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RUNNING HEAD: Power and Loneliness

Not So Lonely at the Top:
The Relationship between Power and Loneliness

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Abstract

Eight studies found a robust negative relationship between the experience of power and the experience of loneliness. Dispositional power and loneliness were negatively correlated (Study 1). Experimental inductions established a causal connection: we manipulated high versus low power through autobiographical essays, assignment to high- versus low-power positions, or control over resources, and found that each manipulation decreased loneliness (Studies 2a-2c). We also demonstrated both that low power can increase loneliness and that high power can decrease loneliness by comparing these conditions to a baseline condition (Studies 3-4, 6). Furthermore, we establish a key mechanism that explains this effect, demonstrating that the need to belong mediates the effect of power on loneliness (Studies 5-6). These findings help explain some effects of power on social cognition, offer insights into organizational well-being and motivation, and speak to the fundamental question of whether it is "lonely at the top" or lonelier at the bottom.

Keywords: power; loneliness; leadership; social processes

> What can solitude have to do with leadership? Solitude means being alone, and leadership necessitates the presence of others—the people you're leading. When we think about leadership in American history we are likely to think of Washington, at the head of an army, or Lincoln, at the head of a nation, or [Martin Luther] King, at the head of a movement—people with multitudes behind them, looking to them for direction. And when we think of solitude, we are apt to think of Thoreau, a man alone in the woods, keeping a journal and communing with nature in silence.
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> --William Deresiewicz (October 2009) in a lecture to the U.S. Military Academy at West Point

Deresiewicz poses a question about the relationship between loneliness and power, a relationship that prior research has broached, but never directly addressed empirically. In a chapter that asks explicitly, "Is it lonely at the top?" Lee and Tiedens (2001) reviewed extensive research suggesting that power creates social distance (i.e., independence). Likewise, Magee and Smith (2013) articulated the social forces that can increase power-holders' sense of distance from others: among other distancing effects, power increases feelings of self-sufficiency while decreasing willingness to help others (Lammers, Galinsky, Gordijn, & Otten, 2012) and reduces desire for contact with subordinates (Kipnis, 1972).

To the extent that social distance and subjective isolation are similar, this previous research suggests that high-power people would experience greater loneliness than low-power people. However, we argue that the social distance experienced by power-holders differs from subjective isolation in two important respects. First, the social distance experienced by power-holders refers specifically to the people over whom they have power (Magee & Smith, 2013). In the current research, we are additionally interested in whether simply having or lacking power affects the psychological experience of loneliness more generally, outside their power-related relationships.

Second, a sense of social distance is not inherently negative or positive, so it need not translate into an undesirable state of loneliness. An important component of our theorizing is that loneliness and social distance are orthogonal constructs. We propose that high power reduces loneliness by reducing the motivation to connect socially with others, whereas low power increases loneliness by increasing this motivation. That is, having power decreases the need to belong compared to low power, which increases this need. Contrary to the received wisdom that it is lonely at the top, we propose instead that lacking power leads to more loneliness than having power. In the current research, we will show that the need to belong is an important driver of the relationship between power and loneliness.

Power as a Potential Driver of Loneliness

Before turning to evidence for why lacking versus having power might affect the psychological experience of loneliness, we want to acknowledge that power can contribute to loneliness in a number of ways. For example, as noted above, power increases independence (House, 1988; Kipnis, 1972; Lee & Tiedens, 2001) and personal control (Fast, Gruenfeld, Sivanathan, & Galinsky, 2009), both of which represent a cluster of characteristics that emphasizes personal agency. Such self-focused characteristics also emerge in how power influences relational dynamics. In social interactions, high-power individuals pay less attention to, and listen less to, others than do low-power individuals (Ellyson, Dovidio, Corson, & Vinicur, 1980; Tost, Gino, & Larrick, 2013).

This diminished attention toward others can result in a lack of concern for others' feelings and opinions. Power decreases people's consideration of others' perspectives (Galinsky, Magee, Inesi, & Gruenfeld, 2006) and their compassion for others' suffering (Van Kleef et al., 2008). In addition, giving people power increases dehumanization (Lammers & Stapel, 2011)

and heightens objectification of others, whereby people treat others as a means to their own goals (Gruenfeld, Inesi, Magee, & Galinsky, 2008). These behaviors do not represent the actions of a socially engaged individual.

Power may also facilitate loneliness by changing the perceptions of one's social relationships. One set of studies demonstrates that power can decrease trust and increase cynical attributions for others' generosity (Inesi, Galinsky, & Gruenfeld, 2012). This pattern of results emerges because people in power question whether subordinates' kind behavior is genuine or simply instrumental. These findings suggest that power may increase loneliness by increasing social distance from, and decreasing social engagement with, others.

Power as an Alleviator of Loneliness

Although power can increase factors associated with loneliness, other research suggests a negative relationship between power and loneliness. Research has found that power can provide social opportunities that may enhance feelings of social connection. For instance, people with power tend to have more network ties (Blackburn, 1981; Ibarra, 1995) and therefore can connect otherwise disconnected individuals (Burt, 1992). Research also indicates that powerful people overestimate the extent to which people they know are "in their corner" (Brion & Anderson, 2013). Although this overestimation may impair future social connection and the ability to maintain alliances with others (Brion & Anderson, 2013), in the short term people might benefit psychologically from perceiving strong social connections with others.

Not only can power enhance perceived access to social ties but also it can bolster specific social skills. For example, trait measures of power are correlated with the ability to decode others' nonverbal emotional cues (Hall, Halberstadt, & O'Brien, 1997). Experimentally increasing perceivers' sense of power can also increase their ability to infer others' thoughts and

feelings, particularly when perceivers are dispositionally prosocial or have an empathic leadership style (Côté et al., 2011; Schmid Mast, Jonas, & Hall, 2009). These enhanced social skills conferred through experiencing power might also increase the subjective sense of being able to connect with others and thus reduce loneliness.

Another way that power may reduce loneliness is through buffering against social stressors. Physiological research on primates and humans has shown that power is related to increased testosterone, a hormone that buffers threat (Carney, Cuddy, & Yap, 2010; Sapolsky, 2005) and lower levels of cortisol, a hormone that is released in response to stress (Abbott, Keverne, et al., 2003; Carney et al., 2010; Coe, Mendoza, & Levine, 1979; Sapolsky, 1982; Sapolsky, Alberts, & Altmann, 1997; Sherman, Lee, et al., 2012). Multiple studies have found that the powerful experience less distress, cortisol reactivity, and physiological arousal in the face of socially stressful situations (Carney et al., 2013; Kuehn, Chen, & Gordon, 2015; Schmid & Schmid Mast, 2013). Having power also makes people more socially resilient, increasing the likelihood of finding new connections after experiencing social exclusion (Narayanan, Tai, & Kinias, 2013). These findings suggest that even when power presents demands that threaten social relationships, the stress-buffering effects of power might reduce loneliness for powerful individuals.

Finally, studies have shown that low power (versus high power) increases attention to social context and increases the desire for interpersonal harmony (e.g., Adler, 1983; Copeland, 1994; Jones & Pittman, 1982; see Lee & Tiedens, 2001). These findings suggest that individuals low in power are lacking and wanting of social connection.

Taken together, these findings suggest that it is lonelier at the bottom of social hierarchy. Because power enhances social opportunities, specific social skills, and buffers the effects of

social stressors, and because lacking power appears to increase loneliness and the desire for social opportunities, we suggest that high power will diminish the subjective experience of loneliness relative to low power. In other words, we propose that the experience of power will psychologically be associated with reduced loneliness. Conversely, we propose that lacking power will be associated with increased loneliness.

Social Distance versus Loneliness

The research we have summarized suggests that power has different relationships with two different forms of social disconnection, social distance and loneliness. Here, we distinguish between these two constructs to demonstrate why we predict a negative association between power and loneliness despite the existence of a positive association between power and social distance.

To properly conceptualize loneliness we draw on the important distinction between *objective* and *subjective* social isolation, the latter of which characterizes loneliness (Cacioppo & Patrick, 2008; Cacioppo & Hawkley, 2009a). Objective social isolation reflects the quantity of one's social interactions and includes one's relationship status, how often one interacts with others, and one's living arrangements with others. On the other hand, subjective social isolation—captured by the construct of loneliness—concerns the quality of those interactions and reflects dissatisfaction with one's social relationships. The relationship between subjective and objective isolation is surprisingly modest (Hughes, Waite, Hawkley, & Cacioppo, 2004), with evidence indicating objective isolation may or may not contribute to the subjective emotional state (Cole et al., 2007; Wheeler, Reis, & Nezlek, 1983). Loneliness, as a subjective assessment of one's relationship to others is also a necessarily negative state, described by Weiss (1973) as a "gnawing, chronic disease without redeeming features" (Cacioppo & Cacioppo, 2012, p. 446).

Unlike loneliness, social distance is not necessarily undesirable. Social distance is a "subjective perception or experience of distance from another person or other persons" (Magee & Smith, 2013, p. 159) and would only translate into loneliness if the powerful expected to be close to the people from whom they actually feel distant. Although a wealth of data supports the positive relationship between power and various forms of social distance (Magee & Smith, 2013), the present research suggests that power is negatively associated with a different form of subjective disconnection, loneliness. Whereas social distance is largely bereft of emotional valence and can in fact be a desired state for many power-holders (particularly with respect to subordinates), loneliness necessarily is aversive and serves as a signal that spurs the desire to connect with others (Cacioppo & Hawkley, 2009a).

Although research on power and objective isolation tends to show that social network size is positively related to power (Blackburn, 1981; Ibarra, 1995; McPherson, Smith-Lovin, & Brashears, 2006), no prior research has directly examined the effects of power on subjective isolation. The present research therefore represents the first explicit empirical investigation of power's effect on subjective isolation, conceptualized as loneliness.

Need to Belong

The primary mechanism through which we expect power and loneliness to be negatively associated is through power's effect on the need to belong. This fundamental motivation to connect socially with others is thought to exist because of the adaptive value of forming social bonds and finding acceptance from groups (Baumeister & Leary, 1995). We propose that high power reduces loneliness by reducing the need to belong. By contrast, lacking power increases the need to belong.

Given the wealth of evidence supporting the function of loneliness as a signal to motivate people to seek social connections for adaptive purposes (Hawkley & Cacioppo, 2011), we expected that reducing the need to belong would diminish loneliness. We argue that having power reduces the need to belong and ultimately decreases loneliness whereas lacking power increases the need to belong and thus loneliness. The present research first documents a basic effect of high versus low power and loneliness, and then demonstrates the role that the need to belong plays in producing the power-loneliness relationship.

Overview of Studies

Eight studies using diverse methods test the hypothesis that high power decreases loneliness relative to low power. Study 1 tests the hypothesis that individual differences in the personal sense of power are negatively associated with individual differences in dispositional loneliness. This study demonstrates naturally occurring relationships between power and loneliness in a broad sample.

Studies 2-6 experimentally manipulate power, using variations on two common methods: priming people with high versus low power (through autobiographical essays), and assigning people to roles with high or low power within an experimental context. Study 2a manipulated power to test the hypothesis that high versus low power triggers an association with less loneliness. Studies 2b and 2c demonstrate that people in positions of high power experience less loneliness than people in positions of low power. Studies 3-4 test whether the relationship between power and loneliness is driven by high power or low power. Studies 5-6 show that the effect of power on reduced loneliness is mediated by a diminished need to belong.

After establishing the empirical connection between power and loneliness, we discuss how our findings help explain some significant effects of power on cognition and behavior. We also consider the organizational implications of our findings.

Study 1: Dispositional Power and Loneliness

Study 1 used individual differences in the sense of power and dispositional loneliness to test whether power and loneliness are negatively related.

Method

Participants. Three hundred nine participants[1] (58.3% women; 47.7% U.S. residents; M_{age}=31.57) completed an online study through Mechanical Turk.

Procedure. After providing consent to participate in an "emotional experiences" study, participants completed two questionnaires, one on power and one on loneliness, embedded in questions about various emotional experiences unrelated to the present study. As a measure of power, participants completed an eight-item sense of power scale (Anderson, John, & Keltner, 2012; α=.83; e.g., "I can get others to do what I want"), using a 7-point scale (1=*disagree strongly*, 7=*agree strongly*). As a measure of loneliness, participants completed the 20-item R-UCLA loneliness scale (Russell, Peplau, & Cutrona, 1980; α=.91; e.g., "I lack companionship") on a 4-point scale (1=*Never* to 4=*Often*).

Results and Discussion

As predicted, power and loneliness were significantly negatively correlated, $r(307)$=-.57, p<.01. Given that occupational power increases with age and is particularly strong during middle

[1] Sample sizes vary across studies because (a) although each study attempted to maximize statistical power, resources available to conduct studies were at times constrained, (b) the university student sample was constrained to the students available in a given term, (c) study design varied across the studies, and sample sizes were tailored to each particular design (including number of cells), and, (d) the authors became increasingly aware of the importance of maximizing statistical power over the period of time in which this research was reported.

age (40-60) (Eaton, Visser, Krosnick, & Anand, 2009), the age range capturing all but six participants in the upper quintile of our sample, we examined the correlation between power and loneliness controlling for age. The correlation remained significant when controlling for age, $r(302)=-.57$, $p<.01$, suggesting that this effect did not result from age alone. This study demonstrates a naturally occurring inverse relationship between power and loneliness. The more powerful people perceived themselves to be, the less lonely they reported being.

Study 2: Establishing a Causal Relationship

Studies 2a-c used three operationalizations of power to demonstrate a causal relationship between increased power and decreased loneliness. Because of the identical aims of these studies, we present their methods first, separately, and then their results in concert. Study 2a begins by manipulating power through having people write about experiences of high or low power. In these studies, we explored whether thinking about having or lacking power in the present influence presents feelings of loneliness.

Study 2a: Power-Recall Manipulation and Loneliness

Method

Participants and Design. Fifty-six U.S. residents (72.2% female, $M_{age}=34.15$) were randomly assigned to a high-power or low-power condition and completed an online study through Mechanical Turk.

Procedure. After consenting to participate in a study on "experiences and beliefs," participants completed the primary experiment, embedded in filler tasks about evaluating products and current events. Participants were randomly assigned to a low- or high-power condition in an essay task to manipulate high or low feelings of power in the present. In this task, participants were asked to write and think about either all of the ways that others currently have

power over them (low-power condition) or all the ways that they have power over others (high-power condition). Participants then completed an adapted version of the three-item loneliness scale developed by Hughes et al. (2004) ("Right now, do you feel isolated from others?" "Right now, do you feel that you lack companionship?" "Right now, do you feel left out?"; 1=No, not at all, 2=Somewhat, and 3=Yes, definitely). These items were averaged to form a reliable composite measure of loneliness (α=.92).

Study 2b: Role-Based Power Manipulation and Loneliness

Study 2b extends the previous study by manipulating power based on one's role in a particular relationship.

Method

Participants and Design. Two hundred two United States residents (35.10% female, M_{age}=28.15) completed an online study through Mechanical Turk. Participants were randomly assigned to the high-power or low-power condition.

Procedure. All participants read on an initial screen:

> We are randomly pairing you with another MTurk worker participating in the study to play a two-person task. Some people will be randomly assigned to be the BOSS and some people will be randomly assigned to be the SUBORDINATE. The Boss gets to make the decisions about what tasks the Subordinate does in this study. That is, the Boss will get to choose from a variety of tasks to decide which ones the Subordinate will perform. Then, the Subordinate has to perform those tasks whereas the Boss does not have to do so. The Subordinate does not get to make any decision. On the next page, you will find out if you are the Boss or the Subordinate.

Participants in the high-power condition read on the next screen that they were assigned to the boss role, and then chose seven tasks—from seven items asking the participant to choose one of three tasks—for the subordinate to perform (example item: a lie detection task, a proofreading task, or a logic game). Participants in the low-power condition were told they were randomly assigned to the subordinate role and saw the seven sets of three tasks provided to the boss. Low-power participants were told they would complete the seven tasks purportedly chosen

for them by the boss. Before proceeding in the study, all participants completed additional items including the same loneliness scale used in Study 2a asking participants to respond how they feel right now (α=.85) and then a questionnaire asking about participants' work relationships, which we will not discuss further.

Participants in the high-power condition proceeded to the end of the study, and participants in the low-power condition proceeded to complete the tasks chosen for them. At the end of the study, prior to entering demographic information, all participants completed a manipulation check item that asked, "Thinking back to the role that you were assigned in this study, how much power do you feel you had" (*1*=very little, *7*=a great deal). Thirty-four people in the low-power condition did not complete this item because they had stopped participating in the study after having been assigned their role and completing the loneliness scale. We included these participants because they completed the critical measure of loneliness, but excluding these participants from analyses does not alter significance of the results.

Study 2c: Resource-Based Power Manipulation and Loneliness

Study 2c built on the previous study by manipulating financial outcome dependence as a form of power.

Method

Participants and Design. Eighty-two U.S. residents (44.4% female, M_{age}=27.99) completed an online study through Mechanical Turk. Participants were randomly assigned to a high-power or low-power condition.

Procedure. The structure of the manipulation was a classic dictator game adapted to the boss/subordinate context of the study. On an initial screen, all participants read:

> We are randomly pairing you with another MTurk worker participating in the study to play a two-person task. The task involves dividing up $1.00 that will be administered as a bonus on MTurk. Some people will be randomly assigned to be the BOSS and some people will be randomly

> assigned to be the SUBORDINATE. The Boss gets to make the decision of how to divide up the $1.00 any way he/she likes. The Boss can keep the entire dollar for himself/herself, can split the money equally, or give more or less to the other person. The Boss will receive as a bonus on MTurk, the amount he/she allocates to himself/herself. The Subordinate does not get to make any decision. He/she simply receives as a bonus on MTurk, the amount allocated by the Boss. You will never know the identity of the person you are partnered with. The next page will tell you if you are the Boss or the Subordinate in this part of the study.

On the next screen, participants in the high-power condition read they had been randomly assigned to the boss role and then proceeded to divide the $1.00, whereas participants in the low-power condition simply read they were randomly assigned to the subordinate role and did not get to make a financial decision. All participants then completed the same loneliness measure as in Studies 2a-2b (α=.85).

Results and Discussion

In Study 2a, as hypothesized, participants in the high-power condition (M=1.26, SD=0.46) felt significantly less lonely than participants in the low-power condition (M=1.83, SD=0.75), $t(54)=3.44$, $p=.001$, $d=.94$[2].

In Study 2b, the manipulation check showed that participants in the high-power condition (M=5.47, SD=1.49) reported significantly more power than participants in the low-power condition (M=2.19, SD=1.27), confirming our manipulation was effective, $t(166)=14.35$, $p<.001$, d=2.24. Participants in the high-power condition (M=1.48, SD=0.56) reported significantly less loneliness than participants in the low-power condition (M=1.75, SD=0.62), $t(200)=3.18$, $p<.005$, d=.45.

In Study 2c, participants in the high-power condition (M=1.52, SD=0.61) reported significantly less loneliness than participants in the low-power condition (M=1.90, SD=0.69), $t(80)=2.63$, $p=.01$, d=.59.

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[2] This effect and all others that assume unequal variances across studies are unchanged compared to assuming equal variances.

In Studies 2a-2c, three different manipulations of power all found that high power decreases loneliness compared to low power. Study 2a demonstrates that writing about the ways one has or lacks power influences loneliness. Study 2b demonstrates that occupying a high versus low power position in a relationship influences loneliness. Study 2c demonstrates similarly that having power versus lacking power in a particular relationship influences loneliness. Through self-reflection, occupation of a particular role, or possession of resources, these studies provide further evidence that low power is associated with greater loneliness than high power.

Study 3: The Direction of the Effect

Studies 1-2c compare experiences of high versus low power on loneliness, but they do not compare these experiences to a baseline condition. Study 3 included a baseline condition to allow us to examine the direction of these effects.

Method

Participants and Design. One-hundred-twenty-four University of Virginia undergraduates who were enrolled in an introduction to leadership course (60.5% female; M_{age}=20.21) participated in the study in exchange for course credit. Participants were randomly assigned them to one of three conditions: high power vs. low power vs. baseline.

Procedure. Participants received an online link that randomly assigned them to one of three conditions: high power vs. low power vs. baseline. We used the same dictator game used in Study 2c, with $10.00 at stake, to manipulate high versus low power. In this version, we informed participants that we would randomly select only one boss's decision to actually implement. That is, not everyone would receive money as a boss or a subordinate, only one randomly selected pair would get the money allotted to them based on the "boss's" decision.

All of the participants read about the dictator game and the role of Boss versus Subordinate. Participants in the high-power condition or the low-power condition learned that they would be randomly assigned to assume the role of Boss or Subordinate. Those who were randomly assigned to the baseline condition were told about the game, but were not told that they or anyone else would be participating in it; therefore, participants in the baseline condition could not have felt excluded from participation in the dictator game. We included the dictator game instructions in the baseline condition to control for any potential money priming effect.

On the next screen, participants in the high-power condition read they had been randomly assigned to the boss role and then proceeded to divide the $10.00. Participants in the low-power condition and the baseline condition simply learned their roles and did not have an opportunity to make a financial decision. All participants then completed the same loneliness measure as in Studies 2a-2c (α=.83).

Results

A one-way ANOVA showed that the power manipulation had a significant effect on loneliness, $F(2, 121)=6.41$, $p=.002$, $\eta^2_p=.096$. Planned contrasts revealed that participants in the high-power condition reported being less lonely ($M=1.29$, $SD=0.43$) than participants in the low-power condition ($M=1.70$, $SD=0.67$), $t(82)=3.42$, $p=.001$, $d=.73$. Low-power participants reported significantly more loneliness than participants in the baseline condition ($M=1.39$, $SD=0.51$), $t(80)=2.40$, $p=.02$, $d=.52$, suggesting that experiencing low power can increase loneliness. High-power and baseline participants did not differ significantly in loneliness, $t(82)=0.99$, $p=.32$.

The results of this study suggest that low power can increase feelings of loneliness compared to baseline to a greater degree than high power decreases loneliness compared to baseline.

Study 4: The Direction of the Effect Redux

Because Study 3 was the first examination of the direction of the effect of power, we sought to conduct an additional study as a conceptual replication.

Method

Participants and Design. Six hundred fifty-three individuals (all U.S. residents except two who indicated current residence in South America; 44.6% female, M_{age}=32.81) completed the study through Mechanical Turk. Participants were randomly assigned to condition in a 3 Power (high vs. low vs. baseline) x 2 Social Connection (high vs. neutral) between-subjects design.

The manipulation of social connection—assigning people to write about someone to whom they felt connection (high connection) vs. assigning people to write about someone to whom they felt no connection (neutral connection)—unexpectedly did not significantly affect loneliness or alter or moderate the effects of power described below, so it is not discussed further. The order of the manipulations was also randomly assigned, but this factor did not influence the results and is not discussed further.

Procedure. As in Study 3, participants were assigned to either the boss or the subordinate position in a dictator game with $10.00 at stake; in the baseline condition, participants received no information about the game and were simply asked to proceed to the next section. Participants in the control condition therefore could not feel excluded from the game given that they were

unaware of it. Following both manipulations, we administered the three-item loneliness scale used in Studies 2a-3 (α=0.88).

Results

A one-way ANOVA showed that the power manipulation had a significant effect on loneliness, $F(2, 650)=3.08$, $p=.047$, $\eta^2_p=.009$. Planned contrasts on the main effect of power showed that high-power participants reported being less lonely (M=1.43, SD=0.56) than low–power participants (M=1.57, SD=0.64), $t(650)=2.41$, $p=.018$, $d=.19$. Compared to baseline (M=1.54, SD=0.64), high-power participants reported marginally less loneliness, $t(650)=1.78$, $p=.075$, $d=.14$, which suggests that high power can reduce loneliness. The low-power and baseline conditions did not differ significantly, $t(650)=.51$, $p=.61$.

We replicated the previous difference in loneliness between conditions of high and low power, and demonstrated a slightly different pattern than Study 3 in that high-power participants showed reduced loneliness compared to baseline. Taken in conjunction with the results of Study 4, these results suggest the possibility that low power can increase loneliness *and* high power can decrease loneliness, compared to baseline. As noted in the introduction, whereas high power confers real and perceived access to social opportunities, bolsters social skills, and buffers people from social stressors, low power can limit people's social opportunities and psychological resources for attaining connection, leading them to desire affiliation with others. We next turn to this desire for affiliation—the need to belong—in examining the mechanism through which power affects loneliness.

Study 5: Need to Belong and Loneliness

We now examine the need to belong as a key mechanism driving the effect of power on loneliness. Study 5 tests whether inducing high power reduces the need to belong relative to low power, which, in turn, leads to a decrease in loneliness.

Method

Participants and Design. Two hundred eighty-five U.S. residents (34% female, M_{age}=26.69) completed an online study through Mechanical Turk. Participants were randomly assigned to a high-power or low-power condition.

Procedure. Participants were randomly assigned to a high-power or low-power condition in a dictator game similar to that employed in Studies 3-4, with $12.00 at stake.

Following the manipulation of power, participants also answered a manipulation check item, "How much power do you feel you have in the role to which you were assigned" (1=*very little*, 7=*a great deal*), then the need to belong scale (α=.84; e.g., "I have a strong need to belong," 1=*strongly disagree*, 5=*strongly agree*; Leary, Kelly, Cottrell, & Schreindorfer, 2007), and then the loneliness measure used in Studies 2a-4 (α=.82).

Results and Discussion

Manipulation check. Participants in the high-power condition (M=6.25, SD=1.02) reported significantly more power than participants in the low-power condition (M=1.49, SD=1.15), confirming that our manipulation was effective, $t(283)=37.11$, $p<.001$, $d=4.41$.

Loneliness. Participants in the high-power condition (M=1.50, SD=0.53) reported significantly less loneliness than participants in the low-power condition (M=1.70, SD=0.63), $t(283)=2.92$, $p=.004$, $d=.35$.

Need to belong. Paralleling the results for loneliness, participants in the high-power condition (M=3.06, SD=0.65) reported significantly lower need to belong than participants in the low-power condition (M=3.23, SD=0.70), $t(283)=2.11$, p=.036, d=.25.

Mediation. To test the hypothesis that power influences loneliness through the need to belong, we used bootstrapping mediation analysis using the SPSS PROCESS macro (Hayes, 2013) (bias-corrected, 20,000 resamples). This analysis confirmed partial mediation, in that high power indirectly affected people's feeling of loneliness through a reduced need to belong (95% confidence interval=-.09 to -.006; see Figure 1 for the path coefficients).

Consistent with Studies 1-4, Study 5 demonstrates that the experience of high versus low power is associated with reduced versus increased loneliness. Furthermore, this study provides evidence for our proposed mechanism, suggesting that high-power individuals demonstrate a reduced need social connection compared to low-power individuals, which in turn reduces loneliness. In a final study, we sought to replicate this effect with a different measure of loneliness and again to compare the effects of high and low power to baseline.

Study 6: Need to Belong and Loneliness, Redux

To this point, our studies suggest that experiences of both high and low power have opposing effects on loneliness, and that the need to belong mediates these effects. In Study 6, we combine these insights and expand on them. This study aims to replicate the finding that the need to belong mediates the effect of high versus low power on loneliness and to replicate the findings that both high and low power affect experiences of loneliness compared to a baseline condition. In addition, Study 6 includes a manipulation check to show that high power increases and low power decreases perceived power compared to baseline, and also uses a different measure of loneliness than the one used in Studies 2a-5 to provide convergent validity.

Method

Participants and Design. Six hundred and seven U.S. residents (43.2% female, M_{age}=32.80) completed the study through Mechanical Turk. Participants were randomly assigned to one of three conditions: high-power vs. low-power vs. baseline.

Procedure. As in Studies 3-4, participants were assigned to either the boss or the subordinate position in a dictator game with $10.00 at stake; in the baseline condition, participants received no information about the game. Participants then completed a manipulation check consisting of two items assessing sense of power that asked participants to indicate their agreement with the statements, "I feel like I have power" and "I feel like I lack power" (reverse scored; *1*=strongly disagree, *5*=strongly agree; $r(605)=.91$, $p<.001$). Then participants completed the need to belong scale (Leary et al., 2007; $\alpha=.89$). Finally, participants completed a loneliness measure consisting of eight items from the R-UCLA loneliness scale for which participants indicated their agreement. The items were: "I lack companionship," "I feel isolated from others," "People are around me but not with me," "There is no one I can turn to," and reverse-scored items, "There are people I can turn to," "I do not feel alone," "There are people I feel close to," and "I can find companionship when I want" (*1*=strongly disagree, *5*=strongly agree; $\alpha=.90$). All items for all measures were preceded by a condition-specific phrase that positioned the item in the context of their role in the study: "In my current role as the boss…" (high power), "In my current role as the subordinate (low power), and "In my current role in the study…" (baseline). Study 6 extends our analysis of sense of power, the need to belong, and loneliness by measuring these constructs as psychological states rather than as traits.

Results and Discussion

Manipulation check. A one-way ANOVA showed that the power manipulation had a significant effect on sense of power, $F(2, 604)=902$, $p<.001$, $\eta^2_p=.75$. Planned contrasts revealed that participants in the high-power condition ($M=4.43$, $SD=0.61$) reported a significantly greater sense of power than participants in the baseline condition ($M=3.06$, $SD=0.88$) and in the low-power condition ($M=1.45$, $SD=0.63$), confirming that high power increased sense of power, ts>19.20, ps<.001, ds>1.56. Planned contrasts also revealed that the low-power condition participants reported a significantly lower sense of power than baseline condition participants, $t(604)=22.64$, $p<.001$, $d=1.84$ confirming that our manipulation of low power reduced sense of power compared to a neutral position.

Loneliness. A one-way ANOVA showed that the power manipulation had a significant effect on loneliness, $F(2, 604)=15.47$, $p<.001$, $\eta^2_p=.05$. Planned contrasts revealed that participants in the high-power condition ($M=2.61$, $SD=0.61$) reported significantly less loneliness than participants in the baseline condition ($M=2.79$, $SD=0.80$) and in the low-power condition ($M=3.04$, $SD=0.86$), confirming that high power decreased loneliness, ts>2.31, ps<.021, ds>0.18. Planned contrasts also revealed that the low-power condition participants reported significantly more loneliness than baseline condition participants, $t(604)=3.15$, $p=.002$, $d=0.26$. These findings confirm that, consistent with Studies 3 and 4, high power decreases loneliness *and* low power increases loneliness compared to baseline.

Need to belong. Paralleling the results for loneliness, a one-way ANOVA showed that the power manipulation had a significant effect on the need to belong, $F(2, 604)=31.91$, $p<.001$, $\eta^2_p=.10$. Planned contrasts revealed that participants in the high-power condition ($M=2.74$, $SD=0.77$) reported a lower need to belong than low-power condition participants ($M=3.28$,

SD=0.73), $t(604)=7.41$, $p<.001$, $d=0.60$, and low-power condition participants reported significantly higher need to belong than baseline condition participants ($M=2.82$, $SD=0.75$), $t(604)=6.26$, $p<.001$, $d=0.51$. Participants in the high-power condition also reported lower need to belong than participants in the baseline condition although this difference did not reach significance ($t=1.05$, $p=.30$). These findings confirm that, consistent with Study 5, high power reduces the need to belong compared to low power and suggest that powerlessness drives this difference.

Mediation. To replicate Study 5, we conducted a mediation analysis on the high-power condition and low-power condition. To test the hypothesis that power influences loneliness through the need to belong, we used the same procedure as in Study 5 (bias-corrected, 20,000 resamples). This analysis confirmed mediation, in that power was negatively associated with loneliness through its negative influence on the need to belong (95% confidence interval=-.20 to -.05; see Figure 2 for the path coefficients).

Consistent with all previous studies, Study 6 demonstrates that high power increases loneliness compared to low power, and consistent with Studies 3 and 4, this study suggests that both high and low power affect loneliness relative to a baseline condition. Furthermore, consistent with Study 5, Study 6 demonstrates that the effect of power on loneliness is driven by high power reducing the need to belong relative to low power. This study extends Studies 1-5 in that it examines state experiences of power, loneliness and the need to belong, and demonstrates that mere momentary manipulations of high and low power roles are sufficient to affect people's sense of power, loneliness, and the need to belong in those roles.

General Discussion

Contrary to the popular notion that "it's lonely at the top," the results of the present research consistently illustrated that it is lonelier at the bottom. The experience of high power versus low power led people to report less loneliness and the influence of power on loneliness emerged regardless of how power was induced (through writing about one's sense of high or low power, assignment to roles, or allocation of resources). The effects of power on loneliness were mediated by a reduction in the need to belong. Our results also suggest that both low power and high power can alter people's perceptions of loneliness compared to baseline, although the findings of Study 6 suggest that the need to belong might be affected more by powerlessness.

Our findings highlight the importance of the distinction between the subjective feeling of loneliness versus objective social isolation. Although the objective degree of social isolation between those experiencing high versus low power was held constant in each of our studies, the experience of high power diminished loneliness, whereas the experience of low power had the opposite effect by increasing loneliness. Beyond its direct implications for loneliness, our findings have interpersonal implications as well as implications for management and organizations.

Interpersonal Implications

The current research also provides insight into some of power's effects on behavior. For example, this research may help explain why power leads to greater risk-taking behaviors (Anderson & Galinsky, 2006). The subjective sense of social support that accompanies experiences of power may provide people with a greater sense of security. Research has shown that these feelings of security can promote people to engage in riskier activities (Gardner & Steinberg, 2005; Levav & Argo, 2010). Thus, the social support that people derive from having

power may also increase risk-taking whereas lacking power, and therefore lacking feelings of social support, may increase risk aversion. At the same time, the present research complements studies showing that power increases self-sufficiency and preferences for performing tasks alone (Lammers et al., 2012), attributes that form the basis of social distance (Magee & Smith, 2013), and research showing that the powerful overestimate their connections with others (Brion & Anderson, 2012). Ironically, by conferring a sense of connection with others, power may give people the ability to feel that they can accomplish tasks independently while feeling they have others' support. Lacking power may lead people to become more interdependent and more willing to seek others' help on group tasks.

The present research also helps to explain why having power can decrease perspective-taking, empathy, and compassion toward others whereas lacking power can increase these other-oriented processes. Given that the need for social connection often prompts consideration of others' mental states (Epley, Akalis, Waytz, & Cacioppo, 2008; Pickett et al., 2004), it is likely that power diminishes this tendency, in part, by reducing the need for connection whereas lacking power increases the need to connect, thereby increasing social engagement. Recent work has also shown that social connection can enable dehumanization as well (Waytz & Epley, 2012), supporting the idea that power diminishes empathic tendencies through mitigating the need for connection.

Managerial and Organizational Implications

These results also have a number of managerial and organizational implications. One is that given loneliness' far-reaching detrimental effects on physical and psychological health (Cacioppo & Patrick, 2008), these results can add insight into why employees' well-being and happiness is diminished at the lower end of organizational hierarchies (Marmot, 2004).

Consistent with prior research on the benefits of autonomy (Deci & Ryan, 1987), it is important for managers to provide all employees opportunities to attain power or at least feel powerful, so that they do not suffer the consequences associated with loneliness. A second implication is for organizational citizenship behaviors (OCBs), which contribute to an organization's well-being but are not formally part of the job. Prior research suggests a positive relationship between social support received by employees and their engagement in OCBs (Bowling et al., 2004). In addition, being made to feel isolated tends to reduce OCBs, particularly for people oriented toward short-term versus long-term consequences (Balliet & Ferris, 2013). This pattern suggests that managers seeking to motivate their employees to engage in OCBs should attend to the social needs of low-power employees who might be experiencing feelings of isolation.

Future Directions

The present studies suggest a number of avenues for future research. We believe that both low power can increase and high power can decrease loneliness because high power confers material and psychological resources that afford access to social opportunities whereas low power can deny access to these resources, and hence deny access to the same opportunities. It should be noted that whether the effect of power on loneliness could be attributed to the experience of low power or high power varied across studies and future research is needed to comprehensively assess directionality of the present effects.

Second, we wish to raise the possibility that although the present studies suggest that low power is associated with greater loneliness, possessing power over—and therefore responsibility for—a negative outcome can also increase loneliness (Anderson & Arnoult, 1985; Anderson, Horowitz, & French, 1982; Anderson, Miller, Riger, Dill, & Sedikides, 1994). In other words, high-power employees of organizations might also be susceptible to the consequences of

loneliness under particular circumstances. When executives or managers have sole responsibility over high-stakes decisions with negative outcomes, loneliness may be more likely to emerge. For example, when high-ranking individuals in an organization have sole responsibility for laying off employees, reducing resources to employees in budget restructurings, or increasing organizational profit at a potential cost to the environment or to society, they might experience loneliness. Given the negative effects of loneliness on cognitive functioning (Cacioppo & Hawkley, 2009b), such instances might then hamper effective management and leadership. Future research can examine these circumstances to test boundary conditions of the power-loneliness relationship.

A limitation of the present research is that it largely examines momentary experiences of high or low power. Study 1 demonstrates that the dispositional experience of power is associated with reduced loneliness, but it is possible that over time, experiences of high or low power might have different effects on loneliness than those documented here. For example, whereas momentary experiences of high power appear to reduce loneliness, over time attaining a position of power may isolate oneself from others in an organizational hierarchy, creating feelings of subjective isolation as well. We welcome future research on the effects of having or lacking power long-term on loneliness.

In addition, future research can examine the consequences of the power-loneliness relationship. At a general level, given that social connection improves physical and mental well-being (Cacioppo & Patrick, 2008; Diener & Seligman, 2002), future research can test whether power conveys these benefits through diminishing feelings of loneliness and whether low power conversely reduces well-being. More specifically, at the organizational level, future research can examine whether increasing opportunities for employees to experience power, control, and

autonomy increases satisfaction with work through reducing loneliness. Similarly, research can examine whether positive experiences of power increase OCBs through reducing loneliness and increasing organizational engagement. Future studies can also examine the negative consequences of increased loneliness that managers may face in high-stakes situations, testing whether such situations lead to impaired decision-making resulting from loneliness' detrimental effect on cognitive functioning.

Conclusion

The present research contributes to the organizational literature on leadership by examining the relationship between power and loneliness. These studies provide answers to the complex and long-standing question of whether power is positively or negatively related to loneliness. The predominant pattern of results across eight studies suggests that high power reduced loneliness compared to low power, which increased loneliness. These results have numerous interpersonal and organizational implications and provide an important insight into power's effects on perceptions of one's social world.

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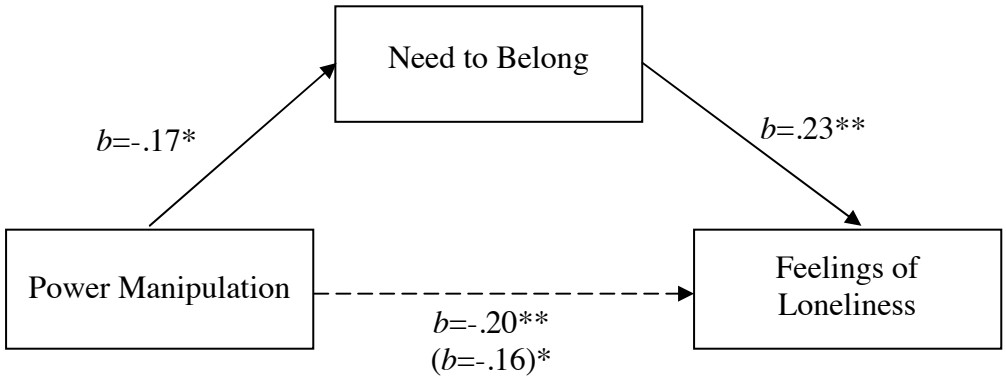
Figure Captions

Figure 1. The results of a mediation analysis of power condition on loneliness, Study 5.

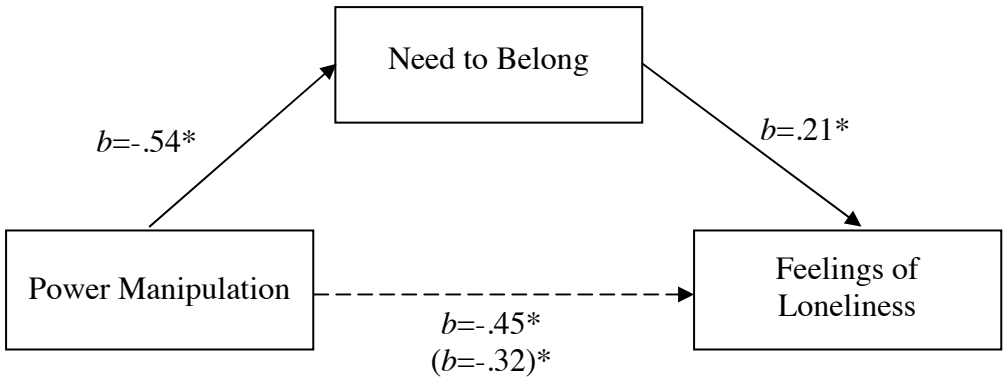
Figure 2. The results of a mediation analysis of power condition on loneliness, Study 6.

Figure 1.



Note 1: High power condition is coded as 1; low power condition is coded as 0.
*$p \leq 0.05$; **$p \leq 0.01$

Figure 2.



Note 1: High power condition is coded as 1; low power condition is coded as 0.
*$p \leq 0.01$