

INTRODUCTION

Situation awareness (SA) is a cognitive safety-critical skill.

SA means “knowing what is going on” and has 3 levels – perception, comprehension and anticipation.

SA lapses are associated with incidents and accidents across high-risk industries. Stress and fatigue can impact SA, leading to some of these lapses.

More recently, SA has been studied in agriculture, the most dangerous industry in the UK and Ireland.

The current study aimed to explore SA lapses and the impact of stress and fatigue on SA in agriculture.

Lapses in knowing what is going on contribute to agricultural accidents and incidents.

Many of these lapses are caused by stress and fatigue.

Training SA and managing stress and fatigue may help reduce accidents.

METHOD

15 farmers, 10 Irish & 5 British

14 males, 1 female, age 25-59
Most worked on animal farms.

Qualitative, semi-structured interviews, based on a critical incident

Participants were asked to verbally recall a recent negative experience, an error, or adverse conditions on the farm when feeling tired or stressed. Additional questions were asked to uncover implicit knowledge on SA lapses, stress, and fatigue. This was followed by general questions on stress and fatigue.

Qualitative content analysis

Largely inductive, partly guided by SA theory and error taxonomy

RESULTS and DISCUSSION

SA lapses were involved in all accidents and incidents

Broadly described as **loss of concentration or focus or loss of awareness of a certain element** such as space

“I don’t know where I am.”

General role of SA in prevention also acknowledged

“Not as aware of your surroundings and that can lead to accidents.”

Many SA lapses occurred at the perception level, in the form of failure to monitor or observe data

“I didn’t see any risk at all.”

Some participants demonstrated **attentional narrowing**, whereby they focused excessively on one element

“I was just totally focused on his nostrils.”

Some also exhibited **premature closure**, whereby they reached a decision without considering everything

“I just saw the bucket and I reacted.”

Many SA lapses occurred at the comprehension level, as well, in the form of an incomplete or inaccurate mental model

“I didn’t realize how serious the situation was.”

Some interviewees also reported a **recent change in equipment or machinery or over-familiarity with existing equipment**

“Possibly because of that I was not used to the operation of it.”

Stress and fatigue negatively affected SA

Fatigue caused impaired concentration and **SA perception and comprehension lapses**

“Going through the motions.”

Stress also led to impaired concentration and **internal focus on worries and concerns, contributing to many of the SA lapses**

“You’re on the job, but your mind is not there, that’s stress for me.”