Risky decision making due to goal conflicts in firefighting – debriefing as a countermeasure to enhance safety behavior

GEMEINSAM STARK
Teamtraining Brandbekämpfung

Hagemann, V.[a], Heinemann, L.[a], Aust, F.[b], Holtz, M.[c] & Peifer, C.[b]

- Background -

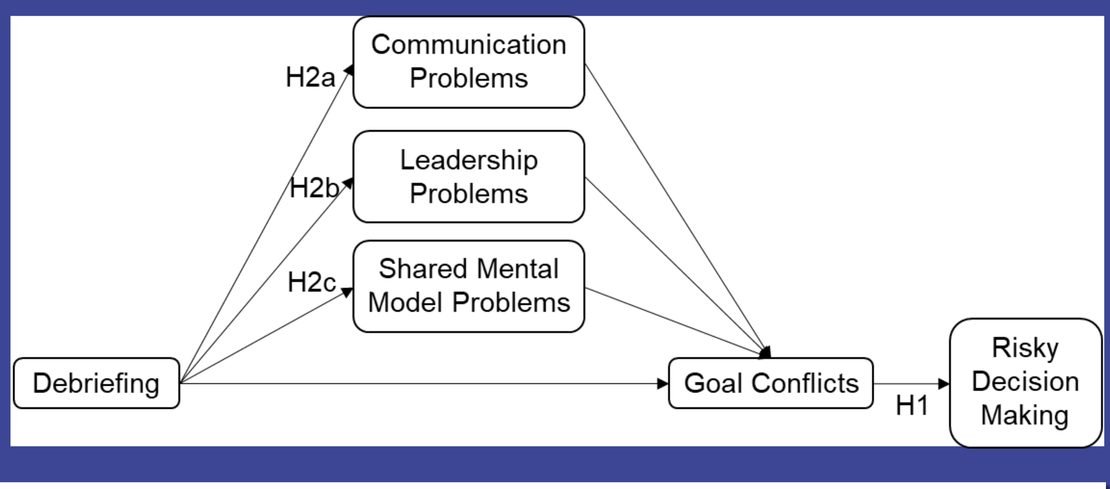
Firefighters act within extreme environments, work under threatening conditions and are often exposed to goal conflicts during their missions (two or more goals are incompatible; e.g., own safety vs. task completion)[1].

Accident numbers and mission reports show that risky decision-making plays an important role in accidents on firefighting missions[2] even though there are safety service regulations and strategies that are learned in training to behave safely in missions[3].

What are the consequences of these safety and task goal conflicts, and what countermeasures could help to reduce their occurrence?

- Hypotheses -

- The experience of goal conflicts in firefighting missions correlates significantly positively with risky decision-making strategies (H1)
- Debriefings lead to fewer goal conflicts in missions, mediated by less frequent difficulties in teamwork (communication (H2a), leadership (H2b) and shared mental models (H2c))



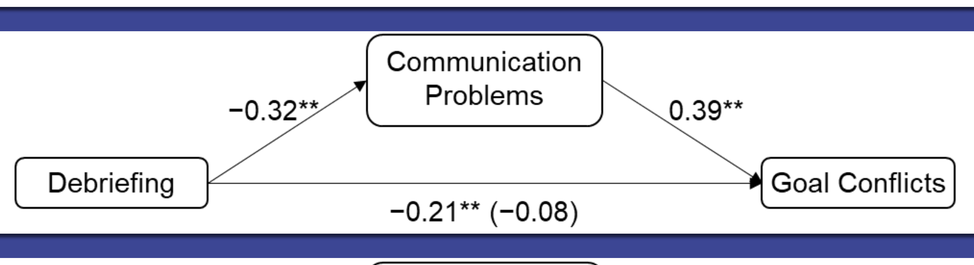
- Methods -

In an online survey, 340 firefighters (19 females; M_{age}= 40.19, SD_{age} = 11.09) with an average of 20.82 years of work experience (*SD* = 10.81) were asked about goal conflicts, risky decision making, debriefings, and the frequency of difficulties in teamwork during firefighting. Associations between the survey variables were determined by multivariate regression and mediation analyses.

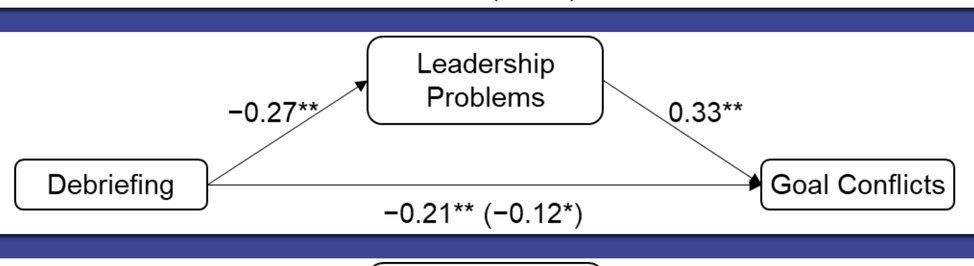
- Results -

H1: Multivariate regression with z-standardized variables showed that risky decision making was significantly affected by the experience of goal conflicts ($F(5, 334) = 7.60$, $p < 0.001$, $\eta^2_p = 0.102$)

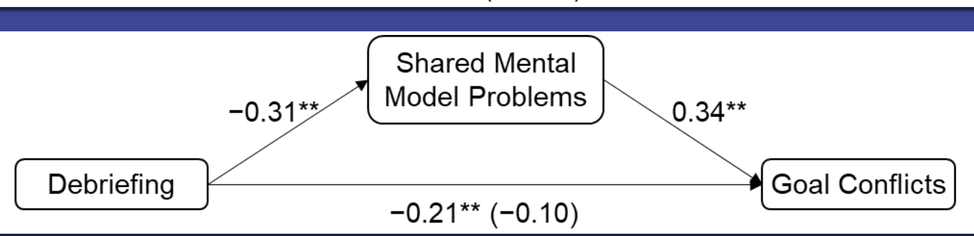
H2a: Results indicate that the negative relationship between debriefings and goal conflicts is fully mediated by the experience of communication problems



H2b: Results indicate a partial mediation of the negative relationship between debriefings and goal conflicts by the experience of leadership problems



H2c: Results indicate that the negative relationship between debriefings and goal conflicts is fully mediated by the quality of the shared mental models within the teams



- Discussion and future research needs -

This study demonstrated that goal conflicts in firefighting enhance the probability of risky decision making. As a promising countermeasure, debriefings after missions were found to be associated with reduced problems with communication, leadership, and shared mental models within teams, which in turn, reduced the occurrence of goal conflicts during firefighting.

To provide a causal interpretation of the results presented, it would be interesting for future studies to assess goal conflicts in experimental settings by using mission exercises specifically designed to provoke such conflicts. Since this study used cross-sectional methods to demonstrate that debriefing effectively reduces goal conflicts during missions, future research should examine the effects of different debriefing interventions in the field over a longer period of time.

- Access to paper and contact -

Hagemann, V., Heinemann, L., Peifer, C., Aust, F. & Holtz, M. (2022). Risky decision making due to goal conflicts in firefighting – debriefing as a countermeasure to enhance safety behavior. *Safety, 8*, 21. DOI: doi.org/10.3390/safety8020021

[a] Business Psychology, University of Bremen, Germany, Prof. Dr. Vera Hagemann, vhagemann@uni-bremen.de
[b] Department of Psychology, University of Lübeck, Germany
[c] Fire Department Köln, Germany

- References -

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[3]Deutsche Gesetzliche Unfallversicherung. DGUV Vorschrift 49–Unfallverhütungsvorschrift–Feuerwehren [DGUV Regulation 49–Accident Prevention Regulation–Fire Brigades] 2018. Available online: https://publikationen.dguv.de/regelwerk/dguvvorschriften/1507/feuerwehren (accessed on 12 December 2021).