The Hidden Cost of Keeping Secrets: How Protecting Proprietary Information Can Inhibit Creativity

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Abstract

Companies in the information industry rely on employees to protect proprietary information from the clutches of competitors. In exhorting employees to protect proprietary information, few employers consider the affect of such constraints on employees' creativity. But, there are several reasons to believe that people may be less creative when asked to protect proprietary information. First, employees are less creative when they do not have adequate autonomy. Being asked to keep proprietary information secret may reduce people' sense of autonomy. Second, when people absorb new information, it becomes integrated into their existing mental models and may be difficult to differentiate from their existing knowledge. Third, asking people to suppress information may strain their cognitive resources. For all of these reasons, people may be less creative when asked to protect proprietary information. In an experiment, subjects were asked to read a packet of information and to brainstorm on new product ideas for information appliances. In two of the four conditions, subjects were told that some of the information they were reading was proprietary. In the remaining two conditions, no information was designated as proprietary. When some information was proprietary, subjects generated significantly fewer product ideas and their best idea was less creative than when no information was proprietary. The results suggest that being asked to protect proprietary information reduces idea generation and creativity.

1. Introduction

System designers, product developers, industrial researchers and a whole host of others within industrial firms have come to expect that they will be entrusted with information that needs to be kept secret from those outside of the project or firm. Protecting intellectual property can help organizations to retain a competitive advantage and bring new products to market before their rivals [1,2]. Extensive research has explored the economics of sharing information between firms and considered the conditions under which sharing information can be valuable [1,2,3,4]. But, most of this research has examined only the value of the information and neglected the potential costs of asking employees to keep this information secret. In this paper, I argue that the constraint of trying to protect proprietary information may reduce motivation and pose a cognitive challenge to employees. Further, I argue that these motivational and cognitive challenges may inhibit productivity and creativity. The study reported here directly examines the affect of protecting proprietary information on idea generation and creativity.

Proprietary information refers to "know-how" that is commercially useful – that is, process, business, or technical ideas that help an organization to sell their products or increase their revenues [5]. Organizations identify information as "proprietary" when they believe that the information will provide a competitive advantage if kept out of the hands of rival companies. For example, Schrader [4] found that technical managers in the steel industry were reluctant to share information of high competitive importance with rival firms. Frequently, large organizations have a formal process for identifying information as proprietary and conveying employees' obligation to protect the information. Employees are exhorted not to share proprietary information and can be threatened with legal action should they violate this agreement.

The collective wisdom seems to suggest that protecting vital competitive information is economically advantageous. But few researchers have considered the hidden costs of placing such a constraint on employees. There is some evidence that when employees participate in knowledge exchanges with colleagues in other firms, firms perform better [4]. One explanation for this finding lies in the value of reciprocal information sharing arrangements, thus in the value of the information itself. That is, sharing information with colleagues in other firms may increase the information available to both firms and result in improved performance. Another explanation is that employees' who are not restricted in their ability to

share information and discuss work with outside colleagues are more productive and creative than those asked to restrict their information sharing activities. In other words, independent of the information being shared, being free to share information may unleash the creativity of employees.

1.1. Creativity and Proprietary Information

Although early research on creativity identified the ability to be creative as an individual trait, more recent research suggests that many organization level factors influence employees' ability to be creative [6,7]. Inadequate encouragement, scarce resources, and workload pressures can all reduce creativity in organizations [6]. Explanations for the effect of these factors on creativity are both motivational and cognitive.

Creativity can be inhibited by reduced motivation when organizational factors reduce autonomy. Researchers have found that individuals are more creative when they have freedom and control in the conduct of their work and over their own ideas [6, 8, 9]. Amabile and her colleagues [6] found that reduced autonomy decreased employees' creativity by about 19% on average. Asking people to keep secret proprietary information may have an effect similar to reduced autonomy. People may feel more constrained and, therefore, less motivated to be productive and creative. Thus, we should expect that employees who are asked to protect proprietary information will be less creative because the constraint of protecting proprietary information interferes with their freedom on the task

In addition to the motivational explanation discussed above, there are several cognitive reasons to believe that protecting proprietary information might hinder creativity. First, there is some evidence that people store information in associative memory structures [10]. Storing information in such a structure may make it difficult to clearly separate proprietary from non-proprietary information. Second, attempting to monitor and control the expression of certain thoughts might be counter-productive because supressing thoughts often leads to an even stronger focus on those very thoughts a person is trying to suppress [11]. The details of each of these cognitive explanations will be discussed below.

The existence of an associative memory structure suggests that people have links or networks connecting pieces of information stored in memory. When people encode information, they store it in memory as nodes with links that connect the nodes to other related items. Therefore, an entire bundle of knowledge can be called up by triggering a single piece of relevant information [12]. When people encode information relevant to their own expertise, they are likely to encode and subsequently retrieve this information along with other knowledge related to their expertise in a particular area. For example, if a person is an expert in designing software, it makes sense that she would store information related to this endeavor in a network structure with links between relevant pieces of knowledge. If she thought about a particular software product she designed, she might also recall the method used to extract requirements, the data flow diagrams she developed, and the bugs discovered in the testing process. If she was later informed that any information related to the data flow diagrams was proprietary, she might find it difficult to re-organize this information in memory and separate it from "public" information.

This argument is consistent with work on the "appropriation of ideas" – a line of research suggesting that people are biased toward claiming ownership for ideas that they did not generate [13]. In one study, members of dyads each claimed a majority of the ideas that were generated in a discussion [14]. One explanation for this effect is that when people are exposed to ideas, they integrate these ideas into their own mental frameworks and are no longer able to differentiate the source of the idea [13]. Given an ego-centric bias, they tend to claim the ideas as their own [14]. A similar process may be at work when people are exposed to proprietary information. That is, they may integrate the proprietary information into a associative memory structure, subsequently have difficulty identifying the source of the information, and be biased toward labeling the information as their own. This inability to accurately label proprietary information may result in slower processing of information as people attempt to determine what can and can not be shared, thus inhibiting the idea generation process.

Another cognitive factor that may interfere with peoples' ability to be productive and creative when asked to protect proprietary information is the difficulty associated with suppressing unwanted thoughts. Wegner [11] explains that attempts at "thought suppression" often cause people to become absorbed with the thought rather than keeping the thought at bay. This occurs for two related reasons. First, suppressing a thought requires a "metacognition" – an instruction about not thinking about that thought. In this case, the metacognition contains the instruction not to share certain pieces of proprietary information. To hold the metacognition in mind requires that the thought be held in mind as well. This paradox means that the unwanted thought – in this case, the proprietary information – is constantly "on the tip of the tongue" because the metacognition about the proprietary information is highly available in memory. Second, retaining this metacognition (about not sharing the proprietary information) and exerting control over ones' thoughts absorbs cognitive resources [11]. If people are not successful at controlling their thoughts, they may

accidentally "leak" proprietary information. If they are successful at suppressing their thoughts, they are less likely to leak proprietary information but may be cognitively overloaded. Cognitive overload can interfere with productivity and creativity. For example, Amabile and colleagues [6] found that workload pressures can lead to reduced creativity [6]. Thus, successfully suppressing proprietary information is likely to reduce idea generation and creativity.

The motivational and cognitive processes identified above suggest that people who are asked to protect proprietary information will generate fewer ideas and be less creative than those who are not asked to protect proprietary information.

H1: People who are asked to protect proprietary information will generate fewer, less creative ideas than people who are not asked to protect proprietary information.

As mentioned above, another alternative is for people to abandon the constraint and leak proprietary information [11]. Leakage is when people share or use some (or all) of the information they are attempting to protect. Leakage can occur because people are unable to untangle the public from the proprietary information in memory. Leakage also can occur when people are cognitively overloaded and unable to sustain the metacognition in consciousness [11]. Leakage is especially likely when people are not motivated to apply enough mental energy to differentiate ideas in memory or suppress the unwanted thought. Therefore, an alternative hypothesis is that idea generation and creativity will not be inhibited by instructions to protect proprietary information because people will simply leak the information when protecting it interferes with the production of creative ideas.

H2: People who are asked to protect proprietary information will "leak" proprietary information.

2. Method

An experiment was designed to ascertain whether or not protecting proprietary information reduced idea generation and creativity. To test the hypotheses, participants engaged in a brainstorming task in which they were asked imagine themselves as representatives of their company with responsibility for generating creative ideas for information appliances. Their ideas were to be shared with others on a task force that included people from other companies. Participants were assigned to either a public or to a proprietary information condition. In the proprietary conditions, participants were told that some of the information they received was proprietary and that they should not share use this information in their brainstorming session because it could get into the hands of competitors. In the public conditions, no such instructions were given. In addition, conditions were added that allowed for examining the underlying causes for the predicted effect. In the experiment, participants developed ideas for information appliances in a brainstorming session. The study consisted of four conditions – two public and two proprietary information conditions. One of the public conditions (public – high information) provided participants with an entire packet of information intended to increase their familiarity with a range of ideas for information appliances. The other condition (public – low information) provided participants with a reduced set of information – only that information that was public in all conditions. This manipulation allowed a determination as to whether or not any reduction in idea generation and creativity could be explained by having access to less information. If a reduction in creativity can be attributed to participants' having a reduced set of information, then participants in the high information conditions would be expected to produce more ideas and be more creative than participants in the low information condition.

The proprietary conditions included one condition (proprietary – before) in which participants were told which information was proprietary before they read the information packet and another condition (proprietary – after) in which participants did not learn that they had proprietary information until after they read the information packet. This manipulation allowed an initial test of the associative memory explanation. To the extent that participants are more creative when they are informed about the proprietary information *before* they read the materials, this would suggest that the way the information is encoded affects peoples' ability to easily differentiate proprietary from non-proprietary information. That is, people told about proprietary information prior to being exposed to it are better able to label it in memory as proprietary and reduce the inhibiting effects of trying to separate information that is integrated in memory.

Hypothesis 2 was tested by measuring the extent to which participants used proprietary information in the ideas they generated.

2.1. Participants

Participants were 69 undergraduate students who were recruited through bulletin boards on campus and paid $10 for participating in the study. This sample of freshman through seniors ranged in age from 18 to 26 years old with a mean age of 19.62 (SD=1.50). Participants were 58% male and 42% female and represented a variety of ethnic groups. Upon arriving at

the lab, participants were randomly assigned to one of the four conditions. One participant was eliminated from the analysis because it was determined from the post-test survey that he did not understand the task instructions.

2.2. Task

The task instructions asked all participants to assume that they had been selected "as a representative of [their] Company to work on a joint task force addressing the topic of information appliances." They were told that it was an inter-organizational task force with the purpose of capitalizing "on the skills and expertise of people from multiple organizations and multiple disciplines" to come up with ideas for consumer oriented information appliances. They were given a packet of information to read and told that the information in the packet would help to "form the foundation of [their] expertise on the topic." After reading the packet, they were asked to come up with as many ideas as they could for information appliances for consumers and told that their performance would be judged based on how many good (novel and marketable) product ideas they generated. As an added incentive, they were informed that a prize of an extra $25 would be awarded to three participants for their creativity on the task.

2.3. Public Conditions

In the two public conditions, no reference was made to proprietary information or the need to keep any information secret. In the high information condition, participants were given all 11 pieces of information in the study. Four of these pieces of information were those labeled as proprietary in the proprietary conditions. In the low information condition, participants were given only the 7 pieces of information not labeled as proprietary in the proprietary conditions. Therefore, those in the low information conditions had information that duplicated the information provided in the high information condition, but were missing 4 pieces of information. Figure 1 summarizes the information given to participants in each of the conditions. All participants received the information in the order indicated.

2.4. Proprietary Conditions

Participants in the proprietary conditions received the same 11 pieces of information as in the high information conditions, but 4 pieces of information were identified as proprietary. Thus, they could effectively use 7 pieces of the information they were given. In the "proprietary – before" condition, participants were told before they began reading the packet that some of the information was labeled as proprietary. They were told that they should still read all of the information because it would help form the foundation of their expertise on the topic, but that they were not allowed to use the information in the brainstorming session. Each of the 5 pages that contained proprietary information had a large proprietary information sticker that read (in red ink)

Information Presented	Information Conditions		
	Public – high info	Public – low info	Proprietary (before and after)
Definition and examples of information appliances	Yes	Yes	Yes
Description of smart appliances in the kitchen	Yes	No	Proprietary
Description of wallet that beeps whenever a credit card is removed	Yes	Yes	Yes
Description of a beverage dispenser that logs users' preferences	Yes	Yes	Yes
Data on current appliance ownership and future projections	Yes	No	Proprietary
Description of melt-processible rubber and its advantages	Yes	Yes	Yes
Description of futuristic appliances using cameras	Yes	No	Proprietary
Description of futuristic appliances embedded in walls and furniture	Yes	Yes	Yes
Picture and description of a video walkie-talkie	Yes	Yes	Yes
Picture of a video cellular phone	Yes	No	Proprietary
Picture and description of a smart pen	Yes	Yes	Yes

Figure 1. Information presented by condition.

"Proprietary Information: For internal company use only." Participants in the "proprietary – after" condition read the entire packet of information first. When they finished reading the packet, they were told that some of the information they read was proprietary. They were then given another packet in which these items were labeled with a proprietary information sticker so that they could identify which information was proprietary. Participants were given several minutes to look through the second packet and make sure that they understood which information could not be shared.

Participants in both proprietary conditions were told that if they used proprietary information in the brainstorming session, they would not be eligible for the

$25 award. This instruction was intended to increase their motivation to protect the proprietary information.

2.5. Procedures

Upon arriving at the lab, participants signed a consent form and then proceeded to fill out a short demographic survey and read the task instructions. The task instructions informed them of their role as a member of a joint task force developing product ideas for consumer oriented information appliances. Upon completing the task instructions, participants read the information packet appropriate to the condition to which they were assigned. A 12-minute individual brainstorming session followed in which participants were told to come up with as many product ideas as they could for information appliances and to type these ideas into a word processing file. Participants were not told the length of the brainstorming session. At the end of 12 minutes, the experimenter asked the participant to stop typing and to complete a post-task survey that asked questions about how many ideas they thought they generated, how creative they were, and their overall experience of the brainstorming task. Those in the proprietary conditions also were asked to identify those pieces of information that had been labeled proprietary.

2.6. Measures

The primary dependent variables of interest in this study are idea generation and creativity. Idea generation was measured both as a self-report measure and as an objective measure. The self-report measure was taken from the post-task survey in which participants were asked how many ideas they generated during the brainstorming session. Information on self-reported ideas is an indication of how creative participants felt they were in the brainstorming process. The objective measure of idea generation was a count of the number of ideas recorded in the word processing file. Creativity was measured by coding each idea on a scale of 1 to 5 where 1=not creative at all and 5=extremely creative. A product design engineer was hired to perform the coding by rating the creativity of the product ideas based on their novelty and marketability. Creativity scores were then generated for each participant by summing for each participant the creativity rating on each idea they generated.

3. Results

All 68 participants generated ideas for information appliances in the home and completed the experiment. In the 12 minute brainstorming session, the actual number of ideas generated ranged from 3 to 24 (self-reported ideas ranged from 3 to 30). On average, participants actually generated 8.8 (SD=4.48) product ideas and reported that they generated 9.3 (SD=5.98) product ideas. Although participants frequently overestimated the number of ideas they generated, the correlation between actual number and self-reported number of ideas was high, $r = .92$, $p < .01$. The mean level of creativity on all product ideas was 3.50 (SD=.31) on a 5-point scale with 5 representing extremely creative ideas. Participants' overall creativity on the task averaged 31.19 (SD=16.32).

To test the hypothesis that protecting proprietary information will inhibit idea generation and creativity, the public and proprietary conditions were compared. As can be seen in table 1, participants in the proprietary conditions generated fewer ideas than did participants in the public conditions. ANOVA analyses predicting each of the dependent measures were conducted. The first analysis examined the difference between public and proprietary conditions when predicting self-reports of the number of ideas generated. The results indicate that participants in the public conditions reported that they generated significantly more ideas than did the participants in the proprietary conditions ($F[1, 66]=10.58$, $p>.001$). An ANOVA analysis predicting actual ideas also suggests a significant difference in the number of ideas generated between the public and the proprietary conditions ($F[1, 66]=5.89$, $p>.05$). When predicting overall creativity on the task, the results again suggest that those in the public conditions were more successful at generating creative product ideas ($F[1, 66]=6.19$, $p>.05$). These data are consistent with hypothesis 1 which argued that protecting proprietary information would lead to reduced idea generation and reduced overall creativity.

Table 1: Mean (standard deviation) number of ideas and creativity by public vs. proprietary conditions.

	Public Conditions (n=33)	Proprietary Conditions (n=35)	Difference
Ideas generated – self-report	11.55 (7.06)	7.13 (3.72)	4.42 **
Ideas generated – actual	10.18 (5.06)	7.54 (3.86)	2.64 *
Overall creativity on task	35.64 (16.46)	26.99 (15.24)	8.64 *

$p < .05$. ** $p < .01$.

To examine creativity independent of productivity on the task, an average creativity rating was calculated for

each participant by averaging the creativity rating over all of the participants' product ideas. This measure controls for the number of ideas generated. An examination of the average creativity scores by participant indicates little difference between the public and the proprietary conditions in the creativity of the ideas generated (M=3.54 vs. M=3.47) although participants in the public conditions were slightly more creative than participants in the proprietary conditions. A final analysis considered participants' highest level of creativity reached on the task. In this analysis, each participant received a single rating for their most creative idea. The results of this analysis confirm that ideas generated by participants in the proprietary conditions were less creative than those generated by participants in the public conditions, $F[1,66]=4.66$, $p < .05$.

One possible explanation for these results is that labeling a subset of information as proprietary reduced the information available for the brainstorming task. To explore this explanation, I compared the two public information conditions (high information and low information). Table 2 contains the mean values for idea generation and overall creativity for these two conditions. As indicated in table 2, the differences between these conditions are slight and in the opposite direction of that expected if idea generation and creativity were inhibited due to reduced information. Therefore, the data do not support the idea that reduced information is the cause of reduced creativity in the proprietary conditions.

Another possible explanation for the results is that people encode information into particular memory structures and have difficulty separating out proprietary information because it is not encoded as proprietary (versus public) information in memory. If this is the primary cause of the reduction in idea generation and creativity, then participants should be less creative when they are not informed about the proprietary information until after they have been exposed to it. When they read (encode) the information first, they should integrate the proprietary information into a memory structure that makes it difficult to differentiate public from proprietary information. A summary of the means for idea generation and overall creativity in the two proprietary conditions are reported in table 3. As indicated in table 3, there were only small differences between the two proprietary conditions and the direction of the difference is the opposite of that predicted. These data do not support an associative memory structure explanation for people's reduced idea generation.

Table 2: Mean (standard deviation) number of ideas and creativity for public (high information and low information) conditions.

	Public – high information (n=17)	Public – low information (n=17)	Difference
Ideas generated – self-report	10.78 (7.00)	12.26 (7.25)	- 1.48
Ideas generated – actual	9.50 (3.93)	10.82 (5.98)	- 1.32
Overall creativity on task	32.74 (12.59)	38.36 (19.42)	- 5.62

- $p < .05$. ** $p < .01$.

A further examination of participants' responses on the post-task survey indicates little to no difference between participants' experience of the two proprietary conditions. Participants in the proprietary conditions were asked questions about how difficult it was to avoid using proprietary information and the extent to which they inadvertently found themselves using proprietary information. They also were asked to identify which information was proprietary and which information was public in the task. Ratings between the proprietary-before and the proprietary-after conditions did not differ significantly on any of these measures. In general, participants were able to recall which pieces of information were proprietary (M=3.68 out of 5.0 correct) and which were not (M=4.06 out of 5.0 correct). Although not statistically significant, the largest difference was in participants' ratings of how difficult it was to keep separate proprietary from public information. Participants who were told that some of the information was proprietary before they read the materials reported less difficulty keeping the information separate (M=3.17 vs. M=4.00). Although weak, this is consistent with an associative memory structure explanation because it suggests that people have an easier time separating information if they are able to label it as proprietary before they encode it.

Finally, the amount of leakage of proprietary information was measured by examining each product idea and determining whether or not items labeled as proprietary could have been used in generating these ideas. Once again, a product design engineer performed the data coding. Each idea that could have been derived from one of the proprietary items was coded as using proprietary information. For example, one participant suggested "a mini-camera that records peoples' faces and names so that you can remember them later." Because this built on the ideas presented in the description of futuristic appliances using cameras, it was coded as having been derived from the proprietary information. The average score across all conditions indicates that 1.06 product ideas per participant appeared to build on the

proprietary information. Surprisingly, this was true across all conditions even when participants were in the public conditions and were informed of no difference between the pieces of data they received (M=1.03 product ideas). Even those who received none of the proprietary pieces of information were perceived as having some products that used ideas from that information. These data suggest that any similarity between the product ideas and the proprietary information was incidental. A closer examination of the two proprietary conditions suggests no difference between the before and after conditions in participants' use of proprietary information on this task (M=1.07 vs. M=1.11). This suggests that there was very little leakage of proprietary information. That is, participants in both proprietary conditions were able to identify and avoid using proprietary information in the brainstorming session.

4. Discussion

The results confirm the hypothesis that protecting proprietary information can inhibit idea generation and overall creativity. This study suggests that there may be hidden costs associated with asking employees to protect proprietary information. Without knowing it, organizations may experience less creativity and innovation when they designate information as proprietary and restrict employees' ability to share information. Evidence from this study suggests that neither reduced information nor the inability to separate proprietary from non-proprietary information in memory adequately explain the effect. Participants with less information were just as creative as participants with more information. Participants who were told that information was proprietary before they read it were just as creative as participants who were not told that the information was proprietary until after they read it. Participants in both proprietary conditions were also equally likely to "leak" the same amount of proprietary information and accurately recall which items were proprietary.

This leaves two possible explanations for the effect. One possible explanation is that the instruction to protect proprietary information is perceived as a constraint that interferes with autonomy on the task. It may be that people are less motivated to be productive and creative when they are told that they are not able to use some of the information that they hold. Another possible explanation is that suppressing proprietary information is cognitively taxing and interferes with the idea generation process. Although none of the data allow a clear test between these alternatives, some of the data can be leveraged to help clarify the question of motivation. Specifically, several pieces of data suggest that participants were motivated to perform well on the task. First, the creativity of the actual ideas did not differ across conditions. Although participants in the proprietary conditions produced fewer ideas, most of their ideas were equally creative as those in the public conditions (M=3.47 vs. M=3.54). This suggests that participants worked hard to come up with novel and marketable ideas. Second, participants in the proprietary conditions did not appear to use the proprietary information when generating product ideas. This suggests that they made an effort to protect that information as requested in the instructions. It may also mean that they were eager to win the $25 award and knew they could not win if they used the proprietary information. These data all suggest that participants in the proprietary conditions were motivated to do well on the task. Still, future research needs to examine more closely and attempt to separate these two possible explanations.

There were also some differences between the self-reported and actual number of ideas generated. Participants in the public conditions thought that they had generated significantly more ideas than they actually had in the brainstorming session (M=11.54 vs. M=10.18). But, participants in the proprietary conditions thought that they had generated somewhat fewer ideas (M=7.13 vs. M=7.54). This suggests that participants in the proprietary conditions may have felt more constrained or overloaded when performing the brainstorming task. In the post-task survey, participants were asked what (if anything) interfered with their creativity on the task. Over 33% of those in the proprietary conditions stated that protecting the proprietary information interfered with their performance. For example, one participant wrote "I… tried my hardest not to include any proprietary information but that limitation impeded my creativity." The data seem to indicate that participants in the proprietary conditions experienced their task as more difficult because of the requirement to protect proprietary information.

It is interesting to note that across conditions, participants generated an average of 1 idea out of 8.8 (11%) that appeared to have used the proprietary information provided in the study. This was the case even when the participants never received that information. This indicates how difficult it can be to track the use of proprietary information when it is combined with other information or other ideas. It may be difficult to determine which products contain proprietary information and which products are simply generated from peoples' imagination.

As with any experiment, there are issues with the generalizeability of these results to real organizations and to employees facing these issues on a day-to-day basis. For example, one issue not addressed in this study is the extent to which people can learn to differentiate proprietary from public information and overcome the

inhibiting effect on idea generation. It is possible that people develop methods for suppressing proprietary information without reducing their motivation or taxing their cognitive system. Given that the information labeled as proprietary is constantly changing and interaction partners are likely to change as well, I have doubts about the extent to which people can reduce the load enough to avoid interference. Still, this is an important question for future research.

Another limitation of this study is that it uses a single product development task and individual brainstorming. It is not clear what would happen with other creative and problem solving tasks nor what would happen if the brainstorming were to take place in a group. But, with either the motivational or the thought suppression explanation, there is every reason to believe that the effect would obtain with other tasks and with groups. Alternatively, perhaps people would "leak" more in groups because of the social and cognitive pressures associated with group interaction. Again, these are questions that remains for future research.

Although the findings from this study can not be applied to all situations in which people may be faced with a decision about how to deal with proprietary information, it does suggests that there are likely to be costs associated with asking people to keep information proprietary. Organizations may want to consider these potential costs when assigning a value protecting proprietary information.

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6. References

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