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Lifelogging for Organizational **Stress** Measurement Theory and Applications



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# Lifelogging for Organizational Stress Measurement

Theory and Applications



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ISSN 2192-4929 ISSN 2192-4937 (electronic) SpringerBriefs in Information Systems ISBN 978-3-319-98710-1 ISBN 978-3-319-98711-8 (eBook) https://doi.org/10.1007/978-3-319-98711-8

Library of Congress Control Number: 2018955395

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## Contents

Lif	felogging for Organizational Stress Measurement: Theory	
and	d Applications	1
1	Introduction	1
2	Constructs in Organizational Stress Research	4
	2.1 Constructs on the Input Side	4
	2.2 Constructs on the Output Side	5
	2.3 Methodological Limitations	6
3	Lifelogging	8
	3.1 Background and Vision of Lifelogging	9
	3.2 Contributions of Lifelogging to Organizational Stress Research	10
4	Discussion, Limitations, and Future Research	24
5	Conclusion	27
Ref	ferences	29
Ap	pendix	39
1	Review of Limitations in Longitudinal OS Research	39
2	Review of Lifelogging Publications	40
3	Review of Lifelogging Tools	45
Ref	ferences	60

### Lifelogging for Organizational Stress Measurement: Theory and Applications



### 1 Introduction

Since the original research report by Hans Selye in the 1930s (Selye, 1936), stress has been an important research topic, predominantly due to its possible detrimental effects ("strains") on individual well-being and health, as well as its negative effects on organizations and society. Among others, Cooper and Cartwright (1994) highlighted that "healthy organizations" must not only be characterized by their financial success, but should consider the health of the individuals working in the organization, for example indicated by high individual job satisfaction and low labor turnover rates. Goh, Pfeffer, and Zenios (2015) estimated the costs and deaths in the US caused by work-related stress based on eight factors (e.g., work hours and shift work, job control and job demands, social support). They report that 5–8% of the US national health care expenditures (about US\$174 billion) and about 120,000 annual deaths can be attributed to work-related stress. Thus, work is a main source of most individuals' daily levels of stress (e.g., Anderson et al., 2015), and therefore exploring the mechanisms of *organizational stress* (hereafter: OS) is pivotal.

Independent of the specific research area and the concrete research question, stress researchers studying cause/effect-relationships are concerned with the development and test of theoretical models in which they hypothesize the relationship between different constructs (based on Edwards & Bagozzi, 2000, p. 155, we define a construct as "a conceptual term used to describe a phenomenon of theoretical interest"). As most constructs in OS research cannot be observed directly, their operationalization and the development of appropriate measurement instruments are key activities in the research process. Prior OS research has applied various instruments, predominantly methods and tools from social science research (interview and survey, e.g., Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Pearlin, 1989; Weiss, 1983) and endocrinological research (measurement of stress hormones

such as adrenaline, noradrenaline, or cortisol, e.g., Emurian, 1993; Evans & Johnson, 2000; Frese, 1985). Yet, despite the long tradition of OS research, scholars in this domain still face a number of significant measurement challenges.

First, there are a number of methods that can be employed to *capture* specific elements of the stress process (e.g., surveys to capture perceptions, observations to capture behavior, or neurophysiological measures to capture bodily reactions). Each method has advantages and disadvantages (Kahn & Byosiere, 1992; Kasl, 1978; Sonnentag & Frese, 2013). Hence, instead of choosing one method only, the combination of methods (i.e., multi-method or even mixed-method approaches, see Venkatesh, Brown, & Bala, 2013; Venkatesh, Brown, & Sullivan, 2016) has repeatedly been suggested to balance the methods' individual advantages and disadvantages, while also allowing for triangulation of data, thus creating a more complete picture of the stress process (Perrewé & Zellars, 1999). Yet, the implementation of a multi-method or mixed-method approach can be difficult from a data collection perspective (e.g., subjects feel overwhelmed, a fact that holds particularly true in field studies, e.g., Venkatesh et al., 2013, 2016).

Second, the combination of methods is essential due to the sheer number of constructs that are involved in the OS process. In addition to individual capabilities and organizational demands, researchers interested in OS cannot simply limit their efforts to the physical confines of an organization (Kahn & Byosiere, 1992; Kasl, 1978). Instead, it is necessary to also measure factors (i.e., at least to control for them) external to the organization as potential sources of stress that can spill over to the organizational context (e.g., work-home conflict, financial problems, or external commitments, Beehr & Newman, 1978; Cooper & Cartwright, 1994; Danna & Griffin, 1999; Parker & DeCotiis, 1983). Hence, measurement instruments should accompany subjects in as many situations of their daily live as possible and, instead of only focusing on a very limited number of specific constructs of interest, researchers should attempt to capture many, or even most, of an individual's daily experiences. Based on such a rich dataset, analytical techniques can be used to make inferences about constructs of interest, a process that is commonly referred to as *information retrieval*.

The third measurement challenge is related to the *dynamic aspects of stress*. Lazarus (1990), for example, pointed to the importance of measuring as close to the occurrence of stress encounters as possible, particularly when utilizing self-report measures (e.g., due to memory distortion). Indeed, several studies have found that human memory can be quite fallible (e.g., Kelly et al., 2011; Vemuri & Bender, 2004), and, based on the understanding of stress as a dynamic concept, only collecting data at one point in time would lead to limited insights on its sources and effects, as well as the unfolding of stress over time. Hence, a more frequent use of longitudinal study designs has been emphasized in OS research during the past decades (e.g., Edwards, 1992; Frese & Zapf, 1988; Kahn & Byosiere, 1992; Kasl, 1978; Riedl, 2013; Sonnentag & Frese, 2013). Yet, for many reasons it can (still) be a challenge to apply a longitudinal research design to stress research (e.g., obtrusiveness of measurement routines and amounts of created data) and hence it is not