

# Psychometric Properties of the German Version of Hospital SOPS for Leaders (Medical Directors)

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# Safety culture in Germany

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- Estimated death rate among hospital patients in Germany: 0.1%
    - 17,000 deaths a year (Hoffmann and Rohe 2010; Conen et al. 2006)
  - Publishing the report: “Aus Fehlern lernen“ (Learning from errors)
- The importance of improving safety culture has grown, however, there is still a lack of knowledge on safety culture and patient safety



# Why using the Hospital-SOPS?

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- Analyses of psychometric properties
  - Reliability:  $\alpha = .63 - .84$
  - Construct validity
  - Exploratory and confirmatory factor analysis
- Includes 3 patient safety outcomes
  - Frequency of event reporting (3-item scale);
  - Number of events reported (1 item);
  - Patient safety grade (1 item)
- Already used in 31 countries
  - Swiss-German-version (Pfeiffer, Y. and Manser, T. submitted)



# Purpose

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- Test, whether the Hospital SOPS for Leaders could be used in a medical directors' survey
  - Test, whether the Hospital SOPS for Leaders shows the same psychometric properties as the original HSOPS for hospital employees
- Adapting the Swiss-German-version (Pfeiffer, Y. and Manser, T. submitted)
- For typical linguistic usage in Germany
  - For medical directors in German hospitals



# Response

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- Data collection between April and October 2008
- Cross-sectional, retrospective postal-mail survey
- 1224 medical directors from German hospitals
  - Inclusion criterion: one internal medicine and one surgery unit
- Response rate of about 45% (n=551)
- 4 respondents were excluded (missing values >30% in scale items)



## Statistical analysis

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- Replacing missing values by a multiple imputation
- Confirmatory factor analysis (CFA)
- Reliabilities
- Inter-correlation of the dimensions
- Comparison composite scores (USA vs. GER)



## Results – Confirmatory factor analysis (CFA)

Model Fit index	Criterion (n>250 and m≥30) <sup>a</sup>	Fit index German sample
CMIN/df	<3.0	2.177
CFI (Comparative-Fit-Index)	>0.90	.916
TLI (Tucker-Lewis-Index)	>0.90	.903
RMSEA (Root-Mean-Square-Error of Approximation)	≤0.07	.046
SRMR (Standardized-Root-Mean-Residual)	<0.08	.048

<sup>a</sup> Hair et al. 2006



## Results – Reliability

Factor	No of items	Cronbach's Alpha American data <sup>a</sup>	Cronbach's Alpha Swiss data <sup>b</sup>	Cronbach's Alpha German data
<b>Safety Culture Dimensions</b>				
1 Hospital management support for patient safety	3	.83	.83	.86
2 Supervisor/manager expectations/actions	4	.75	.79	<b>.69</b>
3 Teamwork across hospital units	4	.80	.77	.78
4 Teamwork within units	4	.83	.75	.77
5 Communication openness	3	.72	.64	.63
6 Hospital handoffs and transitions	4	.80	.72	.83
7 Nonpunitive response to error	4	.79	.70	.73
8 Feedback and communication about error	3	.78	.78	.79
9 Staffing	4	.63	.65	<b>.73</b>
10 Organizational learning	3	.76	.68	<b>.62</b>
<b>Outcome dimensions</b>				
11 Overall perceptions of safety	4	.74	.76	.73
12 Frequency of event reporting	3	.84	.70	.86

<sup>a</sup> (Sorra, J. S. and Nieva, V. (2004); <sup>b</sup> (Pfeiffer, Y. and Manser, T. (submitted))

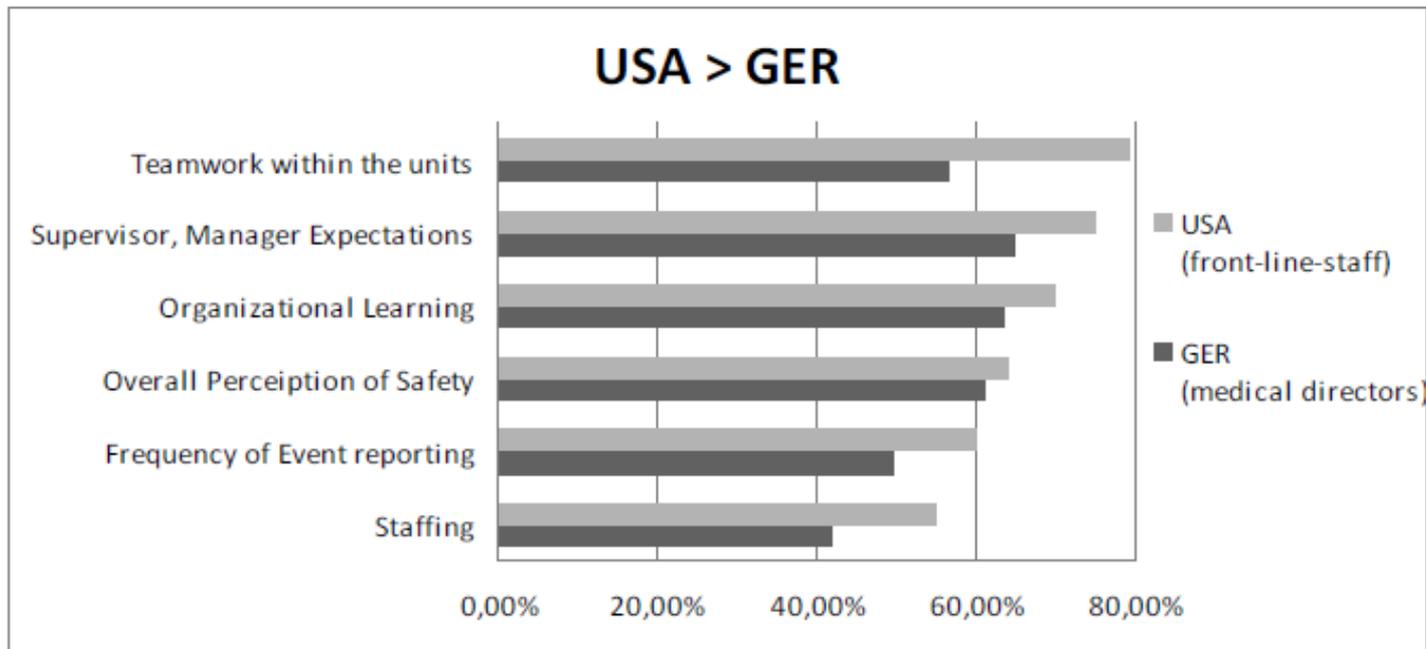


# Results – Inter-correlation of the dimensions

Factor	1	2	3	4	5	6	7	8	9	10	11
1 Hospital management support for patient safety											
2 Supervisor/manager expectations/actions	.54										
3 Teamwork across hospital units	.60	.43									
4 Teamwork within units	.58	.62	.48								
5 Communication openness	.47	.46	.48	.58							
6 Hospital handoffs and transitions	.50	.49	.47	.52	.47						
7 Nonpunitive response to error	.45	.42	.27	.33	.35	.38					
8 Feedback and communication about error	.60	.48	.54	.56	.49	.54	.38				
9 Staffing	.47	.39	.62	.46	.43	.47	.22	.52			
10 Organizational learning	.59	.41	.59	.49	.56	.43	.23	.53	.49		
11 Overall perceptions of safety	<b>.64</b>	.57	.53	.54	.48	.59	.48	.60	.46	.56	
12 Frequency of event reporting	.41	.32	.48	.31	.30	.31	<b>.13</b>	.39	.46	.44	.40

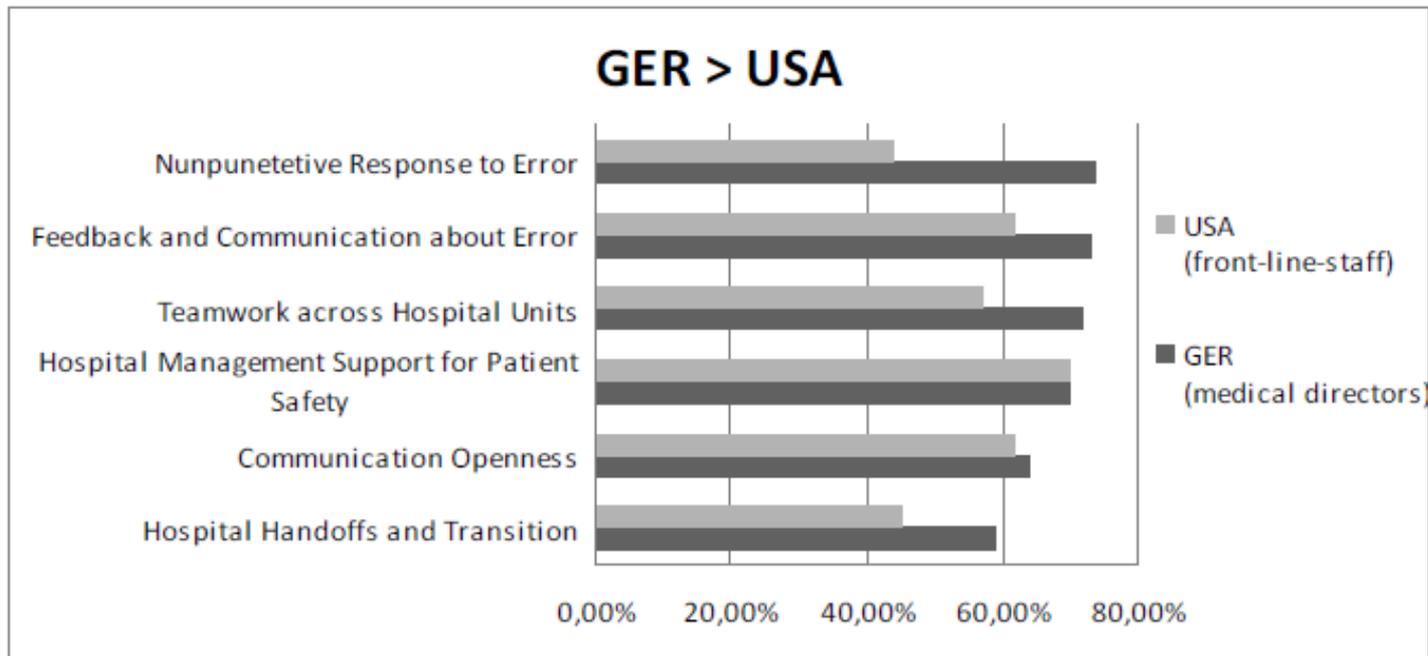


## Comparing composite-level results I





## Comparing composite-level results II





## Limitations

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- Level of respondents (staff vs. medical director)
- Key-informant- persons
- Selection bias (sampling)
- Response bias
- Inhouse-Survey (who answered the Questionnaire)



## Conclusion

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- CFA indicates that the factor structure of the original HSOPS fits to the German-data
  - Dimensions have an acceptable level of reliability
  - Discriminant construct validity proves that the HSOPS is eligible for measuring safety culture in German hospitals from the medical directors' point of view
- Valid measurement to proof intervention for improving safety performance

# Thank you very much!

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Results will be published soon.

For any further information please contact.

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