



Senior Managers and Safety Intelligence in ATM



fig. 07
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Who and where?





What is Safety Intelligence?

- Safety Intelligence considers skills and traits of senior executive managers in relation to safety
- Abilities and Understanding regarding
 - Information
 - Safety risks to the organization
 - Decision making(Kirwan, 2008)



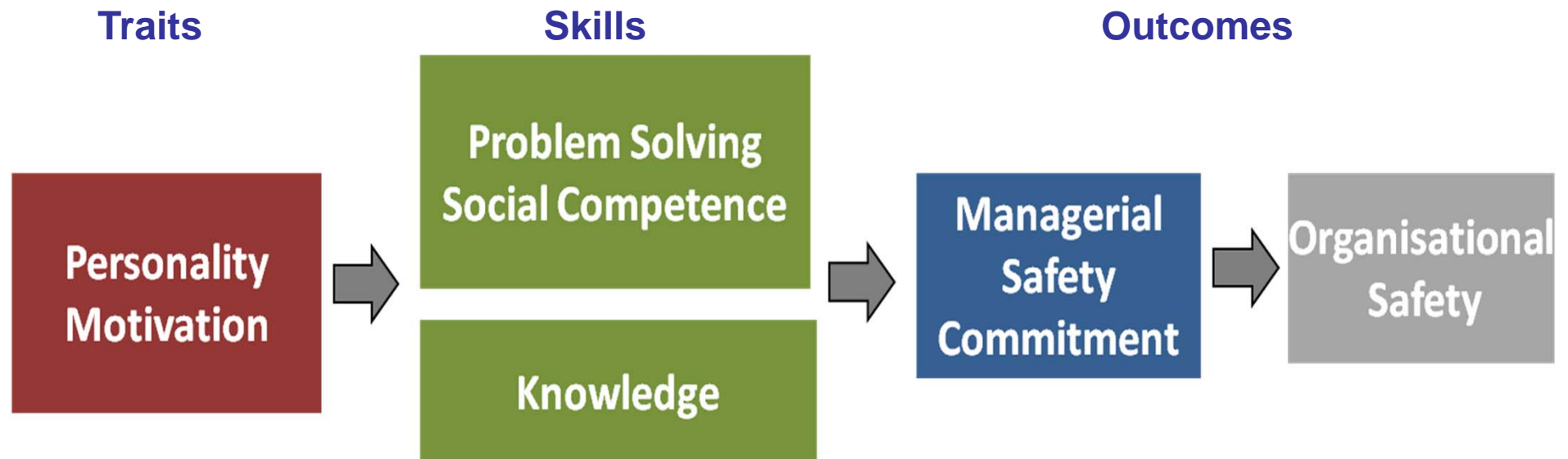
Aims of the Safety Intelligence Project

- What are the characteristics of the people at the top of an organisation who achieve high quality safety performance?
- How do senior executive managerial skills and traits affect safety outcomes?
- How does an executive manager indicate to the workforce that he or she is highly committed to safety?



The Skill Based Leadership Model

adapted from Mumford et al. (2000)





Questionnaire Study

Aim: *What* constructs identified from the literature review are really relevant?

Sample:

- Subject matter experts (n=49)
 - CEOs (n=11)
 - Safety managers (n=38)

Measures

- Questionnaire with two open questions
 - ‘*What kind of person would you like an ideal CEO/safety manager to be regarding his or her effect on safety?*’
 - ‘*What behaviour would you like an ideal CEO/safety manager to demonstrate regarding his or her effect on safety?*’.



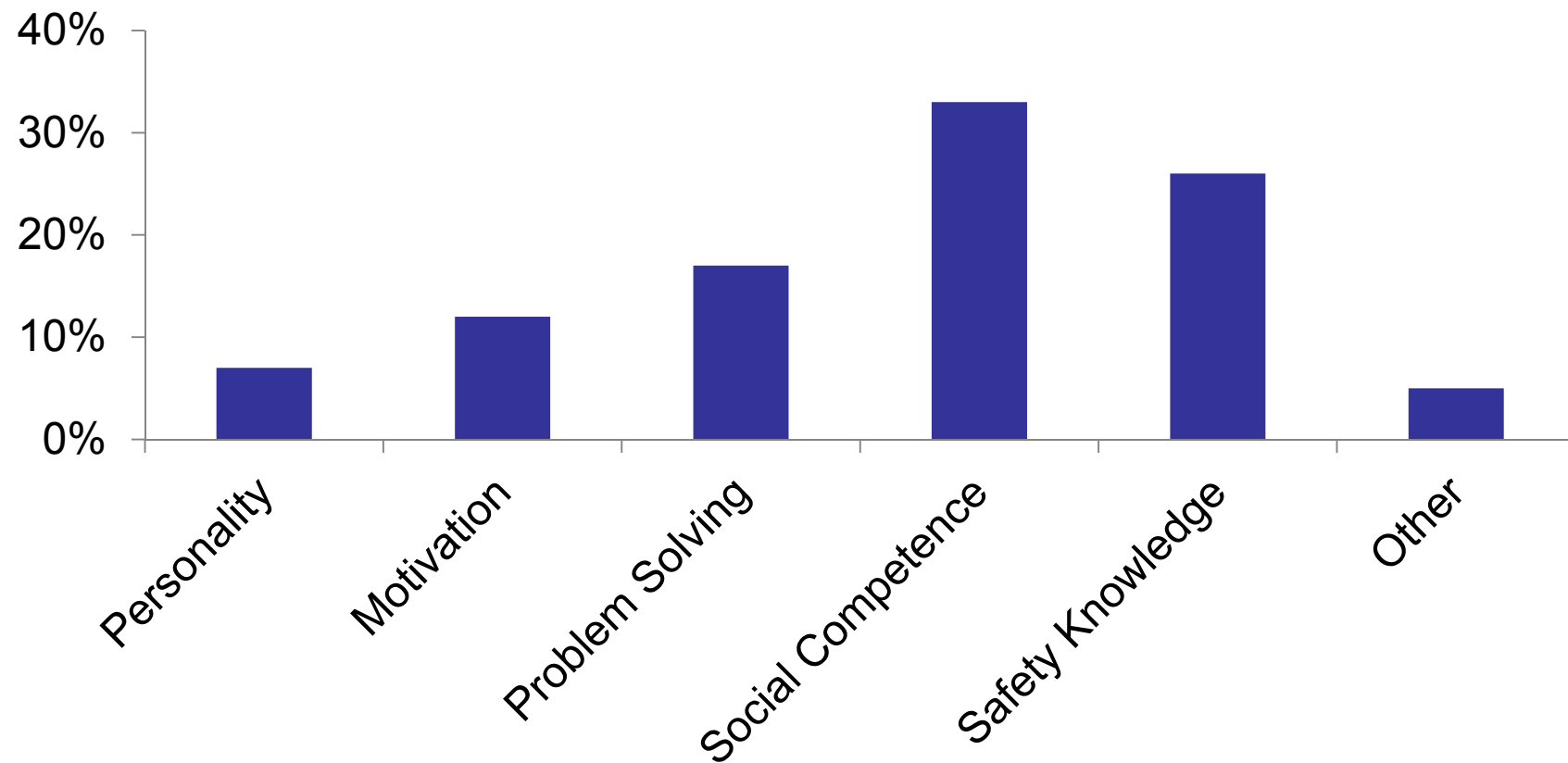
Analysis of the Data

- Qualitative content analysis
(Mayring, 2001)
 - Carried out by two independent coders
- Interrater Agreement
 - Krippendorff's $\alpha = 0.80$





Frequency in Percent





An Example: Problem Solving

Problem Solving (Isaksen & Treffinger, 2004)	Frequency
Understanding the Problem	32 (71%)
Idea Generation	9 (20%)
Planning for Action	3 (7%)



Data analysis

- Problem solving, personality, leadership and safety knowledge all contributed significantly to safety influence
- Problem solving, leadership & safety knowledge more relevant for CEOs
- Personality more ideal for safety managers' influence



These results suggest...

- The skill based model is suitable to further understand the influence of senior managers on safety outcomes
- Furthermore leadership style is important



Method of the final study

- Interviews with senior managers from 10-12 ANSPs
 - Open Questions to assess safety knowledge
 - Based on Zaccaro et al. (2000)
 - Scenarios to assess problem solving and social competence
 - Based on Mumford et al. (1996)
 - Validated during the first set of interviews
 - Questionnaires to assess personality and motivation
 - Gosling et al. (2003); Wallace et al. (2009)



Example Scenario

“You are the CEO of a European ANSP, and the following issue has been brought to your attention.

Traffic has been down 8% for the last six months. Incidents have gone up 15% above the level it used to be, during this period.

The chief investigator believes this is not a significant trend, but has no explanation for this contradiction.

You know that there has been a high influx of new air traffic controllers, who are trained on high traffic, during the last year.

The regulator has asked for a response to this issue.”



Analysis I



- Responses to Problem Solving scenarios are coded regarding the
- Understanding the problem
 - Number of issues considered
 - Quality and Originality of issues considered
 - Reiter-Palmon et al. (1997)
- Generating Ideas
 - Number of ideas generated
 - Effectiveness, Implementability, Applicability and Completeness
 - Scales from Dean et al. (2006)



Analysis II



- Scenario responses and open question responses
 - Rated by two coders
 - Interrater agreement using $rwg_{(j)}$ (James et al. 1982;1993)
- Safety commitment as an outcome measure
 - Self reports from participants
 - Questionnaire by Zohar & Luria, (2005)
- Regression analysis



Q & A

**Thank you for
your attention**

