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

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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 behaviours.

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.

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.

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

<table>
<thead>
<tr>
<th>Components of Psychological Processes of Safety Behaviors</th>
<th>Level of Detail in Description</th>
<th>What</th>
<th>What + When</th>
<th>What + How</th>
<th>What + When + How</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supposition of positive results of safety behavior</td>
<td>△ Promoting Effect</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>Supposition of increased satisfaction</td>
<td>△ Have confidence in results</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>Supposition of risk avoidance</td>
<td>△ Do not have to think about responsibility</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>Supposition of side effects such as decline in effectiveness</td>
<td>△ Easy to prioritize safety behavior</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>Supposition of negative results of safety behavior</td>
<td>△ Does not ridicule ability</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
<tr>
<td>Supposition of increased physical and psychological workload</td>
<td>△ Not bothersome</td>
<td>△</td>
<td>△</td>
<td>△</td>
<td>△</td>
</tr>
</tbody>
</table>

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.