated
## 1     RedAverse 33.33333 40.54054 44.44444            60
## 2 RedPreference 32.43243 26.31579 40.54054            40
```

## Preregistered Analyses on Copulation and Cannibalism

**in preregistration**

**Model 1: glm (CannibalismY/N ~ male treatment * female treatment + female body condition, family = binomial).**

**Model 2: glm (CannibalismY/N ~ female treatment + female body condition, family = binomial**

**Model 3: glm (CopulationY/N ~ male treatment * female treatment + male size + male body condition, family = binomial).**

**Model 4: glm (CopulationY/N ~ female treatment + male size + male body condition, family = binomial).**

**If Fcondition is significantly leading to more cannibalism this should be removed (Preregistered)**

FCondition was positively significant in the cannibalism nodel so it is silenced in the models below

```
# Model 1
modCannibalism <- glm (CannibalizeYN ~ FTrtCode* MTrtCode
                         #+ Fcondition
                       , family = "binomial", data = MY_TABLE)

summary(modCannibalism)
```

```
##
## Call:
## glm(formula = CannibalizeYN ~ FTrtCode * MTrtCode, family = "binomial",
##     data = MY_TABLE)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0604  -0.9480  -0.8952   1.3652   1.5522
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.57403    0.22255  -2.579   0.0099 **
## FTrtCode           0.01430    0.44511   0.032   0.9744
## MTrtCode           0.00454    0.17197   0.026   0.9789
```

```
## FTrtCode:MTrtCode -0.29045    0.34393  -0.844   0.3984
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 289.31  on 220  degrees of freedom
## Residual deviance: 287.61  on 217  degrees of freedom
## AIC: 295.61
##
## Number of Fisher Scoring iterations: 4
```

```
# Model 2
modCannibalism2 <- glm (CannibalizeYN ~ FTrtCode
                        #+  Fcondition
                        , family = "binomial", data = MY_TABLE)

summary(modCannibalism2)
```

```
##
## Call:
## glm(formula = CannibalizeYN ~ FTrtCode, family = "binomial",
##     data = MY_TABLE)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0017  -1.0017  -0.8956   1.3639   1.4883
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -0.5675     0.1403  -4.044 5.25e-05 ***
## FTrtCode     -0.2781     0.2807  -0.991    0.322
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 289.31  on 220  degrees of freedom
## Residual deviance: 288.33  on 219  degrees of freedom
## AIC: 292.33
##
## Number of Fisher Scoring iterations: 4
```

```
# Model 3
modCop <- glm (CopDuringVideo ~ FTrtCode* MTrtCode + MCarapaceWidth + Mcondition
               , family = "binomial", data = MY_TABLE)
summary(modCop)
```

```
##
## Call:
## glm(formula = CopDuringVideo ~ FTrtCode * MTrtCode + MCarapaceWidth +
##     Mcondition, family = "binomial", data = MY_TABLE)
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max
## -1.651  -1.251   0.915   1.070   1.296
```

```
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)        -1.7654     2.6427  -0.668    0.504
## FTrtCode           -0.5422     0.4455  -1.217    0.224
## MTrtCode           -0.1809     0.1691  -1.070    0.285
## MCarapaceWidth      1.7080     1.9806   0.862    0.388
## Mcondition         -7.2680    33.2151  -0.219    0.827
## FTrtCode:MTrtCode   0.3122     0.3376   0.925    0.355
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 300.80  on 220  degrees of freedom
## Residual deviance: 297.58  on 215  degrees of freedom
## AIC: 309.58
##
## Number of Fisher Scoring iterations: 4
```

```
# Model 4
modCop2 <- glm (CopDuringVideo ~ FTrtCode + MCarapaceWidth + Mcondition
                , family = "binomial", data = MY_TABLE)
summary(modCop2)
```

```
##
## Call:
## glm(formula = CopDuringVideo ~ FTrtCode + MCarapaceWidth + Mcondition,
##     family = "binomial", data = MY_TABLE)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4855  -1.2911   0.9732   1.0511   1.2682
##
## Coefficients:
##                Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -1.7851     2.6160  -0.682    0.495
## FTrtCode        -0.2203     0.2743  -0.803    0.422
## MCarapaceWidth   1.5827     1.9632   0.806    0.420
## Mcondition      -4.4557    33.1516  -0.134    0.893
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 300.80  on 220  degrees of freedom
## Residual deviance: 299.53  on 217  degrees of freedom
## AIC: 307.53
##
## Number of Fisher Scoring iterations: 4
```