Supplemental materials: Structures of multi-level models

All analyses will be carried out in the R programming language and environment (R Core Team, 2020). We will calculate the distance between participants' pre-discussion rankings and post-discussion rankings, and between each participants' pre-discussion rankings and the pre-discussion rankings of the other members of their group, using Spearman's correlation tests from the *stats* package version 4.0.2. (R Core Team, 2020). Moreover, we will test the effects of independent variables using mixed-effect regressions or anovas, from *lme4* package version 1.1 (Bates, Maechler, Bolker, Walker, Christensen, Singmann, Dai, Grothendieck, & Green, 2015) and *stats* package version 4.0.2, respectively. We will always use the maximal random structure justified by our design that allows the models to reach convergence (Barr, Levy, Scheepers, & Tily, 2013). To assess the significance of all main effects and interactions, we will use Wald tests.

1. Study 1

Study 1 investigates the effects of visual display on both the dynamics of conversations and the opinion of speakers.

In particular, Study 1 investigates the effects of visual display on turn-taking, by testing whether:

(i) "Speaker A-Speaker B-Speaker A" turn pattern is less frequent in "monologue-like" speaker-mode versus "dialogue-like" gallery-mode;

(ii) Turn length is larger in "monologue-like" speaker-mode versus "dialogue-like" gallery-mode; and

(iii) Dominant speakers contribute a higher proportion of words in "monologue-like" speaker-mode versus "dialogue-like" gallery-mode discussions.

Moreover, Study 1 investigates the effects of visual display on the outcome of discussions, by testing whether:

(iv) Participants' opinion is influenced less by the contributions of the person with whom they interact the most in "monologue-like" speaker-mode than "dialogue-like" gallery-mode; and

(v) Participants' opinion is influenced more by the proportion of contributions of each other participant in "monologue-like" speaker-mode discussions than "dialogue-mode" gallery-mode discussions.

We will run three sets of analyses. First, to test our hypotheses it is important to establish the degree of pre-discussion agreement as to the importance of the issues. In particular, we need to take into account the possibility that participants' pre-discussion agreement may influence both the proportion of contributed words during the discussion and the proportion of adjacent turns that they share with other group members. Second, we will investigate the effects of visual display on turn-taking. Third, we will investigate the effects of visual display on individuals' opinion about the topic under discussion, using models that account .

1.1. Pre-discussion agreement

We will establish the degree of pre-discussion agreement about the importance of the discussed issues. In particular, we will calculate the distance between the **Pre-discussion Rankings** of each individual with the **Pre-discussion Rankings** of each other participant in their group (**Pre-discussion Agreement**), using a Spearman's correlation test. Then, we will calculate each individual participant's mean agreement with other group members (**Pre-discussion Group Agreement**).

1.2. Effects of Visual Display on turn-taking

We will investigate the effects of **Visual Display** on turn-taking using three sets of analyses.

First, we will test the effect of **Visual Display** on **Turn Pattern** by regressing **Turn Pattern** ("Speaker A-Speaker B-Speaker C" versus "Speaker A-Speaker B-Speaker A") against **Visual Display** (speaker-mode versus gallery-mode). We will use a logistic, mixed-effects model that will include **Turn Pattern** as outcome variable, **Visual Display** as fixed effect, and random effects by **Participant** nested in **Group**. If (i) "Speaker A-Speaker B-Speaker A" turn pattern is less frequent in "monologue-like" speaker-mode discussions versus "dialogue-like" gallery-mode discussions, we should find a significant effect of **Visual Display** on **Turn Pattern**.

Second, we will test the effect of **Visual Display** on **Turn Length** by regressing **Turn Length** (i.e., participants' mean of number of words contributed per turn) against **Visual Display** (speaker-mode versus gallery-mode). We will use a mixed-effects model that will include **Turn Length** as outcome variable, **Visual Display** as fixed effect, and random effects by **Group**. If (ii) turn length is larger in "monologue-like" speaker-mode discussions versus "dialogue-like" gallery-mode discussions, we should find a significant effect of **Visual Display** on **Turn Length**.

Third, we will test the effect of **Visual Display** on the **Proportion of Total Words** contributed by the dominant speakers, by comparing the mean of **Proportion of Total Words** *contributed by the dominant speaker* in speaker-mode versus gallery-mode, using an ANCOVA that will control for the dominant speakers' mean agreement with other group members prior to the discussion (**Pre-discussion Group Agreement**). The outcome variable will be **Proportion of Total Words** (transformed to approach normality), the grouping variable will be **Visual Display**, and the covariate will be **Pre-discussion Group Agreement**. If (iii) dominant speakers contribute a higher proportion of words in "monologue-like" speaker-mode versus "dialogue-like" gallery-mode discussions, we should find that the mean of **Proportion of Total Words** contributed by dominant speakers is higher in speaker-mode discussions versus gallery-mode discussions.

1.3. Effects of Visual Display on individuals' opinion

We will test the effects of **Visual Display** on individuals' opinion, using three sets of analyses.

First, we will calculate the distance between participants' **Pre-discussion Rankings** and **Post-discussion Rankings** using a Spearman's correlation test (**Opinion Change**).

Second, we will test the effects of **Proportion of Adjacent Turns** and **Visual Display** on **Opinion Change**, by regressing **Opinion Change** against **Proportion of Adjacent Turns** and **Visual Display**. We will use a mixed-effects model that will include **Opinion Change** as outcome variable, and **Proportion of Adjacent Turns**, **Visual Display**, and their interaction as fixed effects. The random structure will include random intercept by **Participant** nested in **Group**, and slope for **Pre-discussion Agreement**. If (iv) participants' opinion is influenced less by the contributions of the person with whom they interact the most in "monologue-like" speaker-mode than "dialogue-like" gallery-mode discussions, we should find a significant interaction between **Proportion of Adjacent Turns** and **Visual Display**.

Third, we will test the effects of **Proportion of Total Words** and **Visual Display** on **Opinion Change**, by regressing **Opinion Change** against other group members' **Proportion of Total Words** and **Visual Display**. We will use a mixed-effects model that will include **Opinion Change** as outcome variable, and other group members' **Proportion of Total Words**, **Visual Display**, and their interaction as fixed effects. The random structure will include random intercept by **Participant** nested in **Group,** and slope for **Pre-discussion Agreement**. If (v) participants' opinions are influenced more by the contributions of each other participant in "monologue-like" speaker-mode discussions than "dialogue-mode" gallery-mode discussions, we should find a significant interaction between **Proportion of Total Words** and **Visual Display**.

2. Study 2

Study 2 tests whether:

(vi) The opinion of naïve participants (i.e., not participating in the original discussions) who listen to audio-recordings of the discussions is influenced more by the proportion of words contributed by each other participant in "monologue-like" speaker-mode discussions than "dialogue-mode" gallery-mode discussions.

We will use two sets of analyses. First, to test our hypothesis it is important to establish the degree of pre-discussion agreement as to the importance of the issues. Second, we will investigate the effects of **Discussion Recordings** on individuals' opinion about the topic under discussion.

2.1. Pre-discussion agreement

We will establish the degree of pre-discussion agreement about the importance of the discussed issues. In particular, we will calculate the distance between **Pre-discussion Rankings** of each Study 2's individual with the **Pre-discussion Rankings** of each Study 1's participant that was involved in the discussion they listened to (**Pre-discussion Agreement**), using a Spearman's correlation test.

2.2. Effects of Visual Display on discussions' outcome

We will test the effects of **Discussion Recording** (speaker-mode versus gallery-mode) and **Proportion of Total Words** on naïve participants' opinions about the topic under discussion, using two sets of analyses.

First, we will calculate the distance between participants' pre-discussion and post-discussion rankings (**Opinion Change**), using a Spearman's correlation test.

Second, we will test the effects of **Proportion of Total Words** and **Visual Display** on **Opinion Change**, by regressing **Opinion Change** against Study 1's participants' **Proportion of Total Words** and **Visual Display**. We will use a mixed-effects model that will include **Opinion Change** as outcome variable, and other group members' **Proportion of Total Words**, **Visual Display**, and their interaction as fixed effects. The random structure will include random intercept by **Participant** nested in **Group**, and slope for **Pre-discussion Agreement**. If (vi) the opinion of naïve participants (i.e., not participating in the original discussions) who listen to audio-recordings of the discussions is influenced more by the proportion of words contributed by each other participant in "monologue-like" speaker-mode discussions than "dialogue-mode" gallery-mode discussions, we should find a significant interaction between **Proportion of Total Words** and **Visual Display**.

References

Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language*, *68*(3), 255-278.

Bates, D., Maechler, M., Bolker, B., Walker, S., Christensen, R. H. B., Singmann, H., Dai, B., Grothendieck, G., & Green, P. (2015). "Package ‘lme4’." *Convergence* 12, 1:2.

R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.