

Study of the effects of the level of detail in safety rule descriptions on a psychological process of safety behaviours

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Introduction

- Safety rule expansion can cause side effects such as increasing workloads
- Our previous study indicated the importance of mitigating the effects of disturbances on **the components of the psychological processes of safety behaviors**, and adjusting the level of detail in safety rule descriptions based on applicable conditions, for introducing effective safety rules
- However, there is little research on the effects of the level of detail in safety rule descriptions on the psychological processes of safety behaviors.

Objective

The purpose of this study is to investigate the effects of the level of detail in safety rule descriptions on a psychological process of safety behaviors

Methods

40 participants (men, mean age: 40.25)

completed a continuing **calculation task** while following multiple **safety rules** with differing levels of detail in their description

The rule of "What + When + How" description:
"Check your answers with a calculator immediately after solving each problem"

The rule of "What + When" description:
"Check your answers immediately after solving each problem".
The method of checking (How) was left up to the participants.

The rule of "What + How" description:
"Check your answers with a calculator".
The timing of checking (When) was left up to the participants.

The rule of "What" description:
"Check your answers".
The method of checking (How) and timing of checking (When) was left up to participants.

answered a questionnaire about the psychological processes with 7-point Likert scale, using as an index.

19 two-digit by two-digit problems, asking the participants to multiply them mentally and selected the closest number to the right answer out of four choices

The numbers under the answer are used as the next problem, so that all problems are needed for the final output

The answer of this problem is the final output

a one-way ANOVA was conducted for each descriptions as the inter-experimental participant factor. Furthermore, when a main effect of level of detail in description was found, multiple comparisons were conducted to find the description in which the differences were seen. Table 1 displays a summarization of these results.

Results and Discussion

Results suggested that 1) detailed rules describing "What", "When", and "How" should be limited to only when necessary, because, while they enhanced the awareness of the results of a safety behavior, they also led to the supposition of decrease in work efficiency and increase in mental workload. 2) It might be better to add How" or "When" description to "What" description, because just "What" description was not enough to enhance the awareness of usefulness of a safety behavior and the confidence towards its result.

Table 1. the effects of the level of detail in safety rule descriptions on a psychological process of safety behaviors

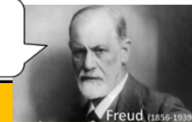
△ : Promoting Effect
▼ : Inhibiting Effect

		Level of Detail in Description				
		What + When + How	What + When	What + How	What	
Components of Psychological Processes of Safety Behaviors	Supposition of risk avoidance	△ Useful for mistake prevention			▼ Not useful for mistake prevention	
		△ Have confidence in results			▼ Cannot have confidence in results	
		△ Do not have to think about responsibility			▼ Have to think about responsibility	
	Supposition of positive results of safety behavior	Supposition of increased satisfaction	▼ Ridiculing ability			△ Does not ridicule ability
			▼ Difficult to prioritize safety behavior			△ Easy to prioritize safety behavior
		Supposition of negative results of safety behavior	▼ Takes too much time			△ Does not take too much time
	▼ Loss of efficiency			△ No loss of efficiency		
	Supposition of side effects such as decline in effectiveness	Supposition of increased physical and psychological workload	▼ Cannot finish task within given time			△ Can finish task within given time
			△ No mistakes in the safety behavior itself			▼ Mistakes in safety behavior itself
		▼ Mistakes...			△ No mistakes...	
	Supposition of negative results of safety behavior	▼ Bothersome			△ Not bothersome	
		▼ Annoying			△ Not annoying	



I want freedom!!

Most people do not really want freedom because freedom involves responsibility, and most people are frightened of responsibility.



Freud (1856-1939)

Future Research

Based on the findings of this study, we would like to consider the consideration procedure of safety rule introduction when establishing countermeasures for human-factor events.