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Article

The Role of the Decision-Making Regime on Cooperation in a Workgroup Social Dilemma: An Examination of Cyberloafing

Brice Corgnet [1,4], Roberto Hernán-González [2] and Matthew W. McCarter [3,4,*]

[1] Argyros School of Business and Economics, Chapman University, 1 University Drive, Orange, CA 92866, USA; E-Mail: corgnet@chapman.edu

[2] Business School, Nottingham University, Jubilee Campus, Nottingham, NG8 1BB, UK; E-Mail: roberto.hernangonzalez@gmail.com

[3] College of Business, University of Texas at San Antonio, 1 UTSA Circle, San Antonio, TX 78249, USA

[4] Economic Science Institute, Chapman University, 1 University Drive, Orange, CA 92866, USA

* Author to whom correspondence should be addressed; E-Mail: matthew.mccarter@utsa.edu; Tel.: +1-210-458-8297; Fax: +1-210-458-4308.

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Abstract: A burgeoning problem facing organizations is the loss of workgroup productivity due to cyberloafing. The current paper examines how changes in the decision-making rights about what workgroup members can do on the job affect cyberloafing and subsequent work productivity. We compare two different types of decision-making regimes: autocratic decision-making and group voting. Using a laboratory experiment to simulate a data-entry organization, we find that, while autocratic decision-making and group voting regimes both curtail cyberloafing (by over 50%), it is only in group voting that there is a substantive improvement (of 38%) in a cyberloafer's subsequent work performance. Unlike autocratic decision-making, group voting leads to workgroups outperforming the control condition where cyberloafing could not be stopped. Additionally, only in the group voting regime did production levels of cyberloafers and non-loafers converge over time.

Keywords: autocratic decision-making; cyberloafing; group voting; social dilemma; workgroup performance

1. Introduction

Many of the challenges organizations face when attempting to achieve their goals are social dilemmas: interdependent decisions where an individual attempting to satisfy his or her own interests in the short run conflicts with the collective's interests in the long run [1]. With the advent of the Internet, a social dilemma that has received increased attention in management studies is cyberloafing, where an employee "uses their company's Internet access for personal purposes (*i.e.*, web surfing and personal email use) during work hours" [2] (p. 675). In social dilemma terminology, cyberloafing is categorized as a social trap: a situation where an individual indulges in a short-term private benefit (e.g., using the Internet for personal use during work hours) while passing a long-term cost on to the collective; e.g., lost labor and reduced productivity to the workgroup or organization [3]. Surely, employees may use the Internet to cope with stress or to stimulate their creativity [4,5]. While recognizing the inevitable "grey area" between Internet use and abuse (cyberloafing) and acknowledging these caveats [6], we focus on clear cases of cyberloafing, which disrupt work [7] and are thus counterproductive [5].

The costs of cyberloafing to organizations can be substantial. Knights [8], for instance, reports $470 million in lost productivity to U.K. firms from workers taking 15 to 30 min of company time to place a bet using online gambling websites. Another study reports that workers using Facebook and Twitter are interrupted once every 10.5 min by instant messages and tweets, taking about 23 min after using a social media website to refocus their attention entirely back to their work and costing their companies about $4500 per worker every year [9]. These monetary figures leave managers with the task of increasing cooperation from cyberloafers.

Van Lange, Balliet, Parks and Van Vugt's [10] recent review on social dilemmas suggests two decision-making regimes that managers can use to encourage cooperation: autocratic decision-making and group voting. Drawing from normative decision theory [11], we seek to answer the research question: What effects do group decision-making and autocratic decision-making structures have on cyberloafing and subsequent worker performance in workgroups?

We address this question in a laboratory environment where workgroups of nine performed a data calculation and entry task while supervised by a monitor. In addition to a control condition, we considered autocratic and group voting regimes. In the autocratic decision-making condition, a monitor would unilaterally decide whether to turn off workers' access to the Internet in the middle of the experiment. In the group voting condition, a majority vote from workers was used to decide whether workers' access to the Internet should be turned off. We find that autocratic and group voting structures reduce cyberloafing by over 50%, but only group voting boosts the cyberloafer's subsequent work productivity by a substantive (and statistically different) amount: 38%. Unlike the autocratic regime, group voting leads to workgroups outperforming the control condition where cyberloafing could not be stopped.

The remainder of the paper is outlined as follows. First, we review the literature pertinent to social dilemmas, decision regimes and cyberloafing and state our hypotheses. Second, we summarize our research methodology. Third, we report the results of our hypothesis testing both in terms of statistical and practical significance. Lastly, we conclude with discussing the theoretical and practical implications of our results for social dilemma theory and organizations.

2. Theoretical Background and Hypotheses

Vroom and Yetton's [11] seminal taxonomy of organizational decision-making regimes outlines two extreme paths that an organization may take when solving a problem. At one extreme is the autocratic decision-making regime where decisions are made by a manager or boss about what those facing the decision situation can do [12]. The motivation behind an autocratic decision-making regime is efficiency. A manager, being aware of a cyberloafing problem, can take steps to avoid collective ruin brought upon by persistent exploiters [13–15]. The effectiveness of Internet abuse detection and disciplining actions within an autocratic decision-making regime rests on general deterrence theory [16–18]. In particular, an autocratic structure allows for a manager to impose an organizational policy that limits Internet access to stop current and future cyberloafers from exploiting other group members [19].

However, the centralized decision rights of an autocratic manager may come at a cost. Most workers value autonomy in their jobs [20] and may feel spite toward those who dictate terms about what they can do [21]. In fact, workers who slack on the job may slack even more out of spite when unilateral actions are taken to force their cooperation [22]. In relation to cyberloafing, losing access to the Internet by an autocratic authority may lead the cyberloafer to not only find something else to pass the time (other than work), but exert even less effort out of spite on the job.

> *Hypothesis 1*: After the implementation of the Internet policy, the autocratic decision-making regime will fail to increase individual production by cyberloafers compared to the control condition where cyberloafing cannot be curbed. As a result, workgroup production under an autocratic decision-making structure will fail to surpass that of the control condition.

At the other end of Vroom and Yetton's [11] taxonomy is a group decision-making regime. As a form of employee empowerment [23], a group decision-making regime places decision-making rights in the hands of group members and their manager [24]. As reviewed by Van de Ven and Delbecq [25], group decision-making regimes can vary in the extent to which group members interact. At one extreme, group members may have unstructured discussions about a problem the group faces and develop solutions through conversation. At the other extreme, group members do not converse, but merely vote independently about proposed solutions to a problem. The current research focuses on this second minimal group decision process, which we refer to as a group voting regime. Group voting resembles the democratic leadership style studied by Lewin, Lippitt and White [26]. In relation to cyberloafing, a group voting regime lets workgroups decide through a vote to turn Internet access on or off.

Previous work on employee empowerment suggests that a group voting regime increases workgroup performance [27,28]. The reason for this positive relationship may be that shared decision rights among workgroup members give these workers a sense of ownership over their work and trust that each worker will do his or her share of the labor [29]. Furthermore, a group voting regime may positively affect group members who disagree with the majority about what group members can do on the job. Procedural justice research reminds us that workers often value the procedures for reaching an outcome more than the outcome's value [30]. To capitalize on this asymmetry, the administration may give employees voice over the design of their work; e.g., voting about Internet access [31]. Worker productivity increases after merely giving employees voice about rules on their jobs [27], because choice over elements of work

increases worker-perceived procedural justice and subsequent work effort [32]. Van den Bos, Vermunt and Wilke's [33] research on procedural justice suggests that a group member's commitment and motivation to work will be higher when given voice compared to when not given voice, even when the outcome of a group voting conflicts with that member's preferences or previous behavior.

> *Hypothesis 2*: After the implementation of the Internet policy, the group voting condition will lead to higher levels of individual production among cyberloafers compared to the control and autocratic decision-making conditions. As a result, workgroup production under the group voting condition will be higher than in the control and autocratic conditions.

3. Method

3.1. Sample

Participants were 220 students recruited from a subject pool of about 2000 undergraduate and graduate students at a university in the Western United States. Participants received a $7 show-up fee plus the opportunity to earn more money for participation in a 2.5-h experiment. We conducted 6 sessions in the control and group voting conditions and 10 sessions in the autocratic condition. Participants earned $32.50 on average, which includes the show-up fee. Our participants thus earned on average $13 per hour, which compares to average earnings of data-entry clerks in the United States, which were $13.37 per hour ± $2.75 [34] at the time of the study.

3.2. Design and Procedure

We employed a one-way factorial design with three conditions: a control condition, an autocratic decision-making condition and a group voting condition. Each participant was randomly assigned to one of the three conditions summarized in Table 1. In the control condition, participants could use the Internet at any time during the experiment. In the other two conditions, Internet access could be turned off after the second period. In the autocratic decision-making condition, one of the participants, the monitor, decided unilaterally whether to turn off or maintain Internet access. In the group voting condition, Internet access was turned off if the majority of workers (five out of nine) voted to do so.

3.2.1. Instruction Period

Upon arrival at the laboratory, participants were directed to private cubicles and asked to read a set of computerized instructions. Since the instructions were somewhat involved [35], participants had 20 min to read them, with a timer displayed on a large screen at the front of the laboratory. The instructions indicated that they were one of ten members of a workgroup; the workgroup would undertake a 1 h and 40-min task, broken up into five 20-min periods. Each member would work on the task, separately and in isolation, but their earnings would be calculated based on group performance.

Table 1. Summary of conditions.

Condition	Description	No. of Sessions (Participants)
Control	Internet access was maintained by the experimenter after Period 2.	6 (60)
Autocratic decision-making condition	The monitor unilaterally decided whether to turn off or maintain Internet access after Period 2.	10 (100)
Group voting condition	Workers voted on whether to turn off or maintain Internet access after Period 2. The decision selected by the majority of workers was implemented.	6 (60)

Three minutes before the end of the instruction period, the experimenter announced the time remaining and handed out a printed summary of the instructions. None of the participants asked questions or requested extra time. At the end of the instruction period, the experiment was launched from the experimenter's room.

All conditions involved the same number of participants (nine workers and one monitor), so as to be able to compare production patterns across conditions. The person who was assigned the role of monitor kept this role for the entire experiment. We conducted six sessions of 10 participants for all conditions, but the autocratic decision-making condition, for which we conducted a total of 10 sessions. More sessions were conducted for the autocratic decision-making condition so as to collect more observations on voting decisions, since, in this case, only the monitor voted on future Internet access, leaving us with only one vote per session.

3.2.2. Software

The experiment was conducted using the Virtual Organizations software developed by CYDeveloper LLC. The software facilitates a multi-party team task, controlled centrally by an experimenter.

3.2.3. The Work Task

Adapted from previous research using summation tasks [36], the work task was a particularly long and laborious task intended to resemble the monotony that can accompany organizational life and prompt Internet usage. The task required summing up tables of 36 numbers without using a pen, scratch paper or calculator (see Figure 1). Participants could sum as many tables as they wanted so that the work task was never interrupted during a period. After completion of a table, and whether the summation was correct or not, a new table appeared on the screen.

Each table had six rows and six columns of randomly-generated numbers between zero and ten. Before providing the grand total, participants had to provide a separate subtotal for all of the 12 rows and columns. Calculating these subtotals did not directly generate earnings, but could help participants compute the grand total, which generated a 40¢ profit to the group only if the grand total was correct. If the grand total was incorrect, a 20¢ penalty was deducted from group production. So that participants could not sabotage other group members' production, penalties only applied when the worker who completed the table incorrectly had produced a positive amount sufficient to bear the penalty. After completing a table, participants learned whether their answers were correct and how much money they earned. At the end of each period, participants learned the total amount of money generated by all

participants' efforts on the work task. Individual earnings were calculated such that each participant obtained an equal share of 10% of workgroup production similar to a gainsharing plan. The gainsharing design feature induces interdependence among participants, as their performance on the task not only affects their individual earnings, but also the other participants' earnings. The current setting is a social dilemma, as each member of the group can increase overall performance at their own cost of effort.

	Column1	Column2	Column3	Column4	Column5	Column6	Sum Row:
	3.00	6.00	3.00	0.00	6.00	0.00	
	10.00	5.00	1.00	5.00	2.00	3.00	
	8.00	3.00	5.00	4.00	8.00	7.00	
	1.00	6.00	0.00	9.00	8.00	0.00	
	3.00	7.00	0.00	8.00	10.00	4.00	
	3.00	10.00	10.00	6.00	10.00	0.00	
Sum Column:							

Figure 1. Sample work task.

In addition to the work task earnings, participants received a fixed wage of $2.40 per period, which was obtained by clicking on a yellow box at the bottom of the participants' screens. The fixed wage was implemented to mimic real work environments in which pay for performance is only limited to a portion of the wage. In our experiments, about half of total pay was earned on the work task, while the remainder corresponded to fixed pay.

3.2.4. Internet

At any point during the experiment, all participants were told they could switch from the work task to Internet browsing. Within the bounds of university policy, participants could use the Internet however they liked, including email. Their confidentiality was assured and maintained, but the software tracked the exact amount of time spent on each activity. Although participants could not complete the work task while browsing the Internet, switching was quick and easy. Through the action menu, participants returned to either the last Internet page or the last number table that they had seen. If participants chose the Internet, the work task window was replaced by an Internet window (embedded in the software; see Figure 2). Students were not allowed to bring cell phones into the lab, so that Internet browsing, if any, was embedded into the experimental platform.

At the end of the second period, depending on the condition, Internet access was either maintained or removed. In the control condition, Internet access was maintained after the second period. In the group voting and autocratic decision-making conditions, organizational members decided on whether Internet access should be turned off after Period 2. Therefore, even if the Internet were turned off, participants could still loaf on the job by sitting idle.

Figure 2. Embedded Internet screen.

3.2.5. Monitoring

In all conditions, one of the 10 participants referred to as "*C*" (the rest of the workers were referred to as "*B*s") was given the ability to watch everyone else, and everyone else was aware of this ability. If the monitor selected the monitoring option from the action menu, he or she used a separate screen to choose whom to monitor (anywhere from one to all other participants) and to actually perform the monitoring. For each selected participant, a column in a table listed their activities (e.g., switched to Internet, provided a subtotal), their current earnings and their percentage contribution to the workgroup total (see Figure 3). For example, the first row in Figure 3 informs the monitor that Participant B13 just switched to the Internet screen and that B13 had produced 40¢ on the task thus far (that is, after 13 min and 18 s of the 20-min period). The production of Participant B13 corresponded to 33% of workgroup production (120¢) thus far. Participants who were being monitored saw the figure of an eye and a text message indicating that "*C* is watching you", independently of the activity they were undertaking. The figure and message resemble the common practice of notifying employees when they visit restricted websites. Notification systems are becoming popular, as illustrated by the team application developed by the largest online marketplace: oDesk. oDesk allows employers to overtly monitor freelancers via webcams (the analogue of our eye image), which take frequent pictures that are immediately sent back to the employer.

Participants could spend as much or as little time as they wanted on the various activities (work task, Internet and monitoring), each of which was undertaken on a separate screen. To switch activities, participants simply chose the corresponding option from a drop-down menu at the bottom-right of their screens.

3.2.6. Voting

In the autocratic decision-making condition, the monitor unilaterally decided whether to turn off or maintain Internet access after Period 2. In the group voting condition, all workers (excluding the

monitor) voted on whether to turn off or maintain Internet access after Period 2. The details of the voting process were described to participants during the instruction period.

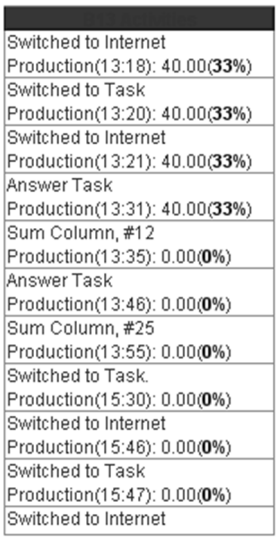

Figure 3. Monitoring screen with a zoom on Participant B13.

3.3. Measures

Individual production is defined as the total monetary amount (in U.S. Dollars) generated by a participant's answers on the work task. Workgroup production is defined as the sum of the individual production of the nine workers in the organization.

Internet usage is defined as the percentage of a participant's total time that was spent on the Internet screen. Internet usage was considered cyberloafing in this case, because time spent on the Internet was time away from the work task, costing money for participants and their colleagues. We confirm this interpretation of Internet usage in our organizational setting in which it is shown, for example, that a worker's accuracy on the summation task typically decreased after spending time browsing the Internet [37]. This would not be the case if workers used the Internet to take a break and restore concentration with the objective of increasing productivity thereafter.

4. Results

4.1. Periods 1–2: Internet Access on

We start by analyzing the first two periods of the experiment during which Internet access was available in all conditions. Average Internet usage across conditions was equal to 13.9% (SD = 0.20) of workers' available time (see Table 2). This is similar to the on-the-job Internet usage, for non-work purposes, of about 13% reported in the 2005 report by American Online and Salary.com [38]. Our cyberloafing rate is also a little less than half the rate [39] of the study of Wagner and colleagues' [40] that measures cyberloafing behaviorally in a classroom setting.

Table 2. Individual Internet usage in the first two periods across conditions (all workers, excluding the monitor).

Condition	Average Internet Usage (% of Available Time)	Proportion of Cyberloafers	Average Internet Usage for Cyberloafers
Control (n = 54)	13.8%	44.4%	29.3%
Autocratic decision-making (n = 90)	14.2%	47.8%	28.4%
Group voting (n = 54)	13.6%	48.2%	26.8%
All (n = 198)	13.9%	47.0%	28.2%

In the remainder of this section, we provide the results of t-tests in parentheses and the p-values for the corresponding non-parametric tests in brackets (either Wilcoxon rank sum or sign rank tests). The use of the Internet in the first two periods in the autocratic condition (M = 14.2%, SD = 0.20), group voting condition (M = 13.6%, SD = 0.20) and control conditions (M = 13.8%, SD = 0.20) were not statistically different from each other (all $p > 0.85$ for pairwise comparisons using t-tests, (all $p > 0.67$ for the corresponding Wilcoxon rank tests)). A large proportion of participants (53.0%) did not browse the Internet and dedicated their time to the work task. We refer to Internet users as cyberloafers and to the remaining ones as non-loafers. The proportion of cyberloafers did not vary statistically across conditions (all $p > 0.69$ for pairwise comparisons using proportion tests). Because participants faced the Internet screen at the beginning of each of the periods, those who were not categorized as cyberloafers spent some minimal amount of time on the Internet screen before switching to the task screen at the beginning of the period. Even though these participants faced the Internet screen, they did not intentionally browse the Internet. Their average Internet usage was equal to 1.3% (SD = 0.01) of their available time: about 16 s each period (no statistical differences across conditions were found; all $p > 0.82$ using t-tests). In the first two periods, workers' average production per period in the control (M = \$1.17, SD = \$1.15), autocratic decision-making (M = \$0.99, SD = \$0.89) and group voting (M = \$1.24, SD = \$1.08) conditions was not statistically different from one another (all $p > 0.14$ (all $p > 0.24$); see Table 3). Lastly, workgroup production across the control (M = \$26.26, SD = \$6.99), autocratic decision-making (M = \$25.45, SD = \$5.91) and group voting (M = \$28.19, SD = \$7.73) conditions was not statistically different from one another (all $p > 0.16$) (all $p > 0.55$).

Table 3. Average individual production per period (in U.S. Dollars) across conditions (all workers, excluding the monitor; n denotes the number of workers per condition).

Condition	Periods 1 and 2			Periods 3–5		
	Cyberloafers	Non-loafers	All	Cyberloafers	Non-loafers	All
Control (n = 54)	\$0.61	\$1.62	\$1.17	\$0.82	\$2.05	\$1.50
Autocratic decision-making (n = 90)	\$0.71	\$1.25	\$0.99	\$0.91	\$1.87	\$1.42
Group voting (n = 54)	\$1.02	\$1.44	\$1.24	\$1.45	\$1.73	\$1.59
All (n = 198)	\$0.77	\$1.41	\$1.11	\$1.04	\$1.89	\$1.49
Only sessions where the Internet was turned off						
Autocratic decision-making (n = 81)	\$0.70	\$1.13	\$0.92	\$0.91	\$1.78	\$1.35
Group voting (n = 45)	\$0.97	\$1.37	\$1.20	\$1.55	\$1.68	\$1.63

4.2. Voting about Internet Access

At the end of the first two periods, the workers or the monitor decided on whether to turn off Internet access in the remaining periods in the group voting and autocratic decision-making conditions. In both conditions, Internet access was shut off in all but one session, practically eradicating cyberloafing. The proportion of organizations that were able to eliminate cyberloafing in the group voting condition (5/6) did not statistically differ from the proportion of organizations achieving this outcome in the autocratic decision-making condition (9/10) (proportion test; z = 0.390, p =0.696). In the group voting condition, a majority of workers (55.6%) voted to remove Internet access.

The shutdown of Internet access in the group voting condition was not exclusively due to the non-loafers' decision to curb cyberloafing. Forty-two percent (11/26) of cyberloafers voted to turn off Internet access. Furthermore, thirty-two percent (9/28) of non-loafers voted in favor of maintaining Internet access.

4.3. Periods 3 and beyond: After Internet Access Is Voted on or off

In the last three periods, average Internet usage dropped down to 4.6% (SD = 0.11) and 5.5% (SD = 0.18) in the autocratic and group voting conditions from an initial level of 14.2% and 13.6%, respectively. The remaining presence of Internet usage is due to the fact that one session per condition maintained Internet access after Period 2. Internet usage was significantly higher in the control condition (M = 25.2%, SD = 0.30) compared to the group voting and autocratic decision-making conditions over the last three periods, and these comparisons are statistically different (all $p < 0.001$) (all $p < 0.001$). Both group voting and autocratic decision-making regimes curbed cyberloafing effectively and did not differ in Internet usage ($t(142) = 0.373$, $p = 0.710$) ($p = 0.520$).

We henceforth focus only on sessions where the Internet was turned off for a more sensitive comparison across conditions. The qualitative nature of our statistical analysis is not affected by this choice, and the analysis, which includes the two sessions in which the Internet was maintained, is available upon request from the authors.

Individual performance increased statistically and significantly in size in the last three periods for all three conditions (all $p < 0.001$) (all $p < 0.001$). This performance increase across conditions shows the existence of learning effects (see Table 3). This finding is not surprising considering previous work reports similar learning effects in mathematical tasks [41]. The evolution of period production did vary across conditions in the case of cyberloafers, however (see Figure 4). In the case of cyberloafers, the increase in individual production between the first two periods (in which Internet access was available) and the last three periods (in which Internet access was removed) in the group voting condition (from \$0.97–\$1.55, a 59.8% increase) was near double that of the autocratic decision-making (from \$0.70–\$0.91, a 30.0% increase) and control (from \$0.61–\$0.82, a 34.4% increase) conditions. Production of cyberloafers in the last three periods of the group voting condition was statistically higher than in the first two periods ($t(18) = 3.50$, $p = 0.003$) ($p = 0.001$), whereas the difference was statistically marginal for the other two conditions ($t(23) = 1.65$, $p = 0.113$ ($p = 0.083$) and $t(39) = 1.88$, $p = 0.068$ ($p = 0.354$) for the control and autocratic decision-making conditions). Furthermore, cyberloafers' production was statistically higher in the group voting condition than in the autocratic decision-making

and control conditions ($t(57) = 2.54$, $p = 0.014$ ($p = 0.017$) and $t(41) = 2.54$, $p = 0.015$ ($p = 0.021$)). There was no statistical difference between cyberloafers' performance in the autocratic decision-making and control conditions ($t(62) = 0.38$, $p = 0.700$) ($p = 0.770$). These findings are in line with our Hypothesis 1 regarding the absence of differences in individual production between the autocratic decision-making and control conditions.

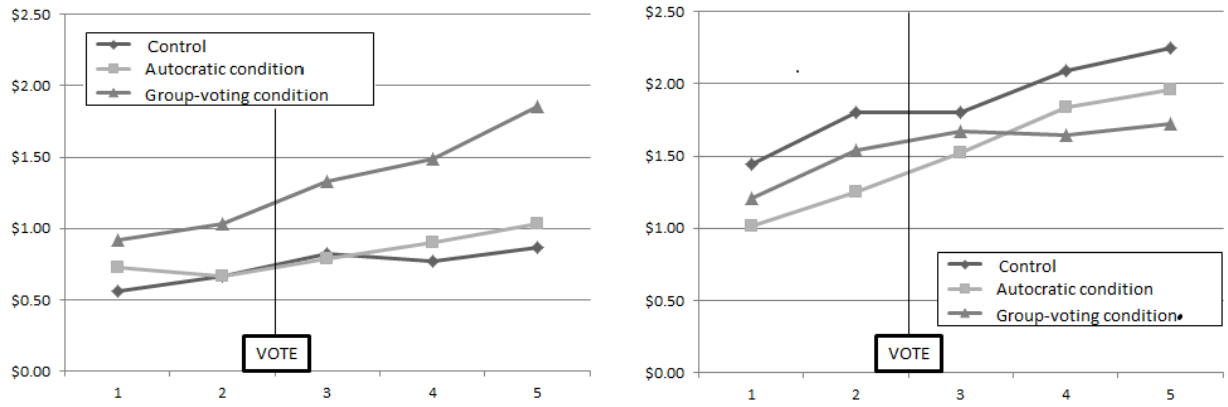

Figure 4. Evolution of the individual production of cyberloafers (left panel) and non-loafers (right panel) across periods and conditions.

Our findings also provide support to our Hypothesis 2. Non-loafers' period production increased more between the first two periods and the last three periods in the autocratic decision-making condition (from \$1.13–\$1.77, a 56.6% increase) than in the control (from \$1.62–\$2.05, a 26.5% increase) and group voting (from \$1.37–\$1.68, a 22.6% increase) conditions. Production per period was statistically higher in the last three periods than in the first two in all three conditions ($t(40) = 6.57$, $p < 0.001$ ($p < 0.001$); $t(25) = 2.32$, $p = 0.029$ ($p = 0.013$) and $t(29) = 4.46$, $p < 0.001$ ($p < 0.001$)) for the autocratic decision-making, group voting and control conditions). Non-loafers' production thus increased in all conditions, but this increase was more pronounced in the autocratic decision-making and control conditions, where shirking by cyberloafers was also more pervasive than in the group voting condition. This observation is actually consistent with the findings of van Dijk, Sonnemans and van Winden [42], who showed that workgroups, in which social loafing was pervasive, performed surprisingly well because of the extra effort of non-loafers that aimed at compensating the particularly low level of effort of social loafers. Importantly, non-loafers' production levels in the last three periods did not statistically differ across treatments (all $p > 0.290$) (all $p > 0.380$), confirming that Internet restriction policies primarily impact those who are regular Internet users on the job; *i.e.*, cyberloafers.

In the group voting condition, workers who voted in favor of shutting down Internet access increased their individual level of production from the first two periods to the last three periods by 24.6% ($t(26) = 2.76$, $p = 0.011$) ($p = 0.002$) compared to an increase of 55.6% for those workers who did not ($t(17) = 2.97$, $p = 0.009$) ($p = 0.008$). The increase in production among workers who voted against turning off the Internet was more pronounced for cyberloafers, whose production increased by 118.4% ($t(9) = 3.35$, $p = 0.009$) ($p = 0.006$), compared to non-loafers, whose production increased by only 10.9% ($t(8) = 2.25$, $p = 0.055$) ($p = 0.475$). That is, in the group voting condition, group members did not react negatively to the implementation of an Internet policy that they opposed. Instead, they increased their

production levels under the newly-implemented policy. The absence of a negative reaction is consistent with procedural justice research emphasizing the positive effect of giving employees a voice in decision-making, even when the final outcome conflicts with one's preferences [33].

Average workgroup production in the autocratic decision-making condition (M = \$42.47, SD = \$21.77) was 4.5% higher than in the control condition (M = \$40.63, SD = \$14.54). However, workgroup production in the group voting condition (M = \$51.84, SD = \$26.36) was 27.6% higher than in the control condition and 22.1% higher than in the autocratic decision-making condition. Even though these differences in production are not statistically different (all $p > 0.390$) (all $p > 0.280$), the effect for the comparison between group voting and autocratic decision-making conditions is of a moderate size (Cohen's $d = 0.40$). Our findings are consistent with our Hypothesis 1 according to which the autocratic structure will fail to increase workgroup production statistically despite curbing cyberloafing. However, we lack support for the second part of Hypothesis 2, as the performance of workgroups using group voting structures does not statistically differ from the control condition, despite exhibiting a significant increase in production. The null statistical effect is mostly explainable by the fact that, after the second period, non-loafers' performance did not increase as much in the group voting condition compared to the control and the autocratic decision-making conditions. As mentioned above, the group voting condition is the one in which the increase in production levels was the highest for cyberloafers, while being the lowest for non-loafers. It follows that the gap in production levels between non-loafers and cyberloafers decreased significantly over time in the group voting condition (see Figure 5).

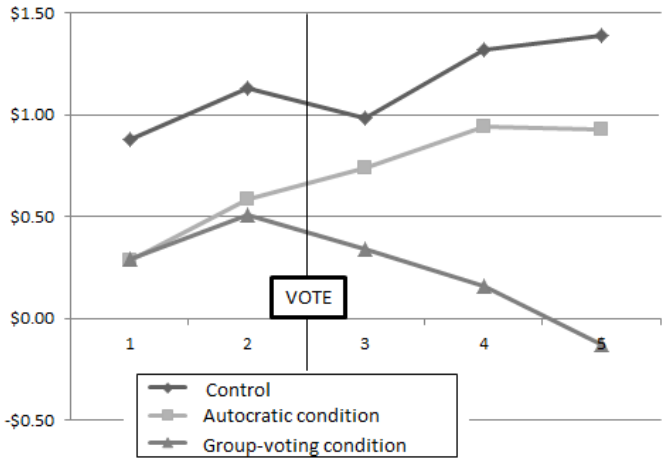

Figure 5. Difference in individual production between non-loafers and cyberloafers across periods and conditions.

By contrast, the gap in production levels increased in the autocratic and control conditions. As shown in Figure 5, the performance of cyberloafers and non-loafers did not statistically differ in the last three periods of the experiment in the group voting condition ($t(43) = 0.391$, $p = 0.698$), while cyberloafers underperformed non-loafers in the other two conditions (all $p < 0.001$) (all $p < 0.001$). The group voting condition is the only one under which the production levels of cyberloafers and non-loafers converged over time. The observed convergence in production among cyberloafers and non-loafers is especially striking given that a large proportion of workers (40.0% in the five sessions in which Internet was turned off) voted against turning off the Internet.

Without a way of making decisions about what workers could do on the job, our workgroup's performance suffered: Internet usage in the control condition increased from 13.7% in the first part of the experiment to 25.2% in the second part of the experiment. Both autocratic and group voting structures were similarly effective in curbing cyberloafing: from an initial level of 14.2% and 13.6%, average Internet usage declined to 4.6% and 5.5% in the autocratic and group voting conditions. This finding echoes the study of Barker [43] that showed how self-managing teams ultimately imposed even more control on workers' behavior than a hierarchical system.

However, this is not all these decision-making regimes did. Organizations in the autocratic structure condition produced $56.06 on average, which is $5.67 less than organizations in the control condition, whereas organizations in the group voting condition increased their production with respect to those in the control condition up to $65.30. This difference was because of the change in behavior of the cyberloafers between the autocratic and group voting conditions.

5. General Discussion

A recent squib in *The Globe and Mail* suggests that answering "how can I stop people loafing in my workgroups?" keeps leaders awake at night [44]. The current research answers this question through comparing different decision-making regimes in a workgroup social dilemma. We found that the decision-making structure impacts not only whether people can cyberloaf, but also what the cyberloafer does thereafter. Autocratic decision-making and group voting regimes both removed the Internet form of loafing in workgroups (87.5% of the time), but only group voting let leaders have their cake and eat it too. Group voting increased a cyberloafer's work performance even when the cyberloafer had voted against turning off the Internet. An autocratic decision-making regime, by comparison, failed to increase cyberloafers' production more than the control condition after the intervention had been taken.

Our findings suggest that, despite the overwhelming monetary costs of cyberloafing identified in recent reports [8,45], managers should refrain from following an autocratic decision-making regime to restrict Internet access. Instead, organizations may consider letting employees decide on the Internet restriction policy. This may not only curb cyberloafing, but increase work performance over time.

While voting on Internet access is unlikely to lead to consensus, as it was in our study, workers who voted against the implemented measure did not react negatively. Cyberloafers increased their work performance after having Internet access restricted. In the last hour of our experiment, after the Internet restriction policy was implemented through group voting, cyberloafers produced 71.4% more than in the control condition, which is equivalent to a $1.80 increase in hourly production per clerical worker.

In conclusion, cyberloafing is real in workgroups. Cyberloafing is costly to organizations. However, cyberloafing is navigable through altering the decision-making regime in the workgroup. The key is for organizations to select a decision-making regime that stops workers from cyberloafing while also encouraging them to work harder. The group voting structure seems to be one way for managers to address cyberloafing and also to get better sleep at night.

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Author Contributions

Matthew McCarter developed the research question; Brice Corgnet and Roberto Hernán-González conceived and designed the experiments; Brice Corgnet, Roberto Hernán-González, and Matthew McCarter wrote the paper.

Conflicts of Interest

The authors declare no conflict of interest.

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