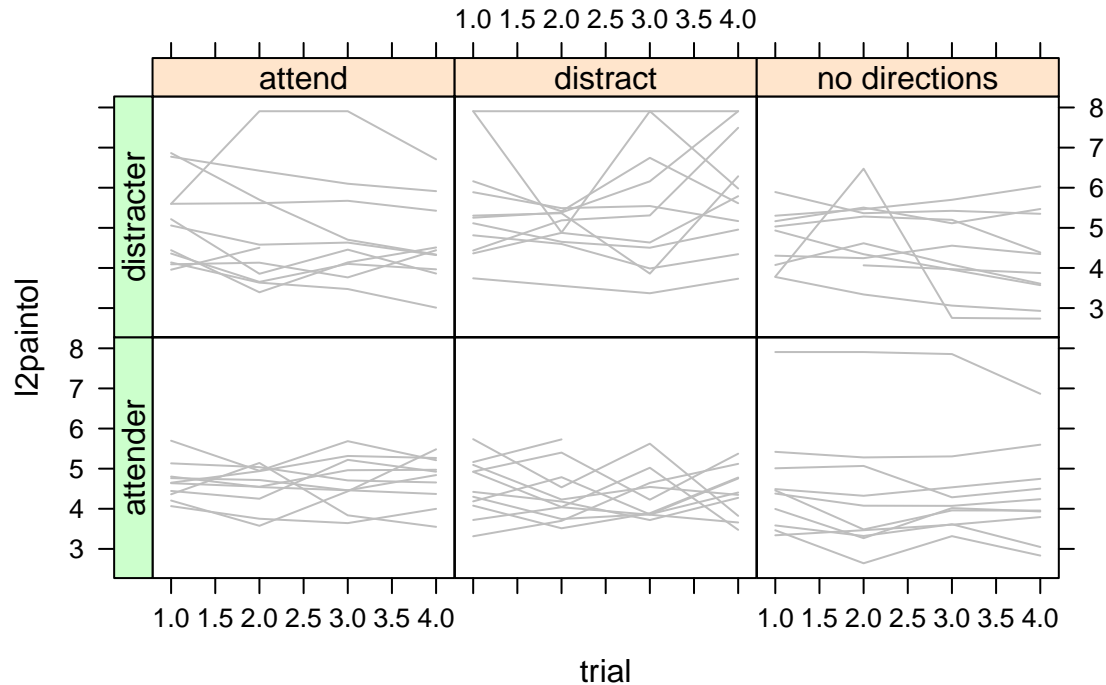


## A profile plot



## Here's a random intercept model

```
> m <- lme(l2paintol ~ trt * cs, random = ~1 | id, data = pp)
> summary(m)
```

```
      AIC      BIC    logLik
601.9478 636.6284 -290.9739
```

Random effects:

```
Formula: ~1 | id
(Intercept) Residual
StdDev:    0.8909409 0.5858537
```

Fixed effects: l2paintol ~ trt \* cs

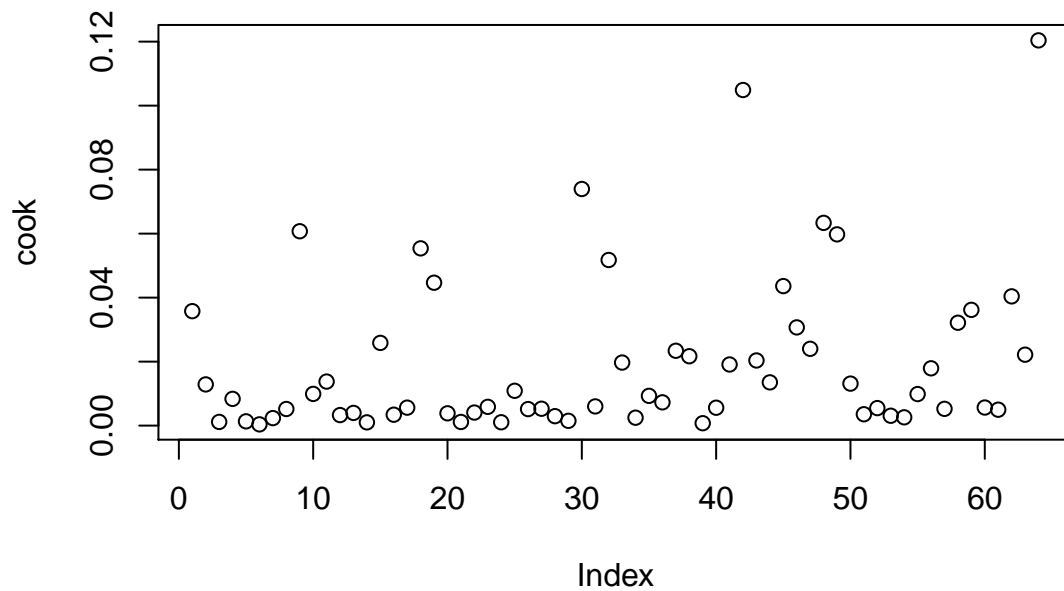
	Value	Std.Error	DF	t-value	p-value
(Intercept)	4.532592	0.1693017	175	26.772276	0.0000
trtattend	0.108192	0.2116055	175	0.511289	0.6098
trtdistract	0.038954	0.2116055	175	0.184088	0.8542
trtno directions	-0.108203	0.2125829	175	-0.508990	0.6114
csdistracter	0.478031	0.2393500	62	1.997206	0.0502
trtattend:csdistracter	-0.459945	0.2992544	175	-1.536971	0.1261
trtdistract:csdistracter	0.537127	0.2924447	175	1.836679	0.0680
trtno directions:csdistracter	-0.373634	0.3026533	175	-1.234529	0.2187

## Get Cook's Distances

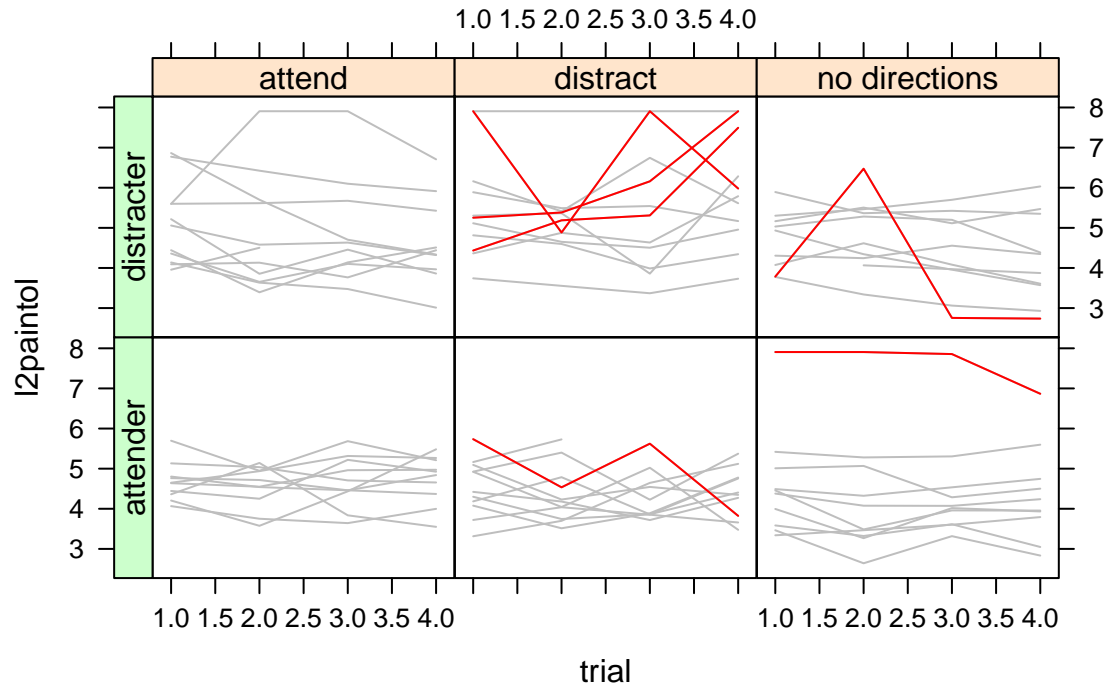
```
> ids <- unique(pp$id)
> cook <- numeric(length(ids))
> names(cook) <- ids
> for (i in seq_along(ids)) {
+   mi <- update(m, subset = id != ids[i])
+   d <- fixef(mi) - fixef(m)
+   cook[i] <- (d %*% solve(vcov(m)) %*% d)/length(d)
+ }
> head(sort(cook, decreasing = TRUE))

           62           17           61           31           21           32
0.12041066 0.10489163 0.07395190 0.06337129 0.06075579 0.05977931

> plot(cook)
```



With high influence ids marked in red



## Make PC residuals

```
> pp$res <- residuals(m, level = 0)
> ppr <- cast(pp, id ~ trial, value = "res")[, -1]
> ppr <- subset(ppr, complete.cases(ppr))
> pc <- princomp(ppr)$scores
> pc <- as.data.frame(pc)
> pc$id <- rownames(ppr)
> head(pc)
```

	Comp.1	Comp.2	Comp.3	Comp.4	id
1	-0.6880698	-0.4968401	-1.1704024	-0.31019252	1
2	-1.4561299	-0.6183026	-0.4986693	0.03555624	2
3	-2.1980400	-0.3341581	0.1458666	-0.39269584	3
4	0.4545052	0.1804136	0.2217580	-0.19771729	5
5	2.7178111	-0.1451418	-0.3200515	0.48455390	6
6	-1.0509247	0.3817054	0.2920678	-0.17213365	7

id	variable	value
1	1	Comp.1 -0.6880698
2	2	Comp.1 -1.4561299
3	3	Comp.1 -2.1980400
4	5	Comp.1 0.4545052
5	6	Comp.1 2.7178111
6	7	Comp.1 -1.0509247

