Gender and Leadership In Organizations:
The Threat of Backlash
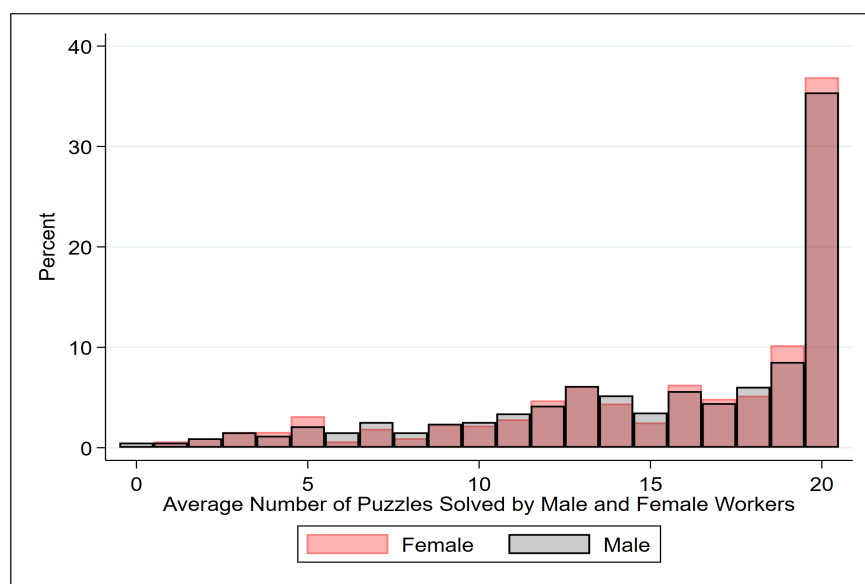
Priyanka Chakraborty[*]   Danila Serra[†]

ONLINE APPENDIX

A   Additional Figures and Tables

Figure A1: Average Productivity of Male and Female Workers

Note: The figure shows the average number of puzzles correctly solved by male and female workers over the 5 rounds of the experiment, across all treatments.

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Figure A2: The decision to be Manager by performance terciles
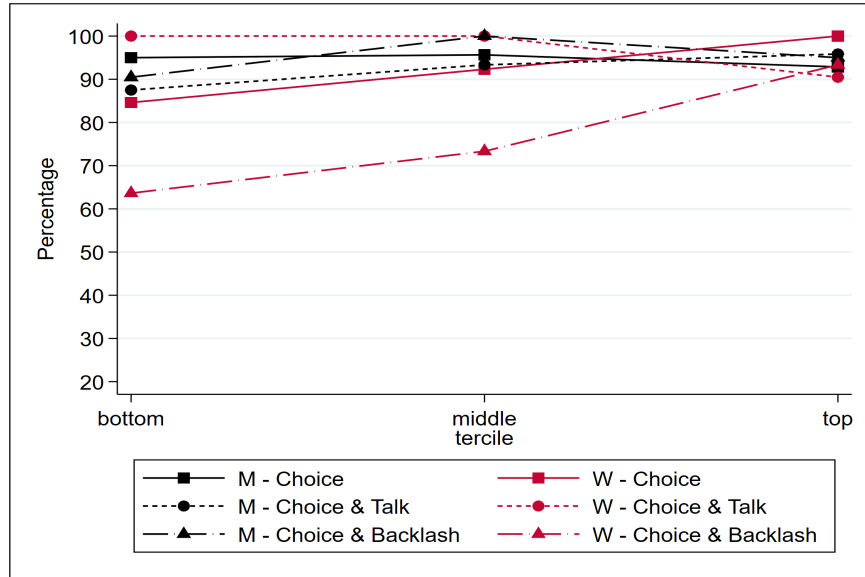
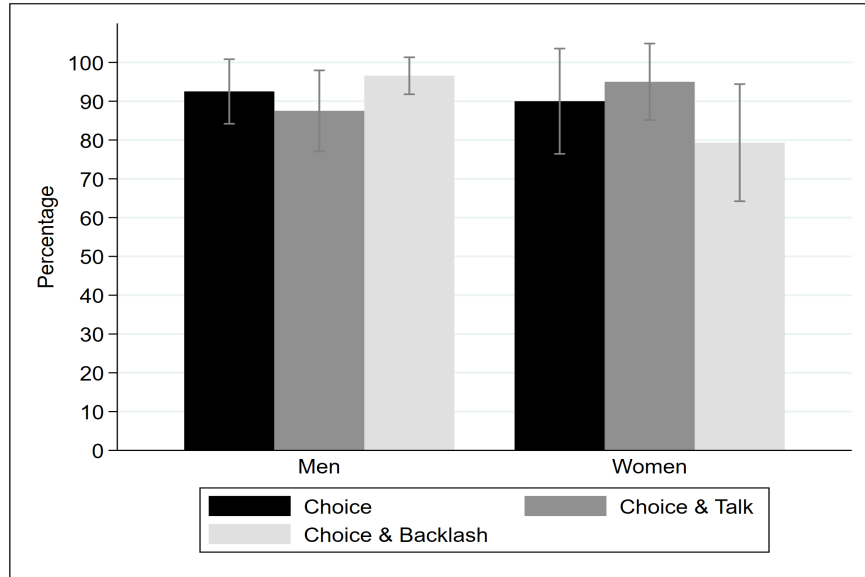Note: The figure shows the percentages of bottom-, middle- and top-performers (in the initial real effort task) who were willing to hold the leadership role, by gender and treatment.

Figure A3: Percentage of managers receiving at least one angry emoji
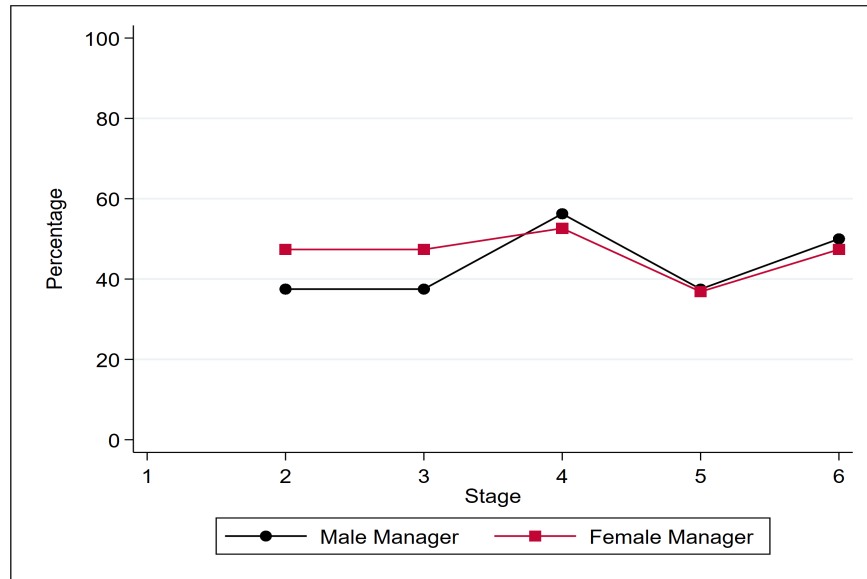
Note: The figure shows the percentages of men and women managers who received at least one angry emoji in each stage when backlash was possible.

Figure A4: Self-selection into leadership in groups of 2 men and 1 woman

Note: The figure shows the percentages men and women who stated that they wanted to be the manager of their group, when restricting the sample to groups formed by 2 men and 1 woman.

Table A1: Subjects' characteristics

	Male					Female					M=F (All)
	NC	C	CT	CB	Joint p-value	NC	C	CT	CB	Joint p-value	p-value
Age	22.61	22.84	24.38	22.55	0.091	23.32	22.19	23.27	22.00	0.454	0.414
	(2.47)	(2.85)	(6.94)	(4.60)		(4.46)	(3.06)	(6.53)	(4.22)		
STEM-Bus-Econ (freq.)	0.85	0.91	0.78	0.80	0.196	0.71	0.67	0.54	0.66	0.396	0.000
	(0.36)	(0.28)	(0.42)	(0.40)		(0.46)	(0.47)	(0.50)	(0.48)		
Native speaker (freq.)	0.36	0.26	0.52	0.48	0.014	0.44	0.45	0.67	0.61	0.076	0.007
	(0.48)	(0.44)	(0.50)	(0.50)		(0.50)	(0.50)	(0.47)	(0.49)		
Past Leadership (freq.)	0.80	0.85	0.89	0.83	0.614	0.90	0.83	0.85	0.83	0.768	0.724
	(0.40)	(0.36)	(0.31)	(0.38)		(0.30)	(0.38)	(0.35)	(0.38)		
Big 5 Agreeableness Index	27.80	26.67	27.92	27.70	0.653	29.44	28.34	29.35	29.95	0.738	0.004
	(5.02)	(5.49)	(6.94)	(5.15)		(7.19)	(6.70)	(5.89)	(5.15)		

Note: We report average age, share of subjects pursuing a degree in STEM, economics or business, share of native speakers, share of subjects with past leadership experience and average Big5 Agreeableness measure by gender and treatment. The Agreeableness index can assume values between 0 and 40; the minimum in our sample is 8. For each variable and gender subsample, we report p-values generated by tests of the treatments' joint statistical significance. In the last column, we report p-values generated by tests of equality of the means computed for male and female participants.

Table A2: Performance in the real effort task

	Number of correctly solved puzzles		
	(1)	(2)	(3)
No Choice (NC)	0.396	0.269	0.020
	(0.739)	(0.706)	(0.686)
Choice&Talk (CT)	0.735	0.894	0.062
	(0.746)	(0.696)	(0.681)
Choice&Backlash (CB)	0.230	0.019	-0.546
	(0.762)	(0.737)	(0.694)
Female	0.574	0.119	-0.738
	(0.858)	(0.851)	(0.797)
Female x NC	-0.620	-0.198	0.412
	(1.193)	(1.115)	(1.090)
Female x CT	0.707	0.620	1.324
	(1.101)	(1.068)	(0.979)
Female x CB	0.855	1.015	1.567
	(1.153)	(1.129)	(1.021)
Constant	13.656	19.737	14.564
	(0.570)	(1.168)	(1.704)
Controls	No	Yes	Yes$^+$
Stage FE	Yes	Yes	Yes
Observations	2,502	2,502	2,502
Clusters	417	417	417
H_0: NC = CT	0.642	0.360	0.947
H_0: NC = CB	0.824	0.729	0.394
H_0: CT = CB	0.502	0.221	0.333
H_0: NC + Fem. x NC=0	0.811	0.935	0.611
H_0: CT + Fem. x CT=0	0.075	0.057	0.046
H_0: CB + Fem. x CB=0	0.210	0.229	0.172

Note: OLS estimates. Each subject solved up to 20 puzzles in each of 6 rounds. Robust standard errors, clustered at the individual level, in parentheses. Controls are: performance in the task, age, and STEM or economics field of study. Additional controls in column 4 are: being a native English speaker, having held a leadership position, Big5 agreeableness measure. Due to a computer glitch, the additional individual characteristics in Column 4 were not collected for 12 subjects in the *Choice* treatment. We input the missing values of the Big 5 Agreeableness index with its mean, and the missing values of the past leadership indicator and the native English speaker indicator with the most common value in the non-missing sample. In Column 4, we include a dummy variable equal to 1 for the 12 subjects who have missing values for the three additional control variables.

Table A3: Self-selection into the manager role and manager decision-making by treatment and gender

	Men				Women			
	Self-select	Switch	Mistaken	Lost Profit	Self-select	Switch	Mistaken	Lost Profit
No Choice (NC)		0.085	-0.017	0.931		0.095	0.161	0.992
		(0.066)	(0.081)	(0.826)		(0.079)	(0.061)	(0.710)
		[0.446]	[0.990]	[0.485]		[0.347]	[0.010]	[0.307]
Choice&Talk (CT)	-0.010	0.145	-0.004	0.189	0.030	0.134	0.078	0.352
	(0.051)	(0.075)	(0.088)	(0.699)	(0.048)	(0.076)	(0.061)	(0.673)
	[0.990]	[0.059]	[0.990]	[0.990]	[0.723]	[0.119]	[0.327]	[0.723]
Choice&Backlash (CB)	0.011	0.113	-0.117	-0.269	-0.149	0.268	0.093	0.621
	(0.050)	(0.080)	(0.074)	(0.643)	(0.073)	(0.076)	(0.065)	(0.811)
	[0.990]	[0.356]	[0.287]	[0.990]	[0.050]	[0.010]	[0.267]	[0.723]
Observations	184	240	240	240	131	316	316	316
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Clusters	105	60	60	60	100	79	79	79
$H_0 : NC = CT$		0.435	0.870	0.377		0.639	0.178	0.259
$H_0 : NC = CB$		0.729	0.109	0.124		0.042	0.311	0.582
$H_0 : CT = CB$	0.630	0.709	0.116	0.500	0.013	0.120	0.820	0.697

Note: LPM in columns 1 to 3, and 5 to 7; OLS in columns 4 and 8. The dependent variables are: i) a dummy equal to 1 if the subject stated that he or she wanted to be the manager of the group (columns 1 and 5); ii) a dummy equal to 1 if the Manager switched ranks (columns 2 and 6); iii) a dummy equal to 1 if the the worker chosen to be rank A ended up performing worse than the other worker (columns 3 and 7); iv) the difference between the profits that the manager would have made by assigning rank A to the best performing worker, and the profits actually made in the current Stage (columns 4 and 8). The analysis of manager decision-making is restricted to Stages 3 to 6, since Stage 3 is the first stage when rank switching is allowed. Controls are: age and STEM or economics field of study. The analysis of leader decision-making also controls for the difference in the performances of the two workers in the previous stage. Robust standard errors, clustered at the group level, in parentheses. Romano-Wolf corrected p-values presented in brackets.

Table A4: Examples of messages sent by managers to workers

Examples of messages sent by managers
Praising
"you are a powerhouse", "Amazing work, you are doing great"
"You're a star. Keep shining.", "Outstanding work as always!"
"you are KILLING IT!", "Manager material! I like the consistency!"
Motivating
"Keep it up!", "You got this dude"
"Keep up the good work!", "I believe in you Jill! You got this."
"I know you can do better than that.", "we are almost there! finish strong!!"
Explaining the rank allocation
"Greg did better in general which is why he is A do better and you will be"
"You are B because Emily did better in 1. If you beat her, I will switch your rank.",
"This is not a tactic: If you do better than Worker A, you will be rewarded as such."
Competition-inducing
"Your coworker outscored you! Earn your spot back!"
"Good job, Carly. Roger is catching up so keep it up"
"your percentage increase was higher than worker A, so beat her this time and Rank A is yours"
Fairness
"Trying to be fair and switch it up"
"I just want to distribute the ranks equally"
"I'll alternate A and B so you have a better chance to be paid more"
Team building
"lets do this together"
"Let's go, team!", "The team needs your best effort, John."
"Let's finish strong here team!"
Cordial
"Sorry", "sorry had to give him a chance"
"Thank you for your hard work!", "Good luck! Hope you make lots of $ today :)"
"Great job! Thank you so much!"

Table A5: Manager messages to Rank A workers

	Praise	Motivate	Explain	Compete	Fairness	Team	Cordial
Choice & Talk (CT)							
Male Manager	0.75	0.48	0.12	0.08	0.06	0.03	0.12
Female Manager	0.72	0.37	0.07	0.04	0.03	0.05	0.11
$H_0 = M = F(p-values)$	(0.67)	(0.14)	(0.19)	(0.31)	(0.37)	(0.54)	(0.76)
Choice & Backlash (CB)							
Male Manager	0.53	0.34	0.30	0.17	0.05	0.03	0.07
Female Manager	0.67	0.34	0.19	0.06	0.04	0.06	0.15
$H_0 = M = F(p-values)$	(0.04)	(0.99)	(0.09)	(0.02)	(0.80)	(0.23)	(0.13)
For M							
$H_0 : CT = CB(p-values)$	(0.00)	(0.30)	(0.00)	(0.00)	(0.81)	(0.47)	(0.34)
For F							
$H_0 : CT = CB(p-values)$	(0.28)	(0.26)	(0.01)	(0.76)	(0.96)	(0.47)	(0.42)

Note: We report the percentage of messages of each type that male and female managers sent to rank A workers over the 5 stages of the experiment in the *Choice & Talk* and the *Choice & Backlash* treatments. The analysis is based of a total of 360 messages, of which 185 in the *Choice & Talk* treatment and 175 in the *Choice & Backlash* treatment. For examples of messages in each category, see Table A4. Since the categories are not mutually exclusive, the percentages do not sum up to 1. P-values are generated by Chi-square tests.

Table A6: Examples of messages sent by rank B workers in *Choice & Backlash*

Thanks or jokes
"Thanks. Don't agree, but thanks."
"I understand. Thank you."
"haha what?"
Accepts rank
"no problems"
"Fine."
"Fair enough"
Commits to work hard
"I will be better and become rank A"
"I will try my best."
"I will make you proud."
Apologetic
"I apologize for slack last stage and hope to make it up"
"I am disappointed in myself. Need to concentrate more."
"sorry....got stucked..lol"
Upset
"I am mad."
"eat dirt, im out here grinding and u missin out"
"i hate u"
Questions the ranking decision
"why??? i did 20 correct in first and 19 in second?"
"you really can't do better can you"
"are u kidding me... u changed to mine after the failed then u go back to them"

Table A7: Received Backlash: Extensive Margin

| | Dep. Var (0-1): | | | |
	At Least One Emoji Sent to Manager			
To Female Manager	0.104	0.074	0.103	0.141
	(0.118)	(0.120)	(0.130)	(0.139)
Performance$_{t-1}$	0.014	0.014	0.012	0.012
	(0.010)	(0.010)	(0.011)	(0.012)
RankB$_{t-1}$	0.163	0.139	0.171	0.176
	(0.102)	(0.099)	(0.108)	(0.103)
Praising Message from Manager			0.011	-0.001
			(0.093)	(0.100)
Motivating Message from Manager			0.024	0.021
			(0.102)	(0.099)
Explaining Message from Manager			0.054	0.074
			(0.109)	(0.108)
Competing Message from Manager			-0.052	-0.077
			(0.109)	(0.111)
Fairness Message from Manager			0.243	0.222
			(0.139)	(0.140)
Team Building Message from Manager			0.007	0.005
			(0.039)	(0.039)
Cordial Message from Manager			-0.173	-0.182
			(0.108)	(0.112)
Constant	-0.019	0.364	0.397	0.316
	(0.212)	(0.418)	(0.422)	(0.477)
Observations	140	140	140	140
Controls	No	Yes	Yes	Yes+
Stage FE	Yes	Yes	Yes	Yes
Manager's message type	No	No	Yes	Yes
Clusters	35	35	35	35

Note: OLS regressions. Robust standard errors, clustered at the group level, in parentheses. The dependent variable is a dummy equal to 1 if the rank B worker sent at least one angry emoji to his or her Manager in the *Choice & backlash* treatment. Performance$_{t-1}$ is the number of correct puzzles solved by the rank B worker in the previous Stage. RankB$_{t-1}$ is a 0-1 dummy, which is equal to 1 if the rank B worker was rank B also in the previous Stage. Controls are: age, gender and STEM or economics field of study. Additional controls in column 4 are: Being a native English speaker, having held a leadership position, and Big5 Agreeableness index. In column3 and 4, we add measures of for the type of message that the manager sent to the B worker when assigning ranks. For example of the seven not-mutually exclusive message types are presented in Table A4.

Table A8: Messages sent by Rank B workers to managers in *Choice & Backlash*

	Thanks or jokes	Approves rank	Commits to work hard	Apologetic	Upset	Questions rank
To Male Manager	0.16	0.59	0.16	0.06	0.09	0.06
To Female Manager	0.17	0.51	0.17	0.09	0.04	0.17
$H_0 : M = F(p - values)$	(0.92)	(0.28)	(0.92)	(0.43)	(0.22)	(0.03)

Note: We report the percentage of messages of each type that rank B workers sent to managers in the *Choice & Backlash* treatment over the 5 stages of the experiment. The analysis is based on 175 messages. For examples of messages in each category, see Table A6. Since the categories are not mutually exclusive, the percentages do not sum up to 1. P-values are generated by Chi-square tests.

Table A9: Manager Reaction to Any Backlash

	Dep. Var: Switched ranks & promoted the B worker			
Female	0.172	0.276	0.240	0.224
	(0.095)	(0.112)	(0.108)	(0.110)
At Least One Angry Emoji$_{t-1}$	-0.109	0.022	-0.070	-0.037
	(0.083)	(0.116)	(0.132)	(0.141)
ΔPerformance$_{t-1}$	-0.044	-0.044	-0.043	-0.043
	(0.006)	(0.005)	(0.005)	(0.006)
Female $\times$ At Least One Emojis$_{t-1}$		-0.238	-0.137	-0.143
		(0.156)	(0.161)	(0.182)
Constant	0.584	0.523	1.323	1.435
	(0.114)	(0.120)	(0.422)	(0.618)
Observations	140	140	140	140
Controls	No	No	Yes	Yes+
Stage FE	Yes	Yes	Yes	Yes
Clusters	35	35	35	35
H$_0$: OneEmoji$_{t-1}$ + $Fem.$ $\times$ OneEmoji$_{t-1}$ = 0		0.053	0.029	0.068

Note: Linear probability models. Robust standard errors, clustered at the group level in parentheses. The dependent variable is a dummy equal to 1 if the Manager switched ranks and promoted the rank B worker at the beginning of the current Stage in the *Choice & Backlash* treatment. "At Least One Angry Emojis$_{t-1}$" is a dummy variable equal to 1 if the manager received at least one angry emojis from the rank B worker in the previous Stage. Δperformance$_{t-1}$ is the difference in the performances of the rank A and rank B workers in the previous Stage. Controls are: age and STEM or economics field of study. Additional controls in column 4 are: being a native English speaker, having held a leadership position, and Big5 Agreeableness index.

Table A10: Decision-making in groups with 1 male worker and 1 female worker

	Switched ranks		Mistaken		Lost Profits	
	(1)	(2)	(3)	(4)	(5)	(6)
No Choice (NC)	0.141	0.143	0.047	0.008	1.479	1.055
	(0.080)	(0.088)	(0.099)	(0.097)	(0.993)	(1.027)
Choice&Talk (CT)	0.212	0.206	0.010	-0.044	0.063	-0.680
	(0.086)	(0.097)	(0.116)	(0.114)	(0.885)	(0.929)
Choice&Backlash (CB)	0.152	0.107	-0.109	-0.122	-0.266	-0.711
	(0.088)	(0.086)	(0.087)	(0.087)	(0.727)	(0.691)
Female	0.081	0.040	-0.023	-0.051	0.559	-0.024
	(0.098)	(0.102)	(0.100)	(0.104)	(1.017)	(1.093)
Female x NC	0.029	0.050	0.070	0.102	-1.229	-0.818
	(0.140)	(0.150)	(0.134)	(0.144)	(1.484)	(1.524)
Female x CT	-0.106	-0.110	0.020	0.058	-0.627	-0.258
	(0.149)	(0.156)	(0.150)	(0.147)	(1.384)	(1.316)
Female x CB	0.021	0.065	0.082	0.083	-0.832	-0.446
	(0.165)	(0.162)	(0.118)	(0.113)	(1.155)	(1.184)
ΔPerformance$_{t-1}$	-0.032	-0.033	-0.009	-0.009	-0.120	-0.122
	(0.004)	(0.004)	(0.003)	(0.003)	(0.046)	(0.047)
Constant	0.226	0.448	0.293	-0.070	1.784	-1.604
	(0.071)	(0.209)	(0.093)	(0.235)	(0.684)	(2.042)
Observations	332	332	332	332	332	332
Controls	No	Yes+	No	Yes+	No	Yes+
Stage FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters	83	83	83	83	83	83
$H_0 : NC = CT$	0.448	0.520	0.732	0.604	0.201	0.114
$H_0 : NC = CB$	0.915	0.694	0.048	0.080	0.073	0.070
$H_0 : CT = CB$	0.548	0.305	0.225	0.421	0.701	0.972
$H_0 : NC + F \times NC = 0$	0.145	0.094	0.207	0.282	0.817	0.828
$H_0 : CT + F \times CT = 0$	0.392	0.453	0.759	0.888	0.605	0.367
$H_0 : CB + F \times CB = 0$	0.222	0.204	0.734	0.597	0.214	0.226
$H_0 : CT + F \times CT = CB + F \times CB$	0.640	0.624	0.498	0.525	0.436	0.757

Note: LPM models in columns 1 to 4; OLS in columns 5 and 6. Robust standard errors, clustered at the manager level, in parentheses. The dependent variables are: i) a dummy equal to 1 if the Manager switched ranks and promoted the worker who was Rank B in the previous Stage (columns 1-2); ii) a dummy equal to 1 if the the worker chosen to be rank A ended up performing worse than the other worker (columns 3-4); iii) the difference between the profits that the manager would have made by assigning rank A to the best performing worker, and the profits actually made in the current Stage (columns 5-6). The analysis is restricted to Stages 3 to 6, since Stage 3 is the first stage when rank switching is allowed. Δperformance$_{t-1}$ is the difference in the performances of the rank A and the rank B workers in previous Stage. Controls are: age, STEM or economics field of study, being a native English speaker, past leadership experience, Big5 Agreeableness index. Due to a computer glitch, being a native English speaker, past leadership experience, and Big5 Agreeableness index were not collected for 12 subjects in the *Choice* treatment. We input the missing values of the Big 5 Agreeableness index with its mean, and the missing values of the past leadership indicator and the native English speaker indicator with the most common value in the non-missing sample. In Columns 2, 4 and 6, we include a dummy variable equal to 1 for the 12 subjects who have missing values for the three additional control variables.

B Laboratory experiment

B.1 General instructions

Thank you all for coming today. You are here to participate in an experiment. In addition to a \$10 participation fee, you will be paid any money you accumulate from the experiment. You will be paid privately, by check, at the conclusion of the experiment.

The experiment will consist of six stages and the instructions will be provided separately on your screen at the beginning of each stage. You will have the chance to earn money in each stage of the experiment. Earnings during the experiment will be denominated in Experimental Currency Units, or ECU. At the end of the session one stage of the experiment will be randomly selected for payment and your earnings in that stage will be converted to dollars at the exchange rate of \$1 for 6 ECU. After participating in all the stages of the experiment you will be asked to complete a brief questionnaire. You will then be paid the money your earned in the selected stage of experiment.

This study has been reviewed and approved by the SMU Human Subjects Committee. If you have any questions during the experiment, please raise your hand and wait for an experimenter to come to you. Please do not talk, exclaim, or try to communicate with other participants during the experiment. Participants intentionally violating these rules may be asked to leave the experiment and may not be paid.

Please read and sign the Consent Form that you found on your desk. Please raise your hand if you have any question about any of the information on the Consent form. We will proceed with the experiment once we have collected all signed consent forms.

B.2 Handout 1

PUZZLE EXAMPLE (*Handout 1*)

During the experiment, you will engage in multiple rounds of a puzzle-solving task. Please refer to the paper you have been given to see an example of the task. Each task consists of finding a 4-letter word in a 6x6 matrix. As you can see on the example you have been given, the screen will be divided in two halves. On the left, you will see the matrix and on the right, you will see a list of 40 words. Each puzzle has two words that appear on the list. In order to earn money, you will have to identify one word per puzzle. Once you identify the word, you will have to enter the number next to that word in the list. You will then have to press "submit" to move to the next puzzle.

Please note that the word you are looking for can appear horizontally or vertically in the matrix, following a forward direction. You should ignore words that are read backward or

PUZZLE 1

Please find one word in the puzzle below. Remember that the correct word can appear horizontally or vertically following a forward direction.

The puzzle contains two words from the list on the right. Finding one of the two words will earn you 2 ECU.

```
X P P M Q K
T W U E O H
I T B V D K
D N V A P I
E L A S L T
T Z U Y T E
```

1	aeon	21	heir
2	bait	22	iamb
3	bilk	23	jeux
4	bits	24	kale
5	boil	25	kelp
6	cade	26	kite
7	camo	27	lama
8	carp	28	meme
9	cask	29	mutt
10	coda	30	ogre
11	darb	31	pend
12	dote	32	polo
13	dory	33	raff
14	edgy	34	repo
15	ebbs	35	scry
16	euro	36	swig
17	fane	37	tide
18	faze	38	tzar
19	fief	39	verb
20	fuji	40	weir

Use the list above to enter the number corresponding to the word that you found in the puzzle

Submit

diagonally. You should also ignore words that do not appear in the list.

Look at the example you have been given. In order to earn points, you would have to find either the word "tide" or the word "kite" and enter the corresponding number. The word "tide" appears vertically on the first column. The word "kite" appears vertically on the sixth column.

Can you all see the two words in the puzzle? Raise your hand if you cannot see them.

Note that there are other words that you may identify in the matrix. For instance, the word "sale" [appears horizontally on the fifth row, but it reads backward] and the word "bale" [appears diagonally]. These words would not be valid entries, since they either appear backward or are not on the list. Remember that for an entry to be valid, it MUST be on the list to the right of the matrix.

Can you all see the two words in the puzzle? Raise your hand if you cannot.

Do you have any questions or doubts about the puzzle-solving task?

B.3   Instructions for Stages 2 to 6 - Handout 2

Stage 2 of the experiment is about to begin.

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- In this stage and in the following 5 stages of the experiment you will be part of a group, together with two other participants. One group member will assume the role of Manager and the other two group members will assume the role of Worker.

- The manager gets a wage of 100 ECU. The main role of the manager is to decide which worker will be rank A and which worker will be rank B in the group, in this stage of the experiment.

- A Rank A worker gets a wage of 80 ECU. A Rank B worker gets 20 ECU.

- After the rank allocation, all members of the group will engage in a similar puzzle task as in Stage 1 of the experiment. Each correctly solved puzzle generates 2 ECU in addition to the initial wage. Moreover, each puzzle solved correctly by the Rank A worker generated 2 ECU also to the manager.

- Therefore the earnings from this stage of the experiment are determined as follows:

  - The Manager gets 100 ECU + 2 ECU per puzzle + 2 ECU per puzzle solved by Rank A worker
  - Rank A worker gets 80 ECU plus 2 ECU per puzzle
  - Rank B worker gets 20 ECU plus 2 ECU per puzzle

- Stages 3 to 6 will be identical to Stage 2. However, at the end of each stage of the experiment, the Manager will be informed about the performance of Rank A and Rank B workers and will have the chance to reassign ranks before the next stage begins, at his or her discretion.

Please turn this page around to have a look at the screen that the Manager will see when making the rank allocation decision.

The Manager will have to decide which worker will be Rank A and which worker will be Rank B. After the Manager makes the allocation decision, each worker will be informed about the Rank they have been assigned, either rank A or rank B.

[**CHOICE & TALK**:*After assigning ranks A and B to the workers, the Manager will have to send a message to the Rank A worker and a message to the Rank B worker. The message chat box CANNOT be left blank. In the chat box, the Manager can write anything he or she wishes to communicate to each worker. After the Manager submits the individual messages, each worker will see the message sent to him or her.*]

[**CHOICE & BACKLASH**: *After assigning ranks A and B to the workers, the Manager will have to send a message to the Rank A worker and a message to the Rank B worker. The message chat box CANNOT be left blank. In the chat box, the Manager can write anything he or she wishes to communicate to each worker. After the Manager submits the individual messages, each worker will see the message sent to him or her and will have to send a message back to the Manager.*]

[**CHOICE & TALK and CHOICE & BACKLASH**:

The Manager will see the following screen and will have to send a message to each of the two workers. As before, we are referring to the Manager as "Name 1" and the workers as "Name 2" and "Name 3" but in the actual experiment the names of the three group members will be displayed.

	Stage 1	"Name 2"	"Name 3"
"Name 1", you are the MANAGER of your group. To the right, you can see the rank you have assigned to your workers in Stage 1. **You will have to** send a message to the Rank A worker and a **message to the Rank B worker.** The message chat box **CANNOT** be left blank. In the chat box, you can write anything you wish to communicate to each worker. After you submit the individual messages, **each worker will see the message sent** to him or her and will **send a message back** to you	**Rank**	B	A

Message for your **Rank A** worker, "Name 3" [   ]

Message for your **Rank B** worker, "Name 2" [   ]

Submit Message

[**CHOICE & BACKLASH:** *Each worker will see the message sent to him or her and will have to send a message back to the Manager. In addition, the Rank B worker can send one or more angry faces to the Manager to express their disapproval of the ranking decision. In particular, the Rank B's worker can send up to 5 angry faces to the Manager, as shown below.*

😡😡😡😡😡

Please turn this page to see the screen that Worker Bs and the Manager will see. Rank B worker will see the following screen and will have to decide how many angry faces, if any, he or she will want to send to the Manager. Rank B worker will also have to write a message in the chat box, in response to the Manager's message. Rank A worker will see a similar screen, except that he or she will not be able to send angry faces to the Manager.

Hi Name2
Your **MANAGER Name1** assigned **RANK B** to you.
Since you are a **RANK B** worker, if this stage of the experiment is selected for payment, you will earn **20 ECU + 2 ECU** for every puzzle you solve correctly.
The Rank A worker will instead earn 80 ECU + 2 ECU for every correctly solved puzzle. Every puzzle that Rank A worker solves correctly also generates 2 ECU to your Manager.
Before the beginning of the next stage, your Manager will have the chance to re-assign ranks at his or her discretion.

Your Manager, **Name1** , has sent you the following message.
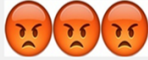
Message for "Name2"

Message for your **MANAGER, Name1**

Please decide if you want to send one or more angry faces to your **MANAGER, Name1**

| **NO** ANGRY FACE | **ONE** ANGRY FACE | **TWO** ANGRY FACES | **THREE** ANGRY FACES | **FOUR** ANGRY FACES | **FIVE** ANGRY FACES |
| OK | OK | OK | OK | OK | OK |

SUBMIT

The messages sent by the workers will be displayed to the Manager as shown in the screen below before the next stage begins. [Please note that in this example there is no actual text displayed in the Message Box.] In the example below, Rank B worker has sent 3 angry faces. Remember that Rank B can send between 0 and 5 angry faces.]

Remaining time [sec]:   8

Hi Name1

You are the MANAGER of your group. **Name2** and **Name3** are the workers.

You have assigned Rank B to **Name2** and Rank A to **Name3** .

You have sent the following message to your **Rank A** worker, **Name3**

Message for Name3

Your **Rank A** worker, **Name3** , has sent you the following message:

Message from Name3

You have sent the following message to your **Rank B** worker, **Name2**

Message for Name2

Your **Rank B** worker, **Name2** , has sent you the following message:

Message from Name2

Your **Rank B** worker, **Name2** , has sent you 3 angry face/faces

The next stage of the experiment is about to begin. You will engage in a puzzle-solving task similar to the task in the previous stage. Your earnings will depend on your performance and the performance of the Rank A's worker.

ALL TREATMENTS: At the end of each of the next 5 stages of the experiment, the Manager will have to decide whether to keep or re-allocate ranks A and B to the two workers, at his or her discretion.

[**CHOICE & TALK**: *The Manager will also have to send messages to Rank A and Rank B worker before the beginning of each stage of the experiment.*]

[**CHOICE & BACKLASH**: *The Manager will also have to send messages to Rank A and Rank B worker before the beginning of each stage of the experiment, and the workers will have to reply to those messages. At the beginning of each stage, the Rank B workers will also have to decide whether to send angry faces to the Manager.*]

ALL TREATMENTS: Is the role of the Manager clear? Please raise your hand if you have any questions about the next 5 Stages of the experiment.

[**ALL CHOICE TREATMENTS**: *In the next screen, you will be asked* **whether you want to be the Manager of your group.**]

C   Online experiment on Prolific

C.1   General Instructions

Why am I being asked to take part in this research study? You are invited to participate in this study because we are trying to learn more about: Understanding individual and group decision making. You were selected as a possible participant in this study because you expressed your interest in participating by clicking on the Prolific advertisement. Your participation in this research study is voluntary. The information in this form is provided to help you decide whether or not to take part. If you decide you do not want to participate, you may leave the website at any time without penalty. You must be 18 years of age or older and a current resident of the United States to participate.

Why is this research being done? The (survey or test) is designed to see how individuals behave in a puzzle task and whether they can predict the behaviors and opinions of others. How long will the research last? It will take about 20 minutes.

What happens if I say "Yes, I want to be in this research"? If you decide to participate, please do the following: This study involves three stages. In the first stage you will be asked to fill in a short demographic survey, in the second stage you will engage in a puzzle solving task, and in the third stage you will have to guess the behavior of participants in a previous study. Participation in this study will take less than 20 minutes.

What happens if I do not want to be in this research? Your participation in this study is voluntary. You can decide not to participate in this research and it will not be held against you. You can leave the study at any time.

Is there any way being in this study could harm me? There are no sensitive questions in this survey that should cause discomfort. However, you can skip any question you do not wish to answer, or exit the survey at any point.

What happens to the information collected for the research? In this study, no direct personal identifiers will be collected. Nobody, including the study researchers, will be able to link your personal information to the answers you will give in the survey. Your information will be kept confidential to the extent allowed by law. The results of the research study may be published but your identity will remain confidential. You may view the survey host's confidentiality policy by clicking here. You may view Prolific's privacy policy by clicking here.

What else do I need to know? You will be paid $3.30 USD$ for completing all stages of the study, and a bonus of up to $2.3 USD$ that will depend on your decisions and your performance in the puzzle-solving task. You will be paid by Prolific via PayPal. The amount of compensation is in compliance with Prolific's guideline. All payments including the bonus payment will be

paid to you in no longer than 2 weeks of your completion. Note that it might take longer before you receive your bonus payment.

Who can I talk to? Please feel free to ask questions regarding this study. You may contact Dr. Danila Serra (dserra@tamu.edu) later if you have additional questions or concerns. You may also contact the Human Research Protection Program at Texas AM University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu for: additional help with any questions about the research voicing concerns or complaints about the research obtaining answers to questions about your rights as a research participant concerns in the event the research staff could not be reached the desire to talk to someone other than the research staff If you want a copy of this consent for your records, you can print it from the screen. If you wish to participate, please click the "I Agree" button and you will be taken to the survey. If you do not wish to participate in this study, please select "I Disagree" or select X in the corner of your browser.

C.2 Brief Fear of Negative Evaluation Index

(In order to construct the Brief Fear of Negative Feedback Index we asked the following questions.)

Do you agree or disagree with the following statements? (5-point likert scale)

- I worry about what other people will think of me even when I know it doesn't make any difference

- I am frequently afraid of other people noticing my shortcomings.

- I am afraid that others will not approve of me.

- I am afraid that other people will find fault with me.

- When I am talking to someone, I worry about what they may be thinking about me.

- I am usually worried about what kind of impression I make.

- Sometimes I think I am too concerned with what other people think of me.

- I often worry that I will say or do wrong things.

C.3 Predictions of backlash in the laboratory experiment

(In order to elicit subjects' expectations of the backlash received by male and female managers in the laboratory experiment we first had subjects solve the same real effort task that we employed in the laboratory experiment (Activity 1). We then introduced Activity 2. The instructions are reproduced below.)

Activity 2 involves a study that has already been conducted and had over 400 university students participate. After reading about the study, you will have to guess how some of these previous participants behaved in the study. If your guesses are correct, you will earn 1USD from this activity.

In the study, participants were placed in groups of 3. In each group, one person was assigned the role of manager and the other two were assigned the role of workers. Each participants chose a fictitious name to be used in the study, and group members knew only the fictitious names of the participants. All interactions were made via computer screen and nobody knew with whom they were matched.

In the first part of the study, the manager and the two workers engaged in the same puzzle task as in Activity 1 and, like you, they earned money based on their individual performances.

In second part of the study, the manager had to decide which worker in the group would be rank A and which worker would be rank B for the next part of the study. The Rank A worker would get a fixed wage of 8USD. The Rank B worker would get a fixed wage of 2USD.

After the rank allocation, all members of the group engaged in a similar puzzle task as in Activity 1 of this study. Each correctly solved puzzle generates 0.20USD in addition to the fixed wage. Moreover, each puzzle solved correctly by the Rank A worker generated 0.20USD also to the manager.

Therefore, the earnings of the participants in the study were determined as follows:

- The Manager got 10 + 0.20 per correct puzzle + 0.20 per correct puzzle solved by Rank A worker;

- Rank A worker got 8 plus 0.20 per correct puzzle;

- Rank B worker got 2 plus 0.20 per correct puzzle.

When the manager assigned ranks to each worker, the rank B worker could send up to 5 angry emojis to the manager to express disapproval of the ranking decision, as shown below.

Please answer the following 3 questions to check your understanding of Activity 2. You will earn 0.10 for every correct answer.

Q1. What was the manager's main role in the study? a. to decide which worker was rank A and which worker was rank B; b. to decide who could talk in the chat and who could not; c. to decide which worker could get paid for the puzzle task and which worker could not get paid.

Q2. If the rank A worker solved 5 puzzles correctly and the rank B worker solved 5 puzzles correctly, what were the earnings each worker, including their fixed wages? a. 10 each in total; b. Rank A got wage of 8 and bonus of 1, while Rank B got wage of 2 and bonus of 1; c. Rank A and Rank B got wages equal to 8 and bonuses equal to 1; d. Rank A got $10 and rank B got 2$ in total.

Q3. Who could send angry emojis in the study? a. The manager could send angry emojis to a worker who did not work hard; b. The rank B worker could send angry emojis to the manager to express disapproval of the ranking decision; c. The rank B worker could send angry emojis to the rank A worker to express disapproval of the ranking decision; d. Both Rank A and Rank B workers could send angry emojis to the Manager.

C.3.1 Male Manager Treatment

We are now going to ask you to guess what actual participants in one of the groups did in the study. We will ask you to make two guesses. For each correct guess, you will get 0.5USD. Therefore, you can make up to 1USD from this task.

Some of the managers were men and some of the managers were women.

Q1. What is the percentage of rank B worker who sent one or more angry emojis to a male manager? *(Half of the participants, randomly selected)*
You earn 0.5USD if your guess is correct

- 0-10%

- 11-20%

- 21-30%

- 31-40%

- 41-50%

- 51-60%

- 61-70%

- 71-80%

- 81-90%

- 91-100%

Recall that if a rank B worker decided to send one or more angry emojis to the manager, he or she could send up to 5 emojis.

Q2. What is the number of angry emojis that you think the rank B workers matched with sent to a male manager, on average? *(Half of the participants, randomly selected)*

You earn 0.5 USD if your guess is correct.

- 0

- 1

- 2

- 3

- 4

- 5

C.3.2 Female Manager Treatment

We are now going to ask you to guess what actual participants in one of the groups did in the study. We will ask you to make two guesses. For each correct guess, you will get 0.5USD. Therefore, you can make up to 1USD from this task.

Some of the managers were men and some of the managers were women.

Q1. What is the percentage of rank B worker who sent one or more angry emojis to a female manager? *(Half of the participants, randomly selected)*

You earn 0.5USD if your guess is correct

- 0-10%

- 11-20%

- 21-30%

- 31-40%

- 41-50%

- 51-60%

- 61-70%

- 71-80%

- 81-90%

- 91-100%

Recall that if a rank B worker decided to send one or more angry emojis to the manager, he or she could send up to 5 emojis.

Q2. What is the number of angry emojis that you think the rank B workers matched with sent to a female manager, on average? *(Half of the participants, randomly selected)*

You earn 0.5 USD if your guess is correct.

- 0

- 1

- 2

- 3

- 4

- 5

C.4 Final questions (to all)

Q.1 Generally speaking, do you think that on average female managers receive more backlash from employees, as compared to male managers?

- No

- Yes

Q2. We now ask you to guess if the majority of the Prolific workers participating in this study (all between the ages of 18 and 30) answered yes or no to the question:

"Do you think that female managers receive more backlash from employees, as compared to male managers?"

You will receive 0.5USD if your guess is correct I guess that the majority of Prolific workers in this study answered:

- No

- Yes