A double-edged sword: Relationship between full-range leadership behaviors and followers' hair cortisol level

Mathias Diebig *,1,2, Kai C. Bormann, Jens Rowold

TU Dortmund University, Department for Human Resource Development and Change Management, Hohe Str. 141, 44139 Dortmund, Germany

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**Abstract**

This study contributes to literature on leadership by linking the full-range leadership behaviors (transformational, transactional, and laissez-faire leadership) with an objective indicator of employees' stress, namely cortisol, assessed via hair. Hair cortisol is a biological indicator of stress, providing an innovative means of displaying the cortisol concentration of the human body over time. Building on a role ambiguity framework, this study explores the double-edged relationship between full-range leader behaviors and followers' stress by focusing on clarifying and ambiguity-increasing aspects of these leader behaviors. One-hundred-twenty-nine participants provided information on their leaders' full-range leadership behaviors together with a hair sample. Results show leader behaviors have significant relationships with followers' hair cortisol level. Results confirm our hypotheses and reveal two different patterns of leader behaviors with regard to stress: a stress-reducing as well as a stress-promoting pattern of leader behaviors. Results are discussed in the context of leadership research and stress theory, and limitations together with implications for future research are presented.

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**Introduction**

Stress is not only prevalent in modern society, but poses a big challenge for occupational health (American Psychological Association, 2015). Epidemiologic studies have revealed that stress is bad for individuals' health (Chrousos, 2009; Russ et al., 2012) and may, in the long run, impair individuals' performance capability and attenuate overall organizational effectiveness. Therefore, it is crucial to deepen our understanding on how organizations may downscale the prevalence of stress in the working context. One promising link for organizations to handle the challenge of work stress and its consequences is to draw on organizational leaders and their influence on followers. As it is leaders' assignment to sustain and enhance the performance capability of the organization, they have to lead the charge to mitigate their followers' level of stress. Yet, only in recent years, a leader's potential influence on follower well-being and stress has been receiving increased academic attention (Skakon, Nielsen, Borg, & Guzman, 2010). Existing research has yielded promising insights regarding the effects of different leadership styles on a plethora of stress- and health-related outcomes (Gregersen, Vincent-Höper, & Nienhaus, 2014; Skogstad, Einarsen, Torsheim, Aasland, & Hetland, 2007; Sosik & Godshalk, 2000; Zwingmann et al., 2014).

Accordingly, we apply the full-range leadership model (Bass, 1985), covering transformational, transactional, and laissez-faire leadership to facilitate a comprehensive view on leadership behaviors in our study. While each of the three leadership styles has
been discussed and tested independently with regard to follower stress (Nielsen & Munir, 2009; Skogstad et al., 2007), we examine their effects simultaneously to unfold each leadership style’s unique predictive validity. Extending the focus of leadership behaviors is important to attenuate omitted variable bias and to provide an accurate estimate of the relationship between leader behaviors and followers’ stress levels (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Antonakis & House, 2014). In addition, we exceed most of past research by approaching transformational leadership on a facet level (cf. Sosik & Godshalk, 2000) to enable a detailed description of each transformational leadership behavior facet. In doing so, we also address conceptual criticism from van Knippenberg and Sitkin (2013) who argued that transformational leadership behaviors are too distinct from one another to be merged into one composite score. For this purpose, we set the emphasis on different foci of leadership behaviors to allocate them to different content-related groups (cf. Wu, Tsui, & Kinicki, 2010) and embed our study in a role ambiguity framework (Rizzo, House, & Lirtzman, 1970) that serves as an explanatory perspective to develop a model of double-edged leadership influence. Within our role ambiguity framework each leadership behavior is interpreted as either clarifying or ambiguity-increasing, leading to different levels of follower stress. This is important to argue why some well-intended leadership behaviors might also be stressing to the follower.

We advance theory by answering recent calls for the application of more innovative and rigorous methods in the organizational literature (Antonakis, Day, & Schyns, 2012). One main limitation of existing studies in our field of inquiry is that they rely solely on self-reported stress measures. Regularly, followers rate their own perceived job strain. To address this limitation one pathway could, for instance, be the combination of biological and psychological research traditions to integrate and advance knowledge in the organizational context in regard of biological aspects of organizational behavior (Arvey & Zhang, 2015). Unfortunately, until today, there is a dearth of leadership studies considering such integrative research questions. Therefore, it is our primary goal to provide insights on this important gap in existing research and, for the first time, examine leadership relationships with an objective biological criterion of followers’ stress, namely hair cortisol. In recent years, cortisol has become the major neuroendocrine indicator of stress in scientific literature and has been the most studied hormonal indicator in the human body (Ganster & Rosen, 2013). The extraction of cortisol from hair displays a general stress level over time and enables us to look at associations between leadership and stress within a prolonged time frame.

In summary, the contribution of the present study to the existing literature is two-fold. Firstly and most importantly, we move the field forward by building a bridge between two disciplines and, for the first time, integrate knowledge from the field of stress measurement using endocrinological markers, with that from the field of leadership research. With respect to stress literature, we investigate an innovative biomarker of stress in the context of organizational research. Concerning leadership research, we assess the influence of transformational, transactional, and laissez-faire leadership simultaneously. While all three leadership styles have been related to measures of stress, independently, considering them in the same study enables us to gain a better understanding on the simultaneous interplay of the different but theoretically connected leader behaviors. Furthermore, by operationalizing transformational leadership on a facet level we are able to present a balanced and detailed view on the heterogeneous concept of transformational leadership that is almost entirely studied on a composite, overall level. Secondly, we extend existing theory on unintended, detrimental effects from well-intended leadership behaviors by contrasting potentially facilitating behaviors of leaders with potentially stressing ones. This offers a more nuanced approach to specify which behaviors of leaders may be beneficial and which may be harmful for followers with regard to stress.

**Theory and hypotheses**

Leadership behavior has been found to be one of the crucial factors that influence followers’ attitudes, behaviors, and well-being (Yukl, 2013). Organizational leaders play such an important role as they shape followers awareness of work through distributing tasks, setting goals, appraising performance, or motivating. One of the most influential leadership theories from the past decades is the full-range leadership theory (FRLT). It was proposed by Avolio and Bass (1991) and comprises three types of leadership behaviors: transformational, transactional, and laissez-faire. Following the conceptual definition of Podsakoff, MacKenzie, Moorman, and Fetter (1990) the FRLT is represented by eight distinct factors: laissez-faire, transactional leadership, and six transformational factors i.e., identifying and articulating a vision, high performance expectations, providing an appropriate model, fostering the acceptance of group goals, providing individualized support, and intellectual stimulation. The three main types of leadership behaviors differ in their consideration of leader’s activity level and can be ordered on a continuum ranging from totally passive to highly active (Antonakis & House, 2013). Building on this classification, laissez-faire is classified as the absence of leadership, meaning the leader does not engage in any leader activity, whereas transactional leadership – based on contingent reward – subsumes typical (active) management behaviors like setting objectives and monitoring outcomes. Transformational leadership, however, is the most active type of leader behavior, and aims at a transformation of values to enhance followers’ effort and performance (Bass, 1985). Transformational leaders engage in proactive behavior to raise followers’ awareness of the collective interests of the group or organization (Antonakis, Avolio, & Sivasubramaniam, 2003). They motivate followers to work for the benefit of the collective and help them to achieve extraordinary goals.

**Role ambiguity perspective on leadership and follower stress**

We adopt a role ambiguity focused framework to link the behavior of the leader to followers’ level of stress. Per definition, role ambiguity describes a lack of clarity about expectations as well as about the process and the criteria of evaluation of ones work (House, 1996). Role theory states that experiencing role ambiguity is unpleasant and stressful for individuals leading to reduced
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