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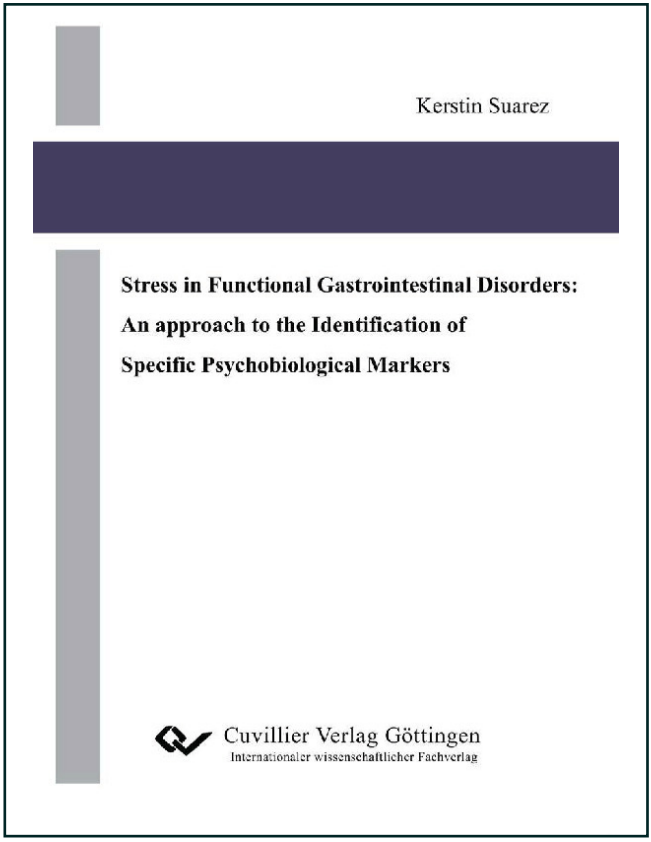
Stress in Functional Gastrointestinal Disorders: An approach to the Identification of Specific Psychobiological Markers



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1. Introduction

"The way to a man's heart is through his stomach" and "scare the pants off someone" are just two of the commonly used expressions in our everyday language suggesting a close association between psychological conditions and digestive functions. Scientific testing of this assumption was first conducted at the beginning of the 19th century by William Beaumont. During the last decades, psychological factors, and in particular stress, have been increasingly implicated in the etiological model of chronic gastrointestinal conditions.

Functional gastrointestinal disorders (FGID), in particular the irritable bowel syndrome (IBS)[1], are the most common conditions resulting in patient visits to primary care physicians and to gastroenterologists. Patients with FGID exhibit a high prevalence of psychiatric comorbidity, psychosocial stress and often show maladaptive illness behavior. For these reasons, FGID have been associated with substantial socioeconomic and individual burden. Although the etiology of FGID remains poorly understood, numerous investigations provide evidence for a crucial role of stress in the etiopathology and in the clinical outcome of these diseases. The influence of acute laboratory stress on bowel functions including motility, secretion and visceral perception is well established in animals and humans. However, stress-induced alterations of gastrointestinal functions have been suggested to be more pronounced in individuals with FGID. Additional evidence for a contributing role of stress in FGID comes from studies linking gastrointestinal symptoms with subjective reports of perceived stress. A variety of "stressors" such as early life stress, acute life-threatening or traumatic events, but also chronic stress in the form of daily hassles and sustained psychosocial stress, have been associated with FGID. It has been postulated that in predisposed individuals, chronic stress modifies the responsiveness and the feedback mechanisms of regulatory psychophysiological systems. The long-term consequences of such alterations are a variety of somatic and psychological symptoms.

[1] IBS is the most expensively investigated FGID. Therefore, the majority of the citations will refer to studies in IBS patients.

Although previous findings provide evidence of stress-induced gut disturbances and psychosocial stress has been associated with the onset and maintenance of FGID, the physiological mechanisms linking stress and gut remain poorly understood. As one mediator of the brain-gut interaction, the hypothalamus-pituitary-adrenal axis – a prominent biological stress system – has been proposed.

The present thesis about Stress in Functional Gastrointestinal Disorders: An Approach to the Identification of Specific Psychobiological Markers includes the three following main parts: A theoretical background, two empirical studies, and a general discussion. The theoretical background consists of information about definition, diagnostic criteria, epidemiology and characteristics of FGID, in particular IBS (chapter I). Following this, current research opinion about etiological factors of FGID in general and IBS in particular will be highlighted (chapter II), and subsequently, the two empirical studies will be presented. The first study aimed at determining the association between functional gastrointestinal symptoms and stress perception in a sample of apparently healthy students. The second study, by contrast, focuses on IBS patients and examines the basal as well as the stimulated hypothalamus-pituitary-adrenal (HPA) axis activity. Finally, a general discussion will embed our current findings in the theoretical background, limitations of the studies will be discussed, and an overview of future research directions will be given.