



Effects of recalling episodes of influencing attempts on cognition in Japan

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Abstract

This study examined the power-cognition relationships in Japan, considering the differences related to interpersonal influence from Western cultures. Participants were instructed to recall episodes of influencing others (high-power condition) or being influenced by others (low-power condition), think about managing a group as a leader, or recall the summary of a drama or movie as a control condition. In Study 1, participants in the high-power condition reported a higher sense of power than those in the low-power condition. Participants in the control condition of Study 2 rated their sense of power the least among the four experimental conditions. However, there were no differences in innovativeness, positive affection, and the Behavioral Approach System between the high-power and control conditions. Many of the results of Bayesian factors supported the null hypotheses. These results did not support the power-cognition relationships. Considering that the Japanese are globally considered to be less assertive, these results suggest a low susceptibility to the activation of a sense of power and the possibility of a weakness in the frame of power in Japanese interpersonal relationships.

Keywords Powerholders · Power-cognition relationships · Sense of power · Cross-cultural differences · Japan

Introduction

Holding power can lead to an increased ability to influence others, and the perception and experiences of influencing others can change the cognition of the powerholders. Researchers have been drawing attention to power-cognition relationships since around 2000. Related studies have revealed that exerting interpersonal power and activation of holding power influence the cognition and decision-making of powerholders, such as the activation of positive affection, sensitivity to rewards, the Behavioral Approach System (BAS), abstractive construal level, and risky decision-making. Power refers to “the ability to provide or withhold valued resources or administer punishments” (Anderson & Berdahl, 2002, p. 1362) and “asymmetric control over valued resources” (Magee & Smith, 2013, p. 159). These researchers focused on the effects of reward and coercive power, excluding four other bases of power: legitimate, expert, referent, and informational power (French & Raven,

1959; Raven, 1965). Although they did not clearly explain why they excluded the four residual powers (excluding Galinsky et al., 2015), it appears that reward and coercive power are fundamental to interpersonal influence (cf. Imai, 2020). The powerholders’ intention to influence the targets is more explicit in using rewards and punishments than in using the other four powers. Some researchers categorized the five bases of power (excluding informational power) into hard power and soft power (Peyton et al., 2019; Raven et al., 1998). Reward and coercive powers are classified as hard power. The targets of hard power have a low degree of freedom to decide whether to comply with powerholders and tend to comply with them because of the peremptory characteristics of rewards and punishments. These characteristics of the reward and punishment powers can influence the cognition of the powerholders.

There are at least three theories regarding the cognition of powerholders: the approach-inhibition theory of power by Keltner et al. (2003), the Situated Focus Theory of Power by Guinote (2007a, 2017), and the social distance theory of power by Magee and Smith (2013). These theories focus on different aspects of the cognition of powerholders. Keltner et al. (2003) organized the determinants and consequences of power. The determinants were composed of individual,

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dyadic, within-group, and between-group variables. The variables activate the high or low-power of individuals, and the powers follow two types of consequences, approach and inhibition, depending on their strength. The two consequences are based on Gray's (1982, 1987) theory of the neural substrates of approach and inhibition and Higgins' (1997, 1999) theory of promotion and prevention of self-regulatory focus. While Keltner et al. (2003) pointed out the activation of the BAS of powerholders, Gray (1982, 1987) emphasized the Behavioral Inhibition System (BIS) in the neural system. The BIS is an aversive motivational system; it is related to punishment and novelty and leads to the inhibition of movement toward goals, while the BAS involves the appetitive motivation system, which is sensitive to reward and avoids punishment. The neural basis of the BAS has been less specified than that of the BIS (Carver & White, 1994). According to the approach-inhibition theory of power, high-power triggers approach consequences, including attention to rewards, positive emotions, and automatic cognition. Powerholders tend to have a sense of competence and are relatively optimistic. Low-power triggers inhibition consequences, including attention to threats, negative emotions, and systematic and controlled cognition. As for the theory of promotion and prevention, Higgins (1997, 1999) argued that there are two systems for individuals' motivational behavior: a promotion and a prevention focus. While the former is related to positive outcomes and conducting behavior, the latter is related to negative outcomes and avoiding behavior. Higgins (1997, 1999) pointed out that which focus system prevails depends on the situation, and Keltner et al. (2003) argued that holding power induces the promotion focus. According to a review of the approach-inhibition theory of power by Cho and Keltner (2020), the four main propositions of the theory (i.e., positive emotion, attention to rewards, automatic cognition, and disinhibited behavior by holding power) have been confirmed.

Furthermore, based on the approach-inhibition theory of power, some researchers were interested in the voice and silence behavior of employees in organizations (see reviews from Morrison, 2023). Morrison et al. (2015) focused on silence behavior (i.e., not speaking up for improvement or change at work) first and found that employees' psychological experience of powerlessness produces their silence. Opposite results were found regarding voice behavior. Yuan et al. (2022) and Luo et al. (2023) found that employees with a high sense of power tend to take more risks, which leads to conducting voice behavior. These studies showed the positive relationships between a sense of power and conducting voice behavior, which is coincident with the approach-inhibition theory of power.

In contrast, Guinote (2007a, 2017) focused on the sensitivity of powerholders to their situations and goal attainment. Holding power heightens the tendency to perceive

things, make decisions, and behave in situations in which powerholders exist. They can devote their attention to information for performing tasks, use default processes to make judgments, and be sensitive to rewards and punishment. These responses are believed to lead to efficient work and high performance.

Finally, Magee and Smith (2013) focused on powerholders' social distance from the powerless and construal levels. They postulated two principles: (a) asymmetrical dependence produces asymmetric social distance, and (b) power increases construal levels via social distance. Holding power increases the social distance from the powerless, and the powerholders tend to construe things abstractly, pursue their goals, and not care about the needs of the powerless. However, Tost and Johnson (2019) pointed out that holding power does not necessarily induce a long social distance from the powerless. They argued that powerholders are likely to feel a sense of responsibility in teams and organizations in particular, which induces feelings of solidarity in teams.

In sum, based on these three theories, holding power increases construing things abstractly (Smith & Galinsky, 2010; Smith & Trope, 2006; Trope & Liberman, 2010), creativity and innovativeness (Gervais et al., 2012), positive affection (Anderson & Berdahl, 2002; Keltner et al., 2003; van Kleef & Lange, 2020), BAS (Lammers et al., 2008; Smith & Bargh, 2008), attention to important information for performing tasks (Guinote, 2007a, 2007b), risky decision-making (Anderson & Galinsky, 2006), and maintaining social distance from the powerless (Magee & Smith, 2013; Lammers et al., 2012). Although these results were found mainly in Western cultures, are these results also applicable to Japan, East Asia? Japan is situated differently from the Western cultures in terms of influencing others and power, as described below.

In 2015, Galinsky et al. reviewed the studies on power-cognition relationships and proposed the organizing framework for the psychology of power, including cultural factors (Galinsky et al., 2015, Fig. 16.2, p. 424). This framework is composed of four parts: manipulations of power, sense of power, consequences of perceiving power, and moderators. Manipulations of power influence consequences through the sense of power, and moderators influence the causal relationships. Galinsky et al. (2015) categorized the manipulation of power into five methods: structural (e.g., hierarchical role and control over resources), experiential (e.g., episodic recall and imagined hierarchical role), conceptual (e.g., semantic priming and visual priming), physical (e.g., posture and hand gestures), and individual differences (e.g., personal sense of power and trait dominance). A heightened or lowered sense of power of participants followed these manipulations. A heightened sense of power induces seven consequences: cognition (e.g., abstraction and executive functioning), self-perception (e.g., enhanced views of self

and confidence), social perception (e.g., perspective-taking and stereotyping), resistance to influence (e.g., conformity and creativity), performance and behavior (e.g., status attainment and risk-taking), motivation and evaluation (e.g., goal pursuit and emotion), and physiological effects (e.g., hormones and heart rate). Moderators such as individual differences, culture, legitimacy, and status influence both causal processes between the manipulation and sense of power and between sense of power and consequences.

The current study was conducted based on this framework with two purposes. The first was to reveal the effects of episodic recall of influencing others on cognition, such as innovativeness (or creativity), affection, BIS/BAS, risk-taking, and psychological distance (or helping) through a sense of power; these relationships have not been studied thoroughly in Japan. The second was to explore the possibility of the effect of culture as a moderator on relationships.

Interpersonal influence and power in Japan

It would be possible to argue that these relationships are dependent on the specific culture to which individuals belong. One cultural difference related to power involves assertiveness, as stated by House et al. (2004), who conducted the Global Leadership and Organizational Behavior Effectiveness Research Program (GLOBE). Den Hartog et al. (2004), a member of the GLOBE, found low assertiveness of individuals in Japan—3.59 (range: 3.38–4.89)—ranking 59th in terms of the trait in 62 societies. Assertiveness, according to the GLOBE, refers to the extent to which individuals are assertive, tough, dominant, and aggressive in interpersonal relationships. Japanese people tend not to influence each other in any way. This leads to the possibility that Japanese people will not be able to recall episodes of influencing others or being influenced by others compared to more assertive nations, such as Austria and America. Similarly, Zhong et al. (2006) pointed out that East Asian culture has a communal goal of power. They argue that the enactment and expression of power and goal attainment prompted by power are linked to culture. There are some differences between the goals of Western and East Asian cultures. In the former, goals are individualistic (i.e., individual goals are more important than in-group goals; Triandis & Gelfand, 1998), and power leads to assertive behavior to fulfill the goals. Power is conceptualized as the ability to influence others in this case. In the latter, goals are collectivistic and related to maintaining relationships between individuals, and power leads to restraint behavior. Power is conceptualized as self-discipline and responsibility toward the less powerful. In other words, the default of East Asian culture is inaction in interpersonal influence unless the situation requires otherwise.

Torelli and Shavitt (2010) and Torelli et al. (2020) also mentioned that culture affects the conceptualization of power, shaping who achieves power and the effects of power. They advocated two kinds of power: self-centered and benevolent. Torelli and Shavitt (2010) categorized cultures using the concepts of horizontal/vertical dimensions nested within individualism/collectivism. The former emphasizes egalitarianism versus hierarchy and is more related to power than the latter, which refers to the relative emphasis on individual goals. They argued for the effectiveness of the four cultural patterns in a combination of the two dimensions. A horizontal individualistic culture is related to power that is used for powerholders' personal or self-centered goals, and individuals tend to maintain and promote their powerful status. In contrast, a horizontal collectivistic culture is related to power that is used for benefiting and helping others, and individuals in this culture tend to approve of the powerholders who behave for others, not for themselves. According to Takano and Osaka (1997) and Oyserman et al. (2002), Japan is located in the middle of a vertical/horizontal continuum and is relatively collectivistic.

Considering these findings, the Japanese appear to be less sensitive to influence or being influenced by others. The Japanese people also tend to avoid understanding interpersonal relationships in the frame of power or interpersonal influence. Japanese culture is a middle power (not vertical or horizontal), and they are less assertive, which means that Japanese people do not immediately attempt to influence others for their own goals and that their sense of power is not to be activated easily. This leads to the possibility that predictions based on theories of power-cognition relationships do not necessarily apply to Japan. To support this, Imai (1994) replicated the experiments of Kipnis (1972) but did not confirm the metamorphic effects of power on Japanese undergraduate students. Japanese people do not try to perceive interpersonal relationships in the frame of power but attempt to maintain or connect relationships (cf. Markus & Kitayama, 1991). There is one study that found results consistent with the approach-inhibition theory of power in Japan. Sasaki (2018) focused on risk-taking manipulated by an episodic power task and found that participants in the high-power condition selected more risky alternatives than those in the low-power condition ($p < 0.05$ in a chi-square test).

Although power has several meanings in it, Mondillon et al. (2005) revealed no differences in influencing others between four nationalities, including Western cultures and Japan, and found proximity between the United States and Japan that represents the independent and interdependent views of the self, respectively (Markus & Kitayama, 1991). Mondillon et al. (2005) found that people from both nations appear to believe that powerholders can elicit negative emotions in others less than those in Germany and

France. Furthermore, individuals in the United States tend to understand power as the ability to control outcomes for the self. In contrast, Germans tend to believe that power is defined as the liberty to violate social norms and to control the outcomes of others. There were no differences between the four national people in influencing others and controlling themselves. These results showed that different aspects of power are emphasized depending on the culture. Power as a concept includes several aspects: controlling one's and others' outcomes, liberty of action, freedom of violating social norms and expressing one's emotions in others. In the current study, the focus was on controlling others' outcomes as a main aspect of power by recalling an incident of influencing others.

Finally, culture could act as a moderator and show an inhibited influence on cognition in the case of Japan; however, it is hard to predict to what extent the inhibited effects of Japanese culture influence the power-cognition relationships. Since the current study was not designed as an international comparative study, it could not conduct analyses to detect the effects of culture as a moderator. Thus, no hypotheses related to cultural factors were specified.

Manipulations of power

To detect the cognition of powerholders, researchers manipulated the activation of participants' perception of power, called power-priming, by (a) recalling and describing episodes of influencing and evaluating others, (b) distributing some money among group members in experimental tasks, and (c) solving anagrams using power-related words (e.g., Galinsky et al., 2015). First, Galinsky et al. (2003) developed a method to recall episodes of influencing attempts, called an episodic power task, which was part of power-priming. They instructed participants to recall an incident in which they had power over other individuals in a high-power condition and in which someone had power over them in a low-power condition. This method does not necessarily reflect the manipulation of rewards and punishments to others but focuses on influencing others and making others change their behavior to some extent. Second, Anderson and Berdahl (2002) used the resource distribution method. Participants in the high-power condition were selected as leaders and were given the right to distribute money to group members. Participants did not attempt to exert any verbal influence on other individuals but distributed some money between them, and the responses of other individuals were ignored. However, they were in the position of leaders, which can also influence the cognition of the participants. Bargh et al. (1995) and Anderson and Galinsky (2006) used semantic priming. Participants in the high-power condition were instructed to take a word-fragment completion quiz called anagrams so that the answers became power-related words, such as influence,

authority, and control. This method had the least interaction between the powerholders and the powerless among the three methods. In the current study, the method of recalling episodes to manipulate power was used, and participants were required to recall interactions between the powerholders and the powerless. Studies using this method identified the activation of a sense of power (Galinsky et al., 2003: Experiment 2), abstractive categorization (Smith & Trope, 2006: Experiment 1), creativity (Gervais et al., 2012), the BAS (Lammers et al., 2008: Experiment 1; Smith & Bargh, 2008: Experiment 1), risky decision-making (Anderson & Galinsky, 2006: Study 2), helping (Lammers et al., 2012: Experiment 4), and taking action (Galinsky et al., 2003: Experiment 2).

In the current study, two revised conditions in an episodic power task were added: thinking about influencing group members as leaders in Study 1 and recalling episodes of influencing others with rewards or punishments in Study 2. The former involved prospective thinking rather than the retrospective thinking that was used by Galinsky et al. (2003). The latter type of influence was true of the definition of power, which is the ability to control resources for the powerless.

Sense of power and perceived control

In the framework of Galinsky et al. (2015), a sense of power is positioned as a mediator. It is argued that individuals who are manipulated by their power will enhance their sense of power temporarily. A heightened sense of power causes changes in individuals' cognition. Thus, a sense of power is a prerequisite for power-cognition relationships. There is a high possibility that the changes are caused by a neurophysiological basis. For example, individuals who lowered their power by an episodic recall task showed less left-frontal cortical activity associated with BAS (Galang & Obhi, 2019), and those who enhanced their power showed high visual working memory capacity (Hadar et al., 2020). Sense of power refers to "the perception of one's ability to influence another person or other people" (Anderson et al., 2012, p. 316). Anderson et al. (2012) developed the Sense of Power Scale composed of eight items and confirmed its validity by finding that the scores of sense of power are related to sociostructural factors (e.g., status) and personality, such as dominance. Perceived control is a similar construct to a sense of power, but its targets of influencing or controlling are broader than those for a sense of power. Therefore, it is studied related to well-being and a healthy mind and body (Chipperfield et al., 2017). Perceived control refers to "individuals' beliefs about their capability to exert influence over and shape one's life circumstances" (Infurna and Gerstorf, 2013, p. 1147) and "the belief that one can determine one's internal states and behavior, influence one's environment,

and/or bring about desired outcomes” (Wallston et al., 1987, p. 5). Davis (2004) developed the Perceived Control Across Domains Scale. Its domains include personal, interpersonal, and sociopolitical control. Items of the first two domains were related to influencing others. Following the framework of Galinsky et al. (2015), the scores of these two scales were used as manipulation checks of power.

Dependent variables and hypothesis

The present study consisted of two experiments. In Study 1, I comprehensively measured the dependent variables related to power-cognition relationships. It was difficult to presume what percentage of participants would answer free descriptions properly for an episodic power task; therefore, Study 1 was conducted as a preliminary study. In Study 2, I changed the methods of collecting data using an outsourcing site so that participants would follow the instructions, and used a rigorous experimental design with the numbers of participants calculated by G*Power 3.1 (Faul et al., 2007) and preregistered it. Furthermore, an experimental condition of power-priming with actualized rewards and punishments according to the definition of power was included.

Galinsky et al. (2015) listed seven categories of consequences or dependent variables in the power-cognition relationships. Four of them (i.e., abstraction or abstractive perception, creativity or innovativeness, risk-taking, and emotions), BIS/BAS, and psychological distance were used for the current study. Innovativeness refers to a tendency to not follow conventional or unchanged methods and is correlated with creativity and originality. This variable corresponds to disinhibition-driven behavior (Keltner et al., 2003). The BIS/BAS were added because they refer to one of the main changes in the cognition of the powerholders in the approach-inhibition theory of power. Psychological distance, or helping others, was also added as one of the main variables in the social distance theory of power. Helping others means reducing the psychological distance from others.

According to the approach-inhibition theory of power and the framework of Galinsky et al. (2015), the study hypothesized that participants in the high-power condition (including the leadership condition in Study 1 and the reward-punishment condition in Study 2) would show more abstract construal, innovativeness, risky decision, positive affection, a higher score in the BAS, and increased instances of helping others than would those in the low-power condition; and the cognition of participants in the control condition would fall between the two conditions. If this hypothesis is verified, the notion of the related theories will be supported. If it is not verified, the possibility of the effects of conducting experiments in Japan on the results will be inferred, considering the validity of manipulating independent variables.

Study 1

The purpose of Study 1 was to reveal the possibility of manipulation of writing incidents of influencing others and being influenced by others and the effects of power-priming on cognition. In Study 1, the aspect of influencing attempts was manipulated through four conditions: (a) recalling episodes of influencing others (the high-power condition), (b) episodes of being influenced by others (the low-power condition), (c) thinking about group management as a leader (the leadership condition), and (d) recalling the summary of a TV drama or movie (the control condition). The leadership condition required participants to engage in prospective thinking instead of retrospective thinking, as in the high-power condition. Participants needed to consider managing a group in the future based on their past experiences. Leadership behavior does not consist of only influencing others but includes thinking about managing a group, such as clarifying group goals and maintaining interpersonal relationships. In this sense, leadership is a broader concept than power or influencing others. As for the control condition, Galinsky et al. (2003) made participants recall incidents of the previous day. There is a possibility that influencing attempts are included in the recall. Thus, participants of the current study wrote a synopsis of TV dramas or movies.

Method

Participants

A total of 1,800 respondents were allocated to the four experimental conditions. Data were collected through Freeasy (<https://freeasy24.research-plus.net/>), a web research company in Japan, in which about 13 million Japanese are registered. A staff member of Freeasy informed me that about 20% of the individuals would answer properly as the questionnaires of this kind of study included free descriptions. The data of 578 respondents (32.11%, male = 231, female = 347, age range = 20–60 years (determined a priori), mean age = 41.80 years ($SD = 12.06$)) who compiled episodes with 70 or more Japanese characters were used for the following analyses. According to this procedure, data from 1,222 participants were excluded (319 high-power, 296 low-power, 255 leadership, and 362 control conditions). This exclusion might have been caused by the fact that participants were offered set points as rewards by Freeasy after answering the questionnaire, even if they did not compile any episodes. The large number of participants excluded in the control condition meant that many did not follow the instructions. The mean number

of characters compiled by the participants was 171.24 ($SD = 67.54$). The mean typing speed with a keyboard for a minute in Japanese was about 40 characters (<https://hizapon.com/typing-speed/>), and that with a smartphone was about 75% the time of using a keyboard (https://gtdwmse.com/sumapho_typing/), assuming that participants used four minutes or more on average to write their episodes. Galinsky et al. (2003) invented the power-priming method and presented 19 lines for writing episodes of influence attempts in Experiment 2. They did not inform how much time participants took to write episodes or how many lines, on average, they wrote for the episodes. Thus, it was difficult to decide to what extent power-priming should be assigned to participants in this study; it was consequently decided that about four or five minutes for writing episodes could become a criterion.

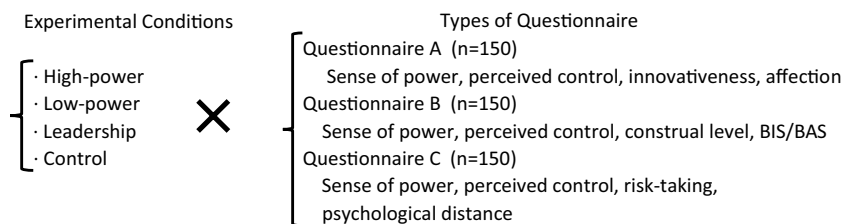
The participants lived in places ranging from Hokkaido to Okinawa, and the percentage of residents in large metropolitan areas, including Tokyo, Kanagawa, Saitama, Chiba, Osaka, Hyogo, Aichi, and Fukuoka, was 63.1%. According to the Statistics Bureau, Ministry of Internal Affairs and Communications (2022), 49.6% of the population of Japan lives in large metropolitan areas. The percentage of participants in large metropolitan areas in the present study was slightly higher than 49.6%. The percentages of participants' occupations

were as follows: businessperson, 42.2%; stay-at-home spouse, 21.6%; part-time job, 15.4%; and students, 5.5%.

Procedures

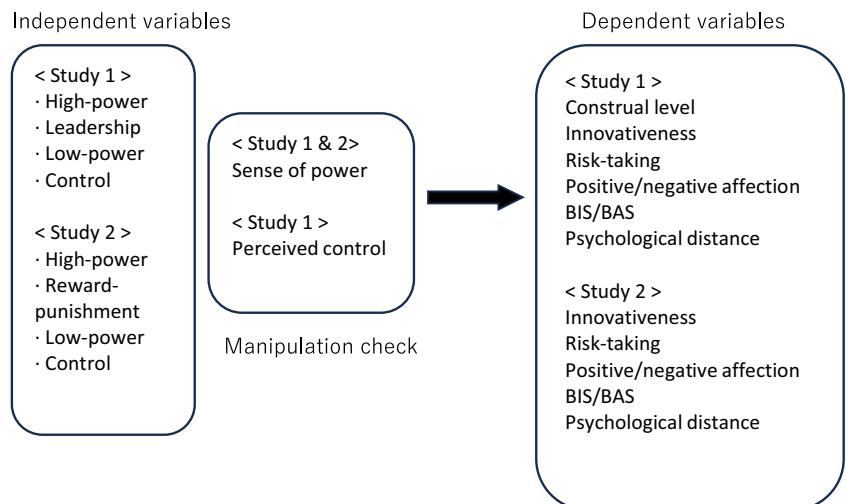
Individuals registered on Freeasy who randomly chose to participate in this experiment answered one of the questionnaires. Participants were informed that the survey was related to interpersonal relationships and that: (a) The survey was academic, (b) the data would be analyzed to reveal overall trends, (c) the results would be made public through conference presentations and academic papers, and (d) they could stop answering a questionnaire at any point without any disadvantages. Those who accepted these points completed the questionnaires. The data of the four conditions were collected in sequential order on different days in a row, selecting three days per condition as the participants were not randomly allocated to the site. As answering eight dependent variables could be a burden for participants, three subgroups of participants were established for each experimental condition, and the subgroups addressed four dependent variables with a sense of power and perceived control in common. There were 12 questionnaires with 150 participants each in the combination of the experimental conditions and sub-groups of participants (Fig. 1 and Fig. 2).

Fig. 1 Experimental conditions and measured dependent variables in three types of questionnaires in Study 1



Note. There were three types of questionnaires for every experimental condition.

Fig. 2 Research design of Study 1 and 2



Independent variables

First, the participants were instructed to describe an episode as a function of the four conditions using most of the type-in columns that contained up to 300 characters. Participants in the high-power condition were given a Japanese version of instructions originally developed by Galinsky et al., (2003, Experiment 2), with two examples:

Please recall an episode in which you have influenced others (your co-workers or part-time workers in a workplace, your friends in a class or a seminar, etc.) to get what you wanted and concretely explain what happened, how you felt, etc.

“Episodes or experiences of influencing others” refer to “a situation in which you influenced another person(s) to get what you want or were in a position to evaluate those persons” according to the following examples:

Example 1: I became the leader of a group project at my company (or a seminar at my university) for presenting team products and arranging for the success of the presentation. I provided directions to members of the group of five and kept the group together to think about it For example

Example 2: I went shopping (or traveling) with three friends, and I decided on our destination and the places to eat, and so on, as the occasions arose. For example, we went to

In contrast, participants in the low-power condition were instructed as follows:

Please recall an episode in which someone (your co-workers or part-time workers in a workplace, your friends in a class or a seminar, etc.) asked you a favor or gave you instruction to get what they wanted or was in a position to evaluate you since you were high school students and explain what happened, how you felt, etc.

Two examples of episodes regarding getting instruction from a team leader and being managed in a situation of shopping by a friend followed. Participants in the leadership condition were given the following instructions (cf. Galinsky et al., 2003, Experiment 1):

You are elected as the leader of a six-person group and should manage the group to present the production of your group. Please describe your behavior, what you should be careful of, what you should consider regarding the members, and so on in your management of the group based on your experiences and what you have heard from your friends.

Participants in the control condition were instructed to recall the most impressive TV drama or movie that they had watched in the last month, write their title and synopsis, and explain why they chose the drama or movie.

Manipulation check and dependent variables

Participants responded with six-point Likert-type scales ranging from 1 (strongly disagree) to 6 (strongly agree) for the following variables unless otherwise noted after their description of episodes:

Sense of power Participants rated eight items of the Sense of Power Scale (Anderson et al., 2012), such as: “I can get him/her/them to listen to what I say” and “My wishes do not carry much weight.” Four items were added to create supplementary situations that were not included in the original scale, as follows: “I am not confident in changing other persons’ opinions even when we disagree,” “I seem to be able to change opinions and behaviors of persons around me as I want,” “I can turn to somebody for help even if it is unreasonable,” and “My acquaintances would not comply with me even if I ask them for something” ($\alpha = 0.89$). Participants answered the items related to significant others and the individuals around them. The alpha value of the original eight items was 0.84. After reverse-coding the related items, the participants’ responses were averaged to create a sense of power scale. The same process was applied to the following scales, excluding construal level and risk-taking. Higher average scores indicated a greater sense of power, perceived control, innovativeness, positive/negative affection, and psychological distance from the targets.

Perceived control Participants answered 12 items on the Scale of Perceived Control (Davis, 2004). The scale consists of four factors and some items of the two factors were selected as follows: Seven items (#1, 4, 7, 13, 19, 22, and 28) of the Personal Control factor, such as “I can usually achieve what I want if I work hard for it,” “Once I make plans, I am almost certain to make them work;” and five items (#2, 11, 14, 23, and 29) of the Interpersonal Control factor, such as “In my personal relationships, the other person usually has more control than I do,” and “I can usually develop a personal relationship with someone I find appealing.” According to the results of the alpha values for the 12 items, two items that decreased the values were excluded (#7, “I prefer games involving some luck over games requiring pure skill,” & #19, “Bad luck has sometimes prevented me from achieving things”) and ten items were used for the following analyses ($\alpha = 0.85$).

Construal level Participants rated 10 items of the Behavior Identification Form (Inoue & Akutsu, 2014; Vallacher & Wegner, 1989) using a two-choice method such as “Reading: a. Following lines of print, b. Gaining knowledge,” and “Washing clothes: a. Removing odors from clothes, b. Putting clothes into the machine.” The sum of abstractly construed items (“b” and “a,” respectively, in the above

examples) that participants selected was calculated and analyzed.

Innovativeness Participants answered 12 items based on the Individual Innovativeness Scale developed by Hurt et al. (1977), such as “I am generally cautious about accepting new ideas;” “I enjoy trying out new ideas;” and “I frequently improvise methods for solving a problem when an answer is not apparent” ($\alpha=0.74$). Two items were added to probe supplementary situations that were not included in the original scale: “In any case, it is easy to keep doing things we used to, considering the time and effort required to change them;” and “It will not work if you do not change anything little by little.”

Risk-Taking This variable was measured using the “opinion questionnaire” developed by Wallach and Kogan (1959, 1961). Three out of the 12 situations were used: changing jobs, surgery, and marriage. Participants were presented with two alternatives for a situation: a high-risk but high-reward alternative (e.g., changing jobs with high income but uncertainty of the future of the new company) and a low-risk and low-reward alternative (e.g., keeping working at the present company). Participants answered the minimum percentages of success for conducting the three events (e.g., changing jobs for high-risk and high-income), and the percentages were analyzed.

Positive/Negative affection Participants rated the Japanese version of the Positive and Negative Affect Schedule (PANAS, Sato & Yasuda, 2001; Watson et al., 1988). Six items for positive affect (e.g., active, inspired, and enthusiastic, $\alpha=0.94$) and negative affect (e.g., afraid, scared, and upset, $\alpha=0.95$) were used.

BIS/BAS Takahashi et al. (2007) developed a Japanese version of the BIS/BAS. Carver and White (1994) found that the BIS/BAS scale is composed of four factors, and Takahashi et al. (2007) found the same factor composition in Japan. Participants responded to six items of the BIS factor, such as “Even if something bad is about to happen to me, I rarely experience fear or nervousness” (reversal item) and “I feel pretty worried or upset when I think or know somebody is angry with me” ($\alpha=0.88$); four items of the BAS Drive factor, such as, “When I want something, I usually go all-out to get it,” and “I go out of my way to get some things I want”; and two items of the BAS Reward Responsiveness factor, such as “When I see an opportunity for something I like, I get excited right way,” and “It would excite me to win a contest,” with high factor loadings ($\alpha=0.84$).

Psychological distance To measure psychological distance through intentions to help others, participants were

instructed to answer the extent to which they would help unacquaintance who had trouble in eight situations (cf. Lambers et al., 2012, Experiment 4). The situations included “Yielding to a person in a hurry while you are standing in line at a convenience store,” “Giving up your seat when an older person stands in front of you on a train or bus,” and “Telling a person that he/she has dropped something while you are walking behind the person in the city” ($\alpha=0.83$).

Participants answered demographic questions after responding to these scales.

Results

Manipulation checks

Episode-Rating To check the effectiveness of the experimental manipulation, three raters evaluated episodes of 70 words or more ($n=578$). They were instructed to assess the extent to which the participants wrote episodes following the instructions of their experimental condition using a four-point Likert-type scale (0: not at all followed the instructions; 3: followed the instructions very well). The raters were informed of the instructions and examples for each experimental condition. For example, they rated how well participants wrote episodes of influencing others in the high-power condition and episodes of being influenced by others in the low-power condition. The Intraclass Correlation Coefficient (ICC) between the raters was substantial: ICC (2, 3)=0.762 (0.633 (lower limit)–0.836 (upper limit)). The sum of the coders’ rating points was calculated, and 307 participants (53.1% of 578 participants and 17.1% of 1,800 participants) who wrote an episode with five points or more (upper half of the range: 0–9) were extracted for the following analyses. Participants who failed to provide any response or wrote brief or incoherent responses (e.g., “aaaaaa,” and copying and pasting a part of the instructions) were excluded. According to this procedure, data from 271 participants were excluded (57 high-power, 94 low-power, 82 leadership, and 38 control). Furthermore, an item was set to detect the participants’ sincerity in answering the questionnaires. According to the answers to the item, 36 participants who did not check the specified alternative of the item were also excluded (12 in the high-power, 7 in the low-power, 15 in the leadership, and 2 in the control conditions). Table 1 shows the number of participants in each experimental condition, and the alphas of the scales above were calculated using the data of 271 participants.

Sense of Power and Perceived Control As manipulation checks, sense of power and perceived control were assessed through a one-way multivariate analysis of variance

Table 1 Means and SD for sense of power and perceived control as a function of experimental conditions in Study 1

| | | Experimental conditions | | | |
|-------------------|----|-------------------------|-----------|------------|---------|
| | | High-power | Low-power | Leadership | Control |
| | n | 62 | 53 | 98 | 58 |
| Sense of Power | M | 3.63 | 3.25 | 3.58 | 3.28 |
| | SD | 0.70 | 0.76 | 0.68 | 0.68 |
| Perceived Control | M | 3.58 | 3.29 | 3.47 | 3.18 |
| | SD | 0.72 | 0.78 | 0.65 | 0.67 |

(MANOVA) using SPSS 28.0, which showed a main effect of the experimental conditions ($Wilks' \lambda = 0.932$, $p = 0.005$, $\eta^2 = 0.035$). The one-way ANOVA showed the main effects of sense of power ($F [3, 267] = 5.74$, $p < 0.001$, $\eta^2 = 0.061$) and perceived control ($F [3, 267] = 4.00$, $p = 0.008$, $\eta^2 = 0.043$). As for sense of power, Tukey's multiple comparison tests ($p < 0.05$) revealed that participants in the high-power condition ($M = 3.63$, $SE = 0.09$, 95% confidence interval [CI] = [3.45, 3.81]) showed a greater sense of power than those in the low-power condition ($M = 3.25$, $SE = 0.10$, 95% CI = [3.05, 3.44]) and in the control condition ($M = 3.23$, $SE = 0.09$, 95% CI = [3.04, 3.41]). The leadership condition ($M = 3.58$, $SE = 0.07$, 95% CI = [3.44, 3.72]) fell between these. The significant result between the high-power and low-power conditions indicates the successful manipulation of power. As for perceived control, participants in the high-power condition ($M = 3.58$, $SE = 0.09$, 95% CI = [3.41, 3.76]) showed more perceived control than those in the control condition ($M = 3.18$, $SE = 0.09$, 95% CI = [3.00, 3.37]).

Multivariate analysis of variance (MANOVA)

Three one-way MANOVAs of risk-taking ($Wilks' \lambda = 0.891$, $p = 0.327$, $\eta^2 = 0.038$), positive and negative affection ($Wilks' \lambda = 0.947$, $p = 0.561$, $\eta^2 = 0.027$), and BIS/BAS ($Wilks' \lambda = 0.925$, $p = 0.408$, $\eta^2 = 0.038$), as well as three one-way ANOVAs of construal levels ($F [3, 79] = 1.18$, $p = 0.323$, $\eta^2 = 0.04$), innovativeness ($F [3, 90] = 0.41$, $p = 0.748$, $\eta^2 = 0.01$), and psychological distance ($F [3, 90] = 0.85$, $p = 0.469$, $\eta^2 = 0.03$) revealed no significant main effects.

Discussion

The purpose of Study 1 was to reveal the effects of recalling episodes of influencing others, being influenced by others, and thinking about managing a group as a leader on eight dependent variables (counting the number of variables of positive/negative affection and BIS/BAS as two, respectively) in Japan. Although the manipulation of power

was almost successful, there were no significant differences in the other eight variables between the high-power and low-power conditions. As for affection, studies that used the same power-priming manipulation (Smith & Trope, 2006, Experiment 1; Smith and Bargh, 2008, Experiment 3) revealed no significant results. This manipulation did not appear to influence participants' affection. In Study 2, words related to influencing attempts used by Langer and Keltner (2008) were employed instead of PANAS. As for construal levels and innovativeness, risk-taking, BAS, and psychological distance, power-priming did not result in predicted cognition. The present study did not replicate the results of previous studies. However, there is a possibility that the effects of power-priming manipulation are small. The number of participants might have been too small to validate the hypotheses because of the low ratio of writing episodes. In Study 2, these points were improved.

Although the participants in the leadership condition perceived a sense of power to a similar extent as those in the high-power condition, there were no differences between the leadership and low-power conditions. Participants in the leadership condition also did not show predicted responses in the theories about the residual variables in the same way as in the high-power condition. No specific responses were detected for the leadership conditions. Thus, in Study 2, the reward-punishment condition was set instead of this condition.

One of the reasons most of the power-cognition relationships were not revealed might be the low ratio of participants following the experimental instructions. Although the participants were asked to write their episodes of influencing attempts or leadership behavior, they could leave the description undone to easily earn their reward points. As the description of episodes of influencing attempts is a necessary condition for this study, a comprehensive crowdsourcing site was used, and the participants were asked to compile 100 characters and more for their episodes in Study 2. By doing so, the necessary number of participants calculated by G*Power 3.1 were recruited (Faul et al., 2007).

Study 2

Purpose

Study 2 aimed to reveal the differences in innovativeness, risk-taking, positive/negative affection, BIS/BAS, and psychological distance among the four experimental conditions. While Study 1 used an anomalistic experimental design for dwindling question items to reduce participants' burden, the participants in Study 2 answered the same five dependent variables regardless of experimental conditions. A questionnaire that took about 20 min to complete was given to persons registered with CrowdWorks (<https://crowdworks.jp/>).

It is a comprehensive outsourcing site with over 4.8 million registered persons in Japan. Those who answered the questionnaire were instructed beforehand that their task would not be confirmed, and they would not receive rewards of 350 yen (about 2.5 dollars) unless they described their episodes of influencing attempts or synopsis of TV dramas/movies with 100 characters or more, following the given instructions. As they could easily recall their episodes, concrete examples different from those of Study 1 were presented. Furthermore, a reward-punishment condition was set instead of the leadership condition, whose effects were not found in Study 1. It was predicted that participants in the reward-punishment condition would show more power-cognition relationships than those in the high-power condition because the former would recognize their power by recalling episodes using rewards and punishments that are core factors of the concept of power.

Method

Participants

A total of 599 participants were randomly allocated to four experimental conditions (male = 239, female = 350, others = 3, unknown = 7; age range = 18–75 years (data-dependent), $Mean = 40.01$, $SD = 10.15$) using the Block Randomizer function of QuestionPro (<https://www.questionpro.com/ja/>). Participants were informed of information related to informed consent in the same way as in Study 1, and those who accepted the conditions proceeded to the questionnaire. G*Power3.1 showed that 344 participants were required for MANOVA (global effects), with effect size = 0.02 (small), $\alpha = 0.05$, power = 0.80, number of conditions = 4, and number of measures = 6 (excluding risk-taking). Based on the results of Study 1, it was estimated that the ratio of participants who wrote instructed episodes well was around 60%. The data of 33 participants (seven in the high-power condition, eight in the low-power condition, three in the leadership condition, and 15 in the control condition) who were over 65 years of age were excluded based on retirement age. Six participants who did not put checks in the specified alternatives of two items were also excluded (one of the high-power and control conditions each and two of the low-power and reward-punishment conditions each) in the same way as in Study 1. The percentage of residents in large metropolitan areas was 53.6%. The percentages of their occupations were as follows: businessperson, 32.5%; self-employed, 7.0%; freelance, 9.8%; stay-at-home spouse, 9.8%; part-time job, 14.7%; and students, 3.8%. The percentages were almost the same as those in Study 1.

Manipulation of independent variables

Experimental manipulations were the same as in Study 1, except for changing the leadership condition with the reward-punishment condition and changing the examples of the influencing attempts of each experimental condition, excluding the control condition. Participants in the reward-punishment condition were instructed to describe an episode of influencing others with rewards or punishments so that they could get what they wanted or evaluate others. They were also instructed that “episodes or experiences of influencing others with rewards or punishments” refer to “a situation in which you influenced another person(s) around you to get what you want or to get your own way using rewards (e. g., giving praise, money, information, and effort) and punishments (e. g., suggesting restrictions and inhibitions, scolding and pointing out the anticipation of accidents), or were in a position to evaluate those persons,” as in the examples below.

Participants were presented with two more concrete examples, unlike in Study 1, so that participants could easily recall their episodes as follows:

The high-power condition:

Example 1: When we had a lot of work because of staff shortages, I took the courage to suggest the automation of routine tasks, such as entry and posting of data. My boss decided to accept my suggestion, and my work efficiency improved greatly. Other staff members supported the automation of routine tasks and suggested new ideas, actively taking this opportunity. I suppose that I could have a positive impact on my group.

The low-power condition:

Example 1: My senior resigned suddenly and asked me to take over her position as leader. She advised and taught me how to do tasks that I did not know very well in a polite way. I was able to deal with problems thanks to her. Her behavior as a leader had a great influence on me.

The reward-punishment condition:

Example 1: I did a part-time job helping in the kitchen of a restaurant when I was an undergraduate student. Some experienced staff members resigned, and a delay in serving food occurred. New part-time workers who were high school students considered this someone else’s problem. I engaged with them on various topics, and the distance between us got closer when we talked about school and love. High school students responded to calls and helped with late work. They felt relaxed because of our open communication and our work progressed.

To increase participants' activation of power, they also wrote the reason their target was influenced by them/ influenced them. Participants in the control condition wrote the reason why they chose drama or movies.

Dependent variables

After writing episodes and their reasons for influencing attempts, participants answered data on the sense of power ($\alpha=0.81$, eight items), innovativeness ($\alpha=0.78$, seven items excluding #2), positive ($\alpha=0.87$), and negative affection ($\alpha=0.83$, five items each), BIS ($\alpha=0.87$)/BAS ($\alpha=0.85$, seven items each), psychological distance ($\alpha=0.85$, eight items), and risk-taking (three items). The alphas of each scale were calculated using the data of the 364 participants as described below. Participants rated their present affection according to the items of positive/negative affection used by Langer and Keltner (2008), who found a relationship between social power and emotional experiences. The items of positive affection were “happy, pride, love, amusement, and arousal,” and those of negative affection were “discomfort, sad, anxiety, embarrassment, and tension.” For measuring sense of power and BIS/BAS, “now” or “at present” were added to the items so as not to change the meaning instead of their traits. Innovativeness, psychological distance, and risk-taking were measured in the same manner as in Study 1. Participants answered demographic questions after responding to these scales and took 1,306.73 (21 min 46.73 s) on average ($SD=894.16$) to answer the questionnaires.

Results

Manipulation check

Three raters assessed the extent to which participants followed their instructions for the experimental conditions in the same way as in Study 1. The ICC between raters was moderate: ICC (2, 3)=0.550 (0.462–0.622). Sixty-eight participants with the sum of rated scores of six or less were excluded (22 high-power, 27 low-power, 15 reward-punishment, and 4 control). The remaining participants were 492, and 82.1% of 599. As the values of the rated scores were not sufficiently high, participants for analyses were selected in descending order of the sum of the rated scores after randomizing the order of participants' data as a function of the experimental conditions. Using this procedure, 128 participants were additionally excluded (27 high-power, 20 low-power, 25 reward-punishment, and 56 control). A one-way ANOVA was conducted on the rated scores, and a main effect of the independent variable was found ($F(3, 360)=4.492$, $p=0.004$, $\eta^2=0.036$). Tukey's multiple comparison tests showed that the rated scores of the control condition ($M=8.99$, $SE=0.03$, 95% CI=[8.94, 9.04]) and the reward-punishment

condition ($M=8.97$, $SE=0.03$, 95% CI=[8.92, 9.02]) were higher than those of the low-power condition ($M=8.87$, $SE=0.03$, 95% CI=[8.82, 8.92]). The scores of the high-power condition lay between them ($M=8.92$, $SE=0.03$, 95% CI=[8.87, 8.97]). The mean score for every experimental condition was near the maximum rating score. The data of 364 participants (male=142, female=219, other=3), i.e., 60.8% of 599 participants, were used for the following analyses.

The average number of characters in episodes was 200.19 ($SD=78.93$, range=45–758). A one-way ANOVA was run on the variables, and a main effect of the independent variable was found ($F(3, 360)=12.93$, $p<0.001$, $\eta^2=0.097$). Tukey's multiple comparison tests showed that participants in the high-power condition wrote the most ($M=233.09$, $SE=7.89$, 95% CI=[217.56, 248.61]), participants in the control condition wrote the least ($M=164.40$, $SE=7.89$, 95% CI=[148.87, 179.92]), and participants in the reward-punishment ($M=208.00$, $SE=7.89$, 95% CI=[192.48, 223.52]) and low-power condition ($M=202.50$, $SE=7.89$, 95% CI=[186.97, 218.02]) were in between those two conditions. A one-way ANOVA of the time required to complete the questionnaire revealed no significant effects ($F(3, 360)=1.34$, $p=0.260$, $\eta^2=0.011$).

A one-way ANOVA for a sense of power showed a main effect ($F[3, 360]=9.92$, $p<0.001$, $\eta^2=0.076$). Tukey's multiple comparison tests ($p<0.05$) revealed that participants in the control condition ($M=3.24$, $SE=0.08$, 95% CI=[3.08, 3.39]) showed the least sense of power than those in the high-power condition ($M=3.74$, $SE=0.08$, 95% CI=[3.58, 3.89]), low-power condition ($M=3.77$, $SE=0.08$, 95% CI=[3.61, 3.92]), and reward-punishment condition ($M=3.68$, $SE=0.08$, 95% CI=[3.52, 3.83], Table 2). There were no significant differences in the last three conditions.

MANOVA

Innovativeness, positive/negative affection, BIS/BAS, and psychological distance were entered in the one-way MANOVA. There was a significant main effect of the experimental condition ($Wilks' \lambda=0.913$, $p=0.018$, $\eta^2=0.030$). The main effects of the experimental conditions were revealed for innovativeness, positive affection, and BAS. Overall, the means of the low-power condition were higher than those of the control condition for all four variables, and there were no significant differences between the high-power and low-power conditions. In terms of innovativeness, a main effect ($F[3, 360]=2.78$, $p=0.042$, $\eta^2=0.022$) was revealed, and Tukey's tests showed that participants in the low-power condition ($M=4.01$, $SE=0.08$, 95% CI=[3.86, 4.17]) reported higher innovativeness than those in the control condition ($M=3.71$, $SE=0.08$, 95% CI=[3.56, 3.86]). ANOVA for positive affection showed a main effect ($F[3, 360]=6.70$, $p<0.001$, $\eta^2=0.053$). Tukey's tests revealed that

Table 2 Means and SD of dependent variables with significant differences among experimental conditions in Study 2

| | | Experimental conditions | | | |
|--------------------|----|-------------------------|-----------|-------------------|---------|
| | | High-power | Low-power | Reward-Punishment | Control |
| | n | 91 | 91 | 91 | 91 |
| Sense of Power | M | 3.74 | 3.77 | 3.68 | 3.23 |
| | SD | 0.75 | 0.73 | 0.80 | 3.23 |
| Innovativeness | M | 3.93 | 4.01 | 3.85 | 3.71 |
| | SD | 0.74 | 0.70 | 1.73 | 0.79 |
| Positive Affection | M | 3.67 | 3.98 | 3.55 | 3.36 |
| | SD | 0.97 | 0.93 | 1.07 | 0.90 |
| BAS | M | 4.19 | 4.32 | 4.11 | 3.91 |
| | SD | 0.88 | 0.77 | 0.85 | 0.86 |

participants in the low-power condition ($M = 3.99, SE = 0.10, 95\% CI = [3.79, 4.18]$) showed a more positive effect than those in the control condition ($M = 3.36, SE = 0.10, 95\% CI = [3.16, 3.56]$) and reward-punishment condition ($M = 3.55, SE = 0.10, 95\% CI = [3.35, 3.75]$). As for BAS, a main effect ($F [3, 360] = 3.83, p = 0.010, \eta^2 = 0.031$) was revealed, and Tukey’s tests showed that participants in the low-power condition ($M = 4.32, SE = 0.09, 95\% CI = [4.15, 4.49]$) had a higher BAS than those in the high-power condition ($M = 3.91, SE = 0.09, 95\% CI = [3.74, 4.08]$). Finally, there were no significant main effects of negative affection ($F [3, 360] = 2.16, p = 0.093, \eta^2 = 0.018$), BIS ($F [3, 360] = 0.75, p = 0.521, \eta^2 = 0.006$), or psychological distance ($F [3, 360] = 1.99, p = 0.116, \eta^2 = 0.016$). Furthermore, the MANOVA for risk-taking showed no main effects of the independent variable ($Wilks' \lambda = 0.954, p = 0.055, \eta^2 = 0.015$).

Bayes factors

As many of the results showed no significance between the four experimental conditions, though it was not planned in the pre-registration, Bayes factors BF_{10} were calculated using a one-factor ANOVA framework as a function of dependent

variables with JASP 0.17.1 (JASP Team, 2023). Bayes factors are the relative evidence of the alternative hypothesis H_1 in comparison with the null hypothesis H_0 . There would be no differences between the four experimental conditions (Dienes, 2016; Schmalz et al., 2021; Wagenmakers, 2007). The default priors in JASP were used when calculating Bayes factors. The values of the Bayes factors were as follows: sense of power = 5098.933, innovativeness = 0.479, positive affection = 77.577, negative affection = 0.201, BIS = 0.032, BAS = 1.806, psychological distance = 0.161, and risk-taking (changing jobs = 0.267, surgery = 0.101, and marriage = 0.109). The null hypothesis was strongly supported for BIS and moderately supported for negative affection, psychological distance, and risk-taking based on the evaluation criteria of Kelter (2020). The results were anecdotal for innovativeness and the BAS (Supplementary Information).

Text-mining of episodes

To discover words that were more frequently used in the episodes depending on the experimental conditions, the episodes were analyzed using KH Coder 3 (<https://khcoder.net/en/>), a text-mining software. Table 3 shows the characteristic

Table 3 Characteristic words in order of Jaccard Coefficients as a function of the experimental conditions in Study 2

| | | Experimental conditions | | | | | |
|------------|------|-------------------------|-----------|-------------------|---------|----------------|------|
| | | High-power | Low-power | Reward-Punishment | Control | | |
| suggestion | .241 | senior | .381 | think | .179 | cinema | .323 |
| results | .205 | job | .338 | job | .163 | drama | .293 |
| tell | .172 | boss | .317 | tell | .144 | main character | .273 |
| think | .165 | myself | .269 | person | .126 | narrative | .202 |
| good | .162 | think | .215 | talk | .115 | describe | .170 |
| time | .161 | tell | .209 | time | .114 | story | .152 |
| opinion | .146 | person | .201 | other | .113 | impression | .118 |
| business | .142 | joining the company | .198 | work | .112 | man | .117 |
| produce | .140 | be taught | .193 | listen | .108 | various | .117 |
| person | .126 | glad | .171 | part-time job | .108 | unforgettable | .109 |

words in the order of the Jaccard coefficients. The coefficients refer to the similarity or propinquity of two words and take a value of 0–1, indicating more similarity with a high value. In general, most participants had written episodes in their workplace. Participants in the high-power condition compiled episodes suggesting a new idea of improving operations in their jobs and influencing the surrounding members. However, participants in the low-power condition wrote that their bosses or senior members explained how they worked, especially when they joined the company. There were no specific incidents using rewards or punishments.

Discussion

The purpose of Study 2 was to reveal the power-cognition relationships, including the reward-punishment condition. Participants in Study 2 wrote episodes with more characters than those in Study 1, following the instructions. Non-approval of giving rewards for not following the instructions and presenting concrete examples to the participants appeared to work on their writing episodes. Despite these procedures, it is notable that more than 20% of the participants did not write episodes that followed the instructions thoroughly. As for the sense of power as a manipulation check, no significant differences in sense of power between the high-power and reward-punishment conditions, and the low-power condition were not the expected results. The sense of power in the low-power condition was the same as in the high-power condition, making the former unexpectedly high. Participants in the low-power condition typically recalled episodes of receiving instruction from their seniors and appeared to have good impressions of them. Experiences of being influenced by their seniors were not necessarily negative events for them.

However, the sense of power in the high-power and reward-punishment conditions was significantly higher than in the control condition. This was the expected manipulation, and the results of the three conditions can be compared. The results of Study 2 showed no significant differences in BIS, psychological distance, and risk-taking between the conditions, contrary to the hypothesis. Bayes factors also strongly or moderately supported the null hypothesis. In terms of the remaining variables, such as innovativeness, positive affection, and BAS, the scores of these variables of the low-power condition were higher than that of the control condition. These results appeared to indicate the influence of sense of power on cognition. However, multiple comparison tests did not reveal significant differences between the high-power and reward-punishment conditions and the control condition. These results were not congruent with the hypothesis. At least two factors can produce the abovementioned results: cultural factors and methodological, as described in the General Discussion section below.

The possibility of difficulty in activation of a sense of power in Japan leads to the text-mining of the episodes to reveal their contents. The text-mining of episodes showed typical episodes in participants' workplaces depending on the experimental conditions. They suggested work-related new ideas in the high-power condition and explained the job to the boss or senior members in the low-power condition. These results indicated that the examples that were intended to induce writing episodes affected the contents of these episodes. Thus, there is a need to compare the contents between episodes collected in the experiments in Western cultures and those in Japan. If any differences in the contents are detected between these experiments, there is a possibility that the contents of episodes influence the cognition of the powerholders.

Finally, participants in the reward-punishment condition in Study 2 did not show the predicted results either. These results indicated that adding the manipulation of rewards and punishments did not induce power-cognition relationships in Japan. Considering the results of the reward-punishment condition, it might not be necessary to set this condition for manipulating the situation of influencing others as power-priming or to instruct participants to recall incidents that contain their definitely controlling rewards and punishment to others.

General discussion

Most of the results of Studies 1 and 2 were against the hypothesis and the power-cognition relationships advocated by the approach-inhibition theory of power. In Study 2, the percentage of following the experimental instructions was increased through the change in method, and sense of power of the high-power and reward-punishment conditions was heightened by experimental manipulation compared to the control condition. However, the results were almost the same as those of Study 1. The participants of the former two conditions did not show any cognition related to innovativeness, positive affection, goal-striving and approach to rewards (BAS), long psychological distance from the influencing targets, and risky decision-making.

Although these results did not support the hypothesis, they were consistent with the framework by Galinsky et al. (2015). Cultural factors appeared to influence both the activation of a sense of power and its influence on cognition as moderators in the process of vitalization of the sense of power as described below. The results of this study showed the possibility of cultural factors as moderators. To reveal the moderating effects of culture thoroughly, we need to collect data to detect the characteristics of the targeted cultures in international comparison studies. For example, we can use the Index of Personal Reactions, measuring the need for influence and

power by Bennett (1988, see Imai, 1993), and the Functional Assertiveness Scale, measuring the perceived ability to correct someone who bothers individuals by Mitamura (2018), as moderator variables. As an alternative, to detect the effects of a sense of power, we can use voice behavior in teams. Yuan et al. (2022) and Luo et al. (2023) directly measured the trait sense of power of participants and found relationships between the sense of power and voice behavior in China. The intentions of voice and the actual voice behavior can be measures of cognitive and behavioral levels, respectively. Recently, Awad et al. (2018) conducted a moral machine experiment in 233 countries and categorized cultures into three categories: Western, Eastern, and Southern. In the experiment, the decisions of the Japanese were similar to those of Kuwaitis and South Koreans but different from those of the Chinese. Such comprehensive studies would provide a map of cultural power-cognition relationships.

Theoretical and practical implications

The results of the present study present two theoretical implications within the context of the framework by Galinsky et al. (2015). These are as follows: (a) An episodic power task, or power-priming, does not appear to influence the Japanese in the first place, and it is hard to activate their sense of power; and (b) the power-cognition relationships advocated by the theories might not exist in Japan. First, in the framework, manipulation of power and activation of a sense of power are the starting points of power-cognition relationships, and culture is included as a moderator. There is a possibility that the Japanese are not influenced by an episodic power task because of their low assertiveness (e.g., Den Hartog et al., 2004). They might not try to understand their interactions with others in the frame of interpersonal influence. Japanese people appear reluctant to recognize others as targets of influencing attempts and are relatively less assertive toward others. In other words, it might be a virtue of humility not to manifest episodes of influencing others, to avoid the psychological burden caused by influencing attempts, or to avoid experiencing any sensitivity toward influencing attempts. Using the episodic power task with stronger expressions than that of the present study, Sasaki (2018) found positive relationships between power and risk-taking, which do not comprise robust results, though. He instructed participants to recall incidents wherein they felt they were in a strong or superior position compared to others. This argument leads to the adoption of other manipulations of power in studies in Japan. However, in a study that used the method of allocating the role of a manager, Imai (1994) did not find positive results of the metamorphic effects of power (Kipnis, 1972, 1976). Therefore, future studies need to consider the manipulation and effectiveness of power-priming, especially in terms of reliable methods to activate the responses of participants.

Standard methods of manipulation of power-priming should be used not only for experimenters but also for participants, including minimum task engagement time, the minimum number of words described, and using specific words related to interpersonal influence.

Second, in terms of the process of affecting cognition by a sense of power, although the manipulation of power was not perfect in this study, the expected experimental situations were partially set up in Studies 1 and 2, and the hypothesis was not supported. The results suggest that power-cognition relationships may not apply to Japanese culture. At the very least, the Japanese culture related to influencing others might influence suppressing the cognition of innovativeness, positive affection, and long psychological distance from others. Arguably, the suppression occurs during the activation process of a sense of power by power-priming. Japanese individuals' sense of power is hard to be activated by recalling the experiences of influencing others. If their sense of power was activated sufficiently once, the predicted cognition would emerge.

As for practical implications, it is noteworthy that the Japanese do not appear to understand everyday interactions from the viewpoints of interpersonal influence and power relationships; rather, they undergo ordinary interactions. It might somehow be an indication of their humility not to try to change or manipulate others' behaviors. The Japanese and people of Western cultures may construe the same interpersonal interactions differently.

Limitations and future directions

One of the main points behind revealing power-cognition relationships is the activation of power exercising. A retrospective method was used in the current study. This reflects the actual past interactions of influencing attempts and is a convenient method for collecting data on the Internet. The ratio of written episodes was not high, and many of the episodes were related to the workplace.

There is a possibility of methodological flaws in this study, even though the instructions developed by Galinsky et al. (2003) were followed almost faithfully. The manipulation of power-priming was probably not enough to activate a sense of power among the participants. This might be because experiments in the current study were conducted over the Internet, while Experiment 2 of Galinsky et al. (2003) was conducted face-to-face. I conducted the experiments on the Internet so that the data of participants living in various parts of Japan could be conveniently collected. However, participants instructed by a real experimenter face-to-face are more likely to experience the power of the experimenter and follow the instructions than those who read the instructions on the Internet. If we can identify a sufficient extent of manipulation for participants beforehand, comparing results between studies will be easy. If the contents of the episodes or the most

frequent words detected by text-mining can be compared, we can detect any factors that provide different results. Although studies conducted in Western cultures did not provide the ratio and contents of episodes, we need to compare them between studies to detect any differences. Furthermore, confirmation that the results of this study can be replicated in Japan using different methods, as well as the same recalling episodes, is required. There are other methods to activate the power, such as distributing rewards in a group as a leader and solving anagrams using power-related words. Distributing rewards is preferable because it includes actual interactions that influence the rewards among group members. Another method is one in which participants influence fictitious others with rewards and punishments for achieving the goals of a task, as in Kipnis (1972). It is possible to conduct experiments using application software to influence others and be influenced by others. Situations, methods of influencing others, and the types of targets or powerholders can be manipulated in the application software.

Cultural differences may also be based on differences in the representation of influencing attempts. Showing video clips of influencing attempts to participants and describing them can provide a more accurate representation. The same influencing attempts could be described in different words or not described in specific aspects depending on the culture.

The current study questioned the validity of power-cognition relationships in Japan. More data are needed on this theme in cross-cultural contexts. Furthermore, the theories of power-cognition relationships are based partially on Gray's (1982, 1987) theory of the neural substrates of approach and inhibition and Higgins' (1997, 1999) theory of promotion and prevention of self-regulatory focus. We need to devote our attention to revealing thorough brain science in the future.

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Data availability The data and code for the two studies can be found in the Open Science Framework (<https://doi.org/10.17605/OSF.IO/2UH7V>).

Declarations

Ethical approval Ethical approval for Study 1 was obtained from the Research Ethics Committee of Keio University, Faculty of Letters, Graduate School of Letters, and Graduate School of Human Relations (approval number: 200080000).

Ethical approval for Study 2 was obtained from the Research Ethics Committee of Keio University, Faculty of Letters, Graduate School of Letters, and Graduate School of Human Relations (approval number: 200080004), and this study was administered to the OSF (<https://doi.org/10.17605/OSF.IO/2UH7V>).

Conflict of interest The author declares no potential conflicts of interest with respect to the research, authorship, or publication of this article.

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