

## **Technostress: A Holistic Definition**

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### **Abstract:**

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*Technostress, a form of stress resulting from technology use, has long been described a disease resulting from individuals' inability to cope with technology in a healthy way. This emphasis on malady, although useful for understanding the challenges associated with technology use, does little in the way of helping understand when and why individuals experience technostress. To better understand how to implement, appraise, and adapt to technology use in healthy ways requires a broader definition of the construct. This paper enlists stress research to derive a holistic definition of technostress. This conceptualization supports future research and study in that it: explains the influence of technology on existing stressors, incorporates the impact of technostress conditions, outlines varying responses to technology adoption; and makes room for an appreciative approach of technostress.*

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**Keywords:** Technostress, Adaptive Response, Technology Adaptation, Technostress Condition

Technology pervades nearly every facet of contemporary work life. From the time we wake and even when we are asleep, information technology (IT) is at work. The plethora of tools and techniques commonly known as IT are readily embraced by some and vehemently opposed by others. Nowadays, however, it is not a question of if we embrace IT but how we implement, appraise, and adapt to IT that governs our experiences. While positive and negative sentiments regarding technology use are reported in both academic and practitioner-based literature (Ilie et al., 2007; Miller and Sim, 2004); we lack full understanding on how individuals experience and adapt to technology, particularly those factors influencing stress. This is made evident by the multitude of ways in which technostress is defined in both traditional and contemporary literature (Brod, 1984; Shu et al., 2001; Weil and Rosen, 1997).

This paper offers a holistic definition of technostress as a means to support future research and study of the phenomenon. It proceeds as follows. Stress is defined and clarified as a means to derive a comprehensive definition of the construct. Next, varying definitions of technostress are identified and discussed. After which, a succinct definition of concept upon which future research efforts can be based is presented.

### **1. Stress**

A review of literature on *stress* allows us to identify areas of symmetry and disproportionality when attempting to define technostress. For example, stress is broadly conceptualized as a stimulus, outcome, and process. As a stimulus, it is the catalyst to action. It is that feeling (e.g., too much, too difficult, and too daunting) which supersedes the development of coping strategies needed to defuse unwanted demands. As an outcome, it is the end product or negative result of ineffective coping strategies enlisted by individuals. Finally, as a process it represents the way in which we adapt: using technology, appraising resulting conditions, and developing coping strategies that dictate outcomes.

To develop a holistic definition of technostress, we must first understand the process by which individuals come to experience stress. Ivancevich & Matterson (1980) conceptualization of stress as an adaptive response highlights many of the factors associated with implementing, appraising, and adapting to technology use and thus will serve as the foundation for discovery. Stress is defined as:

An adaptive response, mediated by individual characteristics and/or psychological processes, that is a consequence of any external action, situation, or event that places special physical and/or psychological demands upon a person. -- Ivancevich & Matterson (1980, pp. 8-9)

For clarity, this definition can be reduced to three interrelated dimensions: 1) stressors or environmental demands, which result in 2) adaptive responses that are moderated by 3) individual differences. Ivancevich and Matterson (1980) define stress as a process by which individuals adapt to unwanted demands. The ability to adapt, in turn, is moderated by the unique characteristics and psychological differences of each individual. Response to these conditions is subjective and puissant actions dictate outcomes. In other words, not every individual will view or respond to technology use in the same matter. Furthermore, each will experience results unique to their perceptions and actions.

## **2. Technostress**

A holistic definition of stress captures the process of evolution where by environmental demands spur individualized action and ultimately outcomes. Unlike stress, the outcome-based definition of technostress is narrow in scope limiting our understanding and study of the phenomenon. This limitation has led to: undue focus on technological characteristics and implementation strategies as opposed to more human-centered factors; minimal understanding of appraisal and evaluative processes; reduced awareness of the important of individual differences to technology acclimation and use; and overemphasis on negative outcomes. The following briefly reviews three prevalent technostress definitions allowing us to better understand existing limitations.

*Technostress* was first coined by clinical psychologist Craig Brod. In the onset, this phenomenon was described as a “modern disease of adaptation caused by an inability to cope with technologies in a healthy manner” (Brod, 1984). This definition highlights the individual’s struggle to adapt to technology. Yet it focuses on outcomes (e.g., disease) rather than the process of evaluation and adaptation. Weil and Rosen (1997) later expand upon this conception to emphasize the “negative impact on attitudes, thoughts, behaviors or psychology caused directly or indirectly by technology.” While dropping the idea of malady allows for greater exploration of this phenomenon as a “normal” consequence of the information age, this definition stresses negative consequences ignoring the potential for positive outcomes. More recently, technostress has been referred to as “the fallout of an individual’s inability to deal with constantly evolving ICTs and the changing cognitive and social requirements related to their use” (Shu et al., 2011). This definition hints to the importance of moderators in determining outcomes yet adheres to the notion of malady. While these and other researchers have greatly influenced on our understanding of technostress, their conceptualization of the phenomenon falls short in capturing the process of evaluation and adaptation which proceeds outcomes and consequences.

Brod’s (1984) original definition of technostress is arguable the most widely referenced in nearly fifty years of study. This definition correctly identifies the importance of technology as a contributor to stress. As well, it clearly indicates the individual’s ability to adapt as pivotal to outcomes. A review of stress research exposes several key failing of this definition. First, Brod’s definition assumes technology is a stressor as opposed to an influence on preexisting stressors like job demands, group dynamics, and organizational culture. Second, technostress is deemed an outcome or disease based upon individuals’ inability to adapt versus a normal adaptive response. Finally, its point of reference is based upon the newness of the information age versus what we now accept as a normal facet of everyday life.

Weil and Rosen (1987) advance the definition of technostress by embracing technology as a normal contributor to stress within the new age. They expand upon its conceptualization by articulating the negative impact of technology use on attitudes, thoughts, behaviors, and psychology. While this furthers our awareness of technostress outcomes and consequences; by definition, it unduly promotes technology as a primary environmental demand or stressor. In addition, emphasis on individuals’ inability to adapt further negates the influence of individual characteristics and psychological difference on varied outcomes. Combined, these assumptions explain the overemphasis on technological characteristics as predictors of technostress versus human ones.

Shu, Tu, and Wang's (2011) greatest contribution to the conceptualization of technostress is their declaration of moderators as important to determining outcomes. While technostress is still conceptualized as an outcome, these authors point to the importance of other variables and their influence on the relationship between stressors, stress conditions, and outcomes. They suggest that cognition, skills, and other individual differences influence technology use and therefore outcomes. Like others, Shu et al. (2011) definition presumes technology's role to be that of organization-level stressor as opposed to influencer of individual, group, organizational, and extra organizational demands. Technostress is dubbed a "fallout" of individuals' inability to adapt. Finally, another significant contribution of this definition is the expansion of technology to include both information and communications tools. Doing so, widens the point of reference to include the continuously evolving plethora of tools and techniques commonly known as IT.

A review of technostress definitions (Brod, 1984; Shu et al., 2001; Weil and Rosen, 1994) reveals many common conceptualization issues. While each has its value, focusing exclusively on technostress as an outcome limits a holistic understanding of the phenomenon. Defining technostress as an outcome:

- ignores the process of individual evaluation and adaptation which precede both stress responses and outcomes.
- bypasses the appraisal of technology adoption at best assuming influence on individual, group and organizational-level stressors.
- focuses on negative effects ignoring the potential for positive experiences and outcomes.
- disregards the process of adaptation individuals engage in when attempting to develop effective coping strategies.
- discounts individual differences and their influence on the evaluation and management of technology-enhanced situations and events.

### **3. Technostress Defined**

Technostress investigators fail to give homage to knowledge widely accepted within traditional stress research. Thus, a research-driven understanding of the phenomenon is fragmented. Moving beyond emphasis on outcome-based definitions to understand the process of adaptation involved in appraising and managing technostress will allow for a more holistic understanding of factors influencing technology use and outcomes. A process-based definition of technostress will:

- help explain the influence of technology on potential stressors.
- posit that technology use could have impact or not.
- link individualized stress responses to environmental conditions.
- explain why individuals respond to technology adoption differently.
- make room for the positive views of technological use.
- indicate the importance of developing coping strategies.
- describe the process of adaptation associated with technostress reduction.
- illuminate potential consequences of action and inaction.

In alignment with Ivancevich and Matteson's (1980) definition of stress, technostress can be holistically defined as an:

Adaptive response to IT-enhanced situations and events, mediated by individual differences, where conditions are perceived as placing unwanted demands upon the individual.

This process-based definition can be reduced to several interrelated dimensions: 1) IT-enhanced situations and events that create 2) conditions, evaluated and moderated by 3) individual differences, thought to place unwanted demands on the individual and foster 4) adaptive responses.

#### **3.1 IT-enhanced Situations/Events**

IT-enhanced situations and events result from technology use. Technology melds with potential stressors to alter existing individual, group, and organization-level stressors. Some enhanced situations/events will be perceived as consequential; others will not. For example, a software upgrade may have no effect on the workload of one employee but have enormous impact on another.

In the case of impact, technology-enabled situations and events will be appraised to determine if conditions are positive, negative, or inconsequential. Technostress results from negative evaluation. Although technostress is thought to be innately negative, positive outcomes (eustress) can and do result.

### **3.2 Technostress Conditions**

Researchers have identified 5 conditions which stimulate negative evaluation and adaptation. They are techno-overload, -invasion, -complexity, -insecurity, and -uncertainty. When a software upgrade, for example, makes employees feel pressure to work more often, faster, and longer; they experience techno-overload. Techno-invasion describes the angst ensuing from employees' inability to reconcile personal needs, wants, and desires with increasing technological demands. The inability to manage these complex and often convoluted demands describes feelings of techno-complexity. Techno-insecurities result when employees feel their jobs are jeopardized by an inability to keep pace with technological change. Finally, constantly changing technological innovations result in feelings of techno-uncertainty for those unable to manage ever-changing hardware, software, and process requirements.

### **3.3 Individual Differences**

Individual reactions to conditions will vary based upon their unique characteristics and psychological differences. Factors like hardiness, digital competence, and social support buffer adaptive responses. By example, software upgrades may be less impactful to employees demonstrating higher levels of digital competence. Those demonstrating hardiness, the ability to transform negative stressors into positive opportunities, may also experience success through continuous effort. Others experiencing higher degrees of impact may choose to cope by simply avoiding the situation altogether. In any event, individual differences moderate the perceived influence of technology on environmental conditions, appraisal of situations, perception of conditions, and adaptive responses which supersede outcomes.

### **3.4 Adaptive Responses**

Adaptive responses represent coping strategies enlisted to reduce and/or eliminate technostress. Control, escape, or symptom management strategies are developed to alleviate unwanted demands. Subsequent actions serve to alter situations/events and lead to reevaluation. The unwillingness or inability to act, inaction, results in failure to adapt. In the end, the inability to adapt results in negative outcomes like dissatisfaction, absenteeism, forgetfulness, and illness. In the case of the software upgrade, some employees will experience technostress. The majority of those impacted will choose actions which resolve unwanted demands. This might involve studying a user's guide to become familiar with new and improved features. Others might delay the upgrade, rescheduling for a time when workloads requirements are less intense. Some might choose to alleviate technostress through meditation or medication, staving off technostress until other coping strategies can be formulated.

Combined these interrelated dimensions (IT-enhanced situations/events, Technostress Conditions, Individual Differences, and Adaptive Responses) represent the process by which individuals' attempts to use new or changing technologies, appraise resulting conditions, and develop coping strategies needed to complete required tasks and activities.

## **4. Conclusion**

In closing, a holistic definition of technostress presented in this paper underscores the process of individual evaluation, management, and adaptation not simply outcomes. This conceptualization supports future research and study in that it: explains the influence of technology on preexisting stressors, incorporates the understanding and impact of technostress conditions, outlines varying responses to technology adoption; and makes room for an appreciative approach to technostress.

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