

# Execution Report

**Title: Let's Be Clear: Explaining Purpose Clarity**

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**Full reference:** Chang, Jin Wook & Durand, Rodolphe " Let's Be Clear: Explaining Purpose Clarity". Working paper, April 5 2023.

The structure and contents of this execution report provided by **cascad** for the certification are similar to those recommended by the [AEA Data Editor](#).

## 1. DATA DESCRIPTION

This study relies on the database of a consulting firm operating worldwide. This database contains data from various teams and team leaders, which were collected as part of the consulting firm's leadership assessment and training programs.

For a thorough description of the data, please refer to page 12 of the paper.

## 2. CODE DESCRIPTION

The verification package contains the following files:

### Datasets:

- Study 1 Leader Raw.csv
- Study 1 Member Raw.csv
- Study 1 Main.csv
- Study 1 Member Main.csv
- Study 2 Raw.csv
- Study 2 Main.csv
- matchgenderdata.csv
- matchagedage.csv

### Codes:

- Study 1 Main.R: This script generates results displayed in Table 1 as well as Figures 2 and 3.
- Study 1 Appendix.R: This script generates the results in Appendix 1. "Study 1 Main.R" must be run before.
- Study 2 Main.R: This script generates results displayed in Table 2 as well as Figures 4 and 5.
- Study 2 Appendix.R: This script generates the results in Appendix 2.
- process.R: This script, taken from <http://processmacro.org>, is used by "Study 2 Main.R".

### 3. VERIFICATION STEPS

The verification package was received as a zip file and run as per readme, using R 4.2.3 on a computer with 256GB RAM, Intel Xeon Silver 4210R 2.4GHz, NVIDIA RTX™ A5000 (40 cores) and Windows 10 OS.

We first noticed that all the scripts (except for “process.R”) were filled with “red dots”. For example, here is an excerpt from “Study 1 Main.R”:

```
# split-group method
dindiv$z<-rep(c(1,0), times=22964)
dindiv$z1<-rep(c(0,1), times=22964)
dindiv$clarityz<-dindiv$clarity*dindiv$z
dindiv$purposecommz1<-dindiv$purposecomm*dindiv$z1
dindiv[“clarityz”][dindiv[“clarityz”]==0]<-NA
dindiv[“purposecommz1”][dindiv[“purposecommz1”]==0]<-NA
varsapp1k<-aggregate(cbind(dindiv$clarityz, dindiv$purposecommz1), by=list(dindiv$ID), FUN=mean, na.rm=TRUE)
dteam$clarityz=varsapp1k$V1
dteam$purposecommz1=varsapp1k$V2
```

We do not know what causes this issue. We simply removed them before running the code.

We then encountered two minor issues with the code:

- When we first ran “Study 1 Main.R”, we received the following error message:

```
> psych::alpha(dindiv[23:25])
Error in loadNamespace(x) : aucun package nommé ‘psych’ n'est trouvé
```

This library was not imported at the beginning of the script. We resolved this issue by first installing this package with the “install.packages(“psych”) command and then importing it with the library(psych) command.

- We had a similar issue when running “Study 2 Main.R”:

```
> ggplot(claritySE, aes(x=factor(dissimilarity), y=dvavg, fill=purpose))+
  geom_bar(stat="identity", position="dodge")+geom_errorbar(aes(ymin=dvavg-dvse
, ymax=dvavg+dvse), position=position_dodge(0.9), width=0.25,show.legend=FA
LSE)+labs(x="Team-Leader Dissimilarity", y="Purpose Clarity")+coord_cartesi
an(ylim=c(4,6.5))
```

```
Error in ggplot(claritySE, aes(x = factor(dissimilarity), y = dvavg, fill =
purpose)) :
  could not find function "ggplot"
```

This library was not imported at the beginning of the script either. Again, we resolved this issue by using the commands “install.packages(“ggplot2”) and “library(ggplot2)”.

## 4. REPRODUCED RESULTS

**We reproduced all the Tables and Figures with accuracy.** Note that Figure 1 is not reproduced since it does not contain any result.

**IMPORTANT:** While we checked all the results in the main article and appendix, we only provide below the results displayed in the main article. Indeed, regenerating the Tables was very time consuming because they are not automatically produced by the code. We had to manually reconstruct them from the numerical values displayed in the R console. Recreating the 16 tables displayed in the appendix would take too much time.

### 4.1. TABLE 1. STUDY 1 RESULTS

Original:

Panel A. Descriptive statistics and correlations among study variables

| Variable                            | <i>M</i> | <i>SD</i> | 1    | 2    | 3    | 4   | 5   |
|-------------------------------------|----------|-----------|------|------|------|-----|-----|
| 1. Purpose Communication            | 4.31     | .69       |      |      |      |     |     |
| 2. Team-Leader Gender Dissimilarity | .15      | .36       | -.04 |      |      |     |     |
| 3. Team-Leader Age Dissimilarity    | .05      | .21       | -.06 | .04  |      |     |     |
| 4. Purpose Clarity                  | 4.77     | .68       | .63  | -.05 | -.06 |     |     |
| 5. Directive Leadership             | 3.62     | .67       | -.08 | -.04 | .03  | .05 |     |
| 6. Performance Motivation           | 4.24     | .75       | .31  | .06  | .01  | .42 | .15 |

*Note.*  $N = 7,194$  team-level observations. For team-leader dissimilarity variables, dissimilarity was coded 1, and the rest was coded 0.  $|r| > .03, p < .05$ ;  $|r| > .04, p < .01$ ;  $|r| > .05, p < .001$ .

Panel B. Results of fixed effects regressions predicting purpose clarity

| Variable                  | Purpose Clarity |          |          |          | Performance Motivation |          |
|---------------------------|-----------------|----------|----------|----------|------------------------|----------|
|                           | Model 1         | Model 2  | Model 3  | Model 4  | Model 5                | Model 6  |
| Purpose Communication(PC) | .54***          | .48***   |          |          | .22***                 | .25***   |
| Gender Dissimilarity(GD)  | (.02)           | (.02)    |          |          | (.02)                  | (.02)    |
| Age Dissimilarity(AD)     | -.09**          | -.63***  | -.12**   | -.10     | .01                    | .32      |
| PC × GD                   | (.03)           | (.15)    | (.04)    | (.19)    | (.04)                  | (.17)    |
| PC × AD                   | -.11*           | -1.18*** | -.32***  | -.15     | .05                    | .26      |
| DL × GD                   | (.05)           | (.21)    | (.06)    | (.26)    | (.05)                  | (.24)    |
| DL × AD                   |                 | .13***   |          |          |                        | -.07     |
|                           |                 | (.03)    |          |          |                        | (.04)    |
|                           |                 | .27***   |          |          |                        | -.05     |
|                           |                 | (.05)    |          |          |                        | (.06)    |
| Directive Leadership (DL) |                 |          | -.07**   | -.07*    |                        |          |
| DL × GD                   |                 |          | (.03)    | (.03)    |                        |          |
| DL × AD                   |                 |          |          | -.01     |                        |          |
|                           |                 |          |          | (.05)    |                        |          |
|                           |                 |          |          | -.05     |                        |          |
|                           |                 |          |          | (.07)    |                        |          |
| Control Variables         | Included        | Included | Included | Included | Included               | Included |
| Leader Fixed Effects      | Included        | Included | Included | Included | Included               | Included |
| Year Fixed Effects        | Included        | Included | Included | Included | Included               | Included |
| Function Fixed Effects    | Included        | Included | Included | Included | Included               | Included |
| $R^2$ (within)            | .30             | .31      | .04      | .04      | .06                    | .06      |
| <i>F</i> -value           | 43.75           | 43.45    | 4.42     | 4.15     | 6.51                   | 6.28     |

Reproduced:

Panel A

|                           | vars | n    | mean | sd   | min  | max  | range | se   |
|---------------------------|------|------|------|------|------|------|-------|------|
| purposecomm               | 1    | 7194 | 4.31 | 0.69 | 1.00 | 6.00 | 5.00  | 0.01 |
| genderdissimilarity65pct  | 2    | 7194 | 0.15 | 0.36 | 0.00 | 1.00 | 1.00  | 0.00 |
| agedissimilarity65pct2cat | 3    | 7194 | 0.05 | 0.21 | 0.00 | 1.00 | 1.00  | 0.00 |
| clarity                   | 4    | 7194 | 4.77 | 0.68 | 1.00 | 6.00 | 5.00  | 0.01 |
| direct                    | 5    | 7194 | 3.62 | 0.67 | 1.38 | 5.69 | 4.31  | 0.01 |
| perfmot                   | 6    | 7194 | 4.24 | 0.75 | 1.33 | 6.00 | 4.67  | 0.01 |

|                           | purposecomm | genderdissimilarity65pct | agedissimilarity65pct2cat | clarity | direct | perfmot |
|---------------------------|-------------|--------------------------|---------------------------|---------|--------|---------|
| purposecomm               | 1.00        | -0.04                    | -0.06                     | 0.63    | -0.08  | 0.31    |
| genderdissimilarity65pct  | -0.04       | 1.00                     | 0.04                      | -0.05   | -0.04  | 0.06    |
| agedissimilarity65pct2cat | -0.06       | 0.04                     | 1.00                      | -0.06   | 0.03   | 0.01    |
| clarity                   | 0.63        | -0.05                    | -0.06                     | 1.00    | 0.05   | 0.42    |
| direct                    | -0.08       | -0.04                    | 0.03                      | 0.05    | 1.00   | 0.15    |
| perfmot                   | 0.31        | 0.06                     | 0.01                      | 0.42    | 0.15   | 1.00    |

n= 7194

Panel B:

|                |           | Purpose clarity |           |         | Performance motivation |           |           |
|----------------|-----------|-----------------|-----------|---------|------------------------|-----------|-----------|
|                |           | Model 1         | Model 2   | Model 3 | Model 4                | Model 5   | Model 6   |
| PC             | Estimate  | 0.54            | 0.48      |         |                        | 0.22      | 0.25      |
|                | Std. Err. | 0.02            | 0.02      |         |                        | 0.02      | 0.02      |
|                | Pr(> t )  | < 2.2e-16       | < 2.2e-16 |         |                        | < 2.2e-16 | < 2.2e-16 |
| GD             | Estimate  | -0.09           | -0.63     | -0.12   | -0.10                  | 0.01      | 0.32      |
|                | Std. Err. | 0.03            | 0.15      | 0.04    | 0.19                   | 0.04      | 0.17      |
|                | Pr(> t )  | 0.0051          | 0.0000    | 0.0019  | 0.5984                 | 0.7075    | 0.0593    |
| AD             | Estimate  | 0.06            | -1.18     | -0.32   | -0.15                  | 0.05      | 0.26      |
|                | Std. Err. | 0.06            | 0.21      | 0.06    | 0.26                   | 0.05      | 0.24      |
|                | Pr(> t )  | 0.2779          | 0.0000    | 0.0000  | 0.5523                 | 0.3299    | 0.2827    |
| PC x GD        | Estimate  |                 | 0.13      |         |                        |           | -0.07     |
|                | Std. Err. |                 | 0.03      |         |                        |           | 0.04      |
|                | Pr(> t )  |                 | 0.0002    |         |                        |           | 0.0621    |
| PC x AD        | Estimate  |                 | 0.27      |         |                        |           | -0.05     |
|                | Std. Err. |                 | 0.05      |         |                        |           | 0.06      |
|                | Pr(> t )  |                 | 0.0000    |         |                        |           | 0.3553    |
| DL             | Estimate  |                 |           | -0.07   | -0.07                  |           |           |
|                | Std. Err. |                 |           | 0.03    | 0.03                   |           |           |
|                | Pr(> t )  |                 |           | 0.0066  | 0.0140                 |           |           |
| DL x GD        | Estimate  |                 |           |         | -0.01                  |           |           |
|                | Std. Err. |                 |           |         | 0.05                   |           |           |
|                | Pr(> t )  |                 |           |         | 0.9125                 |           |           |
| DL x AD        | Estimate  |                 |           |         | -0.05                  |           |           |
|                | Std. Err. |                 |           |         | 0.07                   |           |           |
|                | Pr(> t )  |                 |           |         | 0.5094                 |           |           |
| R <sup>2</sup> |           | 0.30            | 0.31      | 0.04    | 0.04                   | 0.06      | 0.06      |
| F-value        |           | 43.75           | 43.45     | 4.42    | 4.15                   | 6.51      | 6.28      |

#### 4.2. TABLE 2. STUDY 2 RESULTS

Original:

Panel A. Descriptive statistics and correlations among study variables

| Variable                            | <i>M</i> | <i>SD</i> | 1   | 2    | 3   |
|-------------------------------------|----------|-----------|-----|------|-----|
| 1. Leader Purpose Communication     | -.02     | 1.00      |     |      |     |
| 2. Team-leader Gender Dissimilarity | .04      | 1.00      | .02 |      |     |
| 3. Perceived Leader Commitment      | 5.76     | .94       | .38 | -.10 |     |
| 4. Purpose Clarity                  | 5.64     | 1.14      | .38 | -.10 | .72 |

*Note.*  $N = 383$ . For leader purpose communication, high leader purpose communication condition was coded 1, and low leader purpose communication condition was coded -1. Team-leader gender dissimilarity (a female-majority team with a male leader condition and a male-majority team with a female leader condition) was coded 1; team-leader gender similarity (a female-majority team with a female leader condition and a male-majority team and with a male leader condition) was coded -1.

Panel B. Results of regressions predicting leader commitment and purpose clarity

| Variable   | Leader Commitment |                 | Purpose Clarity |                 |                 |
|--|-------------------|-----------------|-----------------|-----------------|-----------------|
|  | Model 1           | Model 2         | Model 3         | Model 4         | Model 5         |
| Leader Purpose communication (PC)                | .36***<br>(.04)   | .35***<br>(.04) | .44***<br>(.05) | .43***<br>(.05) | .15***<br>(.04) |
| Team-Leader Gender Dissimilarity (Dissimilarity) | -.11*<br>(.04)    | -.10*<br>(.04)  | -.13*<br>(.05)  | -.12*<br>(.05)  | -.04<br>(.04)   |
| PC × Dissimilarity                               |                   | .13**<br>(.04)  |                 | .13*<br>(.05)   | .02<br>(.04)    |
| Leader Commitment                                |                   |                 |                 |                 | .81***<br>(.05) |
| $R^2$  | .15               | .17             | .16             | .17             | .53             |
| $F$ -value                                       | 34.80             | 26.78           | 35.28           | 25.75           | 108.50          |

*Note.*  $N = 383$ . Standard errors are shown in parentheses. For leader purpose communication, high leader purpose communication condition was coded 1, and low leader purpose communication condition was coded -1. Team-leader gender dissimilarity (a female-majority team with a male leader condition and a male-majority team with a female leader condition) was coded 1, and team-leader gender similarity (a female-majority team with a female leader condition and a male-majority team with a male leader condition) was coded -1.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Reproduced:

Panel A:

|               | vars | n   | mean  | sd   | min | max | range | se   |
|---------------|------|-----|-------|------|-----|-----|-------|------|
| purpose       | 1    | 383 | -0.02 | 1.00 | -1  | 1   | 2     | 0.05 |
| dissimilarity | 2    | 383 | 0.04  | 1.00 | -1  | 1   | 2     | 0.05 |
| commitment    | 3    | 383 | 5.76  | 0.94 | 2   | 7   | 5     | 0.05 |
| clarity       | 4    | 383 | 5.64  | 1.14 | 1   | 7   | 6     | 0.06 |

|               | purpose | dissimilarity | commitment | clarity |
|---------------|---------|---------------|------------|---------|
| purpose       | 1.00    | 0.02          | 0.38       | 0.38    |
| dissimilarity | 0.02    | 1.00          | -0.10      | -0.10   |
| commitment    | 0.38    | -0.10         | 1.00       | 0.72    |
| clarity       | 0.38    | -0.10         | 0.72       | 1.00    |

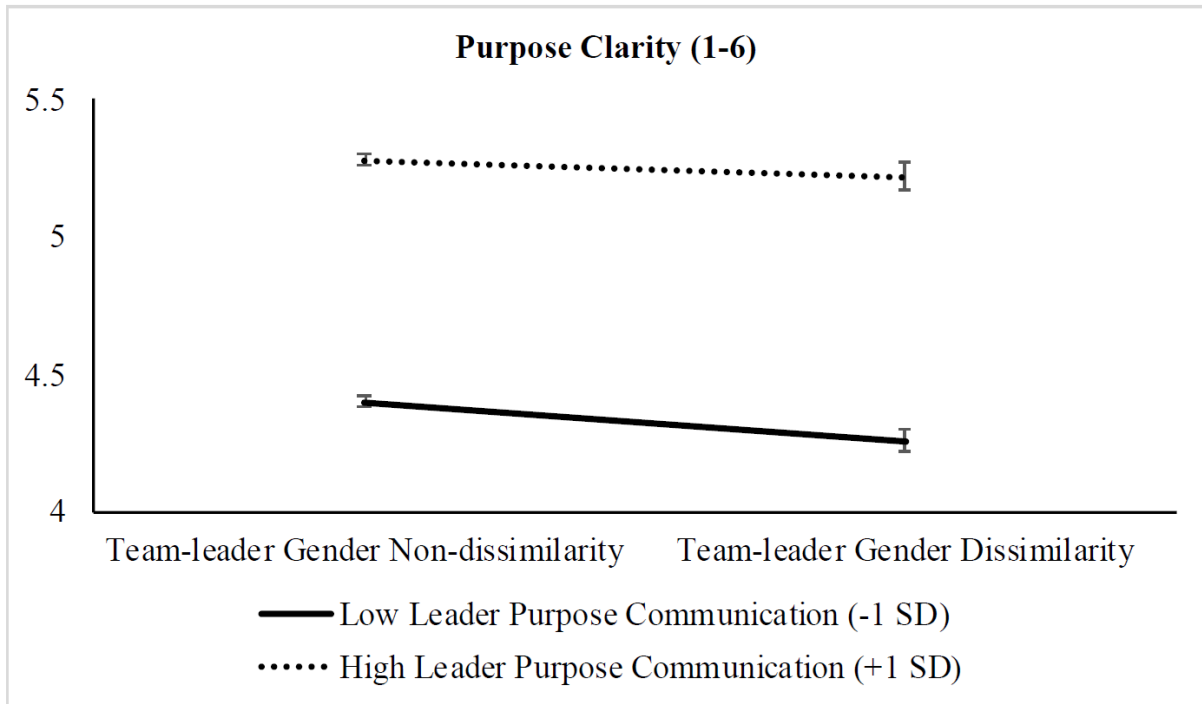
n= 383

Panel B:

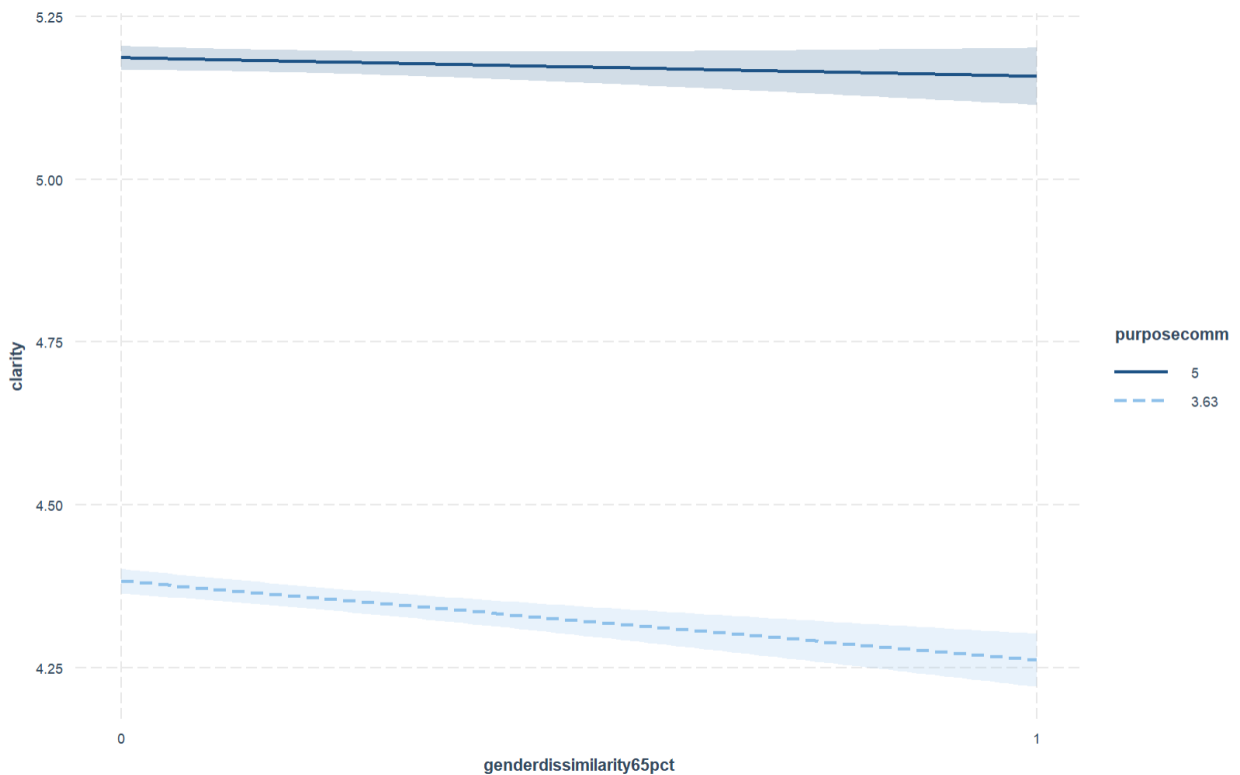
|                    |           | Leader Commitment |          | Purpose clarity |          |          |
|--------------------|-----------|-------------------|----------|-----------------|----------|----------|
|                    |           | Model 1           | Model 2  | Model 3         | Model 4  | Model 5  |
| PC                 | Estimate  | 0.36              | 0.35     | 0.44            | 0.43     | 0.15     |
|                    | Std. Err. | 0.04              | 0.04     | 0.05            | 0.05     | 0.04     |
|                    | Pr(> t )  | 1.08E-14          | 1.65E-14 | 6.73E-15        | 1.08E-14 | 7.53E-04 |
| Dissimilarity      | Estimate  | -0.11             | -0.10    | -0.13           | -0.12    | -0.04    |
|                    | Std. Err. | 0.04              | 0.04     | 0.05            | 0.05     | 0.04     |
|                    | Pr(> t )  | 0.0172            | 0.0199   | 0.0187          | 0.0213   | 0.3133   |
| PC x Dissimilarity | Estimate  |                   | 0.13     |                 | 0.13     | 0.02     |
|                    | Std. Err. |                   | 0.04     |                 | 0.05     | 0.04     |
|                    | Pr(> t )  |                   | 0.0026   |                 | 0.0166   | 0.6044   |
| Leader Commitment  | Estimate  |                   |          |                 |          | 0.81     |
|                    | Std. Err. |                   |          |                 |          | 0.05     |
|                    | Pr(> t )  |                   |          |                 |          | < 2e-16  |
| R <sup>2</sup>     |           | 0.15              | 0.17     | 0.16            | 0.17     | 0.53     |
| F-value            |           | 34.80             | 26.78    | 35.28           | 25.75    | 108.50   |

4.3. FIGURE 2. INTERACTIVE EFFECT OF LEADER PURPOSE COMMUNICATION AND TEAM-LEADER GENDER DISSIMILARITY ON PURPOSE CLARITY (STUDY 1)

Original:

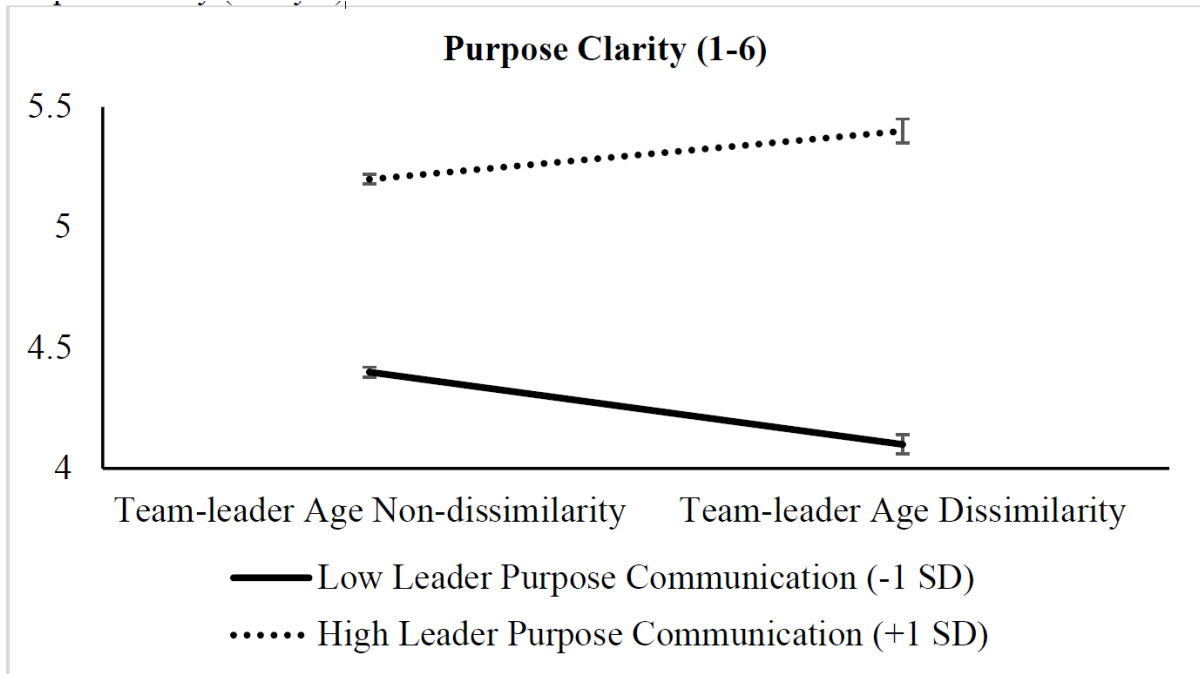


Reproduced:

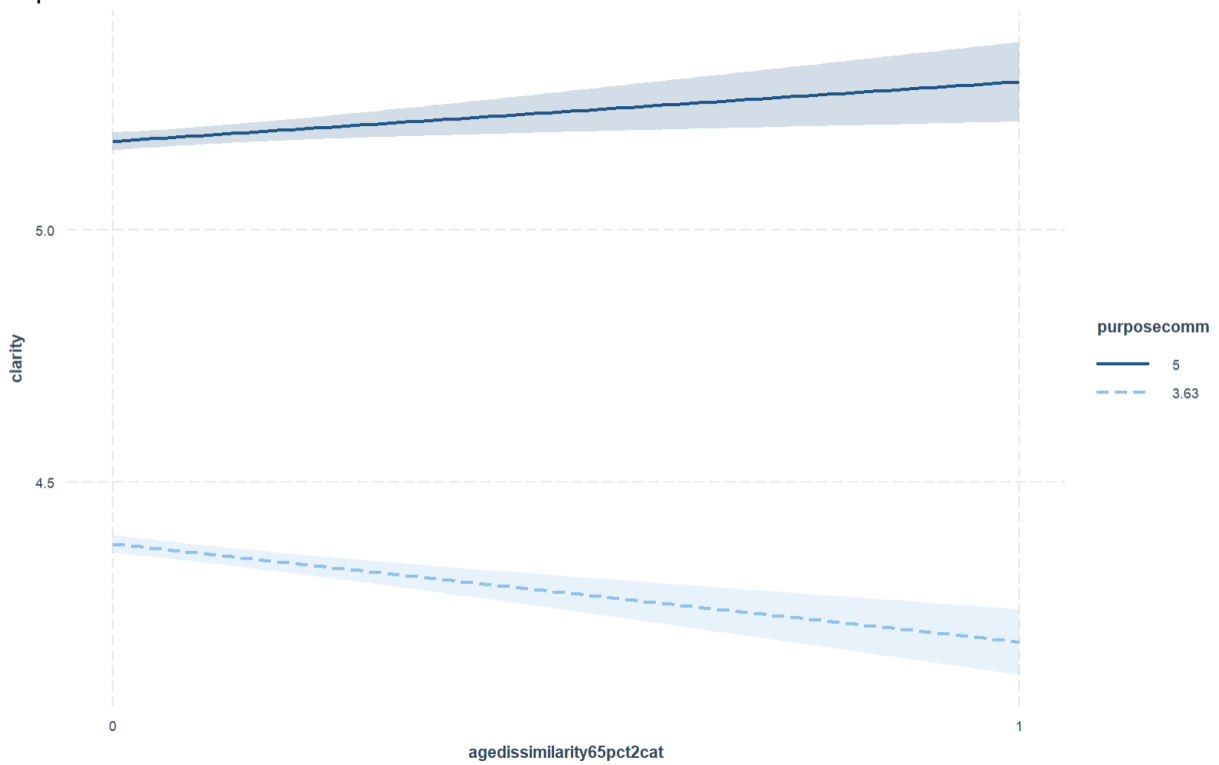


4.4. FIGURE 3. INTERACTIVE EFFECT OF LEADER PURPOSE COMMUNICATION AND TEAM-LEADER AGE DISSIMILARITY ON PURPOSE CLARITY (STUDY 1)

Original:



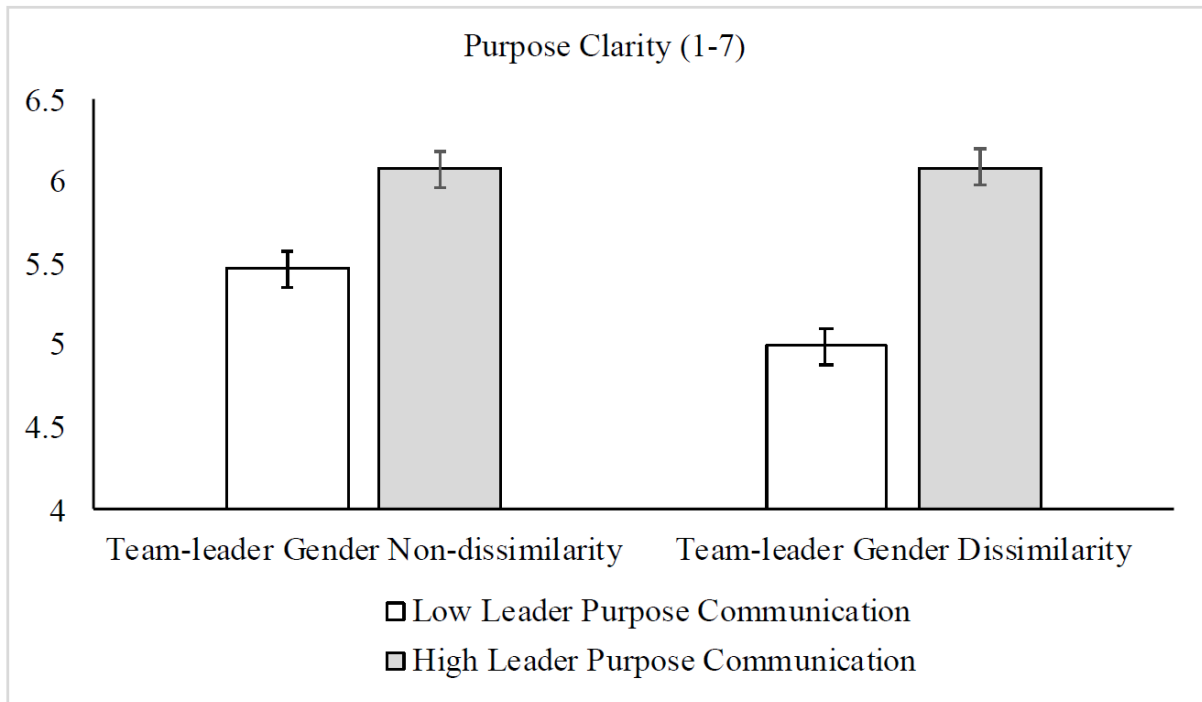
Reproduced:



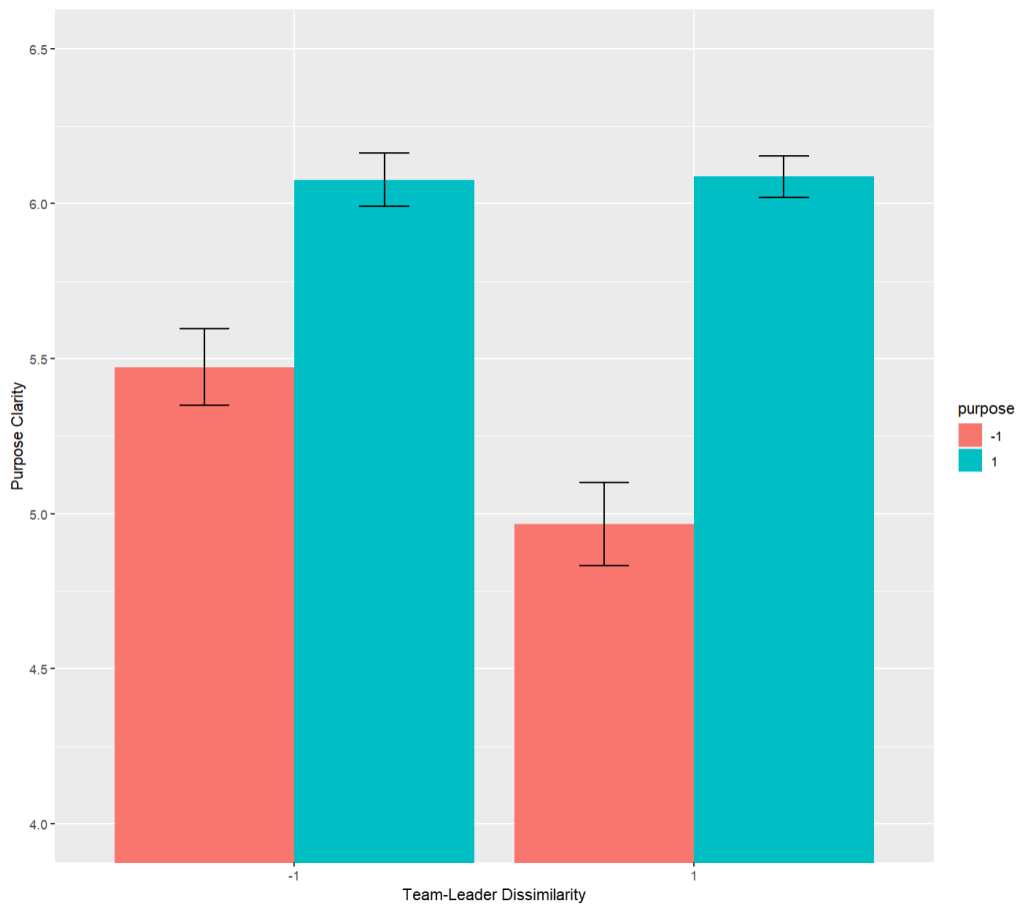


4.5. FIGURE 4. INTERACTIVE EFFECT OF LEADER PURPOSE COMMUNICATION AND TEAM-LEADER GENDER DISSIMILARITY ON PURPOSE CLARITY (STUDY 2)

Original:

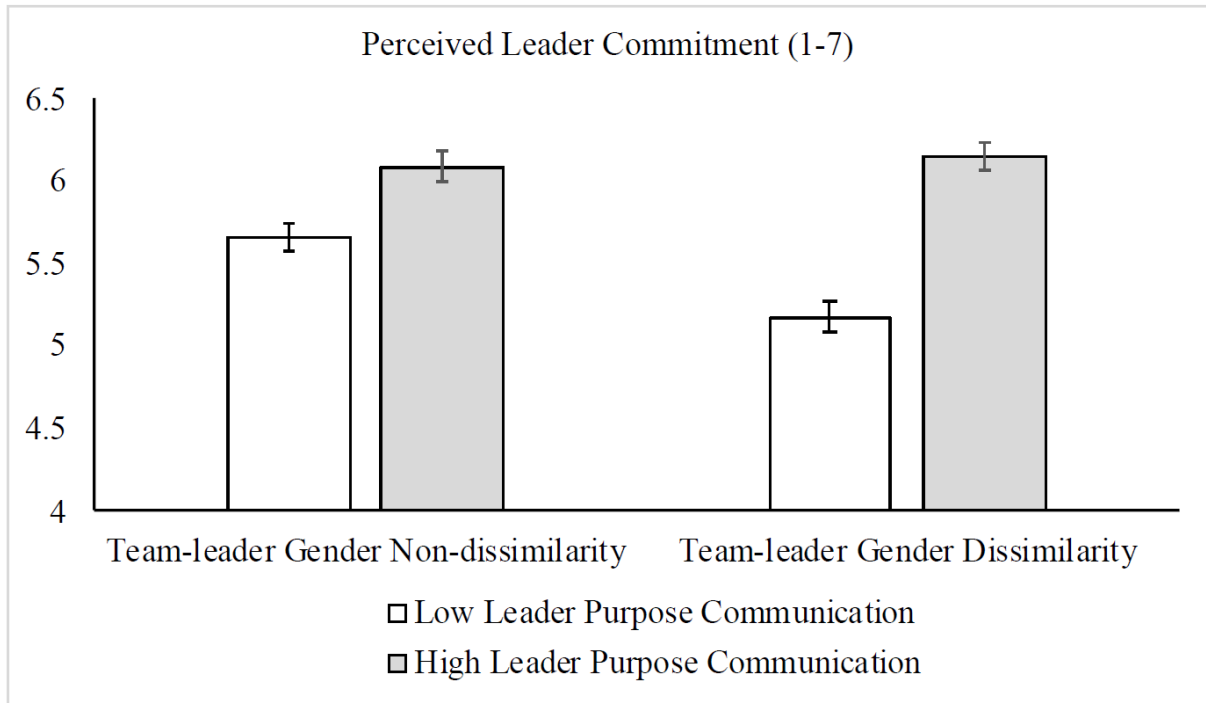


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4.6. FIGURE 5. INTERACTIVE EFFECT OF LEADER PURPOSE COMMUNICATION AND TEAM-LEADER GENDER DISSIMILARITY ON PERCEIVED LEADER COMMITMENT (STUDY 2)

Original:



Reproduced:

