6 April 2015

Honors Committee
Dominican University
7900 West Division Street
River Forest, IL 60305

Dear Honors Committee,

I am submitting the following project, “Does Power Have the ‘Power’ to Influence Visual Perspective?” in fulfillment of the requirements for a Bachelor of Arts Degree with Distinction in Psychology for graduation in May 2014.

Sincerely,

Lauren Elizabeth Kasprzyk
Does Power Have the “Power” to Influence Visual Perspective?

Lauren Kasprzyk

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Abstract
A study by Galinsky, Magee, Inesi & Gruenfeld (2006) found that participants who were primed to feel powerful are significantly more likely to adopt an egocentric perspective than those primed to feel less powerful. Although this is an extremely popular study that has been cited nearly 500 times, including citations in introductory psychology textbooks, this finding is based on a small sample size and has never been directly replicated. To find out if the effect of power on visual perspective taking is robust, a high-powered, precise, pre-registered replication of Experiment 1 of Galinsky et al. (2006) was conducted. To manipulate power, participants completed a memory recall prime and a resource allocation task. To measure visual perspective taking, each participant was asked to draw a capital E on their foreheads. Participants who drew an E appearing backwards to others were determined to have adopted an egocentric perspective while participants who drew an E appearing forwards to others were determined to have adopted a non-egocentric perspective. It was found that being primed into a position of power did not have a significant effect on visual perspective-taking, despite previous findings by Galinsky et al. (2006). This replication further asserts the necessity of direct replication studies in psychological science and indicates that even “text-book” psychological findings have been insufficiently explored for generalizability.
Does Power Have the “Power” to Influence Visual Perspective?

Power has consistently drawn the attention of psychologists as a construct that is simultaneously feared and sought-after. A word holding numerous and often negative connotations both colloquially and scientifically, power has been a pillar of psychological research for some time. Consider the 1971 Stanford prison experiment led by Philip Zimbardo—one of the most infamous studies in the field. Male students were randomly selected to take on the role of either a prison guard or a prisoner in a mock prison built in the basement of Stanford University (Zimbardo, Haney, Banks & Jaffe, 1973). The experiment quickly grew out of control, with the “prisoners” facing brutal physical and psychological abuse from the “guards.” The participants took to their roles more than Zimbardo had ever expected and the experiment was cut short after six days (Zimbardo et al., 1973). Despite the unethical nature of the study when held up to modern standards, the Stanford prison experiment continues to cause us to question how even an arbitrary sense of power can effectively influence our decisions for the worse. The distinct strong effects that power can have on humans makes it an essential and fascinating subject psychologists to study.

The Construct of Power

Power is a multifaceted topic that has been studied by a large number of psychologists, making it difficult to clearly define. However, definitions of power generally include a person’s ability to influence the actions of others. Kurt Lewin, a pioneer of social psychology who studied power extensively, defined the term as “the possibility of inducing forces of a certain magnitude on another person” (1944). Decades later, power is depicted similarly by research, but with a stronger focus on access to resources. Recent researchers describe power as “an individual’s relative capacity to modify others’ states by providing or withholding resources or administering
punishments” (Keltner, Gruenfeld & Anderson, 2003, p. 265), depending on “how capable a person believes they are in terms of controlling outcomes for oneself and others” (Karremans & Smith, 2010, p. 1001).

**Social Effects of Power**

Power is a ubiquitous force in social dynamics. It is a construct that plays a pivotal role in social relationships and personality, affecting various aspects of an individual’s life (Keltner, Gruenfeld & Anderson, 2003). People in power are viewed differently by others; those who are considered powerful are frequently seen in a negative light, often being described as selfish or overly concerned with their own well-being (Fiske, 1993). Having power also influences a person’s actions— the powerful have been found to display higher levels of moral hypocrisy, meaning that they impose strict moral standards on others while following less strict rules of their own. It has been found that high powered people condemn other people’s cheating more than low powered people, but cheat more themselves (Lamers, Stapel & Galinsky, 2009). People in positions of high power are also more likely to default to using stereotypes to describe others (Goodwin, Gubin, Fiske, & Yzerbyt, 2000).

Despite the seemingly unfavorable descriptions of those in power, it remains to be sought after by the individual for multiple reasons. According to the approach-inhibition theory of power, elevated levels of power provide greater access to resources along with a more lax set of social constraints, leading to approach behaviors that increase drive and energy (Keltner, 2003). On the other hand, diminished levels of power can lead to inhibition behaviors including reductions in drive and activity levels (Keltner, 2003). It has been observed that those in positions of high power display increases in self-esteem while those in positions of low power display decreased self-esteem (Wojciszke & Struzynska–Kujalowic, 2007). High levels of power
are also positively correlated with dominance, extraversion, an internal locus of control, and lowered neuroticism (Judge, Bono, Ilies & Gerhardt, 2002). It has even been suggested that power might have the ability to improve motor performance (Burgmer and Englich, 2012).

**Power and Cognition**

It is clear that power has an effect on many aspects of an individual’s life. What remains unclear, however, is what exactly is at the core of these changes in behavior that are observed when an individual is in a position of power. It has been proposed that power can change perceptual and cognitive processing, and that these changes are fundamental to the effects power has on moral reasoning. Consistent with this hypothesis, previous research has found that being in a position of power does have the ability to alter a person’s cognition. For example, individuals primed into a position of power are more likely to be able to see “the big picture,” showing higher levels of abstract thinking, aiding them in efficiently extracting information (Smith and Trope, 2006). High powered individuals are also more prone to filtering out irrelevant information, displaying greater levels of cognitive flexibility, focus, (Guinote, 2007), and executive functioning (Smith, Jostmann, Galinsky, & van Dijk, 2008). It has also been reported, in a study measuring the effects of power on the brain through transcranial magnetic stimulation (TMS), that high powered individuals demonstrate lower levels of motor resonance during action observation tasks, suggesting that those in power show reduced mirroring of others (Hogeveen, Inzlicht, & Obhi, 2014).

**Power and Perspective-Taking**

One key cognitive process that might be altered by power is perspective-taking. Specifically, research has shown that power can impair an individual’s ability to consider the
perspectives of others. There are many plausible reasons as to why power might hinder perspective taking. For example, those in power have heightened control over resources, which might make it less likely for those in power to need to consider the viewpoints of others (Keltner, 2003). Those in power also have a greater psychological distance from other people, possibly making it more difficult for the powerful to view situations from the perspectives of another person (Lee & Tiedens, 2001). The possibility that those in power have difficulty understanding the perspectives of others is troublesome, because as stated previously, the powerful tend to have increased control over the resources of others.

The best empirical evidence that power influences perspective-taking comes from an influential four-experiment study by Galinsky, Magee, Inesi, and Gruenfeld (2006). It is asserted in each of the four experiments that those in power have decreased abilities to understand how others are thinking and feeling (Galinsky et al., 2006).

Experiment 1 of Galinsky et al.’s (2006) study focuses on power and spontaneous visual perspective-taking. In this study, 57 undergraduates were randomly assigned into either a (1) high power group or (2) low power group. Participants were entered into a $300 lottery and were paid $10 for their participation. To prime participants into high and low power groups, two power primes were used. The first power prime consisted of recalling and writing about a personal memory in which the participants (1) felt that they have power over another person or (2) felt that another person has power over them. The second power prime, designed to further enhance the power manipulation, put participants into separate rooms and asked them to complete a resource allocation task related to the $300 lottery. Participants were tasked with (1) allocating 7 lottery tickets to themselves and one other person or (2) being informed that tickets
would be assigned to them by another participant and estimating how many tickets they would receive.

Once participants were primed for power, they were asked to snap their fingers five times with their dominant hand and then draw a capital E on their forehead with a marker provided. This task, created by Hass (1984), served as a way of measuring visual perspective. If the participants drew the E as though other people would be reading it, resulting in a forwards-facing E, it was considered that the person took on the visual perspective of others. If the person drew the E from their own perspective, the E then appears backwards to others and it is determined that the participant did not consider the perspectives of others, but rather took on an egocentric perspective. It was found that participants in the high-power group were nearly three times as likely as low-power participants to draw a self-oriented E (33%, 8 of 24, vs. 12%, 4 of 33).

These findings are an important contribution to the study of power, as visual perspective has been found to be a crucial aspect of understanding the beliefs and intentions of another person (Baron-Cohen, 1995).

Experiment 2a and 2b focused on participants’ interpretations of a written conversation between two people. Participants primed into a high power group or a low power group were asked to read a conversation between two colleagues about a dining experience. Each participant was told that the colleagues were friends and that their dining experience was poor, which would alter the way in which they would perceive the conversation. One colleague sent a sarcastic email to the other stating that the dining experience was “marvelous, just marvelous.” Participants were then asked to rate how sarcastic an outside person would rate the email about the dinner experience being marvelous if they were unaware that the colleagues were friends who had a poor dining experience. It was found that low-power participants were much less
likely than high-power participants to believe that an outsider would rate the comment as sarcastic rather than genuine. This finding further asserts that those who are in positions of power are more likely to rely on their own perspective versus the perspectives of others (Galinsky et al., 2006).

Experiment 3 focused on the effect of power on emotional perception. Participants were randomly assigned into a high-power group or a control group and were asked to rate photos of others. The photos contained people making facial expressions of varying emotions and emotional intensity. It was found that high-power participants were significantly less accurate in determining the emotional expressions of others, which implies that power can impede a person’s ability to experience empathy (Galinsky et al., 2006).

Due to the significant results in each of Galinsky et al.’s (2006) experiments, it appears that power does have an effect on the way in which people perceive the world around them—whether it be visually, socially, or emotionally. Perception is likely one of the many cognitive processes that power might have the ability to influence and this study lays the groundwork for future research on the complex topic of power and perception. Because it is becoming clear that power influences cognition, we can begin to understand what is at the root of the distinct behavioral and social changes observed of those who are in positions of power.

Goals of Current Study

With power being a hot topic in psychology, Galinsky et al.’s (2006) highly cited, influential paper has caught the attention of the popular press, inspiring an article about the Experiment 1 of the study in the New Yorker (Collins, 2008). A Google Scholar search of the paper displays that it has been cited an impressive 497 times (March 12, 2015); even
introductory psychology textbooks such as *Myer’s Exploring Psychology* (8th edition) have cited Galinsky et al.’s (2006) paper. Despite the study’s popularity, however, there are no existing published replications of this study in a peer-reviewed journal. Although a student project replicating Experiment 1 (Galinsky et al., 2006) can be found online (Lester, 2009), the project is unpublished and seemed to produce results contrary to the original paper. The original study also does not have adequate statistical power, which raises uncertainty of the magnitude of its effect.

Due to this study’s foundational importance in understanding power along with its newfound place in “textbook” psychology, we decided to conduct a direct replication Experiment 1 of Galinsky et al.’s (2006) study. Experiment 1 of this study was chosen for its simple manipulation (power writing task and lottery task), its inexpensive materials, and its popularity relative to the other experiments in the study. As replication is an essential aspect of psychological science, Experiment 1 (Galinsky et al., 2006) was also chosen because of the current lack of published, direct replications of the study.

This replication was carried out with rigorous standards to ensure high fidelity to the original experiment along with achieving high levels of statistical power. This study was also pre-registered prior to data collection, with all materials posted to the Open Science Framework. Because of the stringent standards this replication was held to and the credibility of the original results, it was hypothesized that participants in this study who were manipulated with high power primes would be significantly less likely to adopt the visual perspective of another person.
Methods

The materials and procedure of this study were matched as closely as possible to Galinsky et al.’s (2006) study to ensure a successful replication. This was made possible by the gracious cooperation of Adam Galinsky and Joe Magee (personal communications, 2013-2014), who provided original materials and scripts in addition to valuable advice on carrying out a successful, true to the original, replication. This replication was registered in advance of data collection on the Open Science Framework. All materials and data along with a video of the procedure and a preregistered analysis plan are available at https://osf.io/k2yc7/. Any deviations from the original study are explicitly noted.

Prior to data collection, a power analysis was conducted to determine the necessary amount of participants needed for adequate statistical power. In the original study, participants in the high power group were 21% more likely to draw the $E$ from an egocentric perspective. Using an uncorrected chi-square test, it was determined that to detect this type of difference with a power of 0.85, a sample size of 69 participants per group is necessary. A sample size of 78 participants per group would provide the same power using a corrected Fischer test. Thus, a recruitment goal of at least 69 participants per group was set, with a willingness to sample up to 78 participants per group.

Participants

All participants in this study were currently enrolled at Dominican University: a private comprehensive university. Participants were recruited from a participant pool formed from introductory courses within the psychology department, such as Psychology 101 and Introduction to Neuroscience.
As compensation, each participant was entered into a lottery to win a $100 Amazon gift card, which served as both part of the manipulation for the study and as an incentive to participate. Two $100 gift cards were available to win and participants had a 1:63 chance of winning the lottery. Students also received class credit for introductory psychology classes they were enrolled in. The sample consisted of 109 students (88 females, 21 males): 57% of students were in their freshman year of school, 30% were in their sophomore year, 8% were in their junior year, and 5% were in their senior year. Participants also self-reported their ethnicity/race: 53% Hispanic/Latino, 35% Caucasian, 4% African-American, 4% Asian, 3% mixed ethnicities, and 1% Middle-Eastern).

Materials & Methods

The experiment began in a small research room consisting of eight desks and dividing cubicles to ensure privacy. Participants were randomly assigned into either a high power (N = 56) or low power (N = 53) group and were then asked to read and sign an informed consent form. Participants were given a packet at the start of the study with an identification number and a room assignment of either “A” or “B,” with “A” assignments corresponding with the high power group and “B” assignments corresponding with the low power group.

To manipulate the independent variable, participants were asked to write about a time in which (1) they felt as if they had power over another person or (2) they felt as if another person had power over them. The prompt defined power as “a situation in which you controlled the ability of another person or persons to get something they wanted, or were in a position to evaluate those individuals.” Participants had three minutes to write about their experience. This power prime was adopted by Galinsky et al. 2003, and has been found as a reliable means of manipulating power. The exact script for this manipulation was taken from Experiment 1 of
Galinsky et al. (2006) obtained through personal communications with Galinsky and Magee (February 2014).

After participants completed the first power manipulation, they were asked to either (1) remain in the current room or (2) move to a similar room nearby. After participants were separated into different rooms, they were given another packet and informed that the next part of the study would be described in the packet. This packet contained a resource allocation task, instructions for the E task, a power manipulation check measure, and demographics information. The resource allocation task and directions for the E task were adopted directly through Galinsky and were identical to the task in Experiment 1 (Galinsky et al., 2006). The resource allocation task asked participants to either (1) propose a division of 7 lottery tickets for themselves and one other assigned participant or (2) make a prediction as to how many lottery tickets the other person would assign to themselves. Directly after the resource allocation task, participants were directed to turn the page of their packet and follow the following instructions from Experiment 1 (Galinsky et al., 2006).

Task 1. With your dominant hand, as quickly as you can, snap your fingers five times.

Task 2. With your dominant hand, as quickly as you can, draw a capital E on your forehead with the marker provided. Don’t worry, the mirror is nontoxic, and we will make sure that it is removed before you leave today.

After this task, participants then completed an 8 item, 7 point Likert-scale survey which served as a manipulation check to ensure that the power primes adequately made those in the high power condition feel more powerful than those in the low power condition. Sample questions from this scale are “As you wrote about your life, to what extent did you feel as if you
had power over someone else?” and “As you wrote about a situation in your life, you felt as if someone else had control over your destiny.” The final portion of the study asked the participants to fill out demographics information including year in school, ethnicity, and major. At this time, participants were also asked “What do you believe is the purpose of this study?” If a participant was able to correctly guess they purpose of the study, he or she would be removed from data analysis.

Lastly, participants were given mirrors and wipes in order to wash the marker off of their foreheads. The direction of each participant’s E was recorded on the back of the packet by the researcher before this step. Once all steps of the study were completed, packets were collected and debriefing forms explaining the purpose of the study were issued.

Results

Prior to running analyses, participants who incorrectly completed the resource allocation task or correctly guessed the purpose of the study were removed. At this point, 9 participants were removed from the study due to failure in completing the resource allocation task, leaving a pool of 100 participants (54 high-power, 46 low-power). No participants accurately reported the purpose of the study.

A reliability analysis was performed in order to determine the reliability of the 8 item scale used for the manipulation check (α = .77). Due to the high Cronbach’s alpha for this scale, no items were removed.

Mean and standard deviation scores were calculated from the manipulation check scale to compute an individual power score for each participant. An independent samples t-test was performed to determine if participants in the high power group felt more powerful than those in
the low power group. Participants in the high power group ($M = 4.89, SD = .85$) did feel more powerful than those in the low power group ($M = 3.61, SD = .92$) ($t(98) = 7.170, p = .000$).

Additionally, the effect size for this analysis ($d = .59$) suggests a moderate-to-large effect. It can be concluded that the power manipulations were successful, as the participants in the high power condition felt significantly more powerful than those in the low power condition.

A Pearson’s Chi-Square test was performed in order to determine if participants in the high power group were more likely to adopt an egocentric view than the low power group. Although participants in the higher group were more prone to drawing the $E$ from an egocentric viewpoint (20.4%) than participants in the low power group (13%), this difference was not statistically significant ($X^2 = .945, N = 100, p = .331, d = 0.20, 95\% CI [-0.20, 0.59]$). Due to the confidence interval’s wide range and the small effect size ($d = 0.20$), it cannot be determined if power had a weak negative effect, no effect, or a moderate positive effect on perspective taking.

Contrary to the results of the original study (Galinsky et al., 2006), participants assigned to the high power condition were not substantially more likely to adopt an egocentric perspective than participants assigned to the low power condition.

In order to determine if the results of this study would become significant if we controlled for gender, as Galinsky et al. (2006) did, a linear regression analysis was run. However, the results were not statistically significant ($B = .045, p = .629$). Gender was not a significant predictor of egocentricism in this study, nor was group (high power or low power).

It is possible that perspective taking is not determined by the group a participant was assigned to (high power or low power), but rather how powerful they rated themselves in the manipulation check. In order to determine this, a linear regression was run using participant’s
average power scores as a predictor of egocentricism. It was found that average power scores were not a significant predictor of egocentricism ($B = .002, p = .949$).

In order to effectively compare the results of Experiment 1 (Galinsky et al., 2006) with the results of this study, a Pearson’s Chi-Square test was performed. Although the original results reported by Galinsky et al. (2006) were significant, the traditional Chi-Square test displays results that are not statistically significant ($X^2 = 3.762, N = 57, p = .052, d = 0.53, 95\% CI [-0.006, 1.07]$. Additionally, the confidence interval for the effect size of these results contains zero, meaning there could be no effect, a small positive effect, or a moderate positive effect of power on egocentricism.

**Discussion**

Despite the strict standards this replication was held to and the use Galinsky et al.’s (2006) original script and materials, this study failed to produce the same results as the original study. Although more participants in the high power group drew their $E$ from an egocentric perspective, there was only a 7% difference between groups, whereas in the original study, participants in the high power group were 21% more likely to adopt an egocentric perspective.

There are a few possible reasons why this study failed to produce similar results to the original study by Galinsky et al. (2006). One issue that can arise in experimental studies is a lack of impact. However, this replication succeeded in manipulating power. Although participants in the high power group were not significantly more likely to take on an egocentric perspective, these participants did feel more powerful after the power memory prime and resource allocation task. Because the participants in the high power group rated themselves as feeling significantly more powerful than the low power group in the manipulation check survey, it can be ensured that
the power manipulations succeeded in making participants feel more or less powerful. Thus, the failure to observe an effect on perspective-taking was not due to insufficient manipulation of power.

An additional reason as to why studies fail to obtain statistically significant results is a lack of statistical power. This replication’s sample size is, indeed, a drawback. Despite the original sampling goal of 138 participants, we were only able to sample 109 participants due to a lack of time. Thus, instead of achieving a statistical power of 0.85, we achieved a power of 0.72. This means that if the effect observed by Galinsky et al. (2006) is accurate, our study would have had a 28% chance of missing this effect. Although the sampling goal was not met, a power of 0.72 is reasonable relative to statistical power of the original study.

Studies often fail to replicate due to differences in participant populations. However, the population of this study was very similar to the original, as both Galinsky et al.’s (2006) and this replication’s sampling population consisted of undergraduate students. Although this replication featured slightly more females than males (80% females, 20% males) than the original study (72% females, 28% males), the participant pools in both studies featured more women than men. It is also important to note that both Experiment 1 of Galinsky et al. (2006) and this study did not find gender to be a predictor of egocentrism. Due to the fact that there are no discernable differences between participant pools in this study, it can be determined that the failure of this replication was not due to differences in participant populations.

It is of utmost importance when conducting a replication study to ensure that the procedure of the replication is as true to the original as possible. Although this can be a problem with replication studies, this study utilized original scripts and materials obtained from communications with Galinsky and Magee. The use of identical materials for the power primes
and E task paired with a close following of the original script of Experiment 1 (Galinsky et al., 2006) helped ensure that differences in procedure would not be problematic. Although differences in approach and procedure are always a concern when conducting a scientific replication, this study was scrupulously designed to match Experiment 1 of Galinsky et al. (2006) as closely as possible.

It is a possibility that the original effect observed by Galinsky et al. (2006) regarding power and perspective taking is not replicable. When analyzed with a standard Chi-square test, the effect of the original study is not statistically significant. Additionally, the sample size of Galinsky et al. (2006) is small, leaving it prone to error. Even though the original results were significant, calculating effect size values along with a 95% confidence interval garners uncertainty regarding the magnitude of the original effect.

Consistent with the possibility of Galinsky et al.’s (2006) results being a false positive, a large replication of Experiment 2a of Galinsky et al. (2006) was recently conducted (Ebersole, Atherton, Belanger, Skulborstad & Nosek, 2015). Experiment 2a focused on participant’s interpretations of a sarcastic email between colleagues and how they imagined an outside person would rate the conversation. This replication, consisting of 2,969 participants, found that participants in the high power group (M = 3.75, SD = 1.55) and the low power group (M = 3.80, SD = 1.57) believed that the sincerity of the message would be similar $t(2967) = 0.89, p = 0.37, d = 0.03, 95\% CI = [-.04, .10]$. (Ebersole et al., 2015). Contrary to the original results of Experiment 2, this study found that being in a position of power did not alter perspective taking. It is concerning that such a large-scale replication of Experiment 2a failed to produce similar results, generating apprehension as to whether Experiment 1 of this study would be replicable with a similarly large sample size. The single most consistent finding between this study,
Galinsky et al. (2006), and Ebersole et al., 2015, is that results in each study reported confidence intervals containing zero. It is entirely possible that power does not influence perspective-taking.

Although much care was taken into accurately and closely replicating Experiment 1 of Galinsky et al., (2006), this replication’s failure to produce similar results is troublesome. Even though participants in this study displayed a tendency to draw the E from an egocentric perspective, they were much less prone to do so than in the original study. Although this study had sufficient impact and a reasonable amount of statistical power along with a similar participant sample and identical materials and scripts, Galinsky et al.’s original (2006) results were not reliable. This replication further asserts the necessity of direct replication studies in psychological science and indicates that even “text-book” psychological findings have been insufficiently explored for generalizability.
Works Cited


