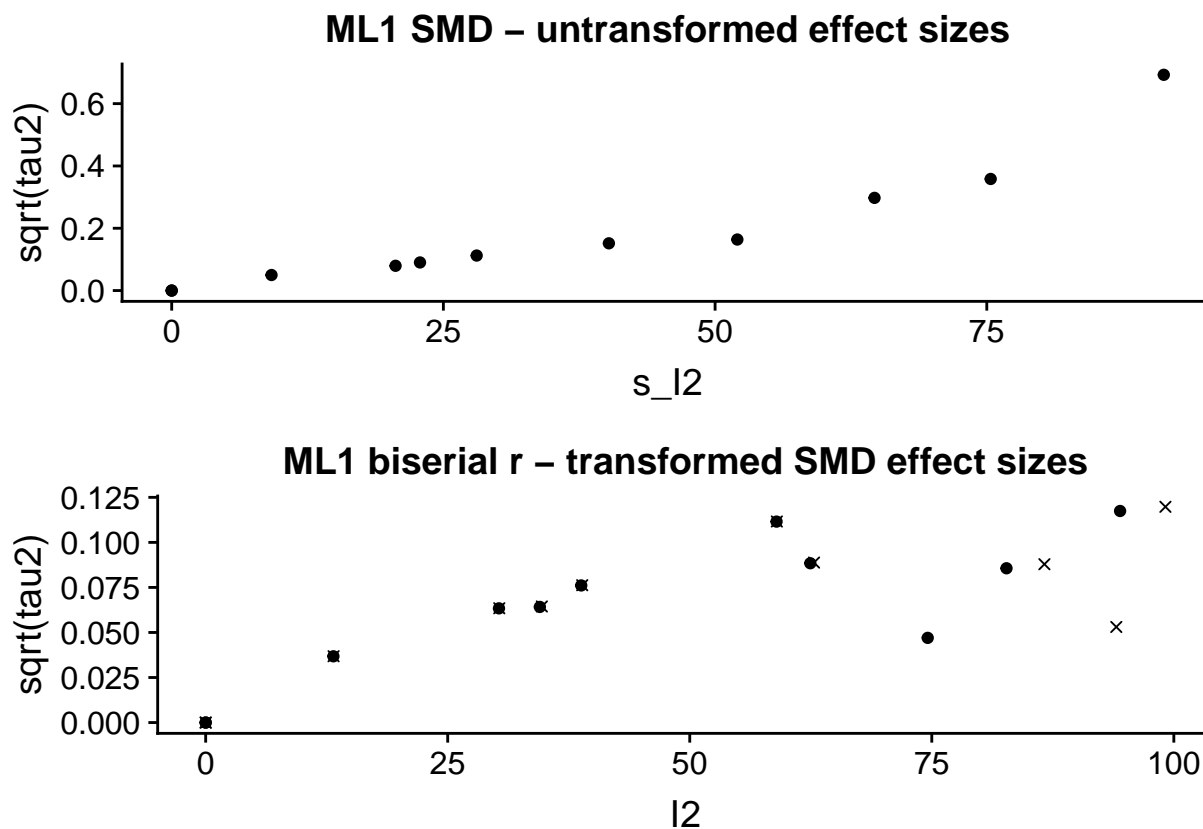# Troubleshooting tau2

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TO DO:

- First figure: replicate panel 2 but with untruncated
- Hopefully the last 3 points will move up
- Also compare mu for truncated and untruncated versions
- Maybe see if can figure out contribution of each lab to overall effect size mu

The four effects at the end are Anchoring 1,2,3,4. X corresponds to untruncated and circles are truncated

Compare the actual values

```
b %>% select(effect, r, tau2, I2) %>% left_join(res3 %>% select(effect, r, tau2, I2), by = "effect") %>%
  rename(trunc_ES = r.x, trunc_tau2 = tau2.x, trunc_I2 = I2.x, nontrunc_ES  = r.y, nontrunc_tau2 = tau2
```

```
## # A tibble: 11 x 7
##    effect trunc_ES trunc_tau2 trunc_I2 nontrunc_ES nontrunc_tau2
##    <chr>     <dbl>      <dbl>    <dbl>       <dbl>         <dbl>
## 1 Ancho~    0.676    0.00782     62.5       0.676       0.00789
## 2 Ancho~    0.898    0.00733     82.7       0.900       0.00772
## 3 Ancho~    0.960    0.0138      94.4       0.961       0.0143
```

```
##  4 Ancho~     0.993      0.00221    74.6       0.997      0.00281
##  5 Flag ~     0.0117     0           0         0.0117     0
##  6 Gambl~     0.381      0.00412    34.5       0.381      0.00415
##  7 Gende~     0.345      0.00579    38.8       0.345      0.00581
##  8 Imagi~     0.0727     0.00402    30.3       0.0726     0.00402
##  9 Money~    -0.0104     0           0        -0.0104     0
## 10 Quote~     0.197      0.0124     59.0       0.197      0.0125
## 11 Sunk ~     0.189      0.00135    13.2       0.189      0.00135
## # ... with 1 more variable: nontrunc_I2 <dbl>
```

It is strange that there are (very slightly) different outcomes for non-truncated effects, this is probably due to metafor (which I use for truncation) uses the exact variance formula whereas I use the approximate. Compare truncated vs. non-truncated manual formulas to check:

```
##                       effect      trunc_ES   trunc_tau2 trunc_I2 nontrunc_ES
## 1        Anchoring 1 - NYC  0.67571489 0.007885289 62.83626   0.67571489
## 2    Anchoring 2 - Chicago  0.89858956 0.007391439 83.53608   0.89951109
## 3    Anchoring 3 - Everest  0.95990068 0.013814846 94.83766   0.96114980
## 4     Anchoring 4 - Babies  0.99342182 0.002269829 76.40955   0.99698723
## 5              Flag Priming  0.01174265 0.000000000  0.00000   0.01174265
## 6          Gambler's Fallacy  0.38111010 0.004151666 34.72507   0.38111010
## 7      Gender math attitude  0.34515528 0.005811483 38.89472   0.34515528
## 8           Imagined Contact  0.07264581 0.004023673 30.32839   0.07264581
## 9             Money Priming -0.01035628 0.000000000  0.00000  -0.01035628
## 10       Quote Attribution  0.19700027 0.012451297 58.99622   0.19700027
## 11               Sunk Costs  0.18910980 0.001354615 13.21200   0.18910980
##    nontrunc_tau2 nontrunc_I2
## 1     0.007885289     62.83626
## 2     0.007723042     86.63295
## 3     0.014339394     99.13042
## 4     0.002814488     94.05795
## 5     0.000000000      0.00000
## 6     0.004151666     34.72507
## 7     0.005811483     38.89472
## 8     0.004023673     30.32839
## 9     0.000000000      0.00000
## 10    0.012451297     58.99622
## 11    0.001354615     13.21200
```

Exactly the same result for non-truncated effects, so that seems to be the case

Check which effects get truncated:

```
dat %>%
  split(.$effect) %>%
  map_dfr(transform_MA, .id = "effect") %>%
  filter(r > 1)
```

```
##                     effect        r           vi  n
## 1  Anchoring 2 - Chicago 1.037239 0.0009615220 NA
## 2  Anchoring 2 - Chicago 1.023831 0.0009003590 NA
## 3  Anchoring 2 - Chicago 1.034815 0.0009406875 NA
## 4  Anchoring 2 - Chicago 1.070713 0.0013542127 NA
## 5  Anchoring 3 - Everest 1.003413 0.0011468637 NA
## 6  Anchoring 3 - Everest 1.100490 0.0008669169 NA
## 7  Anchoring 3 - Everest 1.045074 0.0008877424 NA
## 8  Anchoring 3 - Everest 1.012695 0.0002738024 NA
```

```
## 9  Anchoring 3 - Everest 1.168396 0.0018200691 NA
## 10 Anchoring 3 - Everest 1.098721 0.0008235548 NA
## 11 Anchoring 3 - Everest 1.070460 0.0007698048 NA
## 12 Anchoring 3 - Everest 1.011212 0.0009320243 NA
## 13 Anchoring 3 - Everest 1.030118 0.0004800473 NA
## 14 Anchoring 3 - Everest 1.065253 0.0009301704 NA
## 15 Anchoring 3 - Everest 1.003478 0.0006001020 NA
## 16 Anchoring 3 - Everest 1.114616 0.0007160133 NA
## 17 Anchoring 3 - Everest 1.015831 0.0007893139 NA
## 18 Anchoring 3 - Everest 1.027750 0.0007539286 NA
## 19  Anchoring 4 - Babies 1.017014 0.0009290498 NA
## 20  Anchoring 4 - Babies 1.017783 0.0008520000 NA
## 21  Anchoring 4 - Babies 1.064677 0.0008235548 NA
## 22  Anchoring 4 - Babies 1.002945 0.0006317964 NA
## 23  Anchoring 4 - Babies 1.092992 0.0008590549 NA
## 24  Anchoring 4 - Babies 1.048956 0.0007941040 NA
## 25  Anchoring 4 - Babies 1.033880 0.0005749757 NA
## 26  Anchoring 4 - Babies 1.046186 0.0010923186 NA
## 27  Anchoring 4 - Babies 1.015629 0.0010798194 NA
## 28  Anchoring 4 - Babies 1.116764 0.0006360040 NA
## 29  Anchoring 4 - Babies 1.060034 0.0010004780 NA
## 30  Anchoring 4 - Babies 1.042027 0.0007675570 NA
## 31  Anchoring 4 - Babies 1.067667 0.0008256784 NA
## 32  Anchoring 4 - Babies 1.076853 0.0009239412 NA
```

Basically the anchoring effects.

ML3 (SMD transformed to biserial correlations)
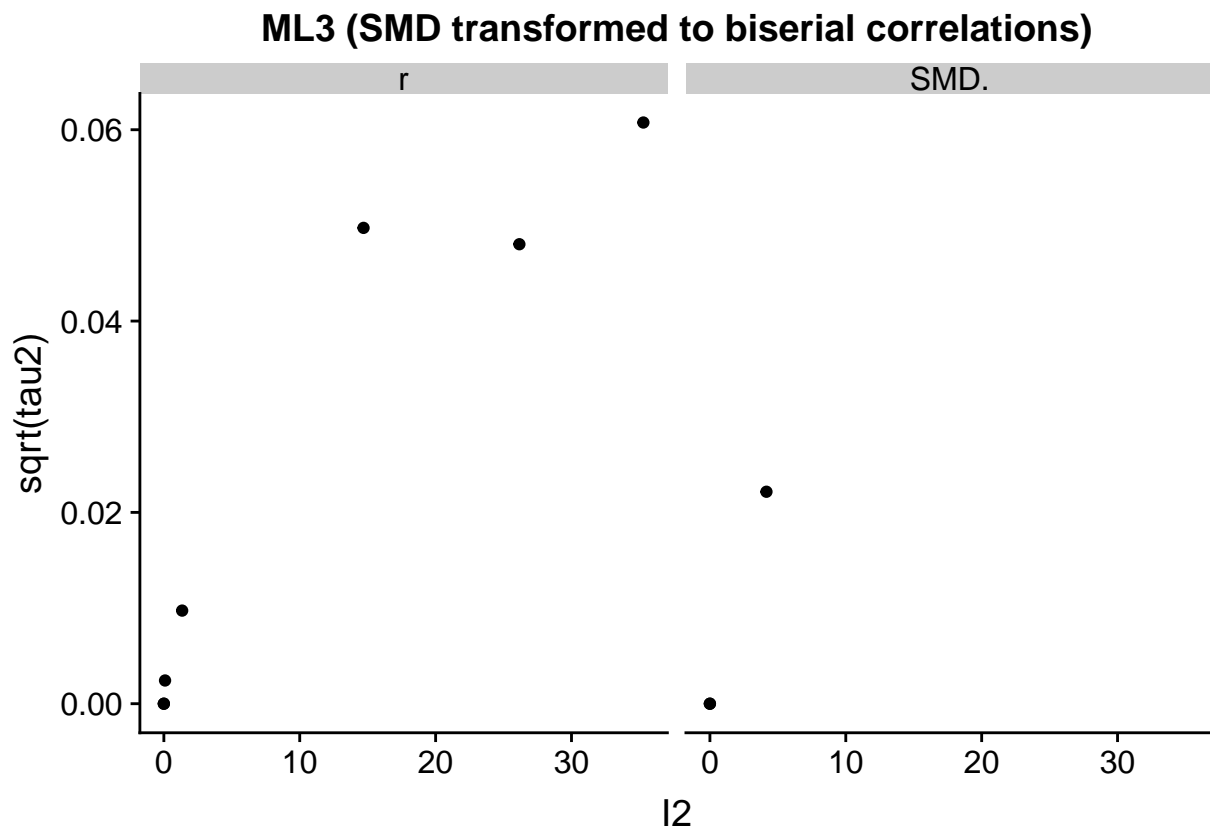
The one non-increasing effect in the left plot above is 'Credentials interaction'. However, note that all the ML3 'correlations' are either transformed partial eta-squared of 2x2 tables in the first table (we can't fix this, would have to get into the raw data which seems liek too much work, I mentioned this in the revised draft)

All effects – tetrachoric, biserial & product–moment r
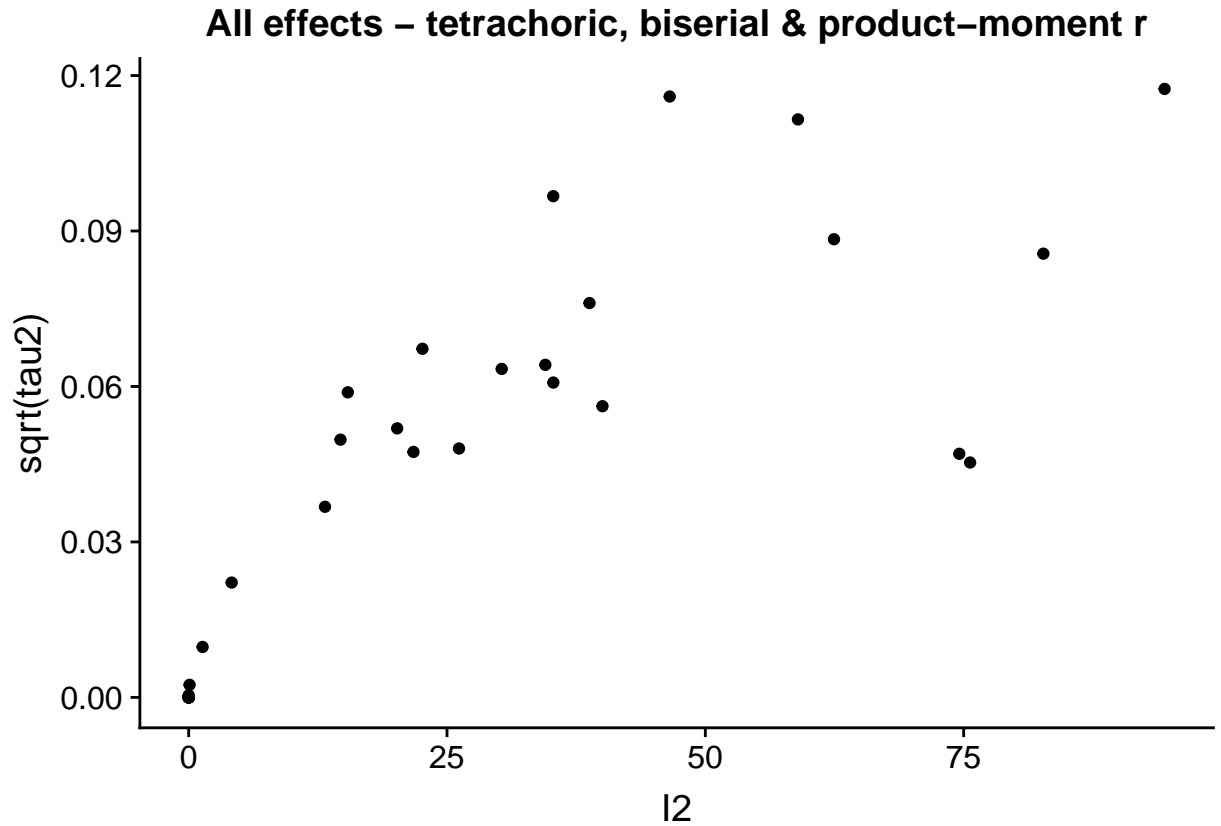
The effect that is close to one of the anchoring effects (I2 ~75, tau ~.05) is Allowed vs. forbidden which also has r = .90.