

Online Appendix for “To Stem the Tide: Organizational Climate and the Locus of Knowledge Transfer”

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Appendix 1.

Additional details about the analysis of interview data (Phases 1 and 2)

While the absence of interview transcripts substantially limited our ability to analyze interview data through an iterative content-analysis process (Glaser and Strauss 1967, Miles and Huberman 1994), we tried to replicate a similar process with interview notes.

We relied on all interviews from Phase 2, as well as the four interviews conducted in Phase 1 with members of ATLAS and CMS. We began by writing short descriptions of each interview to highlight key points and identify recurring patterns. We then linked each interview to a set of first-order categories (Gioia and Chittipeddi 1991, Locke 2001), capturing the elements each informant brought to our understanding of the locus of knowledge transfer. By iterating between data and theory, we were able to re-code our first-order categories into theoretically grounded second-order categories (Strauss and Corbin 1998). Fieldnotes from our observations in Geneva, together with the archival material we had collected, also guided our interpretation (Jick 1979). In this process, we repeatedly updated and revised the emerging framework based on new evidence collected through our interviews. In case of discrepancies in interpretations, we discussed to resolve them. In line with methodological prescriptions (Hirschman 1986, Lincoln and Guba 1985), we reviewed our interpretations with spokespersons from both experiments to ensure their accuracy.

We have chosen not to report this data structure in the paper because we believe the fact that it was generated mainly based on interview notes, rather than on interview transcripts, reduced its objectivity relative to methodological standards. Still, we found the exercise to be very useful, since it helped us make sense of our data and identify the emerging patterns.

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Appendix 2.

Additional details about the lab-in-the-field study (Phase 3)

Here we report additional details about design, participants, measures, and analyses for the lab-in-the-field study.¹

Design. We administered our vignette in a survey that was initially circulated, through phone calls and email exchanges, among representatives of ATLAS and CMS. We took advantage of our CERN visit in February 2018 to pre-test the instrument with eight physicists who were not part of the management team. In addition, before the official launch of the study, we emailed the instrument to another 10 physicists who helped us to further refine it before distributing it to the entire community of ATLAS and CMS scientists. This pre-test phase allowed us to improve the wording of the questions, making sure that each was understandable and used scientific terms correctly. The study was then presented in two internal meetings of ATLAS and CMS. In Appendix 3, we report the text of the emails through which the survey was distributed by the secretary of ATLAS and the secretary of CMS. It is interesting to note that, although we gave both organizations the same sample email, they decided to slightly modify it to better fit their style. In particular, ATLAS adopted a more hands-off approach by ‘inviting’ members to reply and providing our emails for any questions or comments. CMS ‘strongly encouraged’ their members to take part in the study and centralized the collection of feedback by asking respondents to contact the management of the experiment in case they wanted to get in touch with us.

Participants. To understand whether our sample was different from the population, we asked the management of both experiments to provide us with some summary data about the recipients of the original email. Table A1 compares the population of all ATLAS and CMS scientists with our participants.

Table A1. Characteristics of Participants

	ATLAS (n=2,777)	CMS (n=2,955)	ATLAS: Participants (n=152)		CMS: Participants (n=244)		T-test		Cohen's D
	Mean	Mean	Mean	S.D.	Mean	S.D.	t	p-value	D
Gender	0.804	0.808	0.736	0.442	0.747	0.436	-0.212	0.832	0.025
PhD student	0.274	0.401	0.375	0.486	0.176	0.382	4.530	0.000	0.455
Management	0.050	0.060	0.238	0.427	0.119	0.324	3.145	0.002	0.314

Note: Only 152 of the 274 ATLAS participants responded to all demographic questions. Figures are based on available responses. The values for the t-test and Cohen’s d refer to a comparison between ATLAS and CMS.

¹ Please note that the lab-in-the-field study (Phase 3) did not undergo ethical review since the procedure was not available or required by the institutions we were affiliated with at the time. In contrast, the laboratory experiments (Phase 6) underwent ethical review as in the meantime one of the authors moved to an institution where the procedure was available.

The table reveals an overrepresentation of physicists in the management team (ATLAS: $M_{\text{Participants}}=0.238$ vs. $M_{\text{Recipients}}=0.050$; CMS: $M_{\text{Participants}}=0.119$ vs. $M_{\text{Recipients}}=0.060$), which can be explained by the fact that the management of both organizations was involved with validating the experiment and organizing its distribution. To further explore any difference between ATLAS and CMS, we also conducted a series of t-tests based on the same criteria. Results show that, compared to CMS, our ATLAS sample over-represents both PhD students and physicists in the management team. The difference is not big in size (as per Cohen's d). Still, we suggest caution in making any inference, as only 152 of the 274 ATLAS participants answered our demographic questions.

Measures. Together with the main variables described in the paper, we also included other variables that, according to our qualitative informants, could explain one's intention to transfer organizational knowledge. In line with what we heard in the field, knowledge should in fact flow more easily when the counterpart is trustworthy or when the knowledge itself has less value. At the advice of our informants, we captured trustworthiness by looking at the existence of a *direct tie* with the colleague asking for knowledge, as well as their reputation. We manipulated the existence of a *direct tie* between the participant and the fictitious colleague by characterizing the colleague described in the vignette as 'linked to you through personal relationships, e.g. you work or have worked together, you know each other directly' (direct tie: yes) or 'NOT linked to you through personal relationships, e.g. you have never worked together, you do not know each other directly' (direct tie: no). We manipulated the *reputation* of the fictitious colleague by characterizing the colleague described in the vignette as 'known to be a good physicist in the CERN/experiment community' (reputation: high) or 'known to be a mediocre physicist in the CERN/experiment community' (reputation: low). Given that all our manipulations were concrete statements of facts, we did not insert any manipulation checks. Finally, to measure the *strategic importance* of knowledge, we asked our question about intended knowledge transfer twice, with reference to two types of knowledge. In particular, at the advice of our informants, we distinguished between 'information about an unexpected peak in the data' (strategic importance: high) and 'information about a standard model measurement' (strategic importance: low). Following each vignette, we measured the intention to transfer each of these two types of knowledge. We marked responses to the two different types with dummy variables and focused our analyses on knowledge of high strategic importance, as compared to the omitted dummy for low strategic importance. Table A2 reports the exact wording of all four treatments.

Table A2. Manipulated Variables and Corresponding Treatments

		Internal * / High †	External * / Low †
	Locus of knowledge transfer *	Affiliated with <name of same experiment>	Affiliated with <name of competing experiment>
Colleague	Direct tie †	Linked to you through personal relationships <i>e.g. you work or have worked together, you know each other directly</i>	NOT linked to you through personal relationships <i>e.g. you have never worked together, you do not know each other directly</i>
	Reputation †	Known to be a good physicist in the CERN/ experiment community	Known to be a mediocre physicist in the CERN/ experiment community
Knowledge	Strategic importance †	Information about an unexpected peak in the data	Information about a standard model measurement

We measured *organizational identification* using the six-item scale of Jones and Volpe (2011), where we asked participant to express their agreement with six statements about their experiment on a scale from 1 (strongly disagree) to 7 (strongly agree). Examples include: ‘This experiment’s successes are my successes,’ or ‘When someone criticizes/praises the experiment, it feels like a personal insult/compliment.’ The high Cronbach’s alpha ($\alpha = 0.82$) supports the aggregation into a single measure. We measured *performance climate* using the eight-item scale in Nerstad et al. (2013), where we asked our participants to express their agreement with eight statements about their experiment on a scale from 1 (strongly disagree) to 7 (strongly agree). Examples include: ‘Internal competition is encouraged to attain the best possible results,’ or ‘Work accomplishments are measured based on comparisons with the accomplishments of colleagues.’ The high Cronbach’s alpha ($\alpha = 0.73$) supports the choice of combining the eight measures into one. At the advice of our informants, we further assessed whether participants held a position of responsibility by asking them about whether they were currently holding a position of responsibility or coordination within the experiment. The dummy *position of responsibility* equals 1 if a participant responded affirmatively to this question. Finally, location in the headquarters was assessed by asking about the percentage of time participants spent at CERN during a year. At the advice of our informants, we created a dummy *based in headquarters* equal to 1 if a participant indicated a percentage equal or above 80%.

It is important to mention that, together with information about intended knowledge transfer, we also collected information about the other five dependent variables, to have a clearer idea of the full flow of information. In particular, we asked our participants to estimate the likelihood that they would receive such a

request from the colleague described in the vignette, as well as their expectation of *reciprocity* (the extent to which they expected the colleague described in the vignette to provide similar knowledge insights to them in the future). We also asked our participants to imagine the *opposite* situation, in which they would have been the ones asking the colleague in the vignette. We then asked the same three questions about their propensity to ask and to reciprocate, and the expected propensity of the colleague to transfer the knowledge they had asked for. We do not report results for these variables in this paper since they are not central to our research question.

Results. Table A3 shows the impact that *locus of knowledge transfer* has on *intended knowledge transfer* using a pooled regression including all responses from ATLAS and CMS. In particular, Model 1 does not differentiate between ATLAS and CMS, while Model 2 and Model 3 report the same results with all variables interacted with a dummy *CMS* marking all observations from CMS participants. Model 1 gives us an idea of the main drivers of the intention to transfer knowledge across both experiments. Results show that physicists are overall more likely to transfer knowledge to colleagues they know directly, and less likely to transfer knowledge of strategic importance. Neither same affiliation nor reputation seem to have any effect. The moment in which we separate the results for ATLAS from those for CMS, however, we observe the emergence of interesting differences, as predicted by our qualitative examination. We first inserted one interaction term at a time, and then ran the regression displayed in Model 2. We used the same procedure for the regression shown in Model 3. Results are consistent with those presented in the paper.

As shown in Model 2, the interaction between *locus of knowledge transfer* and *CMS* has a strong negative effect, suggesting that, compared to ATLAS participants, CMS participants reported a preference for transferring knowledge across organizational boundaries, to members of the competing experiment, rather than to colleagues from the same experiment ($\beta=-3.113$, $p\text{-value}<0.001$, CI: -3.440, -2.786). We also observe a strong negative effect for the interaction between *strategic importance* and *CMS*, suggesting that, compared to ATLAS participants, CMS physicists reported being less likely to transfer this type of knowledge ($\beta=-0.122$, $p\text{-value}=0.023$, CI: -0.227, -0.016). In Model 3, we push the comparison further by interacting *locus of knowledge transfer* with the other three independent variables, to see whether (a) the perceived trustworthiness of the counterpart (*direct tie*, *reputation*), or (b) the value of knowledge transferred (*strategic importance*) affects the intention to transfer knowledge within/across organizational boundaries. Results show that, compared to ATLAS participants, CMS participants reported a preference for transferring knowledge of strategic importance to members of the competing experiment rather than to their own colleagues ($\beta=-0.234$, $p\text{-value}=0.017$, CI: -0.427, -0.042).

Table A3. Examining the Drivers of Intended Knowledge Transfer

	Model 1			Model 2			Model 3		
	Coef	SE	p-value	Coef	SE	p-value	Coef	SE	p-value
Locus of knowledge transfer	0.055	0.281	0.846	0.501	0.166	0.003	0.479	0.167	0.004
Direct tie	0.653	0.199	0.001	0.429	0.136	0.002	0.438	0.135	0.001
Reputation	0.313	0.209	0.133	0.243	0.144	0.091	0.246	0.143	0.085
Strategic importance	-0.515	0.054	0.000	-0.517	0.054	0.000	-0.513	0.054	0.000
CMS * ...									
... * LKT				-3.113	0.166	0.000	-2.615	0.258	0.000
... * Direct tie				-0.139	0.136	0.308	0.067	0.192	0.728
... * Reputation				-0.172	0.144	0.231	-0.005	0.187	0.978
... * Strategic importance				-0.122	0.054	0.023	-0.008	0.070	0.905
CMS * LKT * ...									
... * Direct tie							-0.420	0.271	0.121
... * Reputation							-0.320	0.246	0.194
... * Strategic importance							-0.234	0.098	0.017
Individual fixed effects	Included			Included			Included		
Cons	3.285	0.215	0.000	3.247	0.131	0.000	3.249	0.130	0.000
N	1,766			1,766			1,766		
F	27.028			65.738			48.986		
R ² (ω)	0.051			0.482			0.487		

Note: The table displays results of regression models whose dependent variable is *intended knowledge transfer*. All models are OLS regressions with fixed effects and robust standard errors clustered at the participant level. We report within R² (ω) for all models. Number of clusters: 517. Clusters correspond to participants. We have 2 to 4 observations per participant, depending on whether they provided answers to 1 or 2 vignettes, and considering they were asked about 2 types of information (high/low *strategic importance*). Model 1 includes main effects only, Model 2 interacts the main effects with the affiliation of the participant (CMS vs. ATLAS), Model 3 adds the three-way interactions with our main variable of interest (*locus of knowledge transfer*, which we abbreviate in LKT).

Models 1 and 2 of Table A4 (where we split the observations between ATLAS and CMS participants) allows us to more easily interpret this three-way interaction. Results show that the effect is driven by the behavior of our ATLAS participants, who reported being *more* likely to transfer knowledge of high strategic importance if the colleague asking for it is affiliated with the same experiment ($\beta=0.301$, p -value=0.026, CI: 0.035, 0.567). In other words, at ATLAS *locus of knowledge transfer* reverts the result on *strategic importance*. It is worth noting that the results reported below, as well as in the paper, are indicative of an intention to transfer knowledge, given that we put participants in front of a vignette and asked them about the extent to which they were likely to transfer knowledge to the colleague described there. To complement our study of intent, we further analyzed behavioral data available for participants in the lab-in-the-field study and collected additional secondary data that could proxy for the knowledge flows of interest.

Table A4. Unpacking Differences in Intended Knowledge Transfer at ATLAS and CMS

	Model 1 ATLAS			Model 2 CMS		
	Coef	SE	p-value	Coef	SE	p-value
Locus of knowledge transfer (LKT)	2.901	0.429	0.000	-2.264	0.313	0.000
Direct tie	0.268	0.299	0.371	0.420	0.249	0.092
Reputation	0.217	0.237	0.360	0.222	0.290	0.444
Strategic importance	-0.536	0.093	0.000	-0.556	0.105	0.000
LKT * Direct tie	0.646	0.435	0.138	-0.255	0.345	0.461
LKT * Reputation	0.382	0.332	0.251	-0.291	0.370	0.431
LKT * Strategic importance	0.301	0.135	0.026	-0.166	0.143	0.246
Individual fixed effects		Included			Included	
Cons	1.796	0.247	0.000	4.908	0.222	0.000
N		896			870	
F		44.547	0.000		34.369	0.000
R ² (ω)		0.542			0.428	

Note: The table displays results of regression models whose dependent variable is *intended knowledge transfer*. All models are OLS regressions with fixed effects and robust standard errors clustered at the participant level. We report within R² (ω) for all models. Model 1 includes only responses from ATLAS participants (274 clusters). Model 2 includes only responses from CMS participants (244 clusters).

With respect to the lab-in-the-field, we focused our attention on two observable behaviors, namely the amount of time each participant took to complete the study, as well as their propensity to leave a comment at the end of it. Our argument is the following: if members of ATLAS(/CMS) are more likely to transfer knowledge to a colleague from the same (/other) experiment, then facing such a counterpart should make them more likely to transfer not only the knowledge described in the vignette, but also their knowledge more broadly—a tendency that we can capture by looking at the amount of time each participant took to complete the study, as well as to their propensity to leave a comment at the end. Table A5 and Table A6 report the results of these analyses. Note that we ran the analyses for both dependent variables using two different samples: one consisting of all observations, and another including only those participants who received an identical affiliation treatment across the two vignettes (i.e., always a colleague from the same experiment, or always a colleague from the competing experiment, while the other treatments were changing). There are no substantial differences among models, but we believe that the second specification, despite the lower number of observations, should better capture what we are interested in, given that the participants did not receive conflicting stimuli. Results are directional, even if not particularly strong in terms of significance. When the colleague described in the vignette was a colleague from the same organization, members of ATLAS spent more time on the study and were more likely to leave a comment. On the contrary, when the colleague described in the vignette was a colleague from the same organization, members of CMS spent less time on the study and were more likely to leave a comment.

Analyzing these data represents a first attempt at gathering behavioral evidence of the differences between ATLAS and CMS scientists. We next tried to collect data more broadly for ATLAS and CMS, independent of our study. In the context of science, collaboration among scientists is usually reflected in the number of scientific works developed together, namely papers. We hence turned to the CERN archives, as well as to arXiv, an open-access repository where almost all papers and preprints in physics are self-archived. Given our interest in examining the transfer of organizational knowledge (remember our vignette asking to think of a colleague looking for “*unpublished information that is internal to the collaboration*”), we did not focus on published papers, but rather on preprints (which physicists can make available both in CERN archives and on arXiv) and notes (a CERN-specific format used both internally and publicly to share updates on specific analyses or on the necessary steps to reach future stages of experiments’ evolution). Focusing on preprints and notes also allowed us to better capture individual research outputs of CERN scientists; in fact, published papers are usually signed by all members of the experiment, while preprints and notes are the result of personal initiatives of scientists, who can choose whom to collaborate (see footnote 2 in the paper). What we discovered in the process was quite telling. First, out of the 395 notes relying on analyses run by both ATLAS and CMS, 61.77% were submitted by CMS scientists, while only 38.23% were submitted by ATLAS scientists. This may allude to a higher tendency for CMS scientists to develop work based on knowledge originating from both organizations. We found similar results for preprints. When looking at those stored in CERN archives, out of 111 preprints relying on analyses run by both ATLAS and CMS, we found that 76.58% were submitted by CMS scientists, while only 23.42% were submitted by ATLAS scientists. We found somewhat similar evidence when looking at unpublished papers co-authored by members of both ATLAS and CMS and uploaded on arXiv. Out of 93 papers, 51 were uploaded by CMS authors, potentially suggesting a higher propensity to initiate collaboration opportunities. Despite descriptive, these additional data reinforced our intuition that members of ATLAS would be more likely to transfer knowledge to colleagues from the same organization, while the opposite would be true for members of CMS.

References

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Table A5. Time Taken to Complete Study (Minutes)

	ATLAS						CMS					
	Model 1			Model 2			Model 3			Model 4		
	Coef	SE	p-value	Coef	SE	p-value	Coef	SE	p-value	Coef	SE	p-value
LKT	7.277	5.524	0.188	14.721	12.510	0.239	-6.354	5.060	0.209	-14.732	10.513	0.161
Direct tie	-4.768	5.468	0.383	-4.059	3.832	0.290	-4.857	8.115	0.549	11.905	11.958	0.319
Reputation	-5.321	4.063	0.190	3.926	3.425	0.252	-15.949	9.007	0.077	-11.999	11.292	0.288
Controls	Included			Included			Included			Included		
_cons	17.284	14.710	0.240	1.741	9.268	0.851	2.754	25.143	0.913	-11.259	22.662	0.619
N	570			312			640			284		
F	0.870			0.740			0.970			0.450		
Adjusted R ²	0.013			0.096			0.035			0.062		

Note: The table displays results of regression models whose dependent variable is the number of minutes taken by our participants to complete the study. All models are OLS regressions with robust standard errors clustered at the participant level. Within R² (ω) reported for all models. Model 1 (ATLAS) and Model 3 (CMS) include all observations, Model 2 (ATLAS) and Model 4 (CMS) only include participants who received the same treatment for *locus of knowledge transfer* (abbreviated in LKT) twice. Number of clusters for ATLAS: 143 in Model 1, 78 in Model 2. Number of clusters for CMS: 160 in Model 1, 71 in Model 2. Clusters correspond to participants. We have 1 to 2 observations per participant, depending on whether they provided answers to 1 or 2 vignettes.

Table A6. Likelihood of Leaving a Comment After the Study

	ATLAS						CMS					
	Model 1			Model 2			Model 3			Model 4		
	Coef	SE	p-value	Coef	SE	p-value	Coef	SE	p-value	Coef	SE	p-value
LKT	0.471	0.346	0.174	0.951	0.620	0.125	-0.364	0.299	0.224	-0.815	0.799	0.307
Direct tie	-0.195	0.331	0.555	-0.401	0.417	0.336	0.214	0.350	0.542	-0.160	0.506	0.752
Reputation	-0.545	0.336	0.105	-0.102	0.465	0.827	0.342	0.353	0.333	0.355	0.615	0.563
Controls	Included			Included			Included			Included		
_cons	-1.801	1.006	0.339	-2.141	1.222	0.621	-1.750	0.984	0.561	-0.595	1.429	0.542
N	570			312			640			284		
Wald chi ²	12.060			9.470			4.330			6.470		
Pseudo R ²	0.058			0.116			0.018			0.081		

Note: The table displays results of regression models whose dependent variable is the likelihood of leaving a comment at the end of the study. All models are logit models with robust standard errors clustered at the participant level. Pseudo R² reported for all models. Model 1 (ATLAS) and Model 3 (CMS) include all observation, Model 2 (ATLAS) and Model 4 (CMS) only include participants who received the same treatment for *locus of knowledge transfer* (abbreviated in LKT) twice. Number of clusters for ATLAS: 143 in Model 1, 78 in Model 2. Number of clusters for CMS: 160 in Model 1, 71 in Model 2. Clusters correspond to participants. We have 1 to 2 observations per participant, depending on whether they provided answers to 1 or 2 vignettes.

Appendix 3.

Emails through which lab-in-the-field study (Phase 3) was distributed

1. ATLAS email sent February 26, 2018

Dear Colleagues,

The management of ATLAS has agreed to conduct a study on information transfer among colleagues at CERN.

This study is conducted by two researchers:

- Researcher #1: First name, Last name – Rank, Affiliation, Website
- Researcher #2: First name, Last name – Rank, Affiliation, Website

You are invited to reply to the survey, which takes **less than 10 minutes** to complete. The deadline is **March 9th, 2018**.

Please click: <direct link to survey>

If the link above does not work, please go to: <webpage>

Results from the survey will be presented in a web-cast event. You will also receive a detailed research report with all the main insights.

If you have any question or comment, please feel free to directly contact Researcher #1 (email) and Researcher #2 (email).

Thank you for your collaboration!

Names of spokespersons

2. CMS email sent April 26, 2018

Dear Colleagues,

The management of CMS, with CERN support, has agreed to conduct a study on information transfer among physicists at CERN.

For this study, we are collaborating with two researchers:

- Researcher #1: First name, Last name – Rank, Affiliation, Website
- Researcher #2: First name, Last name – Rank, Affiliation, Website

You are strongly encouraged to reply to the survey, which takes **less than 10 minutes** to complete. The deadline is **May 8th, 2018**.

Please click: <direct link to survey>

Results from the survey will be presented in a web-cast event. We will also receive a detailed research report with all the main insights.

If you have any questions or comments, please pass them along to us and we will transmit them to the survey team leaders.

Thank you for your collaboration!

Names of spokespersons

Appendix 4.

Additional details about the lab experiments (Phase 6)

Here we report additional details about the design of our lab experiments. To manipulate organizational identification, we replicated the protocol implemented by Schilke (2018), with some minor adjustments due to the nature of the task and the specific context of our experiment. This protocol involved the use of three subsequent manipulations, which were administered before the practice round for participants in the ‘high’ condition and after the second round for participants in the ‘low’ condition. The first manipulation consisted of a test aimed at testing one’s problem-solving approach, a test that respondents in the high-identification condition were led to believe would be the rationale for allocating them to a specific group for the continuation of the study (Doosje et al. 1995, Schilke 2018). In reality, all participants received the same result, but participants in the high-identification condition were told that they had been allocated to a group of people who shared the same problem-solving approach—a feature that enabled us to stimulate intergroup comparison, with a positive effect on group identification, as per Kramer and Brewer (1984). Participants in the high-identification condition were also asked to confirm that they would like to continue with such group—which enabled us to underline voluntary commitment to the group, with a positive effect on group identification, as proposed by Turner et al. (1984). Our second manipulation consisted of a reward-allocation task (Tajfel 1971) whose aim was to allocate rewards/penalties to members of one’s group vs. members of another group—an activity that has been associated with creating a higher identification with one’s group (Leyens et al. 1994). Finally, participants were asked to complete a group involvement test consisting of five questions aimed at measuring the extent to which group members felt involved with their group (Doosje et al. 1995, Schilke 2018). After answering these questions, participants in the high-identification condition were informed that their group reported a higher-than-average group involvement score (53 vs. 40), while participants in the low-identification condition were informed that their group reported a lower- than-average group involvement score (27 vs. 40). As before, this information did not reflect a true result; it was a deceptive feature participants were informed about at the end of the study. To check the effectiveness of our manipulations, we used the four-item scale ($\alpha = 0.89$) employed by Schilke (2018), concluding that they were successful ($M_{\text{high}} = 4.23$ vs. $M_{\text{low}} = 3.38$; $F(1, 205) = 23.51$, p -value < 0.001). As a robustness test, we included the same six-item scale ($\alpha = 0.87$) we employed in the lab-in-the-field (Jones and Volpe 2011). We found that identification was higher in the high condition ($M_{\text{high}} = 4.35$ vs. $M_{\text{low}} = 4.03$; $F(1, 205) = 2.80$, $p = 0.09$). Following Schilke (2018), we also looked at points allocated to in-group

members in the reward allocation task and found that the amount of points allocated was greater in the high condition ($M_{\text{high}} = 36.11$ vs. $M_{\text{low}} = 31.13$; $F(1, 205) = 2.21$, $p = 0.14$).

We manipulated performance climate by combining four different manipulations employed in previous experimental studies investigating the effect of competition in group settings. We administered the first two manipulations before the practice round and the last two before and after the first round, respectively. The first manipulation provided participants with important information on the objective of the study and was designed following Černe et al. (2014) and Darnon et al. (2010). In particular, participants in the ‘high’ condition were encouraged to perform better than their group members, while those in the ‘low’ condition were encouraged to strive for personal improvement. The structure and rationale of the second manipulation followed Schilke (2018), building on the work by Gioia and Thomas (1996). We started by asking our participants to select a personal motto among three versions reinforcing the concepts previously introduced. After having chosen their motto, participants were informed about the choices of their group members—again reinforcing the concepts introduced in the first manipulation. Once the practice round was completed, participants waited for their fictitious group members to finish and were shown completion feedback that served as our third manipulation, designed based on the work of Zhu et al. (2019). In particular, participants in the ‘high’ condition were provided with individually focused feedback that compared their performance with that of a subset of their group members,² thereby directing their attention to personal achievement. In contrast, participants in the ‘low’ condition were shown generic feedback without any peer comparison. Our last manipulation consisted of an almost identical repetition of the previous one, placed just before the measurement of the dependent variable. While the design and rationale were identical, the manipulation differed with respect to the gap between the participant’s performance and the performance of the other two group members. Compared to the initial feedback, the participant now perceived an improvement in their relative position within the group. This reduced fear of failure that, according to Darnon et al. (2007), may induce performance-avoidance and thus reduce the effectiveness of our previous manipulations. To check our manipulations, we used the same eight-item scale ($\alpha = 0.92$) that we had employed in the lab-in-the-field study (Nerstad et al. 2013). The manipulation was successful ($M_{\text{high}} = 5.96$ vs. $M_{\text{low}} = 3.46$; $F(1, 190) = 269.29$, $p\text{-value} < 0.001$).

² We included only two group members in the comparison set so that participants could perceive social comparison without knowing their absolute position within the group.

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