

QUESTIONNAIRE REVIEW

Effort–Reward Imbalance Questionnaire

Brief history

Siegrist's Effort–Reward Imbalance (ERI) model proposes that where there is an imbalance between work effort and reward, such that the effort is greater than the reward, work stress results, which may lead to a range of adverse health outcomes [1]. The model also proposes that over-commitment (personal motivation to work excessively) increases the risk of adverse health outcomes and that there is an interaction effect of over-commitment and ERI [1]. The ERI questionnaire, developed by Siegrist, measures effort, reward and over-commitment, to determine whether ERI and over-commitment are present [1]. This was originally in German, but has been translated into a number of languages including English, Swedish and French [1].

Description

The ERI questionnaire is a standardized, self-report measure of ERI, which includes items regarding effort, reward and over-commitment [2,3]. There are currently two versions of this questionnaire; long (22 items) and short (16 items) [3], both of which will be discussed within this review. There have been changes to the questionnaire made over time; with the most recent update being made in 2012 [3].

Items

The 2012 long version of the questionnaire has 16 items: 10 measuring reward, six measuring effort and six measuring over-commitment [3]. Some studies only use five items for measuring reward, with the item 'My job is physically demanding' being excluded [3]. This has been found to be valid in white-collar workers; however, it is suggested that this item be included when investigating blue-collar workers and those performing manual tasks [3]. Data are collected from participants using four-point Likert scales [3].

The short version also uses four-point Likert scales, with three items measuring effort, seven measuring reward and six measuring over-commitment [3].

To identify ERI, the effort–reward ratio is calculated, as follows:

$$ER = k \frac{E}{R}$$

where E and R are the effort and reward scores, respectively, and k is a correction factor ($k = 7/3$ for the short

version, and $k = 10/6$ for the long version) [3]. ERI is present when $ER \neq 1$, with $ER < 1$ indicating an imbalance in favour of rewards and $ER > 1$ indicating an imbalance in favour of effort [3].

Validity

The long version of the ERI questionnaire has satisfactory convergent and criterion validity, factorial structure, reliability and sensitivity to change over time [1,3], while the short version has satisfactory criterion and discriminant validity, factorial structure and reliability [3,4].

Key research

The ERI questionnaire has been used in a number of large-scale studies, including the Whitehall II [5], Somstress [6] and GAZEL-Cohort studies [7], while systematic reviews synthesizing findings of studies utilizing the ERI questionnaire have also been published [8,9]. These reviews have reported that the ERI model has been supported in a large number of studies for a range of health outcomes, including cardiovascular disease, behavioural outcomes, job-related well-being, musculoskeletal pain and psychosomatic health symptoms [8,9]. The over-commitment and interaction hypotheses have been less frequently investigated, and the findings are inconsistent [8,9].

The majority of research using the ERI questionnaire has been observational; however, intervention studies using the ERI questionnaire have also been published [2]. The ERI questionnaire in its full or shortened version has recently been used to investigate a wide range of workers including police officers [10], firefighters [11], humanitarian aid workers [12], nurses [13], audiologists [14], obstetricians and gynaecologists [15], academics [16] and teachers [17], in a range of languages. For a comprehensive list of studies using the ERI questionnaire up to 2012, refer to Siegrist [2].

Source

Both versions of the questionnaire are available from Siegrist *et al.* [3].

Recommendations for usage

The ERI questionnaire is not intended to be a clinical screening or outcome measure, but may be a valuable

tool for investigating the relationship between occupational stress and a range of health conditions, including cardiovascular disease, behavioural and musculoskeletal outcomes, or as an outcome measure in observational and intervention studies. It is valid and reliable and has been used with a wide range of occupational groups.

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