

## RESEARCH REPORT

# Too Tired to Inspire or Be Inspired: Sleep Deprivation and Charismatic Leadership

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We draw from theory on sleep and affect regulation to extend the emotional labor model of leadership. We examine both leader and follower sleep as important antecedents of attributions of charismatic leadership. In Study 1, we manipulate the sleep of leaders, and find that leader emotional labor in the form of deep acting (but not surface acting or authentically experienced positive affect) mediates the harmful effect of leader sleep deprivation on follower ratings of charismatic leadership. In Study 2, we manipulate the sleep of followers, and find that follower experienced positive affect mediates the harmful effect of follower sleep deprivation on follower ratings of charismatic leadership of the leader. Thus, both leader and follower sleep deprivation harm attributions of charismatic leadership, with the regulation and experience of affect as causal mechanisms.

*Keywords:* sleep, charismatic leadership, transformational leadership, affect, emotional labor

Conger, Kanungo, and Menon (2000) define charismatic leadership as inspiring followers through intellectual stimulation which fosters an impression that the leader and their mission are extraordinary (see also Bass & Avolio, 1993). Charismatic leaders instill pride and respect (Avolio, Bass, & Jung, 1999), and foster an image of remarkable competence (Yukl, 2006). Researchers note that followers personally identify with those who have such “special power” (Conger & Kanungo, 1998; House, Spangler, & Woycke, 1991). Charismatic leadership is associated with a broad range of positive outcomes, including leader performance (Lowe, Kroeck, & Sivasubramaniam, 1996) and retention (Jacquart & Antonakis, 2015), organizational effectiveness (Wowak, Mannor, Arrfelt, & McNamara, 2014), and outcomes for followers such as job satisfaction, helping behavior, and job performance (Den Hartog, De Hoogh, & Keegan, 2007; Lester, Meglino, & Korsgaard, 2002).

The emotional labor model of leadership posits that leader emotional displays—both authentic emotional displays and emotional displays that are manipulated through emotional labor—influence follower affect and thus follower perceptions of leader charisma (Humphrey, Pollack, & Hawver, 2008). Thus, affect plays a central role in charisma. The sleep and emotion regulation model (Barnes, 2012) notes that sleep deprivation undermines both the experience of positive affect as well as the regulation of affect. Thus, we contend that leader sleep is an important determinant of charismatic leadership. Moreover, follower affective experiences are important determinants of their perceptions of leader charisma (Humphrey et al., 2008). Therefore, we posit that sleep deprivation of followers will lower their positive affect as well, influencing their judgment of leader charisma even beyond the effects of leader characteristics.

Accordingly, the purpose of this paper is to extend the emotional labor model of leadership (Humphrey et al., 2008) by drawing from the sleep and emotion regulation model (Barnes, 2012). Thus, our central research question is whether leader and follower sleep influence charismatic leadership. Consistent with the view of charisma as both a behavior and an attribution (Conger & Kanungo, 1998), we deem sleep deprivation as a hindrance to the leader’s engagement in charisma and to the follower’s social judgment of leader charisma. Specifically, as we detail below, we argue that when either party (leader or follower) is sleep deprived, follower attributions of the leader’s charisma deteriorates due to the leader’s reduced positive affect and emotional labor (i.e., emotional display required by given social/contextual norms; Hochschild, 1983) as well as the reduced experienced positive affect of the follower. To

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test our hypotheses, we conduct two laboratory experiments, manipulating the sleep of leaders in Study 1 and that of followers in Study 2.

Our study makes several contributions to the research literature. First, we extend charismatic leadership theory as well as the emotional labor model of leadership (Humphrey et al., 2008) by adding the new antecedents of both leader and follower sleep. Second, we extend theory on emotional labor by showing that sleep can affect how leaders display and experience their authentic and regulated emotions. Third, by showing how sleep influences charismatic leadership, we provide a starting point for research examining ways to improve leadership.

### Leader Sleep, Affective Displays, and Charismatic Leadership

As noted above, charismatic leadership is an attribution given by followers which focuses primarily on perceptions of inspiration. Conger and Kanungo (1987) note processes by which leaders can appear charismatic, focusing on behaviors such as being assertive, expressing self-confidence, displaying expertise, being unconventional, and showing concern for follower needs. This can produce a variety of outcomes for followers, such as acceptance of the leader's authority, follower trust in the leader, emulation of the leader, and heightened goals of the followers (House & Baetz, 1979). A recently developed model of emotional labor and leadership (Humphrey et al., 2008) indicates that affective displays and experiences are important antecedents to perceptions of charismatic leadership.

In the emotional labor model of leadership, Humphrey et al. (2008) note the importance of affective displays, which we define as verbal and nonverbal expressions of positive emotion, such as showing a smile or using a warm tone of voice (for more detail on visual positive displays, see Grandey, Fisk, Mattila, Jansen, & Sideman, 2005; for more on nonverbal positive displays, see Laukka & Elfенbein, 2012). Central to the emotional labor model of leadership is the display of positive affect, which is consistent with several empirical articles noting the positive effect of leader positive affect displays on perceptions of leader charisma (Bono & Ilies, 2006; Damen, Van Knippenberg, & Van Knippenberg, 2008; Erez, Misangyi, Johnson, LePine, & Halverson, 2008; Johnson, 2008). Humphrey and colleagues explicitly note that such positive affect displays can occur through authentic expressions of positive affect experiences, or through emotional labor. Morris and Feldman (1996) define emotional labor as the effort, planning, and control needed to express a specific emotion. Emotional labor includes both surface acting and deep acting (Grandey, 2000, 2003). Surface acting entails modifying affective displays without changing the underlying affective experience, whereas deep acting entails modifying affective displays themselves to match a desired display (Grandey, 2003). Thus, leaders can authentically display positive affect, engage in deep acting to display positive affect, or engage in surface acting to display positive affect, and any of these can aid perceptions of charisma (Humphrey et al., 2008).

Empirical tests have started to show support for the propositions in the emotional labor model of leadership. Damen et al. (2008) conducted a laboratory experiment in which the display of positive affect by a leader was manipulated, and observers attributed higher levels of charisma to leaders displaying high versus low positive

affect. Johnson (2008) conducted a similar experiment, replicating the key finding that leaders displaying high positive affect led to attributions of high charisma by observers. In a field study, Erez et al. (2008) found that positive affect displays by leaders were associated with follower attributions of leader charisma. This is consistent with a larger body of literature indicating the importance of leader affective displays. Employees use affect as an important source of interpersonal information (Van Kleef, van den Berg, & Heerdink, 2015). Recent research highlights how leader positive affective presence and expressions have beneficial effects on team outcomes (Liu, Song, Li, & Liao, 2015; Madrid, Totterdell, Niven, & Barros, 2016).

In short, the emotional labor model of leadership posits that leader emotional displays—both authentic emotional displays and emotional displays that are manipulated through emotional labor—influence follower affect and thus follower perceptions of leader charisma. However, Humphrey et al. (2008) are silent with regards to the topic of sleep. Recent research indicates that leader sleep can be an important antecedent of how leadership unfolds (Barnes, Lucianetti, Bhave, & Christian, 2015). This research does not consider the influence of sleep on the emotional labor of leaders; however, there is a literature on how sleep influences the experience and regulation of affect.

Barnes (2012) distilled research on sleep and affect into a model of sleep and affect regulation. Central to this model is that sleep deprivation lowers the experience of positive affect (Franzen, Siegle, & Buysse, 2008; Pilcher & Huffcutt, 1996). Just as important, the sleep and self-regulation model indicates that sleep also influences the manner in which people regulate their affect. These propositions have received support from neuroimaging evidence. Two regions of the brain are especially important in the experience and regulation of affect: the amygdala and the prefrontal cortex (Beauregard, Lévesque, & Bourgouin, 2001; Ochsner et al., 2004). The amygdala is the emotional center of the brain, and the prefrontal cortex plays a role in regulating the experience of emotion. Sleep physiologists have found that sleep deprivation changes activity in the amygdala and alters the functional connectivity between the prefrontal cortex and the amygdala (Chuah et al., 2010).

Moreover, emotional labor is an effortful process that requires people to override their natural experience of emotion to regulate it through either surface or deep acting. Growing literatures in both sleep physiology and management indicate that sleep deprivation undermines self-regulatory processes (for a review, see Barnes, 2012). This is apparent in experimental research (Christian & Ellis, 2011) and field research (Barnes, Schaubroeck, Huth, & Ghuman, 2011) and applies to a variety of self-control based outcomes such as cyberloafing, work engagement, and abusive supervision (Barnes, Lucianetti, Bhave, Christian, 2015; Lanaj, Johnson, & Barnes, 2014; Wagner, Barnes, Lim, & Ferris, 2012). Applying this effect of sleep on self-control to the domain of charisma, we posit that sleep deprivation will lead to low levels of surface and deep acting.

Integrating these literatures, we hypothesize that leader sleep deprivation will lead to low levels of leader positive affect, surface acting, deep acting, and that these will in turn lead to low follower ratings of leader charisma. In other words, experienced positive affect, surface acting, and deep acting will mediate the effect of leader sleep on charismatic leadership.

*Hypothesis 1:* Sleep deprivation of the leader will lead to low follower attributions of leader charisma.

*Hypothesis 2:* Leader (a) experienced positive affect, (b) surface acting, and (c) deep acting will mediate the effect of leader sleep deprivation on follower attributions of leader charisma.

### Follower Sleep, Affect, and Attributions of Charismatic Leadership

As Conger and Kanungo (1998) indicate, leaders are only half of the equation for charismatic leadership; followers are the other half. Addressing this, the emotional labor model of leadership also focuses on the affective experience of followers. Central to this model is that follower affect is a key linking mechanism between leader affect displays and subordinate perceptions. Leaders display positive affect, which in turn positively influences the affective experience of subordinates, which in turn influences subordinate perceptions of leader charisma. In a series of empirical studies, Bono and Ilies (2006) provide support for this contention.

Moreover, this is consistent with research on affect as information (Clore, Gasper, & Garvin, 2001; Clore & Huntsinger, 2007); when an individual experiences affect, s/he asks the question of why s/he is feeling that way, seeking an attribution for the feeling. We posit that this applies to the context of leadership as well. Followers who interact with a leader and experience a high level of positive affect will seek an explanation for their feelings. Research in the charismatic leadership literature similarly indicates that perceptions of leader charisma can be contaminated by factors other than the leader's behavior. An example of one such factor is knowledge of performance outcomes, such that the same leader behavior can produce high or low attributions depending on performance outcomes (Agle, Nagarajan, Sonnenfeld, & Srinivasan, 2006; van Knippenberg & Sitkin, 2013). We posit that follower positive affect will contaminate perceptions of leader charisma in the same manner as performance. Finally, similar support for this view comes from research on mood-congruent judgment (Mayer, Gaschke, Braverman, & Evans, 1992). This research finds that those who are in a positive mood will be more likely to see positive attributes as likely. In the context of person perception, Mayer et al. (1992) found that positive affect led participants to make more positive attributions about others. Similarly, Forgas and Bower (1987) found that happy people make more positive judgments about others than do sad people.

As noted above, the sleep and affect regulation model indicates that sleep deprivation reduces positive affect (Barnes, 2012; Franzen et al., 2008). This applies to followers as well. The emotional labor model of leadership indicates that through emotional contagion, leader positive affect displays will influence followers' experience of positive affect, which will in turn influence follower perceptions of leader charisma. It is worth noting that individuals experiencing sleep deprivation notoriously underestimate the effects of their sleep deprivation (Banks, Catcheside, Lack, Grunstein, & McEvoy, 2004; Banks & Dinges, 2007; Van Dongen, Maislin, Mullington, & Dinges, 2003). Thus, rather than attributing their low levels of positive affect to their lost sleep, followers will seek other attributions that are more salient such as their leader. More specifically, we posit that there will be a tendency to

attribute that positive affect to the charisma of the leader. In contrast, when a followers interacting with a leader and experiences a low level of positive affect, there will be a tendency to attribute the low positive affect experience to a lack of charisma on the part of the leader.

Integrating our arguments above, we posit that sleep deprived followers will experience low levels of positive affect, which will in turn lead them to attribute low levels of charisma to their leader. Accordingly, we posit that follower positive affect will mediate the effect of follower sleep deprivation on follower perceptions of leader charisma.

*Hypothesis 3:* Sleep deprivation of the follower will lead to low follower perceptions of leader charisma.

*Hypothesis 4:* Follower experienced positive affect will mediate the effect of follower sleep deprivation on follower perceptions of leader charisma.

### Overview of Empirical Studies

Van Knippenberg and Sitkin (2013) criticized the charismatic leadership literature by questioning the causality of leadership effects, positing that the insertion of perceptions of leadership's effects on the predictor side is problematic because it could also be included on the outcome side. In addition, Pastor, Meindl, and Mayo (2002) found that charisma attributions are related to patterns of friendship ties within groups of followers. We conducted two laboratory studies to test our hypotheses in controlled settings to minimize the effects of other contextual variables (e.g., prior performance outcomes or previous friendship ties).

Study 1 focused on the sleep of the leader, and Study 2 focused on the sleep of the follower. In Study 1, we manipulated participants' sleep and asked them to perform the role of a student body leader delivering a speech in the commencement ceremony. Coders blind to conditions watched these recordings and rated the charisma of the leader. In Study 2, we manipulated participant's sleep as well; however, participants were assigned the role of followers watching prerecorded speeches selected from Study 1.

### Study 1: The Effects of Leader Sleep Deprivation on Charismatic Leadership

#### Participants and Procedure

We recruited 88 business students (45 male,  $M_{age} = 21.57$  years) from a large Pacific Northwest university. We used the same manipulation of sleep as Barnes, Gunia, and Wagner (2015). Participants were assigned to one of two conditions. In the sleep deprivation condition ( $n = 43$ ), participants completed short hourly surveys starting at 10:00 p.m. and ending at 5:00 a.m. the night before participating in the laboratory part of the experiment. Participants in the control condition ( $n = 45$ ) did not do so. Regardless of the assigned condition, the laboratory portion of the study took place in the morning to minimize the effects of non-manipulated external factors such as time of day. Upon arrival in the laboratory, participants completed a short survey indicating the quantity of their last night sleep. Next, they were asked to play the role of the student body leader who delivers a speech in the

commencement ceremony. Participants were given 15 min to prepare for the speech and informed that their speech would be videotaped. Finally, participants rated their own emotional labor.

## Measures

**Charismatic leadership.** We recruited three research assistants to rate charismatic leadership displayed in the videos. The three observers watched all videos ( $M_{\text{video length}} = 175.68$  seconds,  $SD = 76.02$ ) in blocks of 20 to avoid fatigue. Observation of videos was randomized across and within blocks. We informed the raters that we had asked participants to play the role of a student body leader and deliver a speech in the commencement ceremony, and that the raters were to play the role of a follower evaluating this speech. The raters were blind to condition. We measured charismatic leadership using 4 items from idealized influence factor in the MLQ-5X (Bass & Avolio, 1997).  $R_{\text{wg}}$  (.70), ICC[1] (.37), and ICC[2] (.65) values indicated sufficient agreement among raters for a given video, providing justification for combining the three ratings into an overall measure of charismatic leadership for each video.

**Experienced positive affect.** We measured state positive affective with 10 items from the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988). Examples items included “enthusiastic,” “excited,” and “attentive” ( $\alpha = .93$ ). Immediately prior to their speech, participants conducted a self-evaluation of the degree to which they experienced these states.

**Deep acting and surface acting.** We assessed the degree to which leaders engaged in deep and surface acting in their speeches with the scales developed by Grandey (2003). After delivering the commencement speech, leaders were asked to indicate the extent to which they engaged in deep and surface acting. Examples of the three-item deep acting scale are “Tried to actually experience the emotions I must show” and “Worked hard to feel the emotions that I needed to show to others.” Examples of the five-item surface acting scale are “Just pretended to have the emotions I needed to display” and “Faked a good mood.” Coefficient alpha was .90 for deep acting, and .89 for surface acting.

**Sleep manipulation check.** To ensure that our sleep manipulation was effective, we asked participants to report how much they slept the night before participating in the study (see Barnes et al., 2011).

**Control variables.** We controlled for gender because the possession of masculine characteristics can be beneficial for leadership emergence (Fagenson, 1990; Kent & Moss, 1994), and female leaders are rated high in charismatic leadership (Groves, 2005). We also controlled for video length.

## Results and Discussion

Means, standard deviations, and correlations for the key study variables appear in Table 1. We conducted an independent-samples  $t$  test to compare sleep quantity in the two conditions. There was a significant difference in sleep between the sleep deprived condition ( $M = 286.74$  min,  $SD = 114.76$ ) and the control condition ( $M = 401.67$  min,  $SD = 77.94$ ;  $t(86) = 5.52$ ,  $p < .01$ ). This indicates that the sleep manipulation was effective.

To Test Hypothesis 1, we examined the impact of leader sleep condition on ratings of charismatic leadership by conducting or-

dinary least squares (OLS) regressions. According to Hypothesis 1, leaders in the sleep deprived condition should be perceived as less charismatic than the leaders in the control condition. All control variables were entered in Model 1 to predict leader charisma. In Model 2, we entered the sleep condition (control vs. sleep deprived) as a predictor and found that leaders who were in the sleep deprived condition were perceived as less charismatic ( $B = -.36$ ,  $p < .01$ ; see Table 2).

To Test Hypothesis 2, we conducted a parallel mediation analysis (Hayes, 2013). Hypothesis 2 suggested that the effects of leader sleep deprivation on charismatic leadership were mediated by experienced positive affect (a), surface acting (b), and deep acting (c). We found that the paths from leader sleep condition to leader experienced positive affect ( $B = -.09$ ,  $p = .66$ ) and from leader sleep condition to surface acting ( $B = .07$ ,  $p = .74$ ) were not significant; however, the path from leader sleep to deep acting was significant ( $B = -.51$ ,  $p < .01$ ). Moreover, the path from deep acting to charismatic leadership was significant ( $B = .20$ ,  $p < .05$ ). Bootstrapping procedures using 1,000 resamples revealed a significant indirect effect of leader sleep on charismatic leadership through deep acting (*indirect effect* =  $-.10$ ; 95% CI [ $-.26$ ,  $-.02$ ], but not via surface acting (*indirect effect* =  $-.001$ ; 95% CI [ $-.06$ ,  $.02$ ]) or experienced positive affect (*indirect effect* =  $-.004$ ; 95% CI [ $-.10$ ,  $.02$ ]). Hypotheses 2a and 2b were not supported, but Hypothesis 2c was. See Table 3 for the results. These findings suggest that leader sleep influences charismatic leadership via leader deep acting.<sup>1</sup>

## Study 2: The Effects of Follower Sleep on Attributions of Charismatic Leadership

### Participants and Procedure

We collected data from 109 business students (47 male,  $M_{\text{age}} = 21.36$  years) from a large Pacific Northwest university. We used the same procedure to manipulate sleep as in Study 1. Participants were assigned to the sleep deprived condition ( $n = 51$ ), or the control condition ( $n = 58$ ). Participants in the sleep deprived condition filled out hourly surveys through the night before participating in the laboratory part of the experiment. They started taking surveys at 10:00 p.m. and finished at 5:00 a.m. The laboratory portion of the experiment was conducted in the morning to minimize the effects time of the day on perceptions of charisma. After arriving to the laboratory, participants filled out a survey about their sleep the night before and their state positive affective at the current moment. Next, they were instructed to play the role of a follower who is observing a series of three leaders delivering speeches (using videos from Study 1). Participants evaluated the charismatic leadership of the speaker in each video immediately after watching each one.

<sup>1</sup> An anonymous reviewer suggested that we examine state negative affect as an additional mediator. In supplemental analyses, state negative affect was not a significant mediator. Moreover, including state negative affect in the analyses did not noticeably change any of the other effects in our model.

Table 1  
Descriptive Statistics and Correlations for Study 1 Variables<sup>a</sup>

Variable	Mean	SD	1	2	3	4	5	6
1. Charismatic leadership	2.99	.76	(.89)					
2. Leader sleep condition <sup>b</sup>	.49	.50	-.20					
3. Leader state positive affect	2.43	.91	.11	-.05	(.93)			
4. Leader surface acting	2.39	.99	.05	.04	-.08	(.89)		
5. Leader deep acting	2.85	.99	.33*	-.23**	.10	.14	(.90)	
6. Leader gender <sup>c</sup>	1.49	.50	-.08	.05	.08	-.14	-.10	
7. Video length <sup>d</sup>	175.68	76.02	.27**	.10	.20	.12	.07	-.03

<sup>a</sup>  $N = 88$ . <sup>b</sup> control condition = 0, sleep deprived condition = 1. <sup>c</sup> male = 1, female = 2. <sup>d</sup> video length in seconds; scale reliabilities are presented within parentheses along the central diagonal.

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

## Measures

**Follower attributions of charismatic leadership.** We used the same charisma scale as in Study 1. Based on the ratings of the three research assistants in Study 1, we selected nine videos (three videos at the mean of charismatic leadership, three videos which were one standard deviation above the mean, and three videos which were one standard deviation below the mean). These videos had 5 male and 4 female leaders. Participants were randomly assigned to view one video at the mean, one video above the mean, and one video below the mean of charisma. We then averaged each participants' ratings of the three videos to create a measure of charismatic leadership ( $\alpha = .93$ ). Analyses of variance showed no significant difference in charisma across the videos in the same category. The three videos that were at the mean for charisma ratings in Study 1 were not significantly different from each other in charisma ratings in Study 2, with the same being the case for the set of three that were below the mean and the set of three that were above the mean. In other words, the three videos in a given category were equivalent.

**Experienced positive affect.** We measured follower state positive affect using the same scale utilized in Study 1 ( $\alpha = .94$ ).

**Sleep manipulation check.** Using the same method as Study 1, we asked participants to report their sleep quantity.

**Control variables.** We controlled for follower gender because individuals can prefer working with similar people (social identity and self-categorization theory; Turner, 1982, 1991).

## Results and Discussion

Means, standard deviations, and correlations for the key study variables are presented in Table 4. We conducted an independent-samples  $t$  test to examine the effect of the sleep manipulation on sleep quantity. We found a significant difference in sleep for the sleep deprived condition ( $M = 277.64$  min,  $SD = 105.95$ ) and control ( $M = 411.47$  min,  $SD = 71.42$ ) conditions,  $t(107) = 7.812$ ,  $p < .01$ . This indicates the manipulation had the intended effect on follower sleep.

To Test Hypothesis 3, we used OLS regressions to investigate if follower sleep influenced their attributions of charismatic leadership. We entered follower sleep after entering the control variable. The results suggested that followers in the sleep deprived condition rated leaders as less charismatic than did followers in the control condition ( $B = -.24$ ,  $p < .01$ ; see Table 5). Next, we tested Hypothesis 4 using Hayes (2013) methods for mediation. Hypothesis 4 proposed that the effects of follower sleep on follower attributions of leader charisma are mediated by follower state positive affect. The results supported Hypothesis 4. Sleep condition had a significant effect on state positive affect ( $B = -.61$ ,  $p < .01$ ). State positive affect had a positive and significant effect on follower attributions of leader charisma ( $B = .15$ ,  $p < .05$ ). Lastly, bootstrapping procedures using 1,000 resamples revealed significant indirect effects of follower sleep condition on follower attributions of leader charisma through the mediator of follower state positive affect (*indirect effect* =  $-.09$ ; 95% CI [ $-.21$ ,  $-.01$ ]). See Table 6 for the results. These findings suggest that follower sleep influences follower perceptions of leader charisma via state positive affect.<sup>2</sup>

## General Discussion

The present investigation allowed us to reveal the pathways through which sleep deprivation of both the leader and the follower inhibited attributions of charismatic leadership. We found that leader sleep deprivation reduced the charismatic leadership via reduced deep acting, and follower sleep deprivation lowered fol-

Table 2  
Regression Coefficients on Charismatic Leadership for Study 1<sup>a</sup>

Variables	Model 1			Model 2		
	B	$\beta$	SE	B	$\beta$	SE
Constant	2.65**		.31	2.76		
Leader gender <sup>b</sup>	-.11	-.07	.16	-.09	-.06	.15
Video length <sup>c</sup>	.003**	.29	.001	.003**	.31	.001
Leader sleep condition <sup>d</sup>				-.36**	-.24	.15
R square	.09			.14		
$\Delta R$ square				.05*		

<sup>a</sup>  $N = 88$ . <sup>b</sup> male = 1, female = 2. <sup>c</sup> video length in seconds. <sup>d</sup> control condition = 0, sleep deprived condition = 1.

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

<sup>2</sup> As with Study 1, an anonymous reviewer suggested that we examine state negative affect as an additional mediator. In supplemental analyses, state negative affect was not a significant mediator. Moreover, including state negative affect in the analyses did not noticeably change any of the other effects in our model.

Table 3  
Regression Results for Parallel Mediation in Study 1<sup>a</sup>

Predictor	Leader state positive affect			Leader surface acting			Leader deep acting			Charismatic leadership		
	B	SE	t	B	SE	t	B	SE	t	B	SE	t
Constant	2.60	.39	6.66**	2.49	.42	5.89**	2.30	.40	5.71**	2.22	.4	4.96**
Leader state positive affect										.04	.08	.51
Leader surface acting										-.02	.08	-.23
Leader deep acting										.20	.08	2.47*
Leader sleep condition <sup>b</sup>	-.09	.20	-.44	.07	.21	.33	-.51	.20	-2.50*	-.25	.16	-1.61
Leader gender <sup>c</sup>	-.18	.20	-.92	-.27	.21	-1.28	.19	.20	.92	-.12	.15	-.80
Video length <sup>d</sup>	.008	.00	.64	.002	.01	1.04	.003	.01	2.20*	.002	.01	2.42*
R <sup>2</sup>			.02									.21**

  

	Bootstrapping effect	SE	95% CI (LL, UL)
Direct effect	-.25	.16	-.56, .06
Indirect effect total	-.10	.07	-.29, -.006
Indirect effect via positive affect	-.004	.02	-.10, .02
Indirect effect via surface acting	-.001	.02	-.06, .02
Indirect effect via deep acting	-.10	.06	-.26, -.02

<sup>a</sup> N = 88. <sup>b</sup> control condition = 0, sleep deprived condition = 1. <sup>c</sup> male = 1, female = 2. <sup>d</sup> video length in seconds; unstandardized regression coefficients are reported; bootstrap sample size = 1,000.  
\* p < .05. \*\* p < .01.

lower attributions of leader charisma via reduced follower state positive affect. Moreover, our finding that follower sleep deprivation reduces follower attributions of leader charisma seems to suggest that it is more difficult for leaders to inspire sleep deprived followers.

Our findings contribute to the charismatic leadership, emotional labor, and sleep literatures. This includes an extension to the emotional labor model of leadership to include sleep as a new antecedent. With this extension, we know not only that the experience and displayed affect of leaders influences perceptions of charisma, but that sleep is an important driver of charisma through these emotion-based processes. This is a useful development given that the charismatic leadership literature has largely focused on outcomes of charisma, and less on what drives the emotional processes that are involved.

Our research has clear implications for practice. In order to avoid being perceived as less charismatic by their employees, leaders should reduce not only their own sleep deprivation but also that of their employees. Such efforts not only benefit their own and followers' neurocognitive and physiological functioning, but also their organizational effectiveness. Barnes (2011) and Barnes and Spreitzer (2015) provide some recommendations for improving

sleep in organizations that are relevant to these findings. For example, individuals can minimize the use of smartphones late at night (Lanaj et al., 2014), and consume caffeine (Welsh, Ellis, Christian, & Mai, 2014) to mitigate the effects of sleep deprivation on behaviors. Organizations can also change work-unit policies in a manner that lessens the prevalence of sleep deprivation (Barnes, Jiang, & Lepak, 2016).

Organizations can also aim at increasing the level of state positive affect across leaders and followers, and consequently influence follower perceptions of leader charisma. Leaders should not only engage in deep acting to induce their own and followers' positive affect, but also reduce the awestruck effect (Menges, Kilduff, Kern, & Bruch, 2015) by encouraging employees to experience and express their positive affect. Such efforts would cultivate a positive affective tone for the work group, enhancing group effectiveness (George, 1990).

Our approach to testing our hypotheses had strengths that aid the confidence one can take in our findings. First, by conducting our research in a laboratory setting in which we manipulated sleep, we avoided potential confounds produced by individual differences in

Table 4  
Descriptive Statistics and Correlations for Study 2 Variables<sup>a</sup>

Variable	Mean	SD	1	2	3
1. Charismatic leadership	2.41	.59	(.93)		
2. Follower sleep condition <sup>b</sup>	.47	.50	-.22**		
3. Follower positive affect state	2.30	.89	.26**	-.33*	(.94)
4. Follower gender <sup>c</sup>	1.57	.50	.15	-.11	-.09

<sup>a</sup> N = 109. <sup>b</sup> control condition = 0, sleep deprived condition = 1. <sup>c</sup> male = 1, female = 2; scale reliabilities are presented within parentheses along the central diagonal.  
\* p < .05. \*\* p < .01.

Table 5  
Regression Coefficients on Charismatic Leadership for Study 2<sup>a</sup>

Variables	Model 1			Model 2		
	B	β	SE	B	β	SE
Constant	2.13**		.19	2.29**		.20
Follower gender <sup>b</sup>	.18	.15	.11	.15	.13	.11
Follower sleep condition <sup>c</sup>				-.24*	-.20	.11
R square		.01			.05	
ΔR square					.04*	

<sup>a</sup> N = 109. <sup>b</sup> male = 1, female = 2. <sup>c</sup> control condition = 0, sleep deprived condition = 1.  
\* p < .05. \*\* p < .01.

Table 6  
Regression Results for Mediation in Study 2<sup>a</sup>

Predictor	Follower positive affect			Charismatic leadership		
	B	SE	t	B	SE	t
Constant	2.93	.29	10.16**	1.84	.27	6.82**
Follower positive affect				.15	.06	2.35*
Follower sleep condition <sup>b</sup>	-.61	.16	-3.73**	-.15	.11	-1.28
Follower gender <sup>c</sup>	-.22	.16	-1.34	.16	.11	1.69
R <sup>2</sup>		.12**			.11**	
	Bootstrapping effect			95% CI (LL, UL)		
Direct effect	-.15			.11, -.38, .08		
Indirect effect via positive affect	-.09			.05, -.21, -.01		

<sup>a</sup>  $N = 109$ . <sup>b</sup> control condition = 0, sleep deprived condition = 1. <sup>c</sup> male = 1, female = 2; unstandardized regression coefficients are reported; bootstrap sample size = 1,000.

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

the need for sleep. Second, we studied charisma in a manner in which charisma ratings could not be polluted by knowledge of performance outcomes, as is often the case in research on charismatic leadership (van Knippenberg & Sitkin, 2013).

Nevertheless, our empirical approach still had some noteworthy limitations. Following previous research on charisma (Antonakis, Fenley, & Liechti, 2011; Awamleh & Gardner, 1999), we adopted a speech task and a speech evaluation task to test our hypotheses. Although researchers have found that leaders can display emotions via speeches, and followers make inferences about leader traits and dispositions based on their displayed emotion (Keltner & Kring, 1998), charisma can be demonstrated via different interpersonal behaviors. Our laboratory study had a restricted range of behaviors compared with a more realistic setting. This may have made it more difficult to detect the effect we investigated, such that we are underestimating the strength of the effect. Another reason that our effects may be a conservative estimate is that we did not measure charismatic leadership both before and after sleep deprivation. Thus, there are between-participants sources of noise that lower our ability to detect the hypothesized effects. Finally, we utilized the most commonly used measure of emotional labor (Grandey, 2003). However, this measure does not focus on the display of positive affect specifically. The emotional labor literature indicates that in most contexts, positive affect displays are the most prevalent (Diefendorff & Richard, 2003), which is perhaps why this measure does not specify more precisely the valence of emotional labor displays. Future research should more specifically measure the content of emotional labor displays.

Our research included a set of laboratory experiments in which sleep was manipulated. In our approach, we did not follow the same individuals over time, nor track any changes over time. Although we did change the sleep (and affect-related variables) between individuals with our manipulation, showing changes within-individuals would further highlight the dynamic aspect of these relationships. We encourage future researchers to advance our ideas even further by taking a longitudinal approach with multiple iterations of measurement. Especially compelling would be field research which takes a diary design, enabling the inves-

tigation of daily sleep on attributions of charismatic leadership. Johnson, Venus, Lanaj, Mao, and Chang (2012) provide a useful example of such a research design in the context of leader charisma. Given our findings showing that sleep influence charismatic leadership, it is reasonable to expect that these relationships may play out in a dynamic manner. It may be that the same leader is more charismatic after a good night of sleep and less charismatic after a short night of sleep. This is an important topic for further study. Moreover, it suggests that there may be other dynamic antecedents of charismatic leadership, perhaps including mood-related characteristics.

In our research, both leaders and followers were included in both studies. However, we manipulated leader and follower sleep in separate studies. We had no a priori predictions for any moderated effects that include the interaction of leader sleep and follower sleep, and therefore did not design our studies to detect such an effect. Nevertheless, if future researchers do develop theory explaining an interaction between leader sleep and follower sleep, then a different design in which both are orthogonally manipulated in the same study would make sense.

Additionally useful would be future research which examines related constructs in the impression management domain. Turnley and Bolino (2001) discuss the primary impression management tactics of ingratiation, self-promotion, exemplification, supplication, and intimidation. Positive affective displays may indeed be useful in some of these impression management tactics. In others, different affective displays may be more likely. For example, the impression management tactic of intimidation includes displaying anger. Moreover, previous research indicates that sleep influences social desirability (Barber, Barnes, & Carlson, 2013). Sleep may have interesting and differential effects across different impression management tactics.

Future research should consider other effects of sleep deprivation on leadership. Our focus has been on charismatic leadership, and Barnes et al. (2015) examined sleep and abusive supervision. Researchers may also find that sleep deprived leaders suffer decrements in other forms of leadership as well. Similarly, future research should consider how the related topic of circadian processes influence leadership, perhaps focusing on circadian mismatches (e.g., Gunia, Barnes, & Sah, 2014) as a detriment to leadership.

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