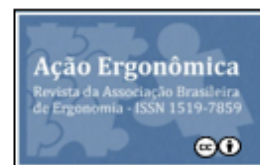




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## **WHEN VIOLATIONS ARE ADAPTIVE ACTIONS TO RESOLVE CRITICAL SITUATIONS AT WORK.**

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### **ABSTRACT**

The study addresses violations of safety rules as adaptation strategies to deal with critical situations at work. The research was conducted with electricians from the maintenance service of electricity distribution networks. The technique of critical incidents with an interview script was used to data collection. For data analysis, thematic categorization was used. The results showed that professionals, when they deviate from rules, make adjustments to restore the functioning of the system, seeking to reconcile organizational objectives while remaining within what they perceive as safety limits. The study contributes to a better understanding of rules violations, and can provide subsidies for actions in the field of safety at work.

**KEYWORDS:** Adaptation; Rule violations; Critical incidents; Safety at work.

## 1. INTRODUCTION

The work with electricity is considered high-risk for accidents. In the work context of electricians in energy distribution companies, the risks of accidents are amplified due to the unpredictability of the services and the speed required to restore power supply to consumers (MELO et al., 2003). In this sense, workers play an important role in the reliability of operations, mobilizing adaptive actions to manage risks at work.

Adaptation is a consequence of working in a dynamic context, corresponding to workers' ability to anticipate and diagnose problems, as well as reassess situations and seek strategies to adjust to new events (CHRISTOFFERSEN; WOODS, 1998). The need to adapt results in performance variability, implying adjustments made at every moment in the execution of the activity. Although variability is often associated with negative consequences, it is an essential condition for the functioning of systems. Adjustments enable work to achieve set objectives, although they may lead to deviations or violations of rules. It is these deviations that make it possible to learn to deal with uncertainties (HOLLNAGEL, 2009).

Although violations of safety rules are commonly related to accident causes (HUDSON et al., 1998), a more in-depth analysis reveals that violations are complex phenomena that, paradoxically, can both increase safety effectiveness and expose the system to risk situations (ALMABERTI et al., 2006).

Therefore, it becomes important to understand how violations may be related to adaptation strategies. This study aims to analyze violations of safety rules that constitute adaptive actions used by electricians to deal with critical incidents.

## 2. METHODOLOGY

The qualitative exploratory study was conducted with emergency service electricians (SE) from a service provider company for an electricity distribution concessionaire in the Northeast region. The SE is responsible for emergency corrective maintenance on low and medium voltage electrical networks, whether energized or de-energized. The research is part of a broader investigation that aimed to analyze safety management by electricians. For this study, a specific focus was made to analyze critical incidents reported that led to rule violations as an adaptive action employed by the professionals.

Data collection utilized the critical incident technique (FLANAGAN, 1973) as it allows for the identification of critical situations experienced by participants regarding safety during work execution, regardless of whether the results were positive or negative. An interview guide was developed divided into two parts: (1) questions to identify critical incidents involving work safety; (2) follow-up questions for deeper exploration.

Participant selection for interviews adopted inclusion criteria: holding the position of electrician and having worked in the SE for at least one year. In total, there were 23 participants, with this number determined by theoretical data saturation. However, due to the focus for this study, only interviews from 5 participants were considered.

Data analysis followed thematic categorization procedures. The study adhered to ethical guidelines governing research involving human subjects.

### **3. RESULTS AND DISCUSSION**

In the interviews, 25 critical events were reported. Regarding critical incidents involving rule violations, six incidents were identified. In this study, the five events involving violations as adaptive actions to deal with critical safety situations were analyzed.

In IC1 (Critical Incident 1), the electrician climbed a broken pole, which was propped up on a truck, in order to perform the service. In IC2, the team had to hold the electrical cable with a maneuvering pole due to an accident that knocked down a pole. In this case, initial procedures were not followed because there was a risk of a larger accident occurring. In IC3, the electrician found an alternative to repair a very high pole by moving from the vehicle's aerial basket to the pole to do the work. In IC4, the team positioned the ladder inside the customer's house without securing it, to address a fire hazard in a branch line. In IC5, the team had to intervene without prior authorization from the control center because there was a risk to third-party lives.

Two incidents (IC1; IC3) were related to a critical power outage event, where there is a sense of urgency to restore the electrical system. In these situations, it is common for electricians to feel pressured and seek alternatives to repair the electrical network. Three events (IC2; IC4; IC5) concerned occurrences that required quick action to avoid further complications.

The strategies for dealing with incidents involved violations of safety procedures, such as climbing a pole with a damaged structure (IC1); not following initial procedures (such as isolating the area and positioning the vehicle correctly) (IC2); exiting the vehicle's aerial basket (IC3); not properly positioning and securing the ladder (IC4); and performing service without authorization from the control center. The adaptive behaviors aimed to both restore the system and limit the severity of the incident's consequences, mainly with implications for the system or third parties.

It is observed that all adopted strategies involved some type of risk for the worker, which could have resulted in an accident. It is considered that the professionals' expertise

contributed to the successful action. It is possible to assume that, faced with conflicting choices between resolving the occurrence and ensuring their own safety, electricians seek to reconcile achieving organizational objectives while staying within what they perceive as a safety zone.

This represents a cognitive commitment, where, in the face of multiple competing interests, the decision made is never optimal (AMALBERTI, 2016). The study shows that if the situation involves a conflict between safety and production (system restoration), the choice often implies taking a risk. This suggests that perceived responsibilities towards the system may be predominant in a way that encourages an ethics of sacrifice.

#### **4. CONCLUSION**

The results reveal that safety rule violation behaviors need to be understood within the context in which they occur, which is largely defined by system deficiencies. Deviations are a way for professionals to compensate for disturbances in the system and can be seen as resilient actions that reflect workers' adaptive capacity to deal with unpredictabilities.

Furthermore, the investigation of critical incidents allowed the identification of activities that need to be explored in-depth in order to reveal how historically, in that system, operators deal with variabilities and what are the strategies and conditions of success or failure of these practices.

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