

Development of the Fear of Work-Related Accident Scale: Pilot Study and Content Validity Findings

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ABSTRACT

Workplace accidents represent a significant occupational health and safety issue, resulting in not only physical injuries but also lasting psychological consequences. The fear and anxiety surrounding potential injury or re-injury can influence employees' safety behaviors, well-being, and organizational outcomes. However, current research and systematic reviews on occupational safety primarily focus on risk perception, safety climate, or hazard awareness, while overlooking the fear of work-related accidents as a distinct emotional construct. Additionally, there is no validated instrument specifically designed to measure this phenomenon. This study aimed to develop and preliminarily evaluate the Fear of Work-Related Accident Scale (FWRAS) to fill this measurement gap and provide a reliable tool for future empirical and systematic investigations. Following a literature-informed framework, an item pool was created through a literature review and feedback from employees. Content validity was established through expert evaluation. The pilot study was conducted online with employees from various sectors ($n = 47$). Internal consistency was assessed using Cronbach's Alpha coefficients, and corrected item-total correlations were calculated to evaluate item discrimination and scale reliability. The results showed high internal consistency across subdimensions and adequate item discrimination, indicating satisfactory preliminary reliability. The multidimensional structure of the FWRAS captured emotional, cognitive, and behavioral aspects of accident-related fear. The FWRAS offers a promising framework for measuring fear of work-related accidents and could support future large-scale studies, systematic reviews, and evidence-based interventions exploring its connections to safety behavior, burnout, and job satisfaction. Developing a reliable measure is crucial for integrating emotional risk factors into occupational safety research and practice.

Keywords: Fear of work accident, Occupational health and safety, Scale development, Safety behaviour, Occupational health psychology

INTRODUCTION

A work accident is defined as a discrete event that occurs during work activities and results in physical or psychological harm (Palali et al., 2017). In contrast, fear of work accidents refers to a specific type of workplace

fear characterized by a persistent sense of anxiety and threat regarding the possibility of being injured or re-injured at work. This fear encompasses not only anticipatory concerns about potential injury prior to an accident but also fears that emerge following an accident, particularly the apprehension of re-injury. It is marked by heightened threat appraisals related to the likelihood of harm and by accompanying avoidance tendencies (Bunzli et al., 2017). Thus, fear of work accidents reflects a subjective psychological experience shaped less by objective risk and more by how individuals perceive and interpret potential hazards.

In the literature, this construct is addressed within the “affective dimension” of risk perception rather than within the traditional risk assessment framework that emphasizes probabilistic calculations of likelihood and severity (Priolo et al., 2025). Within this perspective, fear is conceptualized as a rapid, intuitive, and emotional response to perceived danger and as a fundamental affective state associated with reactions such as anxiety, worry, and panic. Two major theoretical approaches have been proposed to explain how this affective dimension operates. The “risk-as-feelings” approach posits that emotions precede cognitive judgments and directly guide behavioral responses; accordingly, workers often act based on the fear they experience before analytically evaluating the statistical probability of a hazard (Priolo et al., 2025). In contrast, the “feelings-as-information” approach suggests that individuals use their internal affective states as informational cues when evaluating events; negative emotions tend to increase perceived risk and the likelihood of adverse outcomes, whereas positive emotions may facilitate greater risk-taking (Bellini et al., 2022).

Fear and other related emotional states have a complex impacts on employees’ performance and well-being. Empirical findings indicate that fear is significantly associated with both safety behaviors and overall well-being (Bellini et al., 2022; Oah et al., 2018). In some cases, fear may serve an adaptive and protective function by heightening vigilance and encouraging safer behaviors. However, when combined with other threat-related concerns—such as fear of job loss—it may lead employees to avoid reporting accidents or to engage in unsafe practices in order to maintain employment (Palali & van Ours, 2017; Jung et al., 2020).

Fear rooted in feelings of insecurity can trigger defensive responses like withdrawal and avoidance, leading to reduced cognitive abilities, attention deficits, and impaired social interactions (Gibaldi & Cusack, 2019). High levels of fear are associated with emotional exhaustion, health issues, and decreased well-being. Moreover, anxiety and depression can lower safety motivation and knowledge, especially in industries like construction where the risks are high and stress levels are elevated. These effects can hinder decision-making and increase the likelihood of accidents (Oah et al., 2018).

Beyond individual-level processes, organizational factors also play a critical role in shaping risk awareness and fear. Evidence suggests that contextual variables such as safety climate and safety leadership may be more influential in managing risk perception and promoting safe behavior than direct accident experiences themselves (Claxton et al., 2022). These findings underscore that fear of work accidents is a complex and multilayered construct that emerges

from the interaction of emotional, cognitive, behavioral, and organizational factors. Within this framework, fear of work accidents can be considered a critical variable that directly influences not only employees' psychological well-being but also their safety behaviors, job performance, accident-reporting tendencies and ultimately the likelihood of workplace accidents. Consequently, understanding this phenomenon is essential for protecting worker health and for fostering a sustainable culture of safety. Neglecting the emotional determinants of risk may lead safety management practices to focus solely on technical and procedural measures, thereby limiting the effectiveness of preventive interventions.

For these reasons, the development of comprehensive and multidimensional measurement tools capable of capturing emotional reactions, cognitive risk appraisals, behavioral avoidance tendencies, and organizational context associated with fear of work accidents is paramount. Such instruments would enable researchers and practitioners to differentiate among the various components of fear, identify which dimensions are most strongly related to safety outcomes, and design targeted intervention programs and evidence-based safety policies. Therefore, the systematic and reliable assessment of fear of work accidents is indispensable for advancing theoretical knowledge and improving occupational health and safety practices.

METHOD

During the development of the Fear of Work-Related Accident Scale (FWRAS), a conceptual framework was initially established. Following this, an initial item pool consisting of 90 items across five dimensions was created based on a literature review and input from employees. To assess the content validity of the draft scale, feedback was sought from 10 experts specializing in occupational health psychology and measurement and evaluation, with seven experts providing input.

In this study, the Coverage Validity Ratio (CVR) was calculated based on the assessments of seven experts in the field. The minimum acceptable CVR value is based on the study by Ayre and Scally (2014), which provides statistically determined threshold values according to panel size. Accordingly, the minimum CVR value for a panel of seven experts has been set at 1.00. Expert evaluations of the scale items were collected using the options "Appropriate," "Not appropriate," and "Comments." CVR was calculated based on the feedback received. As a result of this process, a 66-item version of the scale was finalized and administered in a pilot study.

The pilot study was conducted with 47 volunteer blue-collar employees from various sectors. Data analysis was conducted using the SPSS 28 statistical package. Cronbach's Alpha coefficients were calculated to assess the internal consistency of the scale. Additionally, corrected item-total correlations were computed to assess how well each item aligned with the construct being measured and to evaluate item quality during the scale development process.

Corrected item-total correlations are preferred because they reflect the relationship between an item and the total score calculated with that item removed, thereby reducing the risk of artificially inflating correlation

coefficients compared to the uncorrected version (Nunnally & Bernstein, 1994; DeVellis, 2016). As widely accepted in the literature, items with correlation values below .30 are considered to have weak discriminative power, and the removal of such items from the scale is recommended.

In the 'Post-Accident Psychological Effects' dimension, three exposure types (Witnessing an Accident, Experiencing an Accident, and Indirect Exposure to Accident-Related Info) were evaluated as complementary components of a unified construct. Consequently, dimensional scores were derived using an unweighted aggregate approach, wherein the final value represents the average of the relevant item scores.

RESULTS

Within the scope of this study, the Fear of Work-Related Accident Scale (FWRAS) was developed to measure employees' levels of fear and anxiety related to occupational accidents using a multidimensional approach. The scale was structured to encompass emotional reactions to the likelihood of occupational accidents, perceptions of safety in the work environment, psychological effects emerging after accident experiences, concerns regarding the future and economic conditions, avoidance-based behavioral responses, as well as fatalistic beliefs and perceptions of inevitability. Accordingly, the scale consists of five main dimensions: Accident-Related Emotional Anxiety; Distrust in the Work Environment; Post-Accident Psychological Effects (subdivided according to witnessing an accident, personally experiencing an accident, and indirect exposure to an accident); Future Anxiety and Economic Fears; and Fatalistic Beliefs and Perceptions of Inevitability. The items are rated on a 5-point Likert-type scale (1 = Strongly Disagree, 5 = Strongly Agree). The developed scale aims to provide a comprehensive assessment of employees' fears and anxieties regarding occupational accidents across cognitive, emotional, and behavioral dimensions.

During the pretest phase of the scale development process, Cronbach's Alpha values obtained from analyses based on data from 47 participants are presented in Table 1.

Table 1: Means, standard deviation and cronbach's alpha coefficients for the FWRAS.

| Sub-Dimension | Items | Means | Std. Dev. | Cronbach α |
|--|-----------|---------------|--------------|-------------------|
| Accident-Related Emotional Anxiety | 10 | 26.85 | 8.32 | .91 |
| Distrust in the Work Environ | 9 | 24.62 | 7.45 | .90 |
| Post-Accident Psychological Effects | 26 | 73.60 | 25.06 | .98 |
| Witnessing an Accident | 8 | 25.52 | 6.96 | .93 |
| Experiencing an Accident | 8 | 24.13 | 8.77 | .95 |
| Indirect Exposure to Accident-Related Info | 10 | 34.74 | 9.04 | .94 |
| Future Anxiety and Economic | 11 | 36.40 | 10.17 | .94 |
| Fears Fatalistic Beliefs and Perceptions of Inevitability | 10 | 19.11 | 9.65 | .96 |
| FWRAS - Total | 66 | 181.70 | 57.92 | .99 |

According to the findings presented in Table 1, the Cronbach's Alpha reliability coefficients of the subdimensions of the FWRAS range from .90 to .96. These values indicate that the scale and its subdimensions demonstrate a high level of internal consistency. The findings suggest that the developed scale is a reliable measurement instrument.

Table 2: Item-total statistics for emotional distress related to the accident and lack of confidence in the workplace.

| Item | Emotional Distress Related to Accident | | Lack of Confidence in Workplace | |
|------|--|--------------------------|---------------------------------|--------------------------|
| | Corr. Item-Total Correlation | α if Item Deleted | Corr. Item-Total Correlation | α if Item Deleted |
| 1 | .68 | .90 | .74 | .88 |
| 2 | .74 | .89 | .79 | .88 |
| 3 | .76 | .89 | .80 | .88 |
| 4 | .63 | .90 | .62 | .89 |
| 5 | .66 | .90 | .73 | .88 |
| 6 | .55 | .91 | .71 | .89 |
| 7 | .83 | .89 | .53 | .90 |
| 8 | .76 | .89 | .61 | .89 |
| 9 | .55 | .91 | .48 | .90 |
| 10 | .55 | .91 | – | – |

The corrected item–total statistics of the scale are presented in the tables below (Table 2, Table 3, and Table 4).

Table 3: Item-total statistics for sub-dimensions of psychological effects after an accident.

| Item | Witnessing | | Experiencing | | Indirect Info | |
|------|------------|------------------|--------------|------------------|---------------|------------------|
| | Corr. | α if Del. | Corr. | α if Del. | Corr. | α if Del. |
| 1 | .92 | .91 | .89 | .94 | .58 | .94 |
| 2 | .91 | .91 | .89 | .94 | .61 | .94 |
| 3 | .79 | .92 | .84 | .95 | .76 | .94 |
| 4 | .67 | .93 | .93 | .94 | .76 | .94 |
| 5 | .76 | .92 | .84 | .95 | .79 | .94 |
| 6 | .81 | .92 | .74 | .95 | .58 | .95 |
| 7 | .78 | .92 | .85 | .95 | .92 | .93 |
| 8 | .50 | .94 | .64 | .96 | .89 | .93 |
| 9 | – | – | – | – | .89 | .93 |
| 10 | – | – | – | – | .85 | .93 |

Table 4: Item-total statistics for future anxiety and fatalistic beliefs.

| Item | Future Anxiety & Economic Fears | | Fatalistic Beliefs & Inevitability | |
|------|---------------------------------|------------------|------------------------------------|------------------|
| | Corr. Item-Total | α if Item | Corr. Item-Total | α if Item |
| 1 | .74 | .94 | .60 | .97 |
| 2 | .66 | .94 | .91 | .95 |
| 3 | .81 | .93 | .82 | .96 |
| 4 | .83 | .93 | .90 | .95 |
| 5 | .74 | .94 | .86 | .96 |
| 6 | .65 | .94 | .88 | .96 |
| 7 | .71 | .94 | .91 | .95 |
| 8 | .81 | .93 | .90 | .95 |
| 9 | .85 | .93 | .71 | .96 |
| 10 | .85 | .93 | .85 | .96 |
| 11 | .59 | .94 | – | – |

Tables 2, 3, and 4 present the corrected item–total correlations and the Cronbach’s alpha values if an item is deleted. The findings indicate that across all subdimensions, the corrected item–total correlations exceed .30, demonstrating sufficient construct relatedness. Additionally, the removal of any item does not result in a significant increase in the Cronbach’s alpha values. These results indicate that the subdimensions possess adequate discriminative power.

CONCLUSION AND FUTURE DIRECTIONS

This study presents the findings of the pretest phase of the development process of the Fear of Work-Related Accident Scale. The results show that the subdimensions of the scale have a high and acceptable level of internal consistency and that the items are significantly related to the constructs intended to be measured. These findings indicate that the scale has a theoretically consistent and psychometrically appropriate structure for measuring fear of workplace accidents.

Workplace accidents are a significant problem in occupational health and safety, not only in terms of physical injuries and material losses but also in terms of their effects on employees’ psychological well-being, risk perception, and safe behaviors. The fear of workplace accidents is seen as a crucial psychological factor that can influence employees’ views on danger, safe work practices, and adherence to rules. In this regard, the Fear of Work-Related Accident Scale could aid in occupational health and safety efforts by allowing for a structured assessment of employees’ perceptions and emotional reactions related to workplace accidents.

Determining levels of fear of work-related accidents, especially in high-risk sectors such as construction, mining, industry, and healthcare, can inform

preventive occupational health and safety policies, the content of training programs, and psychosocial risk management. Data obtained through this scale can also support assessment of the safety climate at both the individual and organizational levels.

The findings of this study must be interpreted in light of several limitations. Primarily, the research was restricted to a pilot sample of $N = 47$ blue-collar workers, which necessarily constrains the generalizability of the results. Consequently, these findings should be regarded as exploratory and preliminary. To further establish the psychometric robustness of the scale, future studies should employ larger, more diverse samples to conduct advanced statistical procedures, such as Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). In addition, it is recommended to examine relationships between the scale and variables such as accident frequency, safe behaviors, risk perception, and occupational safety climate to provide evidence for criterion-related validity.

In conclusion, the Fear of Work-Related Accident Scale has the potential to serve as a valid and reliable measurement tool for understanding employees' psychological experiences in occupational health and safety contexts. It is expected to contribute to holistic approaches to workplace accident prevention and to the improvement of employee safety.

Future research is warranted to more rigorously establish the validity and reliability of the FWRAS instrument developed in this study. Specifically, to evaluate criterion-related validity, subsequent investigations should examine the associations between scale scores and relevant external correlates, such as occupational accident frequency, safety-related behaviors, and safety motivation. Within this framework, the application of correlational and regression-based analyses would further substantiate both the concurrent and predictive validity of the FWRAS.

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