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The effect of communication skills training on residents' physiological arousal in a breaking bad news simulated task

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ABSTRACT

Objective: Breaking bad news (BBN) is a complex task which involves dealing cognitively with different relevant dimensions and a challenging task which involves dealing with intense emotional contents. No study however has yet assessed in a randomized controlled trial design the effect of a communication skills training on residents' physiological arousal during a BBN task.
Methods: Residents' physiological arousal was measured, in a randomized controlled trial design, by heart rate and salivary cortisol before, during and after a BBN simulated task.
Results: Ninety-eight residents were included. MANOVA showed significant group-by-time effects. Trained residents' mean heart rate levels remained elevated after training and cortisol areas under the curve increased after training compared to untrained residents.
Conclusion: Communication skills training has an effect on residents' physiological arousal. Residents' self-efficacy and communication skills improvements in a BBN simulated task are associated with an elevated physiological arousal, which becomes proportional to the complexity of the task and reflects a better engagement and performance.
Practice implications: Residents should be informed that, to perform a task, they need to engage in the task with a physiological arousal proportional to the complexity of this task. Communication skills training should be adapted.

1. Introduction

Improving physicians' breaking bad news (BBN) skills has been recognized as essential. Poor BBN may have a negative impact on patients' satisfaction with care [1], adherence to treatment [2], decisions about treatment options [3] and psychological adjustment [4]. Reviews about BBN have been published and there is now a wide consensus that BBN requires specific communication skills. In order to appropriately break bad news, physicians need to master communication skills promoting patients' expression of concerns but also to be able to identify cues as regards patients' needs and expectations in order to tailor information transmission step-by-step. BBN is a non linear, unscripted and highly complex process both cognitively and emotionally for which physicians are not sufficiently trained [5–8].

Although reviews on BBN have insisted on the stressfulness of the BBN task, to our knowledge, only four studies until now have investigated physicians' physiological and psychological stress responses during BBN [9–12]. In the first study, medical students were randomly assigned to a bad news delivery task, a good news delivery task or a control task (reading magazines). This study, involving a limited number of subjects, showed that both bad news and good news delivery produced significant increases in self-reported distress and cardiovascular responses (heart rate and blood pressure) compared with the control task [10]. The second study found an anticipatory stress response among second year medical students to a simulated bad news consultation on cardiovascular measures (systolic blood pressure and heart rate) and subjective stress measures (globally assessed stress and state anxiety), compared with post-task measures [12]. The third study found higher cardiovascular responses in the bad news scenario

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relative to the good news one [9]. Perceived stress, psychological distress and poor communication were not associated with increased cardiovascular responses in the bad news scenario contrary to doctors' inexperience and fatigue. The fourth study in a medical student population showed that BBN consultations provoked elevated heart rate responses compared to history taking consultations [11].

These four studies reported increased cardiovascular responses of doctors when faced with BBN. These heightened cardiovascular responses however were not systematically associated with subjective stress measures [9]. It is therefore essential to consider the subjective quality of responses when studying the impact of a task on physiological measures [13,14]. Physiological measures alone do not allow distinguishing physiological arousal as a sign of cognitive and emotional effort (investment of resources in order to perform a task) or of cognitive and emotional overload (and therefore of stress) [15]. This goes in line with Gaillard distinction between mental load and stress where mental load manifests itself as a temporary normal mental effort (a healthy coping strategy) whereas stress is seen as an enhanced activation that fails to improve performance and to facilitate recovery [16]. Hulsman et al. study suggests that part of the observed physiological response could also be attributed to the novelty of the task [11]. Beyond that, the impact of a stressor is also modulated by biological predispositions, personality patterns, learning history and available coping resources [17,18].

In the last decades, communication skills training research programs have been conducted. These programs have been shown to improve not only physicians' and nurses' self-efficacy (subjective performance) [19] but also their communication skills (objective performance) [20–22]. No study however has yet assessed, in a randomized controlled trial design, the effect of a communication skills training on residents' physiological arousal in a BBN simulated task.

Yerkes and Dodson described an inverted-U relation between arousal and performance for numerous tasks (letter-detection, mood priming manipulation, public speaking, etc.). Moderate physiological arousal levels may therefore result in optimal performance, whereas too little or too much arousal may result in sub-optimal performances [23–26]. Physiological arousal levels have also been shown to be related to individuals' appraisal of their ability to perform a given task: when individuals perceive that they are unable to perform a complex task (threat appraisal), they may experience difficulties in engaging themselves in the task and their physiological arousal levels remain low, whereas when individuals perceive that they are able to perform a complex task, they experience less difficulties in engaging themselves in the task and their physiological arousal levels remain elevated (challenge appraisal) [26,27]. Yeo and Neal [28] moreover examined the relationship between motivation and performance during skills acquisition and reported that the relationship between effort intensity and performance increased with practice in the early phases of skills acquisition for tasks that involve complex information-processing demands.

The study objective was thus to assess training effect on residents' physiological arousal (Fig. 1). The response measures chosen in this study (heart rate and salivary cortisol) are different in terms of source systems, pattern of response, latency and potential impact or correlation with central mechanisms [29]. Given the complexity and duration of the task, it was considered that heart rate as an electrophysiological mechanism and cortisol as an HPA axis stress hormone would be mediating physiological arousal. Heart rate changes are usually reported to reflect attentional aspects of a task, such as cognitive processing of task-related information or cognitive appraisal of stressful situations [30], whereas salivary cortisol is a measure of affective

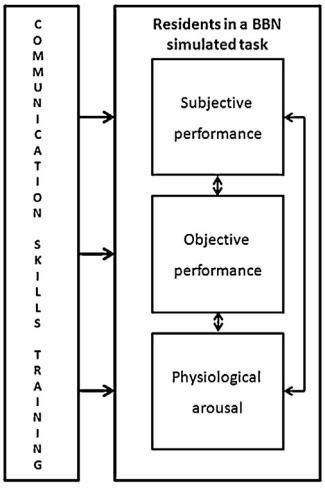

Fig. 1. Training effects on residents' performance and physiological arousal in a BBN simulated task.

responses to a task that is reported to be independent of the cognitive demands of a task and task engagement [31,32]. In a non-experimental task as a BBN task, it is however impossible to distinguish both responses as both cognitive processing and affective responses are simultaneous.

It should be underlined that the efficacy of the training program assessed in this study has already been shown on residents' self-efficacy about their communication, on their ability to manage their stress to communicate (residents' subjective performance) [33], on communication skills (residents' objective performance) [22] but not on their burnout levels [33]. It was hypothesized that the improvement in subjective and objective performance would be associated with an increased mental effort invested in the BBN simulated task and consequently with an elevated physiological arousal. Trained subjects were expected to show an elevated physiological arousal, which is an indicator of their engagement to respond adequately to the task using newly learned communication skills while maintaining step-by-step attention to the task challenges.

2. Methods

2.1. Ethics statement

The Jules Bordet Institute's ethics committee approved of the study. Residents had to give their written informed consent.

2.2. Subjects and study design

All Belgian French-speaking hospitals were contacted with an internal letter of invitation to their residents working in cancer care ($n = 2160$). Because of the low response rate ($n = 41$), attending physicians and heads of department ($n = 117$) were contacted by phone. Six hundred and twenty-six residents, including the 41 potentially interested residents, were contacted by phone, 17 were individually met and 24 information sessions were organized.

To be included in this study, residents had to work with cancer patients, to speak French, and to be willing to participate in the training program and its assessment procedure. Residents participating in another communication skills training were excluded.

After the first assessment time, residents were randomly allocated to a 40-h training (trained residents) or to a waiting-list (untrained residents) (Fig. 2). Assessments were scheduled before