



# Understanding the Strategies Used by Employees to Cope with Technostress in the Software Industry

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## ABSTRACT

Working in the software industry exposes individual employees to the harmful effects of technostress because the work is heavily tied to information technology (IT) use. Because of the ever-increasing IT-related demands and high levels of stress experienced by software industry employees, it is important to understand how employees respond to and cope with these demands. We set to explore the coping strategies employed by individual employees in the industry by utilizing the coping taxonomy proposed by Skinner et al. [1]. We collected and analyzed the coping responses of 715 employees collected via a qualitative questionnaire. In total, we identified 29 individual coping strategies categorized into coping families per Skinner et al. [1]. Our findings help in moving towards a more comprehensive understanding of coping with technostress and in supporting the well-being of those working in the industry.

## CCS CONCEPTS

• **Software and its Engineering** → **Software creation and management** • **Human-centered computing** → **Human computer interaction** → **Empirical studies in HCI**

## KEYWORDS

Technostress, software engineering, coping, coping strategy

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## 1 INTRODUCTION

Technostress can be defined as a form of stress experienced by individuals due to the demands caused by IT use [2]. The demands related to IT use are exceptionally high in the complex technological environment of the software industry. Working in the industry requires deep technical know-how, capabilities to adapt to constantly changing technologies, and learning new technologies under time pressure, while simultaneously keeping the quality of work high. These are just some of the reasons that make software industry workers suffer from an increasing amount of technostress [3] and its harmful consequences on well-being, such as burnout.

The act of coping refers to the efforts of individuals “to manage external and/or internal demands that are appraised as taxing or exceeding the resources of a person” [4 p. 141]. So far, a few studies have explored the concept of coping in the software industry, usually focusing on specific coping strategies [5]. The goal of our research is to build a more comprehensive understanding of coping (especially with technostress) in the industry. This comprehensive understanding of coping includes the motivations, resources, and hurdles that either enable or prevent the selection of specific coping strategies. The goal of our research is to increase the well-being of employees by providing organizations in the industry with concrete interventions that would help them in assisting their employees in their coping endeavors. Such interventions have already been proven useful in combating burnout in the industry [6].



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## 2 APPROACH

Because coping is a personal and subjective matter [4], we needed detailed descriptions of actual coping efforts from those employed in the software industry. Thus, we decided to use the critical incident technique (CIT) [7] in a qualitative setting to give the respondents freedom to describe their critical stressful incidents with IT use (“recall an exceptionally burdensome/stressful experience related to the use of technology in your work”) and responses to those incidents (“how did you try to reduce or mitigate the experience.”) A critical incident can be defined as an event in IT use that has had a significant negative effect on the individual.

We collected our data via a qualitative questionnaire between December 2021 and April 2022 in two phases. In the first (pilot) phase, we collected our data from organizations engaged in software development in Finland, and in the second phase, using the online research platform Prolific. In total, we received 852 responses, of which 715 included detailed descriptions of coping efforts, forming the final sample. The respondents were employees of varying nationalities, employed in different roles, such as software developers, managers, system testers, and designers.

To identify the coping strategies used by the respondents, we used the content analysis approach commonly used in CIT research [7]. We utilized open coding, looking for similarities between the coping efforts described by the respondents and grouping them into categories. In labelling the categories, we mirrored our findings with prior research and utilized labels from prior work when appropriate. Finally, we connected the labelled coping strategies with the higher-level coping families per Skinner et al. [1].

## 3 RESULTS

In total, we were able to identify 29 coping strategies categorized into 10 coping families. Many of the respondents also described having used multiple coping strategies to cope with an incident. The respondents utilized these strategies when encountering different kinds of stressful incidents in IT use, such as learning new development tools, using unfitting tools, and performing complex development tasks. The technologies involved in the incidents included integrated development environments, programming languages, client software, and monitoring software. All the identified coping strategies are presented in Table 1.

**Table 1: Identified coping strategies**

<b>Coping Family: Escape (227)</b> =mentions in the data	
Temporary disengagement from IT use (96)	Behavioral avoidance (79)
Avoiding particular IT (16)	Cognitive avoidance (20)
Use of intoxicants (8)	Changing jobs (8)
<b>Coping family: Problem-solving (198)</b>	
Adjusting IT use routines (45)	Fixing the IT (47)
Planning and strategizing (41)	Using workarounds (42)
IT switching (23)	
<b>Coping family: Information seeking (110)</b>	
Asking for tech. support (59)	IT use training (51)

<b>Coping family: Support seeking (74)</b>	
Comfort/contact seeking (53)	Social escape* (17)
Therapy* (4)	
<b>Coping family: Accommodation (66)</b>	
Acceptance* (34)	Minimizing* (21)
Cognitive restructuring* (11)	
<b>Coping family: Self-reliance (56)</b>	
Emotion control* (36)	Positive thinking (10)
Meditation/Mindfulness (10)	
<b>Coping family: Negotiation (51)</b>	
Compromising* (30)	Persuasion* (21)
<b>Coping family: Helplessness (16)</b>	
Feeling helpless* (14)	Giving up* (2)
<b>Coping family: Opposition (14)</b>	
Blaming others* (9)	Blaming IT (5)
<b>Coping family: Delegation (5)</b>	
Complaining and venting (5)	

\*Coping strategy not addressed in prior software engineering or technostress research

## 4 CONCLUSION

So far, our results demonstrate the wide variety of coping strategies employed by software industry workers suffering from technostress. In total, we identified 11 coping strategies (e.g., acceptance and compromising) that have not been addressed in prior research. A comprehensive understanding of the different coping strategies is crucial in moving forward to deepen our insight on the underlying factors (e.g., existing resources and possible hurdles) that affect the selection of specific coping strategies and in designing appropriate interventions to support the coping efforts of employees.

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