Questionnaire to identify teamwork-related resources and stressors in firefighting operations (REST-Q Fire) – Short description

Objective of the questionnaire

With the help of the REST-Q Fire it should be possible to identify stressors and resources that occur during teamwork in firefighting operations. On the one hand, it should be determined how often the stressors and resources occur and, on the other hand, how strongly they stress or support. The results of the questionnaire will be used to derive training needs. For example, training should be provided in areas where many stressors and few resources were experienced in the field.

Development of the questionnaire

The questionnaire was developed on the basis of interviews with experienced firefighters. They reported which situations regarding teamwork had occurred in past firefighting operations. From this, various stressors and resources were derived. In addition, accident reports and reports of near accidents were analyzed. Stressors and resources were also derived and compared with the categories from the interviews.

Structure

The REST-Q Fire includes a total of 26 stressors and 23 resources, rated in terms of the frequency of their occurrence in firefighting operations ("How often did this occur in your previous experienced firefighting operations?" - 1 = never to 5 = always) and the intensity of perceived stress or support ("If it happened, how much did this stress/support on average?" - 1 = not at all to 5 = very much) must be assessed. For intensity, an additional response option of "did not occur" is provided so that individuals who have never experienced the stressor or resource do not have to indicate how intensely it was experienced.

Each stressor and resource are introduced with a brief description of the situation. The stressors and resources are asked in six different categories:

- communication (6 stressors, 6 resources)
- supporting behavior (6 stressors, 5 resources)
- leadership (4 stressors, 4 resources)
- shared mental models (3 stressors, 3 resources)
- organization & coordination (4 stressors, 3 resources)
- decision-making (3 stressors, 2 resources)

Procedure

The questionnaire takes about 20 minutes to complete. For the survey, the print template can be used, and the participants can be asked to indicate for each stressor and resource how often it has occurred so far and how strongly it has stressed or supported them.

Analysis

Depending on the area of application, the questionnaire can be used in different ways. On the one hand, a rough overview of how often stressors and resources occur in teamwork can be obtained. Here, the mean value is formed across all items that asked about frequency (separately for stressors and resources). This mean can be used to make a general assessment of whether many stressors or resources are experienced in the team in general. To find out more precisely in which areas the stressors and resources occur particularly frequently, a mean value can also be calculated for each of the six categories individually. Ultimately, each item can also be looked at individually at the detailed level to assess which specific stressors and resources occur in the team.

A similar procedure should be used for intensity. However, responses in the "did not occur" category should not be included in the calculation of the mean. In this area, too, the different levels can be considered by either calculating the mean value across all stressors or resources or for each of the different categories.

Analysis example

In this section we give an analysis example. The values entered are fictitious and serve only for illustration.

Stressors

Item	stated frequency	stated intensity
Communication		
S_Com1	4 = often	4 = strongly
S_Com2	3 = sometimes	4 = strongly
S_Com3	3 = sometimes	3 = moderate
S_Com4	4 = often	5 = very strongly
S_Com5	2 = rarely	3 = moderate
S_Com6	3 = sometimes	2 = slightly
Supporting behavior		
S_Sup1	1 = never	0 = did not occur
S_Sup2	3 = sometimes	2 = slightly
S_Sup3	2 = rarely	2 = slightly
S_Sup4	3 = sometimes	4 = strongly
S_Sup5	4 = often	3 = moderate
S_Sup6	2 = rarely	2 = slightly
Leadership		
S_LS1	4 = often	4 = strongly
S_LS2	5 = always	4 = strongly
S_LS3	3 = sometimes	3 = moderate
S_LS4	4 = often	5 = very strongly
Shared Mental Models		
S_SMM1	3 = sometimes	2 = slightly
S_SMM2	3 = sometimes	3 = moderate
S_SMM3	2 = rarely	2 = slightly
Organization & Coordination		
S_O&C1	4 = often	4 = strongly
S_O&C2	2 = rarely	5 = very strongly
S_O&C3	4 = often	5 = very strongly
S_O&C4	2 = rarely	3 = moderate

Decision-making		
S_DM1	3 = sometimes	4 = strongly
S_DM2	2 = rarely	4 = strongly
S_DM3	1 = never	0 = did not occur

Overall mean frequency: Add up all responses in terms of frequency and divide by the number of items answered.

$(4 + 3 + 3 + 4 + 2 + 3 + 1 + 3 + 2 + 3 + 4 + 2 + 4 + 5 + 3 + 4 + 3 + 3 + 2 + 4 + 2 + 4 + 2 + 3 + 2 + 1)/26 = 2,9$

Note: If participants do not answer individual items, these items cannot be considered. Accordingly, the number of answered items must be adjusted. For example, if one item was not answered, divide by 25 only. In general, at least 20 items should be answered to be able to calculate a reasonable mean value.

Mean values in the individual categories:

a. Communication: $(4 + 3 + 3 + 4 + 2 + 3)/6 = 3,2$
b. Supporting behavior: $(1 + 3 + 2 + 3 + 4 + 2)/6 = 2,5$
c. Leadership: $(4 + 5 + 3 + 4)/4 = 4$
d. Shared Mental Models: $(3 + 3 + 2)/3 = 2,7$
e. Organization & Coordination: $(4 + 2 + 4 + 2)/4 = 3$
f. Decision-Making: $(3 + 2 + 1)/3 = 2$

Interpretation: This firefighter experiences stressors of teamwork in general sometimes to often . It can be seen, however, that the experience of stressors differs slightly in the categories. For example, stressors are experienced particularly frequently in the areas of leadership and communication, while stressors rarely occur in decision-making.

Overall mean intensity: Add up all responses in terms of intensity and divide by the number of items answered. The answer "did not occur" is not counted.

Mean values in the individual categories:

a. Communication: $(4 + 4 + 3 + 5 + 3 + 2)/6 = 3,5$
b. Supporting behavior: $(2 + 2 + 4 + 3 + 2)/5 = 2,6$
c. Leadership: $(4 + 4 + 3 + 5)/4 = 4$
d. Shared Mental Models: $(2 + 3 + 2)/3 = 2,3$
e. Organization & Coordination: $(4 + 5 + 5 + 3)/4 = 4,3$
f. Decision-Making: $(4 + 4)/2 = 4$

Interpretation: The general occurrence of stressors is classified as moderately to highly stressful. In the categories organization & coordination, leadership, and decision-making, the occurrence of stressors leads to strong subjective stress. Stressors in the shared mental models area are perceived as low stress.

Conclusion: In order to derive training needs, the common picture of frequency and intensity of stressors should be considered. The greatest training needs are for stressors that are experienced frequently and are particularly stressful (in this example, leadership). Stressors that are experienced infrequently and are less stressful can be given lower priority in training (in this example, supporting

behavior). For the selection of training content, stressors that occur rather rarely but have a strong stressing effect should also be considered (in this example, organization & coordination). To further narrow down training content, the individual items can also be considered.

The same approach is used for resources. When deriving training needs, the focus should be on resources that rarely occur but provide very strong support. These should be expanded through training.