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A Framework for Adaptive Stress Testing (FAST) at the Workplace

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Abstract

In a comprehensive risk assessment at the workplace, all relevant risks at the workplace – and especially psychosocial risks that might be linked to negative health outcomes – have to be assessed. This detailed assessment of psychosocial risks should be done very detailed and as often as possible, which is often complicated as integrating this assessment into the organization's structure and processes is difficult. In addition, a constant assessment could be experienced as stressful for the employees. We present a Framework for an Adaptive Stress Testing (FAST) as a strategy for an effective assessment of stress and psychosocial risks as a basis for the further development of prevention strategies. In three phases, psychosocial risks can be assessed economically and efficiently: 1) A short assessment with few items and obtaining a first feedback about the individual results, 2) An extended version of the assessment and obtaining a second feedback about the individual results, and 3) Getting in contact with supporting experts to discuss the individual results. FAST can be integrated in the process of risk assessment to get a quick and economical assessment of psychosocial risks to further develop specific interventions on the individual and organizational level.

Keywords: Adaptive testing; Assessment; Feedback; Stress; Workplace

Introduction

The assessment and management of psychosocial risks at the workplace are increasingly becoming a major focus of today´s prevention strategies, which can be seen in different campaigns of the European Union (e.g. the "2014-2015 Healthy Workplaces Campaign" [1]). It is a common view that psychosocial risks (or "mental stress") should be assessed in psychosocial risk assessment management (PRIMA) and in Workplace Health Promotion (WHP) in a timely manner and at the same time as differentiated as possible [2]. On the other hand, doing assessments often and detailed could add an additional load to the workers and the organization. In practice, organizations often try to extend the intervals between the assessments of stress to keep the load resulting from too many stress assessments for their employees at a minimum; at the same time knowing that this could enhance the risks of overlooking some critical events.

In PRIMA and WHP programs, the results of the risk assessment are aggregated and then provided to the head of the company and the health experts for developing further interventions [3]. The individual employees on the other hand like to know about their personal status and psychological tests that allow individual feedback are very common and strongly used [4,5]. Instant feedback can support the individuals to monitor their personal status and can motivate users to maintain or change their personal status [6]. In practice, these tests already are used to a great extent. The critical point here is that these tests very often lack psychometric quality, the results are poor, the interpretations and suggestions are questionable, and the scientific background typically cannot be found. A next drawback of these tests is that in case of a critical feedback (i.e., a feedback resulting from a high stress score obtained in the test) the person is often left alone, especially if the test is done on the computer and the feedback is given instantly on the computer as well. Receiving critical results can have a negative effect on individuals [5]; therefore, it is important to present the results in an understandable way but not too detailed or too comprehensive.

A combination of single tests for individuals, done on their own and the proper integration of these test results into the organizational process of WHP or PRIMA could support the individuals and the organization. This would be a successful approach as the individuals could get insight into their stress status and it also could support the organizations in their need of knowing the psychosocial risk status without doing detailed assessments repeatedly and all the time. Ideally, the single tests are short and therefore motivating for the individuals to do them quickly and on demand.

Computerized adaptive testing [7] can be a successful way to shorten assessment instruments but at the same time obtain enough information about psychosocial risks at the workplace. We suggest a Framework for an Adaptive Stress Testing (FAST) as a strategy for an effective assessment of stress and psychosocial risks as a basis for the further development of prevention strategies. Our framework also covers crucial aspects regarding anonymity and the integration of experts in the case of critical negative test results.

Based on the introduction several assumptions can be made for an adaptive testing which can be ideally integrated into the organizational strategy for PRIMA and/or WHP. Stress testing should consider following points.

- The test must have psychometrical high quality. A test with psychometrically high quality is a clear requirement; standards regarding tests and test usage are already defined and well introduced [8-11].
- An important additional aspect is the addition of dimensions and subscales, which can help in a later phase if detailed feedback for the user is wished.

- Next to stress, resources should be integrated in the testing process as WHP focuses on the health-supportive aspects of the work [12]. This supports to broaden the view also for the users of the test.
- A primary test level in the form of a first screening should be done in a quick and short way (i.e., with few items).
- The feedback for the individual must be understandable but at the same time not to comprehensive, which can be ideally solved in a first phase by using a traffic light way (green, yellow, red) with a short interpretation.
- The feedback of the stress test must provide strategies for handling critical results. If a result shows a critical result, e.g. high stress, then a support line should be provided (support hotline, internal experts, etc.).
- The test can be performed anonymously and in a safe way by providing possibilities to perform the test outside the organization (e.g., at home) if the person wants to do it.
- The results are stored anonymously and doing the testing cannot be inferred to a specific single person.
- Ideally, the results can be repeated at a deeper level with an extended version of the test (secondary test).
- A support line is offered in case of the need of a person to understand the result of the test, ideally an expert in stress or psychosocial risks (e.g. work psychologists).
- The supporting expert has the possibility to use the results of the test at both levels (primary and secondary test).
- The results can be integrated into an organizational dashboard where an overview of the current status can be used as a rough indicator for the psychosocial risk level.
- The organizational dashboard data are presented only if a sufficient number of people have used the test (and did not decline the data usage) and the data come from a sufficient number of groups and workplaces so a inference to single persons cannot be done [13].

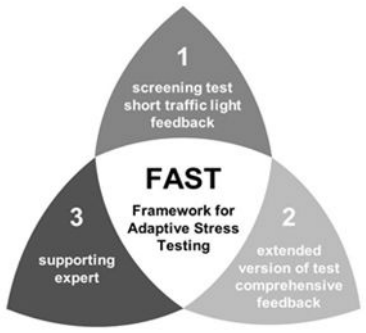

Figure 1: Framework for adaptive stress testing (FAST) at the workplace.

The Adaptive Test Approach

Framework for adaptive stress testing (FAST) at the workplace

Computerized adaptive tests have a long tradition in research about short and efficient ways of assessment [7,14]. An adaptive test is characterized by first starting with one item. Based on the person's answer to this item, a previously defined item selection algorithm calculates which item or set of items will be presented next. Adaptive testing has been mainly used in performance and intelligence tests, but this process can be transferred to health assessments, as well [15]. In the presented FAST, we suggest including adaptive testing in stress assessment in three phases (Figure 1).

Testing at a first phase can sensitize a person for stress. In this first phase, a short test version with only a few items and a short feedback for this test can be used. The goal of this first feedback is to raise awareness for the individual's stress status. In this phase, especially a critical result ("red") can lead to over interpretation or may cause anxiety [5]. Therefore, repeating the test at a later time should be advised as well as clear possibilities for support should be given. In this first phase, the risk of giving false-positive feedback (i.e., reporting a "red" result when actually a "green" result should be given) should be avoided as the persons should not get misleading hints which could raise their fears about stress consequences, which would be typically burnout [16]. A suggestion is to add an extended version of a stress test in a second phase. In that case, this second phase should provide a longer and more detailed test with psychometrically high quality. This test should have higher sensitivity and specificity and therefore the feedback results are more trustworthy for the users of the test. In the third phase, experts should be included for a more detailed discussion of feedback results and further psychosocial risks.

The Support Line – integrating the Experts

The FAST (including resources) suggests the integration of experts for a profound interpretation of the results in the individual feedback. Including experts to support the interpretation of the test results especially for psychosocial aspects can be found in many health promotion programs [17]. Including experts in this process should be particularly considered in computerized assessments at the workplace to raise the quality of the health assessment [18]. In FAST, we suggest to integrate these experts in the process in a way that they can have access to the results of the primary and secondary test phases. This could be done by providing randomly generated codes which can be stored by the test user. This code is unique for every user and only the user knows his/her code. With this method, only the user can connect his/her individual code with the test results. The experts can combine the code and the test results only when the user permits the combination. Other proper technical solutions are possible but should fulfill the requirement that the organization cannot make an inference to a single person.

The integration into the organizational psychosocial risk management

Getting insight into the personal level of stress could help to set the right steps and strategies for risk prevention for the individual. This supports the organization as the prevention of risks is more efficient and sustainable then treating stress symptoms after being exposed to risks [19]. The advantage of FAST is that the results could be integrated in an organizational dashboard that provides an insight of the current status of psychosocial risks in a rough level. It is important to note that this requires clear and transparent rules regarding the amount of data which have to be available to calculate results, the refreshing period of the data, the anonymity rules etc. which have to be cleared with the workers council and other stakeholders. A second advantage of FAST is also to decide whether a second step of assessment at the organization level has to be done if the results in the dashboard (as

anonymous status of the current psychosocial risk level) are going to be more critical. Then a proper implementation of FAST could be used to decide about psychosocial risk assessment at the organizational level. This can help to adapt the assessment cycle of psychosocial risk management.

The future, FAST for research and practice

FAST suggests to do stress assessment in an adaptive way; therefore the use of short or very short questionnaires in the first phase of the assessment is ethically justifiable. A short questionnaire can be implemented in smartphone apps of existing e-health tools as well. This can lead to a more frequent usage of this stress test as a test on the smartphone can be done at any time and place. The combination of FAST in e-health tools can further enhance the awareness regarding stress as conducting a test can induce self-reflection about the topics of the items [20] and self-monitoring is a prerequisite for changing health-related behaviour [21].

Implementing FAST could raise the question whether assessing stress more often also enhances the awareness in a negative sense, i.e., whether people are more sensitive and therefore are more vulnerable to having a more negative view on work. As we suggest including the resources aspects in the assessment as well, at first we see that as balanced. Nevertheless, the raise of awareness and the change of the focus of the workers' view regarding stress and resources would be an interesting research question.

The advantage of FAST for practice has been described as supporting the individual with instant feedback in three phases, which can lead to a reduction of stress, and this in turn supports WHP and PRIMA as stress reduction is one of the goals of these concepts. A clear difference has to be made as the described framework first focuses on the assessment and reporting of the individual stress status, whereas WHP and PRIMA have a clear agenda in reducing the stress factors in the organizational environment [3]. Therefore, FAST always is ranked at the second place behind the assessment of psychosocial risks at the organizational level, as the individual testing cannot replace the organizational assessment. In addition, the typical hierarchy of prevention and control measures [22] has to be considered and changes at the level of work environment have higher efficiency than personal protective measures (including individual stress management). As a whole, we think that FAST supports the idea of giving attention to stress and resources for individual persons and the organization in a positive and holistic way.

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