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Forces of corruption: Effects of power on perceptions of openness and information-sharing

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Citation

Forces of Corruption: Effects of Power on Perceptions of

Openness and Information-sharing

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Masters' Thesis

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Abstract

In considering the power relations that characterize a manager-subordinate relationship, upward information-sharing is often constrained by relative power differentials. However, a burgeoning volume of research has established that power holders are more attuned to situational goals, thus exhibit greater flexibility in behaviour than powerless persons. This paper therefore proposed a model with epistemic motivation as an intervening variable that enhances information-sharing between dyadic counterparts who have unequal power. However, this model was not supported by findings. Nonetheless, this can be attributed to experimental settings – which future studies should address with construct replication.

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Introduction

Withholding information is the essence of tyranny. Control of the flow of information is the tool of the dictatorship."

— Bruce Coville

Despite the benefits of information-sharing on problem-solving (Dawes, 1996) and team performance (Mesmer-Magnus & DeChurch, 2009; Moye & Langfred, 2004), it is often undermined by the dominating behaviour of power-holders (Tost et al., 2013). Nonetheless, the malleability in goal-oriented behaviour of power-holders (e.g. Gruenfeld et al., 2008; Overbeck & Park, 2006) suggests that they may be pushed towards behaviours that are supportive of information-sharing. To test this, this paper employed epistemic motivation (EM), which concerns the desire to establish an accurate and rich understanding of the issues at hand (Webster & Kruglanski, 1997), as an intervention that pushes power-holders to be supportive of information-sharing. As EM influences the extent of information-processing, it was proposed that it would attenuate the effects of power on information-sharing. Specifically, I examined whether low- and high-power individuals in dyads have different levels of openness and information sharing, and whether a dyad-level manipulation of EM will influence the differences in openness and information sharing between low- and high-power individuals.

The proposed manuscript sought to advance literature in at least three ways. First, by using findings regarding knowledge-sharing to predict the effects of power on information-sharing, the paper sought to establish that information- and knowledge-sharing are more similar than different. Secondly, the paper proposed a new model that employs EM as an intervention that attenuates the effects of power on information-sharing and openness. Finally, the paper sought to provide a holistic view on work-related outcomes by investigating the effects of power on both perceptions of openness and information-sharing.

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High Power:

Effects on Information-Sharing and Perceptions of Openness

This section explores the effects of high power on (i) information-sharing and (ii) perceptions of openness. Power constitutes the capacity of an individual to influence and control others (Anderson & Berdahl, 2003); it stems from having control over valuable resources and the ability to mete out punishments and distribute rewards (Galinsky et al., 2006). As managers have influence over their subordinates' pay, promotions and assignments (Anderson & Berdahl, 2003), they are considered to have power over their subordinates.

Information-sharing is the direct communication and information exchange that occur amongst individuals involved in solving a problem (Du, 2014); it is most likely to occur amongst workgroup members of the same hierarchical position as these individuals are likely to share similar perspectives, needs and information resources (Cross, Rice & Parker, 2001). Considering the power relations that characterize a manager-subordinate relationship; knowledge sharing is likely to be resisted to preserve hierarchy and existing power relations (Michailova & Husted, 2003). Indeed, powerful individuals tend to express themselves openly (Anderson & Berdahl, 2003) and dominate conversations, which reduces the inclination of members to share information (Tost et al., 2013).

Approach-Inhibition Model of Power: Information-Sharing. The approach-inhibition model of power can be employed to shed light on the dominating behaviour of powerful individuals. According to this framework, high power activates the behavioural approach system – higher power is associated with automatic information processing and disinhibited behaviour. Thus, powerful individuals are more inclined to be dominate - this is likely to manifest in increased information-sharing. Indeed, Tost et al. (2013) demonstrated that powerful individuals dominated group discussions, which resulted in reduced knowledge sharing by team members.

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Perceptions of Openness (Other-Rated). Perception of openness constitutes the extent to which members perceive that the leader listens to them, is interested in their viewpoints and considers their ideas (Tost et al., 2012). Within a manager-subordinate relationship, it is operationalized as subordinates' perceptions that their supervisors are receptive and interested in their ideas (Detert & Burris, 2007). It has been shown to influence followers' upward information-sharing behaviour in the form of voice (Cumberland et al., 2018; Detert & Burris, 2007; Tangirala & Ramanujam, 2012). Considering the benefits of perceptions of openness to work- and team-related outcomes, it is no surprise that scholars have called for studies that shed light on the antecedents to openness (Mitchell et al., 2009). This paper thus explores the effects of power on perceptions of openness, alongside information-sharing.

Denigration & Devaluation: Perceptions of Openness. As power increases the likelihood of denigration and devaluation of others, it was predicted that power would result in lower perceptions of openness. To demonstrate the effects of power on denigration and devaluation, a meta-analysis by Georgesen & Harris (1998) showed that as power levels increased, ratings of others' and one's own performance diverged – self-ratings became increasingly positive and ratings of others' performance became more negative. Such divergent ratings are the result of psychological distancing – by devaluing others, a psychological distance is maintained between the high- vs. low-power person; this preserves the influence and control that the high-power person has over the low-power person. Indeed, Kipnis (1972) demonstrated in a simulated organizational setting that powerful individuals reported greater desire for increased psychological distance from those others who were designated to be their 'workers', thus were more likely to devalue the performance of these 'workers'.

Thus, I proposed that high-power individuals are likely to devalue and denigrate people who are less powerful – they are likely to view their low-power partners to be lower on openness. Specifically, as high-power persons assign lower ratings of openness to their low-power

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subordinates, a psychological distance is maintained – that preserves the power relations between the high- vs. low-power individuals.

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Low Power:

Effects on Information-Sharing and Perceptions of Openness

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This section continues from the previous section, by discussing the effects of low power on (i) information-sharing and (ii) perceptions of openness.

Approach-Inhibition Model of Power: Information-Sharing. Whereas high power is associated with the behavioural activation system, low power is associated with the behavioural inhibition system (Morrison et al., 2015) – individuals are more sensitive to threats and punishment as they face constraints that more powerful individuals place on them (Anderson & Berdahl, 2003). As less powerful individuals who rely on their managers for work-related outcomes, subordinates in a manager-subordinate relationship are likely to perceive great costs associated with information-sharing (Morrison & Rothman, 2009).

Indeed, low-power individuals have been shown to display more inhibitive behaviours than more powerful individuals (Anderson & Berdahl, 2003), suggesting that low-power individuals may also respond automatically to the more dominant behaviour displayed by more powerful individuals within an interaction. Thus, I proposed that subordinates may refrain from sharing input with more powerful individuals simply because it feels more appropriate; it maintains hierarchy (Morrison & Rothman, 2009) and existing power relations. On the contrary, as powerful persons are more disinhibited, they are likely to dominate conversations and share more information with low-power persons. Thus, as higher-power individuals establish dominance over lower-power individuals, lower-power individuals also inhibit expressions to avoid conflict with more powerful individuals (Anderson & Berdahl, 2003).

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Hypothesis 1: In dyads, low-power individuals are less likely to share information with their high-power counterparts. In contrast, high-power individuals are more likely to share information with their low-power counterparts.

Perspective-taking: Perceptions of Openness. Power increases self-enhancing biases, which are likely to lead these powerful individuals to act in ways that indicate poor receptivity to others' contributions – which they deem to be less valuable than their own.

Power decreases the ability to understand others' perspectives and reduces the willingness to listen to others (Tost et al., 2013). To illustrate, See et al. (2011) demonstrated that power holders were overconfident in their judgments, which led to less advice-taking from others. As power holders felt more confidence in their judgments, they over-estimated the accuracy in their judgments – which they perceived to be more accurate relative to others. Thus, they were less likely to consider advice from others.

To elaborate, power increases the propensity to devalue the contributions, opinions and perspectives of other individuals (Georgesen & Harris, 1998; Galinsky et al., 2006). Thus, powerful individuals are less likely to see value in feedback and would be less open to input from subordinates (Morrison & Rothman, 2009). I thus proposed that high-power persons are likely to act in ways that indicate an aversiveness to contributions. Hence, low-power individuals are likely to perceive their high-power partners to be low on openness.

Although low-power persons are likely to perceive high-power individuals to be low on openness, high-power individuals are likely to perceive their low-power partners to be even lower on openness. Considering that low-power individuals are likely to remain silent and refrain from sharing information with their high-power partners, it is likely that high-power partners will view these low-power persons to be low on openness. That is, as low-power individuals display inhibition and withhold contributions from their high-power partners, high-power partners are likely to view them to be low on openness – being uncooperative in discussions.

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These perceptions, already influenced by the behaviour of low-power subordinates, are likely to be exacerbated by the influence of high power. It was previously discussed that high power increases devaluation and denigration of others, which lowers perceptions of openness. Thus, as the inhibitive behaviour of low-power persons influence high-power individuals to view them to be low on openness, the effects of devaluation and denigration result in even lower perceptions. Simply put, devaluation and denigration amplify the low perceptions of openness that high-power individuals already have (of their low-power partners).

Hypothesis 2: In dyads, high-power individuals are likely to perceive their low-power counterparts to be lower on openness; low-power individuals are likely to perceive their high-power counterparts to be higher on openness.

How can such adverse effects of power be reversed or reduced? Although power has been demonstrated to constrain communications and knowledge sharing, under specific conditions, power may lead to increased knowledge sharing and better team performance (Tost et al., 2013). The next section thus discusses the epistemic conditions that may attenuate the effects of power on information-sharing and perceptions openness. High-power people are likely to be more profoundly influenced by the current epistemic motive, relative to those with low power.

According to the Situated Focus Theory of Power, high power enables one to be more focused on situational demands. This has been attributed to the lack of constraints and freedom that characterize powerful individuals – they possess more resources and more influence over others, thus can afford to concentrate exclusively on goal-relevant information (Guinote, 2007).

Thus, relative to low-power persons, powerful individuals are more sensitive to situational demands, and change their responses more flexibly according to the present goals. This has been corroborated by a small amount of research (e.g. Gruenfeld et al., 2008; Overbeck & Park, 2006). For example, Tost et al. (2013) showed that as powerful leaders were made aware of their team members' potential to contribute effectively to team performance, they refrained

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from dominating conversations and were more inclined to solicit contributions. In contrast, when uninformed of their members' abilities to contribute, leaders dominated conversations. The section below thus discusses how EM can be used to influence the behaviour of powerful individuals.

Power and Flexibility: Epistemic Motivation

Aside from the influence of power, the extent of information-processing also depends on EM – the desire to establish an accurate and rich understanding of the issues at hand (Webster & Kruglanski, 1997). Thus, an individual's willingness to gather and process information is influenced by one's EM (Kruglanski, 1990).

Scholten, van Knippenberg, Nijstad, & De Dreu (2007) demonstrated that higher levels of EM (manipulated via process accountability) led groups to exchange more shared and unshared information on a hidden-profile task, which led to better decision quality. Similarly, Super, Ishqaidef & Guthrie (2016) demonstrated performance-based pay stimulated EM amongst work groups, which in turn lengthened time spent on information search and discussion, and subsequently information-sharing. Thus, it was expected that EM would nudge individuals towards information-sharing.

Epistemic motivation can arise from situational cues regarding accountability. For example, when held accountable for the decision-making process (i.e. process accountability), individuals engage in systematic and deeper information processing. Process accountability should be differentiated from outcome accountability – having to account for the decision *outcomes*, instead of the *processes* or manners in which one arrived at the comotivationlusion (Scholten et al., 2007). Process accountability drives the epistemic desire to obtain a comprehensive understanding of the issue via deeper information processing. In contrast, outcome accountability may impede deep information processing as the individual focuses on attaining satisfactory outcomes that please others.

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I thus argued that under high process accountability, high EM will attenuate the constraining effects of power on perceptions of openness and information-sharing. Galinsky et al. (2006) also echoed similar sentiments – process accountability (often used to manipulate epistemic motives) encourages powerful persons to consider alternative perspectives.

Information-Sharing. With a stronger desire to gather more information (i.e. higher motivation), low-power individuals may be more motivated to share information with powerful individuals. This may help them form a satisfactory decision by engaging in more elaborate discussions, and is likely to occur through the norm of reciprocity, which characterizes social exchange and relations (Flynn, 2003).

The functionalist perspective of the norm of reciprocity was first proposed by Gouldner (1960) – in which reciprocity is viewed as a social-relational pattern that enables a mutually contingent exchange of benefits. This has also been studied in organizational settings, in which employee favour exchanges are of interest – dyadic interactions that involve the mutual exchange of resources, with the expectation that equitable resources are returned (Flynn, 2003).

With a greater EM, high-power individuals may refrain from dominating discussions. Although they are likely to continue sharing information with low-power persons, they are less likely to dominate to allow for opportunities for low-power persons to share information. That is, they are more likely to open the floor to low-power persons to share information, as this fulfils their high EM by gathering more information and engaging in thorough discussions.

Furthermore, with the expectation that information is returned to maintain equity, low-power individuals with high EM may be more eager to share information with powerful individuals – the information returned enables deeper information processing and increases the chances of a well-informed decision for them. Additionally, low-power individuals are less likely to perceive great threats/risks associated with sharing information with powerful individuals, as

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EM is also likely to reduce the dominative tendencies of powerful individuals, thereby reducing threat-avoidant behaviour exhibited by low-power persons.

Bearing in mind the sensitivity and flexibility of high-power individuals to situational goals, this reduction in information-sharing for high-power persons is likely to be more profound than the increase in information-sharing for low-power individuals. Being more goal-oriented, they are likely to modify their behaviour more substantially to ensure they attain their epistemic goal of EM. In contrast, low-power individuals remain relatively insensitive to contextual epistemic goals, thus exhibit a smaller change regarding information-sharing behaviour. Although they are still likely to share more information, the high EM is likely to induce a smaller change amongst low-power persons.

Hypothesis 3: Dyad-level EM moderates the effect of power on information-sharing. When dyad-level EM is low, high-power individuals share more information with their low-power counterparts; low-power individuals share less information with their high-power counterparts. In contrast, when dyad-level EM is high, high-power individuals share as much information with their low-power counterparts, as low-power individuals are likely to share with their high-power counterparts.

Perceptions of Openness. Enhancing EM increases the desire for extensive information processing to improve understanding of the issues at hand (Scholten et al., 2007). When process accountability is high, self-enhancement tendencies and information processing biases are reduced (Scholten et al., 2007); individuals are more likely to engage in thorough information searches than those lower in EM (Henningsen & Henningsen, 2004). In contrast, when process accountability is low, individuals are more inclined to develop a premature conclusion without sufficient knowledge. Thus, I proposed that enhancing EM via process accountability would attenuate the effects of power on perceptions of openness.

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Despite the overconfidence and lack of perspective-taking that typically characterize powerful individuals, a high need for process accountability is likely to reduce these self-enhancing biases. With a greater need for extensive information processing, powerful individuals are likely to remain open to alternative perspectives and information shared by low-power persons; this enables them to attain a more comprehensive understanding of the issue at hand. Thus, as powerful individuals (under high EM) behave in ways that indicate an openness to contributions, low-power individuals are more likely to perceive that these powerful individuals are open to their input and contributions.

Furthermore, for powerful individuals, psychological distancing and the lack of perspective-taking are likely to be reduced. As power holders feel a stronger desire to process information more thoroughly, they may be more inclined to form accurate impressions of others. The employment of stereotypes by powerful individuals has been shown to be contingent on whether such stereotypic information was relevant to their current goals (Guinote, 2007). Hence, when placed under a high EM, powerful individuals may make more concerted and extensive attempts towards forming perceptions of low-power individuals; they are thus less likely to denigrate low-power persons and likely to increase their perceptions of openness.

Considering the sensitivity of power holders to the present goals, this increase in perceptions of openness for high-power persons is likely to be more profound than that of for low-power persons. As they are more proactive towards satisfying the present EM than low-power persons, powerful individuals are likely to exhibit a larger change in perceptions of openness than low-power persons. In contrast, low-power persons remain largely unaffected by the situational EM, and thus exhibit less variance in their perceptions of openness. Although low-power persons are still likely to increase their perceptions of openness, this increase is likely to be smaller than that of for powerful persons.

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Hypothesis 4: Dyad-level Epistemic motivation moderates the effect of power on perceptions of openness. When dyad-level EM is low, high-power individuals perceive their low-power counterparts to be lower on openness; low-power individuals perceive their high-power counterparts to be higher on openness. When dyad-level EM is high, high-power individuals perceive their low-power counterparts to be as open as low-power counterparts perceive their high-power counterparts to be.

Figure 1: Theoretical Model
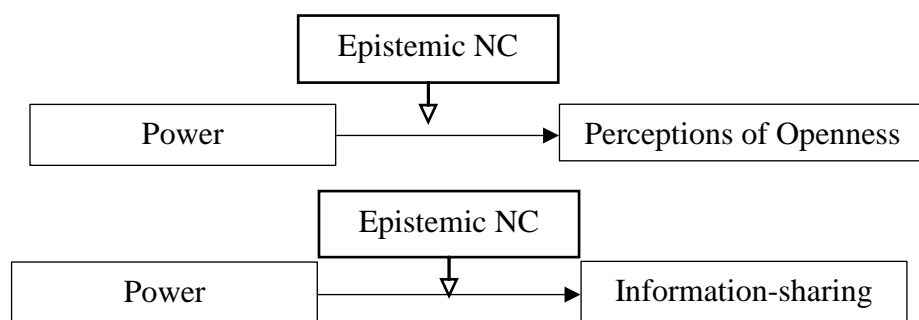
Method

The key rationale of the experiment was to test the efficacy of the epistemic EM as an intervention that could bring out the conditional effects of power on (i) perceptions of openness and (ii) information-sharing behaviour. Participants comprised of 200 undergraduate students from Singapore Management University who received compensation in the form of credits that constitute part of their course requirements or $5.

As a 2 x 2 factorial design with the independent variables being power and EM, each participant received either one of four combinations: (i) low-power, low EM; (ii) low-power, high EM; (iii) high-power, low EM, (iv) high-power, high EM. To enable the manipulation of power, this study took on a dyadic approach. Participants were first randomly paired up as dyads, then randomly assigned into a power condition within the dyad. Thus, to manipulate power, each participant was assigned either a (i) low-power 'subordinate' or (ii) high-power 'manager' role

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within their dyad. Following this, each dyad was randomly assigned into either a (i) low-EM or (ii) high-EM condition – both participants within a dyad received the same EM condition. For example, both participants in a dyad assigned to the low-EM condition received the same set of instructions for low-EM. Thus, whereas power was manipulated within dyads, EM was manipulated between dyads.

After receiving the power and EM manipulations, each participant received a set of 10 ideas. As low-power 'subordinates' and high-power 'managers' within a dyad each received a different set of ideas, these pre-assigned ideas were not repeated within a dyad. Participants were not explicitly told that they received different ideas from their dyadic counterpart. They then proceeded to engage in an idea discussion task for 15 minutes – where they could discuss and share both (i) the pre-assigned ideas and/or (ii) self-generated ideas they came up with.

As the pre-assigned ideas revolved around different ways to recycle plastic bottles, participants were told that the purpose of the task was to come up with as many creative yet practical ideas to recycle plastic bottles. They were told that an additional $5 would be awarded to the best performing dyad who submits the greatest number of creative, yet practical, ideas to recycle plastic bottles. After 15 minutes, participants were automatically directed to a page that contained the measures of self- and other-rated information-sharing and perceptions of openness. After filling up these measures and some demographic items, the experiment concluded.

Procedure and Measures

Participants were randomly assigned into pairs – each consisting of one participant in a high-power and another participant in a low-power condition. Participants within the same pair were assigned a dyad identification number, then tasked to work on an idea discussion task together. They received an anonymous link to complete the survey via Qualtrics.

Participants were randomly assigned to either a high-power or a low-power position before receiving the instructions for the manipulations of the high/low epistemic motive and idea

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discussion task. By doing so, they were expected to encode the information about (i) the high/low epistemic motive and (ii) the idea discussion task according to their high-power or low-power state. This ensured that they approached the tasks according to their manipulated experiences of power. All participants thus received (i) a power-relevant manipulation, (ii) a epistemic motive manipulation and (iii) idea discussion task, in that order.

Pre-Test: Idea Discussion Task. In the main study, each pair of participants worked on an idea discussion task together. Within each pair, every participant received a list of 10 ideas each. These 10 ideas were mutually exclusive within the pair – the ideas provided to each participant within a pair were not repeated. To ensure that the average quality of the 10 ideas given to each participant was kept constant, a pre-test was conducted. This pre-test was administered to four individuals, who were asked to rate the quality of 35 ideas (Appendix A) on a scale from 1 = very low quality to 10 = very high quality. The ratings for each idea were then averaged across raters; ideas that had similar ratings were distributed evenly.

Power. The technique of role manipulation within a dyad was inspired by past scholars, such as Anderson & Berdahl (2003). As the study was held mainly via Qualtrics, for each appropriate page that the participant progresses onto, a sentence was displayed at the top of the page indicating their role assignment. Participants assigned into the high-power (low-power) condition were told that they have been assigned into the role of a 'manager' ('subordinate') and saw the sentence "You have been randomly assigned into the role of a manager ('subordinate')." at the top of each appropriate page.

As they worked on an idea discussion task, participants were told that they would have an opportunity for earning an additional $5 each if their dyad produced the best quantity and quality of ideas. As an apparent manipulation of power, the dyad member in the high-power condition (i.e. manager) was given control over whether the participant in the low-power position

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(i.e. subordinate) would receive the additional sum of $5, if their dyad outperformed the rest. Hence, 'managers' were informed that (i) they would decide which ideas will be included in the final submission of ideas and (ii) had control in determining how/whether the additional sum of $5 would be distributed to a participant in a low position condition. (i.e. equally within the pair, or an uneven distribution that favoured either the 'manager or 'subordinate'). In the low-power condition, the 'subordinates' were informed of the capacity of their partner (i.e. 'manager) to control the rewards and determine the work output. Instructions can be seen in Appendix B.

Hence, after participants finished the discussion, 'managers' were then asked to indicate how they would like to distribute the additional sum of $5 (if awarded) and to submit the list of ideas. Questions can be seen in Appendix D.

Epistemic Motivation. Epistemic motivation was manipulated based on need for cognition (NC) or cognitive elaboration, created by a combination of approaches adopted by Scholten et al. (2007) and Ten Velden et al. (2010). As a proxy for NC, process accountability was manipulated at the dyad-level. Different dyads were randomly assigned into either a high epistemic motive or low epistemic motive condition. As process accountability involves having to account for the ways in which one's decisions were made, dyads in the high NC condition were told that they had to explain the decision-making process to the experimenter (refer to Appendix C). Dyads in the low NC condition were only told to share their answers with the experimenter thereafter.

All dyads were then given 15 minutes to discuss the task and generate the ideas together, as a pair, before submitting a final collective list of ideas. 'Managers' then had the opportunity to decide which ideas should be included in the final submission. Although each participant was given a list of 10 ideas, they were not restricted to discussing about these pre-assigned ideas. Participants were told that they were free to come up with their own ideas, and these ideas could

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be included in the final submission. Hence, participants could discuss and submit both (i) pre-assigned and (ii) self-generated ideas. As the performance of dyads was based on both quality and quantity of ideas, the maximum number of ideas to be submitted was capped at 10 ideas. Placing limitations on the number of ideas would have urged participants to engage in the idea discussion and ensured that participants do not simply submit all the pre-assigned ideas provided.

Perceptions of Openness (Self- and Other-Rated). Following Tost et al.'s (2013) measure adapted from existing measures of openness (Ashford et al., 1998; Detert & Burris, 2007), the measure was modified to fit the dyad context in this study. For exploratory purposes, participants rated both their counterpart's openness (other-rated) and their own openness (self-rated), on a seven-point Likert-type scale, ranging from 1 (*Not at all*) to 7 (*Very much*). Hence, participants in the low-power condition were asked to rate both their high-power dyad counterpart's openness and their own openness. Conversely, participants in the high-power condition were asked to rate both their low-power dyad counterpart's openness and their own openness. Items can be seen in Appendix E. Although perceptions of openness have been operationalized as other-rated measures, self-rated measures have been included for exploratory analyses, to investigate whether self-rated measures of perceptions of openness produced a different pattern of results from the hypothesized model.

Extent of Information-sharing (Self- and Other-Rated). As an alternative measure of information-sharing and for exploratory purposes, both self- and other-rated measures were used. The information-sharing scale used in Tsai & Bendersky (2016), which was used to measure information-sharing in groups, was adapted slightly to fit the context of this experiment. This scale had been previously modified from the scale employed in Bunderson & Sutcliffe (2002), which was used to measure information-sharing amongst team members in organizational business units. The items were modified to measure participants' self- and other-rated reports of their own and their partner's information-sharing behaviour during the dyadic idea discussion

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task in this study. Both high-power and low-power participants were asked to rate their extent of agreement on a seven-point Likert scale (1 = Strongly Disagree, 7 = Strongly Agree) as in Appendix F. High-power participants thus rated their low-power partner's and their own information-sharing behaviour, and low-power participants rated their high-power partner's and their own information-sharing behaviour.

Manipulation checks: Power. Anderson & Berdahl's (2003) measure of sense of power was used. Within the dyad, participants rated their perceptions of power on two items: "Who had more control over the way in which you solved the task?" and "Who was more dominant during your interaction?" Participants rated each item from 1 (my partner) to 4 (equal) to 7 (me). A lower score indicates a lower sense of power, and vice versa.

Manipulation check: EM. To check for the manipulation of process accountability, three items taken from Ten Velden et al. (2010) and Scholten et al. (2007). The items are: "I tried to make judgments and decisions as thoroughly as possible", "I thought deeply before making a decision." and "I have to account for the ways in which decision were made". Items were answered on a seven-point Likert-type scale, ranging from 1 (*Not at all*) to 7 (*Very much*).

Results

Manipulation checks conducted on both (i) sense of power and (ii) EM measures showed that the effects were not significant. An independent-samples t-test showed that the role assignment did not produce significant differences between low-power ($M = 4.41$, $SD = 1.01$) and high-power participants ($M = 4.32$, $SD = 1.00$), $t(198) = -1.22$, $p = .22$, 95% CI [-.46, 0.11]). Similarly, an independent-samples t-test showed that manipulation of process accountability did not produce significant differences between participants in low-EM ($M = 5.44$, $SD = 1.18$) and high-EM dyads ($M = 5.53$, $SD = 1.13$), $t(198) = -.59$, $p = .55$, 95% CI [-.42, .22]).

To investigate whether the manipulation of power may have confounded EM, a mixed-effects regression model (without random intercept) was utilized to analyze the effects of role

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assignment (i.e. power manipulation) on EM. As expected, controlling for process accountability (i.e. EM manipulation), the manipulation of power did not have a significant effect on the EM measure (β = .02, SE = .16, $t(197)$ = .10, p = .92, 95% CI [-.31, .34]). Thus, the manipulation of power did not confound EM.

To test the hypothesized models, mixed-effects regression models were employed for two main reasons. Firstly, these multilevel models account for two levels in the clustered data – individual-level measurements were nested within dyad-level units. Individual measurements (level 1 units) of perceptions of openness and information-sharing behaviour took place within a dyad (level 2 units) – participants were influenced by the power relations within their dyad. Hence, individual responses were non-independent within each dyad; participants were influenced by their dyadic counterpart. Each dyad was thus treated as a cluster; the dyad identification numbers assigned to each pair was used for analysis.

Secondly, although power was manipulated within a dyad, EM was manipulated between dyads. Each participant is thus influenced by (i) power relations within a dyad and (ii) EM between dyads (clusters). To account for both within-dyad and between-dyad effects, a random-intercept model was employed for all but two outcome variables (self-rated perceptions of openness, other-rated information-sharing). These were analyzed without a random intercept as dyad-level differences were too small to be detected by a random intercept model. [1]

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[1] A random intercept model was initially employed to account for inter-dyad differences. However, a "final Hessian matrix is not positive definite" error message was returned for these four outcome measures – indicating that random effects (dyad differences) were too small to be detected by the random intercept model. Hence, a model without random intercept was employed instead.

[2] Random effects between dyads were not significant. That is, the variance between dyads was not significant, rendering a random-intercept model unnecessary.

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Across all four subjective outcome measures, there were no significant differences between (i) low- vs. high-power participants and (ii) low- vs. high-EM dyads. The interaction effects between power and EM on all four outcome measures were also not significant.

On other-rated perceptions of openness, low-power participants (M = 6.44, SE = .08) did not differ significantly from high-power participants (M = 6.50, SE = .08); dyads in low-EM (M = 6.52, SE = .08) did not differ significantly from dyads in high-EM (M = 6.42, SE = .08). On self-rated perceptions of openness, low-power participants (M = 6.50, SE = .07) did not differ significantly from high-power participants (M = 6.58, SE = .07); dyads in low-EM (M = 6.54, SE = .07) did not differ significantly from dyads in high-EM (M = 6.53, SE = .07).

On other-rated information-sharing, low-power participants (M = 6.10, SE = .10) did not differ significantly from high-power participants (M = 6.15, SE = .10); dyads in low-EM (M = 6.11, SE = .10) did not differ significantly from dyads in high-EM (M = 6.14, SE = .10). On self-rated information-sharing, low-power participants (M = 6.16, SE = .10) did not differ significantly from high-power participants (M = 6.09, SE = .10); dyads in low-EM (M = 6.13, SE = .10) did not differ significantly from dyads in high-EM (M = 6.12, SE = .10).

General Discussion

This experiment was designed to test a new theoretical model which proposed that relative power may be an especially constructive force – only when combined with high EM. If powerful individuals are held responsible for their decision-making processes (i.e. process accountability), they may create an environment conducive for information-sharing. This occurs as the constraining effects of power on information-sharing is expected to be attenuated by a higher EM, when the need for extensive information processing is increased. As members share their perspectives and knowledge with each other, this is likely to translate into enhanced management performance and team outcomes.

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However, the proposed model was not supported by the findings. Both power and the need for cognition were not significantly associated with (i) perceptions of openness and (ii) information-sharing. There was also no significant interaction between power and the need for cognition.

Limitations and Future Directions

Although the null hypotheses for most outcome measures were retained, this new theoretical model should not be discarded yet. The non-significant results are likely to be a product of poor manipulations of power and EM. Alternative operationalizations should thus be explored, as with stronger forms of manipulations under contrived settings. The following sections explore why non-significant results were obtained and future directions for researchers who wish to pursue this theoretical model.

The manipulation of power may not have been significant as participants were told that they had been 'randomly assigned' to a role. Thus, the efficacy of the manipulation might have been compromised as participants were made aware of the manipulated variable and guessed the purpose of the study. Additionally, as EM was manipulated at the dyad level, the manipulation check items should have been edited to use "We" pronouns instead of 'I' pronouns. As the items utilized "I" pronouns, differences between dyads may not have been detected – as the items could not fully capture the between-dyad EM differences. Lastly, as participants could share both assigned ideas and ideas they generated on their own, future replications should consider accounting for the type of ideas shared. The type of ideas shared (i.e. pre-assigned vs. self-generated) could be influenced by power and EM.

As the experiment was executed via a remote online survey (precautionary measures due to COVID-19), it lacked experimental realism. Manipulations of power and EM were carried out through text displays on online survey webpages – such text paragraphs that informed

participants of their respective roles or epistemic cues were likely inadequate manipulations. As participants merely read texts displays containing information about the conditions they were assigned to, it is unlikely that they believed the manipulations. Thus, future replications should follow previous manipulations of power (e.g. providing participants with a labelled nametag to be worn throughout the duration of the experiment).

The experiment also lacked mundane realism – the manipulation of power (i.e. role assignment) did not complement the task setting (i.e. discussion about recycling plastics). That is, the formal organizational context of role assignment did not match the task context – managers/subordinates are not usually expected to discuss recycling plastics in their everyday lives. As the stark contrast between experimental conditions and everyday events increased the saliency of the experimental nature, mundane realism was compromised. Hence, when engaging in the idea discussion task, they may not have been fully immersed in their respective roles.

As participants completed the online experiment remotely, the study lacked contrived settings – the environment was not kept constant across participants. Differences in experimental environments may have introduced noise and variance in the results. Furthermore, participants could have completed the survey in environments that were not optimal, such that they were unable to (i) immerse themselves in the experimental conditions and (ii) devote their attentional resources to completing the experiment properly. Considering that uncontrollable variations may have resulted from environmental noise and lack of attentional resources, the reliability of measures were likely to have been compromised.

This was also evident in the chat records of participants' discussions – participants were often still unaware of the task objectives. Although instructions were repeated and made readily accessible to them, participants often still expressed uncertainty regarding task objectives (e.g. clarifying with their counterparts on what to do, unsure of what ideas were provided). This could be because participants were not paying attention to the experiment.

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Future experiments should consider using a stronger manipulation of power and EM, as well as employ a pilot test to check the efficacy of these manipulations before the main study. Most importantly, the experiment should be conducted under contrived settings – such that participants can engage in physical interactions under carefully curated conditions.

To enhance the generalizability of findings to organizational settings, future studies can be replicated in field settings. Participants were also placed in pairs, which may limit the extension of findings to team settings that comprise of more than two individuals. Future studies may employ teams of more than two individuals to assess the dynamics of power and communication in larger groups. Alternative forms of manipulation for epistemic motives may also be considered (e.g. ambient noise). Alternative forms of increasing EM (e.g. time pressure) should be considered, together with other forms of EM (e.g. need for closure). Furthermore, this study utilized perceptual data for openness, which future studies may complement with more objective measures of openness.

Although this study investigated the effects of power on (i) information-sharing and (ii) perceptions of openness separately, future studies may also incorporate perceptions of openness as a moderator of the relation between power and information-sharing. The perceptions of a powerful person's openness may influence one's information-sharing behaviour. For example, Morrison et al. (2015) showed that the effects of power on silence was diminished when participants were told that the recipient would be open to input. When told that the target would be receptive to input, participants who experienced low power were not more likely to exhibit silence than those who experienced high power. On the contrary, without being told about target openness, those with low-power were more likely to keep silent than powerful individuals.

Conclusion

Although null hypotheses in the proposed model were mostly retained, these results may be attributed to experimental flaws – lack of strong manipulations, lack of experimental and

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mundane realism, and the lack of contrived settings. Thus, the theoretical model should not be

discarded yet – it should be further tested using better experimental designs.

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Appendix A: Task Description

RECYCLING PLASTIC BOTTLES

The National Environment Agency of Singapore has been coming up with new initiatives to encourage the public to recycle and reuse products. For example, to inculcate the habit of recycling, smart Reverse Vending Machines have been rolled out across Singapore. For a specified number of empty drink containers or aluminium cans deposited into these vending machines, users will receive discount coupons or non-monetary rewards.

An alternative to these recycling initiatives is to repurpose and reuse empty plastic bottles. Empty plastic bottles encompass a range of products – including empty laundry detergent bottles, shampoo bottles, milk jugs and the typical drink bottles.

You will be given a list of ideas that describe how one can repurpose and reuse a variety of empty plastic bottles. For each idea, you will be given a short description and a picture for visualization purposes. *Although you are given a list of ideas, you are not restricted to these ideas – you are welcome to come up with your own ideas and share them with your partner.*

As a pair, please discuss the ideas that you think are appropriate for repurpose and reusing plastic bottles. At the end of the experiment, you will submit a final list of ideas to the experimenter – the ideas in the list should correspond and match between you and your partner.

Should you decide to share an idea with your partner, you may choose to further elaborate on the idea and provide a more comprehensive description to help your partner understand the idea. You will not be able to paste image files when chatting with your partner. When you are sharing ideas with your counterpart, *you are free to share both the ideas provided and ideas that you have created on your own.*

The best performing dyad (i.e. the pair with the (i) greatest number of (ii) good ideas) will be awarded an additional sum of $5. In other words, you will be evaluated based on both quantity and quality of ideas. Good ideas should be sensible and practical; ideas that are not usable will not be counted towards performance.

Idea No.	Idea Description	Source
1	Slice off the top and bottom half of the bottle to use as a dispenser for plastic bags	https://cdn-fastly.hometalk.com/media/2017/06/15/3892561/s-30-useful-ways-to-reuse-plastic-bottles.jpg?size=720x845&nocrop=1
2	Use to grow plants/flowers in (e.g. flowerpot	https://www.hometalk.com/8770933/reusing-plastic-bottles-in-the-garden
3	Repurpose them into candle holders	https://www.hometalk.com/4750884/repurposed-soda-bottle
4	Punch holes in the bottle cap to use as a watering can	https://www.hometalk.com/28033680/milk-jug-turned-into-a-watering-can

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5	Upcycle it into a piggy bank by cutting a slot/hole in the side of the bottle	https://www.budgetdumpster.com/blog/diy-plastic-bottles-recycling/
6	Reuse as a holder for toiletries or cosmetics	http://www.coolcreativity.com/handcraft/diy-plastic-bottles-holders/
7	Reuse as pencil organizers	https://www.budgetdumpster.com/blog/diy-plastic-bottles-recycling/
8	Repurpose into snack containers	https://sustineri.life/here-are-four-creative-ways-to-recycle-and-recuse-waste-plastic-products/
9	Recycled bird feeder – cut holes through the bottles to put spoons through	http://www.viralnova.com/reusing-recycled-plastic-bottles/
10	Make mosaic art with bottle caps	http://applesloveorangespdx.blogspot.in/2012/07/every-cap-counts-our-bottle-cap-mural.html
11	Recycle as containers to hold condiments or dried goods	http://ekhayahome.com/reusable-plastic-bottles-design/4004/new-reusable-plastic-bottles-design-fireplace-by-reusable-plastic-bottles-gallery/
12	String multiple bottles together to create a vertical hanging garden – each bottle serves as a 'vase' to hold and grow a plant	https://www.boredpanda.com/plastic-bottle-recycling-ideas/?utm_source=google&utm_medium=organic&utm_campaign=organic
16	Recycle lotion bottles into a basket to hold mobile phones while charging	https://in.pinterest.com/pin/571957221399156831/?nic_v1=1ab3wiol98jQF%2FDiAWEbOkqbHRWSO3XvY7j8mjuKJ6kAq80uwgrreIQSDalGDTbcbd
17	Recycle the base of plastic bottles as jewellery holders	https://lifehacker.com/make-a-jewelry-stand-out-of-plastic-soda-bottles-1634795448
18	Cut the bottom of plastic bottles to reuse as snack bowls	http://followgreenliving.com/reusing-plastic-bottles/
19	Cut a bottle into half and attach a zipper to remake it into a purse	http://www.makeit-loveit.com/2015/01/no-sew-zipper-cases-from-old-soda-or-water-bottles.html
20	Repackage a bottle and fill it with candies to be gifted (e.g. as party favors)	https://www.hometalk.com/member/1545195/janiceanderssen

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21	Use to separate egg yolks from whites	https://www.reddit.com/r/lifehacks/comments/6yj66o/use_an_empty_plastic_bottle_to_separate_egg_yolks/
22	Make a pet feeder using two plastic bottles	Source: https://cdn.shopify.com/s/files/1/3007/2766/files/55_-_Plastic_Bottle_Pet_Feeder_-_FOSH_large.png?v=1529495371
23	Cut off the top of plastic bottles and use as a magazine or newspaper holder	https://cdn.shopify.com/s/files/1/3007/2766/files/48_-_Recycle_Plastic_Bottle_Magazine_Holder_-_FOSH_large.png?v=1529495169
24	Fill plastic bottles with water to use as bowling pins (DIY games for kids)	https://cdn.shopify.com/s/files/1/3007/2766/files/26_-_Recycle_Plastic_Bottle_Ten_Pin_Bowling_Set_-_FOSH_large.png?v=1529494646
25	Reuse plastic bottles as a greenhouse for plants – plastic bottles trap heat and water	http://img.postris.com/lists/129025148_966003164_l.jpg
26	Cut plastic bottles up into unique shapes to make into accessories (e.g. keychains)	http://www.diyspins.com/wp-content/uploads/2017/10/Vibrant-Red-Key-Chain-Perfect-Use-Of-Plastic-Bottle.jpg
27	Repurpose plastic bottles (e.g. shampoo bottles) as shovels	http://allthingsplants.com/thread/view/12602/plastic-jugs/
28	Cut large plastic bottles (e.g. detergent bottles, milk cartons) to be reused as dustpans	https://img.wonderhowto.com/img/94/87/63479083925932/0/diy-stormtrooper-helmet-plus-10-more-ways-reuse-old-milk-jugs.w1456.jpg
29	Reuse plastic bottles as wall mounts to store tools (e.g. screws, bolts, nuts)	https://i.pinimg.com/originals/e2/31/5f/e2315fbcf22ba0f52af0266cedcb1647.jpg
30	Cut large plastic bottles (e.g. laundry detergent bottles) to reuse as bookshelf organizers	https://i.pinimg.com/originals/dd/b3/26/ddb326e5480a42f30e60caabd66d01cb.jpg
31	Cut up plastic bottles into smaller shapes and transform them into jewellery (e.g. earrings)	https://i.pinimg.com/originals/ba/47/fd/ba47fd5261d948093aacd751e7dfd6a2.jpg
32	Reuse plastic bottles as art and craft supplies for projects with kids	Source: https://www.icreativeideas.com/diy-beautiful-butterflies-from-plastic-bottles/ https://www.woohome.com/diy-2/40-diy-decorating-ideas-with-recycled-plastic-bottles

33	Recycle shampoo bottles into wall-mounted containers	https://www.butterbin.com/amazing-ideas-on-how-to-recycle-your-plastic-bottles-at-home/
34	Place small lights/lamps in plastic bottles to use as decorative lamps	ttp://www.sisterssavingcents.com/2012/10/31/milk-jug-ghost-halloween-kids-crafts/
35	Repurpose clear plastic bottles as a protective shield for mobile phones mounted on bicycle handles	http://www.complex.com/style/2013/04/25-awesome-hacks-for-recycling/rainproof-bike-mount
36	Cut up clear plastic bottles to use as finger guards	https://brightside.me/inspiration-tips-and-tricks/17-ingenious-ideas-to-reuse-plastic-bottles-367160/
37	Reuse two plastic bottles and a toilet roll to make a loudspeaker	https://brightside.me/inspiration-tips-and-tricks/17-ingenious-ideas-to-reuse-plastic-bottles-367160/
38	Cut a plastic bottle into half, invert the top half and place it within the bottom half to reuse as a double-layer sponge holder – water will leak through the mouth of the inverted top half and collect at the bottom	https://brightside.me/inspiration-tips-and-tricks/17-ingenious-ideas-to-reuse-plastic-bottles-367160/

Appendix B: Assignment to Power Roles

"Before you begin working on the task together, we want to remind you that you have the opportunity to earn an additional $5 in this experiment. We will randomly assign participants to a role of a manager or a subordinate. The best performing dyad will receive an additional sum of $5. At the end of the study session, the manager will evaluate his or her subordinate to determine whether the additional $5 is allocated to only the manager, only the subordinate or the manager and subordinate."

Participants in the high-power condition will receive the following instruction: "You are assigned into the role of a manager. You will be responsible for your dyad's performance by determining which ideas should be included in the final submission. You will also evaluate your subordinate at the end of the session to determine how the additional sum of $5 is allocated.

Participants in the low power condition will receive the following instruction: "You are assigned into the role of a subordinate. Your manager is responsible for your dyad's performance by determining which ideas should be included in the final submission. You will also be evaluated by your manager at the end of the session to determine how the additional sum of $5 is allocated."

Appendix C: Epistemic Motives

Dyads in the high epistemic motive condition will be told:

> "After you and your counterpart have finished the task, the experimenter will invite the both of you to share your answer. The experimenter will conduct a follow-up interview with you and your counterpart to find out more on the decision-making process employed by you and your partner. You will be asked to elaborate on the ways you discussed, how the discussion unfolded, and the decisions made."

Dyads in the low epistemic motive condition will simply be told:

> "After you have finished the task, the experimenter will invite you and your counterpart to share your answer. You will not be required to elaborate on your decision-making process with your partner."

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Appendix D: Questions for 'Managers'

If your dyad (i.e. you and your counterpart) has the best performance, the experimenter will reward you with an additional sum of $5. How would you choose to distribute this amount?

- I would award the $5 entirely to myself.

- I would award the $5 entirely to my counterpart.

- I would distribute the $5 evenly between my counterpart and I - $2.50 each.

1. As the manager, you are to decide which ideas will be submitted by you and your counterpart. Please indicate the list of ideas you and your counterpart wish to submit below.

   -
   -
   -
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   -
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   -
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   -

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Appendix E: Perceptions of Openness

Other-Rated:

"Please recall the discussion with your counterpart and rate the extent of your agreement

on the following. Your counterpart was:

1) Open to new ideas

2) Receptive to suggestions

3) Interested in the information and/or suggestions I provided

4) Rejected new information (reverse-scored)

5) Dismissed suggestions (reverse-scored)"

Self-Rated:

"Please recall the discussion with your counterpart and rate the extent of your agreement

on the following. You were:

1) Open to new ideas

2) Receptive to suggestions

3) Interested in the information and/or suggestions I provided

4) Rejected new information (reverse-scored)

5) Dismissed suggestions (reverse-scored)"

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Appendix F: Information-sharing Behaviour

Self-Rated:

1) I freely shared with my counterpart the information used to make key decisions in the task.

2) I worked hard to keep my counterpart up to date on the main ideas of the task.

3) I kept my counterpart "in the loop" about key issues affecting the ideas generated in the task.

Other-Rated:

1) My counterpart freely shared with me the information used to make key decisions in the task.

2) My counterpart worked hard to keep me up to date on the main ideas of the task.

3) My counterpart kept me "in the loop" about key issues affecting the ideas generated in the task.

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Appendix G: Manipulation Checks

Manipulation check: Power

    1) Who had more control over the way in which you solved the task?

    2) Who was more dominant during your interaction?

Manipulation check: Epistemic Motivation

    1) I tried to make judgments and decisions as thoroughly as possible.

    2) I thought deeply before making a decision.

    3) I have to account for the ways in which decision were made.

Appendix H: Demographic Survey

1. Please indicate your dyad number (assigned to you via e-mail) in the box below.

2. Please indicate your age.

3. Please indicate your gender.

4. Please indicate your faculty (e.g. School of Business, School of Social Sciences) and

    major.

5. Please enter your e-mail.

Appendix I: Hypotheses and Results

Category of Measure	Measure	Hypotheses	Result
Subjective Measure Manipulation Checks	Sense of Power	Participants assigned the role of 'manager' (high-power) should report a higher sense of power than those assigned the role of a 'subordinate' (low-power).	Not supported
	Epistemic Motivation	Dyads assigned high process accountability are expected to report a higher EM than dyads assigned low process accountability.	Not supported
Subjective Measure Information-sharing	Self-Rated Information-sharing	a. High-power participants are likely to rate themselves as higher on information-sharing than low-power participants.	Not supported
		b. Participants in high-EM dyads are likely to rate themselves as higher on information-sharing than those in low-EM dyads.	Not supported
		c. EM is expected to moderate the effects of power on self-rated information-sharing, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Other-Rated Information-sharing	a. High-power participants are likely to rate their (low-power) counterparts as lower on information-sharing, than low-power participants' ratings of their high-power counterpart.	Not supported
		b. Participants in high-EM dyads are likely to rate their partners as higher on information-sharing than those in low-EM dyads.	Not supported
		c. Epistemic motivation is expected to moderate the effects of power on other-rated information-sharing, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
Subjective Measure Perceptions of Openness	Self-Rated Perceptions of Openness	a. High-power participants are likely to rate themselves as higher on openness than low-power participants.	Not supported
		b. Participants in high-EM dyads are likely to rate themselves as higher on openness than those in low-EM dyads.	Not supported

		c. EM is expected to moderate the effects of power on self-rated perceptions of openness, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Other-Rated Perceptions of Openness	a. High-power participants are likely to rate their (low-power) counterparts as lower on openness, than low-power participants' ratings of their high-power counterpart.	Not supported
		b. Participants in high-EM dyads are likely to rate their partners as higher on openness than those in low-EM dyads.	Not supported
		c. EM is expected to moderate the effects of power on other-rated perceptions of openness, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
Objective Measure Information-sharing	Idea Sharing	a. Low-power participants are likely to share fewer ideas than high-power participants.	Not supported (Opposite effect)
		b. Participants in high-EM dyads are likely to share more ideas than those in low-EM dyads	Not supported
		c. EM is expected to moderate the effects of power on idea sharing, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Idea Elaboration	a. High-power participants are more likely to elaborate on their ideas than low-power participants.	Not supported (Opposite effect)
		b. Participants in high-EM dyads are more likely to elaborate on their ideas than those in low-EM dyads.	Supported
		c. EM is expected to moderate the effects of power on idea sharing, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Contribution to Partner's Ideas	a. High-power participants are more likely to contribute to their low-partner's ideas, than are low-power participants likely to contribute to their high-partner's ideas.	Supported

		b. Participants in high-EM dyads are more likely to contribute to their partner's ideas than those in low-EM dyads.	Not supported
		c. EM is expected to moderate the effects of power on contribution to partner's ideas, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Discussion Duration	a. High-EM dyads are likely to have a longer discussion duration than low-EM dyads.	Not supported
Objective Measure Openness	Agreement	a. High-power participants are less likely to agree than low-power participants.	Not supported
		b. Participants in high-EM dyads are more likely to agree those in low-EM dyads.	Not supported
		c. EM is expected to moderate the effects of power on agreement, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
	Probing for Elaboration	a. High-power participants are less likely to probe their low-power partners for further elaboration, than are low-power participants likely to probe their high-power counterparts.	Not supported (Opposite effect)
		b. Participants in high-EM dyads are more likely to probe their counterparts for elaboration those in low-EM dyads.	Supported
		c. EM is expected to moderate the effects of power on probing, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported
Objective Measure Power	Leadership Initiative	a. High-power participants are likely to display leadership initiative more frequently than low-power participants.	Supported
		b. Participants in high-EM dyads are likely to display leadership initiative more frequently than those in low-EM dyads.	Not supported
		c. EM is expected to moderate the effects of power on leadership initiative, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Partially supported

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	Discussion Initiative	a. High-power participants are more likely to initiate discussion than low-power participants.	Not supported
		b. EM is expected to moderate the effects of power on discussion initiative, in that the difference between high- and low-power participants within high-EM dyads is not expected to be significant.	Not supported

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Appendix J: Coding Scheme

Coding Category	Description of Category	Examples	Notes
Discussion_Initiative	Sentence indicates that participant starts the discussion or invites partner to start the discussion	Shall we start discussion? Here's my idea… What are some of your ideas? What do you think of the ideas?	Clarification of task objective is not considered. E.g. what are we supposed to do? Is not considered.
Idea_Sharing	Participant shares his/her own idea	Shares own idea, sharing only the number of the idea is also considered (e.g. idea no. 3)	Only ideas relating to plastic bottles are considered.
Agreement_with_Partner	Participant agrees with something shared by partner (e.g. agrees when partner provides ideas or suggests adopting a particular strategy)	Sounds good! Ok! Sounds cute. Sure.	Agreement with suggestions to direct discussion in a particular way (e.g. if partner suggests to google, to focus on practical ideas) are also considered.
Idea_Elaboration_Self	Participant elaborates on his/her own idea	If participant copies the description of ideas provided, it is considered to be elaboration of idea. Opinions on idea (I think it is practical, I use it too) are also considered. Elaboration on one point is coded as one instance. Elaboration on the same point but across multiple messages are hence still coded as one instance.	
Probing_PartnerToElaborate	Participant invites partner to elaborate more on partner's ideas (asks or solicits for more information)	Do you mean….? How will that work? Which idea number is that?	
ProvideInput_onPartnerIdeas	Participant provides own opinions/input/elaborates on partner's ideas	Based on your idea, we can also…… Elaboration on one point is coded as one instance. Elaboration on the same point	

		but across multiple messages are hence still coded as one instance.	
Probing_PartnerForMoreIdeas	Participant asks partner to provide more ideas	Do you have more ideas? Please provide more ideas.	
Leadership_Initiative	Takes charge of the discussion - takes initiative to compile ideas, suggests a particular strategy	Asks partner for opinion (e.g. what do you think of this idea? What do you think of my idea)? The ideas that we have agreed upon are….. We should focus on practical ideas…	
Discovery_DifferentIdeas	Explicitly discovers different ideas are provided	Explicitly realises that different ideas are provided. Some dyads may have worked on the presumption that different ideas were given - these are not counted. Only explicit discoveries of different ideas are considered.	
Duration of Discussion	Calculated based on duration between the first message and last message (discussion-related)	First message: Hi Last message: We can leave the chat now. Bye!	Sidetrack messages are not considered (e.g. talking about their personal background).
DiscussionDuration_Seconds	Converted to seconds		