Chapter 12
Information Technology Exception Messages:
A Proposed Set of Information Elements and Format for Consistency and Informativeness

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ABSTRACT

Users of information technology (IT) frequently encounter "exception messages" during their interactions with computing systems. Exception messages are important points of communication with users of IT and are similar in principle to compliance and warning messages that appear on consumer products and equipment (e.g., cigarettes, power tools, etc.), in various environments (e.g., around machinery), and on chemicals. This study reviews the normative elements and information that are included in product, chemical, and environment compliance and warning messages and combines these with recommendations in the IT literature to propose that five elements and information should be included in IT exception messages with a standard format. It is argued that including these elements in the proposed format will improve the consistency and effectiveness of exception messages. Also reported are the results of an investigation of a sample of actual exception messages to determine their degree of conformity with the proposed elements. Results indicate that IT exception messages lack descriptive content.

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INTRODUCTION

Users of information technology (IT) commonly encounter exception messages during their interactions with application programs. Exception messages, sometimes referred to as "dialogs," appear over the main window of the parent application program and engage the user by offering information and requesting some input (Cooper and Reimann, 2003; Galitz, 2007). When the user has finished viewing or changing the information presented, he has the option of accepting or rejecting his changes. The exception message then disappears and returns the user to the main application program.

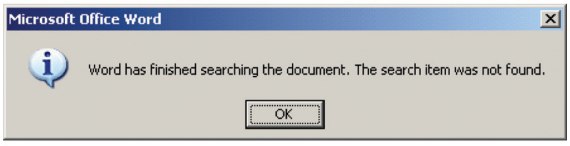
A common type of exception message is the "bulletin box." A bulletin is launched by the program, not the user. This type of exception message stops all progress in the main application, and is sometimes called a "blocking bulletin" because the program cannot continue (processing is blocked) until the user responds. There are three categories of bulletin exception messages with an example of each illustrated in Figure 1 (Cooper and Reimann, 2003): (1) error messages inform the user of a problem or potential problem, (2) alerts (a.k.a. notifiers) give notice to the user of the program's action, and (3) confirmations notify the user of the program's action and gives the user the authority to override that action.

It can be argued that exception messages share similarities in principle to the compliance and warning messages that appear on consumer products and equipment, in various life situations, and on chemicals. Both exception messages and compliance and warning messages are designed to inform people of a state of the world or system, a potential problem, or actions required to be taken. For example, compliance and warning messages appear on household cleaners and ladders to inform the user of a problem if the item is inappropriately used. Likewise, compliance and warning messages appear in various environments to notify and advise people as to the correct

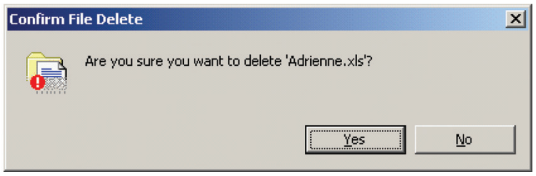
Figure 1. Examples of the three types of bulletin exception messages

a. Error Message:

b. Alert (a.k.a. notifier):



c. Confirmation:



actions to be taken and/or of potential hazards. Two examples of such compliance and warning messages are shown in Figure 2. Considerable research in the field of human factors psychology has been targeted on the content of compliance and warning messages to determine the effect on human perceptions, judgment, and decision making (see Wogalter, 2006a). This research has resulted in normative guidelines specifying the elements and information that should be included in compliance and warning messages. Including these elements improves the informativeness of these messages.

The primary objective of this manuscript is to review the normative elements and information that are included in product, chemical, and environment compliance and warning messages that have been confirmed by extensive research on the design and effectiveness of these warning messages by researchers in human factors psychology. These prescriptions are combined with the recommendations from the IT literature and a set of proposed elements and information is set