

UNIVERSITÉ DE NEUCHÂTEL
FACULTÉ DES SCIENCES ÉCONOMIQUES ET SOCIALES

REGULAR PATTERNS IN THE GROUP
PROCESS:
HOW THEY ARE DETECTED, WHAT THEY TELL US,
AND HOW THEY ARE RELATED TO PERFORMANCE

THÈSE

PRÉSENTÉE A LA FACULTÉ DES SCIENCES ÉCONOMIQUES ET SOCIALES
POUR OBTENIR LE GRADE DE DOCTEUR EN PSYCHOLOGIE DU TRAVAIL

PAR

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Monsieur Christof NAEGELE STALDER est autorisé a imprimer sa thèse de doctorat en Psychologie du travail intitulée :

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Il assume seul la responsabilité des opinions énoncées.

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Index of Contents

1	Additional Friendly Plane in Shift 5 of the CHAT Condition.....	4
2	Abbreviations of the Coding.....	5
3	Predicting Performance: Input variables	6
4	Predicting Performance: Summary Level Process Variables.....	19
5	Predicting Performance: Task Adaptive Behavior Variables.....	40
6	Lag Sequential Analysis.....	62
6.1	Descriptive Statistics Shift 1 and Shift 4	62
6.2	Technical Details SPSS Data File: Data Structure	64
6.3	GSEQ-SDIS Command Files	66
6.4	Adjusted Residuals, all Roles, lag 2 to lag 5, shift 1	68
6.5	Adjusted Residuals, all Roles, lag 1 to lag 5, shift 2.....	76
6.6	Adjusted Residuals, lag 1 to lag 5, shift 3.....	79
6.7	Adjusted Residuals, lag 1 to lag 5, shift 4.....	82
6.8	Adjusted Residuals, all Roles, lag 1 to lag 5, shift 5.....	85
6.9	Adjusted Residuals, all Roles, lag 1 to lag 5, shift 6.....	88
6.10	Adjusted Residuals, all Roles, lag 1 to lag 5, shift 8.....	91
6.11	Predicting Performance: Lag Sequential Analyses.....	94
7	PROcedural NETwork Representations (PRONET)	106
7.1	Conditional Probabilities Used in PRONET Analyses	109
7.2	PRONET Results.....	111
8	Data Mining applied to the ATC Data.....	117
8.1	Technical Details of the Data Sets used in Data Mining Analyses	118
8.2	Support Values for Specialists of Low and High Performing Teams	121
8.3	Sequences Detected on Day One and Day Two	125
8.4	Predicting Performance: Data Mining	133
9	Index of Tables and Figures	149

1 Additional Friendly Plane in Shift 5 of the CHAT Condition

In shift 5 of the CHAT condition an additional friendly plane entered the airspace to mask the additional five minutes time. The plane entered the airspace shortly after the shift began and remained in the air-space for the rest of the time. It was assumed that any team would be capable to identify this plane quickly and therefore assigning the appropriate threat level within a few seconds. And this is exactly what 13 of 14 teams did. They scored 97 to 100 points on this plane. Only one team got a performance of just 87 for this plane. The team with the lowest performance for the first plane in shift 5 had also the lowest overall performance for this shift. It can be shown that especially low performing teams could profit from the additional plane. They gained 8 to 10 points. Good performing teams on the other hand benefited only slightly from this plane, their gain is 3 to 4 points. Nevertheless, the effects of the additional plane can be neglected. The rank order within the CHAT condition stays the same with and without the additional friendly plane. To make the performance measure of shift 5 of the CHAT-condition comparable to the other experimental conditions, shift 5 performance is calculated without taking into account the performance of the first (friendly) plane.

Table 81 Effects of the additional plane on performance in shift 5, CHAT-condition.

Group Number	L_F54	L_F51	L_F52	L_F53	mean	mean without plane F54
441	99	88	81	90	89.5	86.3
423	100	76	86	92	88.5	84.7
435	100	86	76	87	87.3	83.0
436	97	84	70	91	85.5	81.7
429	99	79	72	91	85.3	80.7
421	99	82	69	85	83.8	78.7
430	100	82	70	78	82.5	76.7
426	99	85	52	88	81.0	75.0
427	100	73	70	77	80.0	73.3
425	100	80	61	76	79.3	72.3
437	100	64	67	86	79.3	72.3
428	98	82	43	91	78.5	72.0
431	99	74	76	45	73.5	65.0
424	87	53	45	40	56.3	46.0

2 Abbreviations of the Coding

A time code is always added to the categories (start and end time of event).

ieR – Read Message – reading a message

Sub categories:

- ieR111 reading a message with task, strategy and non-task/non-strategy related content
- ieR110 reading a message with task and strategy related content
- ieR100 reading a message with task related content
- ieR101 reading a message with task, and non-task/non-strategy related content
- ieR011 reading a message with strategy and non-task/non-strategy related content
- ieR001 reading a message with non-task/non-strategy related content
- ieR010 reading a message with strategy related content

ieS – Send Message – sending a message

Sub categories:

- ieS111 sending a message with task, strategy and non-task/non-strategy related content
- ieS110 sending a message with task and strategy related content
- ieS100 sending a message with task related content
- ieS101 sending a message with task, and non-task/non-strategy related content
- ieS011 sending a message with strategy and non-task/non-strategy related content
- ieS001 sending a message with non-task/non-strategy related content
- ieS010 sending a message with strategy related content
- ieS110 sending a message with task and strategy related content

ieSi – Show Information – look up plane information

Sub categories:

- ieSi1 look up plane information on critical parameter (IFF, corridor, direction)
- ieSi0 look up plane information on “non”-critical parameter

ieH – Handle Threat – threat assignment of a plane

Sub categories:

- ieHYX Y is number of plane in shift, X is the threat level set

seNewMsg – seNewMs – New Message – a new message is in the inbox

Sub categories:

-

seNP – New Plane – a new plane is in the airspace

Sub categories:

-

3 Predicting Performance: Input variables

Table 82 Results of multiple regression, predicting performance shift 1, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.130	.105						5.225	3	105	.002

Predictors in trimmed model	Beta	t	Sig.
education specialist A	.282	3.090	.003
education commander	-.160	-1.717	.089
computer expertise commander	.138	1.484	.141

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.046	-0.501	0.617
CHAT condition (dummy coded)	0.006	0.064	0.949
Control Condition 1 (dummy coded)	-0.010	-0.104	0.917
Control Condition 2 (dummy coded)	0.122	1.329	0.187
Individual Reflexivity (dummy coded)	0.002	0.019	0.985
Group Reflexivity (dummy coded)	0.050	0.533	0.595
age commander	-0.098	-1.072	0.286
gender commander	-0.070	-0.702	0.484
education commander			
computer expertise commander			
age specialist A	0.042	0.447	0.656
gender specialist A	0.015	0.163	0.871
education specialist A			
computer expertise specialist A	0.117	1.292	0.199
age specialist B	0.014	0.151	0.880
gender specialist B	-0.001	-0.013	0.989
education specialist B	-0.041	-0.436	0.664
computer expertise specialist B	-0.009	-0.099	0.922

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 83 Results of multiple regression, predicting performance shift 2, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.053	.035						2.972	2	106	.055

Predictors in trimmed model	Beta	t	Sig.
education commander	-.160	-1.686	.095
gender commander	.159	1.678	.096

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.075	0.790	0.432
CHAT condition (dummy coded)	0.119	1.244	0.216
Control Condition 1 (dummy coded)	-0.001	-0.010	0.992
Control Condition 2 (dummy coded)	0.034	0.355	0.723
Individual Reflexivity (dummy coded)	-0.066	-0.691	0.491
Group Reflexivity (dummy coded)	-0.004	-0.037	0.971
age commander	-0.063	-0.650	0.517
gender commander			
education commander			
computer expertise commander	0.076	0.731	0.466
age specialist A	-0.113	-1.178	0.241
gender specialist A	0.100	1.049	0.297
education specialist A	0.084	0.889	0.376
computer expertise specialist A	0.116	1.229	0.222
age specialist B	-0.062	-0.656	0.513
gender specialist B	-0.050	-0.511	0.610
education specialist B	0.056	0.583	0.561
computer expertise specialist B	-0.072	-0.754	0.453

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 84 Results of multiple regression, predicting performance shift 2 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.212	.205						28.81	1	107	.000
2	.236	.222	.024	3.303	1	106	.072	16.37	2	106	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1	.456	5.375	.000
(2) gender commander	.154	1.817	.072

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.099	1.162	0.248
CHAT condition (dummy coded)	0.079	0.923	0.358
Control Condition 1 (dummy coded)	0.031	0.357	0.721
Control Condition 2 (dummy coded)	-0.038	-0.435	0.665
Individual Reflexivity (dummy coded)	-0.024	-0.280	0.780
Group Reflexivity (dummy coded)	-0.041	-0.481	0.631
age commander	-0.029	-0.341	0.734
gender commander			
education commander	-0.077	-0.888	0.377
computer expertise commander	0.029	0.311	0.756
age specialist A	-0.112	-1.318	0.190
gender specialist A	0.089	1.046	0.298
education specialist A	-0.046	-0.517	0.606
computer expertise specialist A	0.059	0.689	0.492
age specialist B	-0.059	-0.696	0.488
gender specialist B	-0.031	-0.362	0.718
education specialist B	0.042	0.493	0.623
computer expertise specialist B	-0.040	-0.472	0.638

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 85 Results of multiple regression, predicting performance shift 3, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.181	.150						5.794	4	104	.000

Predictors in trimmed model	Beta	t	Sig.
gender commander	.277	3.102	.002
education specialist A	.187	2.096	.039
age specialist A	-.209	-2.310	.023
education commander	-.164	-1.819	.072

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.028	0.314	0.754
CHAT condition (dummy coded)	0.126	1.387	0.168
Control Condition 1 (dummy coded)	0.056	0.617	0.539
Control Condition 2 (dummy coded)	0.019	0.209	0.835
Individual Reflexivity (dummy coded)	-0.121	-1.265	0.209
Group Reflexivity (dummy coded)	-0.074	-0.815	0.417
age commander	-0.070	-0.768	0.444
gender commander			
education commander			
computer expertise commander	0.140	1.428	0.156
age specialist A			
gender specialist A	0.072	0.800	0.426
education specialist A			
computer expertise specialist A	0.125	1.418	0.159
age specialist B	-0.089	-0.943	0.348
gender specialist B	-0.029	-0.318	0.751
education specialist B	0.033	0.358	0.721
computer expertise specialist B	0.030	0.319	0.750

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 86 Results of multiple regression, predicting performance shift 3 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.323	.316						50.94	1	107	.000
2	.380	.368	.057	9.768	1	106	.002	32.44	2	106	.000
3	.407	.390	.028	4.882	1	105	.029	24.05	3	105	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 2	.538	7.117	.000
(2) gender commander	.240	3.167	.002
(3) age commander	-.166	-2.209	.029

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.006	0.078	0.938
CHAT condition (dummy coded)	0.089	1.171	0.244
Control Condition 1 (dummy coded)	0.049	0.640	0.524
Control Condition 2 (dummy coded)	-0.017	-0.228	0.820
Individual Reflexivity (dummy coded)	-0.105	-1.362	0.176
Group Reflexivity (dummy coded)	-0.068	-0.889	0.376
age commander	-0.032	-0.416	0.678
gender commander			
education commander	-0.050	-0.640	0.524
computer expertise commander	0.070	0.844	0.401
age specialist A			
gender specialist A	0.031	0.413	0.680
education specialist A	0.077	0.997	0.321
computer expertise specialist A	0.054	0.713	0.477
age specialist B	-0.101	-1.289	0.200
gender specialist B	-0.013	-0.174	0.863
education specialist B	0.031	0.405	0.686
computer expertise specialist B	0.023	0.300	0.764

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 87 Results of multiple regression, predicting performance shift 4, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.133	.117						8.160	2	106	.001

Predictors in trimmed model	Beta	t	Sig.
computer expertise commander	.334	3.682	.000
age commander	-.172	-1.903	.060

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.050	-0.548	0.585
CHAT condition (dummy coded)	-0.070	-0.770	0.443
Control Condition 1 (dummy coded)	-0.122	-1.313	0.192
Control Condition 2 (dummy coded)	0.128	1.420	0.159
Individual Reflexivity (dummy coded)	-0.073	-0.808	0.421
Group Reflexivity (dummy coded)	0.032	0.344	0.731
age commander			
gender commander	0.076	0.772	0.442
education commander	0.041	0.441	0.660
computer expertise commander			
age specialist A	-0.001	-0.014	0.989
gender specialist A	-0.112	-1.230	0.221
education specialist A	0.064	0.702	0.484
computer expertise specialist A	0.093	1.028	0.306
age specialist B	-0.046	-0.506	0.614
gender specialist B	0.043	0.475	0.636
education specialist B	0.013	0.147	0.884
computer expertise specialist B	0.031	0.338	0.736

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 88 Results of multiple regression, predicting performance shift 4 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.235	.228						32.93	1	107	.000
2	.281	.268	.046	6.791	1	106	.010	20.75	2	106	.000
3	.299	.279	.018	2.674	1	105	.105	14.95	3	105	.000
4	.319	.293	.020	3.072	1	104	.083	12.20	4	104	.000
5	.337	.304	.017	2.694	1	103	.104	10.46	5	103	.000
6	.353	.314	.016	2.505	1	102	.117	9.26	6	102	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 3	.473	5.588	.000
(2) computer expertise commander	.277	3.289	.001
(3) gender specialist A	-.160	-1.975	.051
(4) CHAT condition	-.157	-1.908	.059
(5) age commander	-.143	-1.766	.080
(6) education commander	.133	1.583	.117

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.077	-0.943	0.348
CHAT condition (dummy coded)			
Control Condition 1 (dummy coded)	-0.118	-1.424	0.158
Control Condition 2 (dummy coded)	0.073	0.891	0.375
Individual Reflexivity (dummy coded)	-0.052	-0.643	0.522
Group Reflexivity (dummy coded)	-0.015	-0.178	0.859
age commander			
gender commander	0.028	0.320	0.750
education commander			
computer expertise commander			
age specialist A	0.050	0.602	0.549
gender specialist A			
education specialist A	-0.025	-0.301	0.764
computer expertise specialist A	0.124	1.374	0.172
age specialist B	-0.008	-0.094	0.926
gender specialist B	0.077	0.928	0.356
education specialist B	-0.039	-0.472	0.638
computer expertise specialist B	-0.077	-0.943	0.348

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 89 Results of multiple regression, predicting performance shift 5, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.204	.166						5.293	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
computer expertise commander	.284	2.955	.004
gender commander	.218	2.273	.025
Control Condition 2	.148	1.685	.095
age specialist B	-.137	-1.541	.126
age commander	-.132	-1.481	.142

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.093	1.032	0.305
CHAT condition (dummy coded)	0.061	0.676	0.501
Control Condition 1 (dummy coded)	0.021	0.221	0.826
Control Condition 2 (dummy coded)			
Individual Reflexivity (dummy coded)	0.016	0.175	0.862
Group Reflexivity (dummy coded)	-0.053	-0.575	0.567
age commander			
gender commander			
education commander	-0.037	-0.404	0.687
computer expertise commander			
age specialist A	-0.011	-0.116	0.908
gender specialist A	-0.119	-1.339	0.183
education specialist A	0.029	0.319	0.750
computer expertise specialist A	0.042	0.475	0.636
age specialist B			
gender specialist B	-0.079	-0.884	0.379
education specialist B	0.030	0.337	0.737
computer expertise specialist B	0.073	0.814	0.417

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 90 Results of multiple regression, predicting performance shift 5 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.271	.264						39.75	1	107	.000
2	.308	.295	.037	5.655	1	106	.019	23.57	2	106	.000
3	.326	.307	.018	2.844	1	105	.095	16.93	3	105	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 4	.447	5.307	.000
(2) computer expertise commander	.150	1.691	.094
(3) gender commander	.147	1.687	.095

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.077	-0.943	0.348
CHAT condition (dummy coded)			
Control Condition 1 (dummy coded)	-0.118	-1.424	0.158
Control Condition 2 (dummy coded)	0.073	0.891	0.375
Individual Reflexivity (dummy coded)	-0.052	-0.643	0.522
Group Reflexivity (dummy coded)	-0.015	-0.178	0.859
age commander			
gender commander	0.028	0.320	0.750
education commander			
computer expertise commander			
age specialist A	0.050	0.602	0.549
gender specialist A			
education specialist A	-0.025	-0.301	0.764
computer expertise specialist A	0.124	1.374	0.172
age specialist B	-0.008	-0.094	0.926
gender specialist B	0.077	0.928	0.356
education specialist B	-0.039	-0.472	0.638
computer expertise specialist B	-0.077	-0.943	0.348

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 91 Results of multiple regression, predicting performance shift 6, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.188	.165						8.096	3	105	.000

Predictors in trimmed model	Beta	t	Sig.
computer expertise commander	.273	2.873	.005
age commander	-.249	-2.808	.006
gender commander	.187	1.959	.053

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.041	0.457	0.648
CHAT condition (dummy coded)	-0.037	-0.418	0.677
Control Condition 1 (dummy coded)	-0.034	-0.368	0.713
Control Condition 2 (dummy coded)	0.041	0.469	0.640
Individual Reflexivity (dummy coded)	0.019	0.219	0.827
Group Reflexivity (dummy coded)	0.038	0.426	0.671
age commander			
gender commander			
education commander	0.080	0.885	0.378
computer expertise commander			
age specialist A	-0.108	-1.216	0.227
gender specialist A	-0.050	-0.564	0.574
education specialist A	0.040	0.450	0.654
computer expertise specialist A	0.102	1.164	0.247
age specialist B	-0.127	-1.431	0.155
gender specialist B	-0.121	-1.367	0.174
education specialist B	0.102	1.155	0.251
computer expertise specialist B	0.033	0.370	0.712

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 92 Results of multiple regression, predicting performance shift 6 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.405	.400						72.89	1	107	.000
2	.423	.412	.017	3.196	1	106	.077	38.79	2	106	.000
3	.443	.427	.021	3.917	1	105	.050	27.88	3	105	.000
4	.464	.443	.020	3.968	1	104	.049	22.49	4	104	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 5	.587	7.616	.000
(2) age commander	-.161	-2.203	.030
(3) computer expertise commander	.179	2.314	.023
(4) education commander	.148	1.992	.049

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.038	0.519	0.605
CHAT condition (dummy coded)	-0.097	-1.325	0.188
Control Condition 1 (dummy coded)	0.000	-0.001	1.000
Control Condition 2 (dummy coded)	-0.041	-0.563	0.575
Individual Reflexivity (dummy coded)	0.090	1.241	0.218
Group Reflexivity (dummy coded)	0.019	0.258	0.797
age commander			
gender commander	0.084	1.064	0.290
education commander			
computer expertise commander			
age specialist A	-0.052	-0.694	0.489
gender specialist A	-0.040	-0.552	0.582
education specialist A	-0.068	-0.917	0.361
computer expertise specialist A	0.018	0.241	0.810
age specialist B	-0.058	-0.793	0.430
gender specialist B	-0.073	-0.998	0.321
education specialist B	0.056	0.769	0.444
computer expertise specialist B	0.062	0.863	0.390

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 93 Results of multiple regression, predicting performance shift 8, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
	.251	.207						5.691	6	102	.000

Predictors in trimmed model	Beta	t	Sig.
computer expertise commander	.274	2.882	.005
computer expertise specialist A	.228	2.634	.010
gender commander	.222	2.368	.020
age commander	-.204	-2.345	.021
education commander	.138	1.542	.126
education specialist B	.128	1.456	.149

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.042	0.471	0.639
CHAT condition (dummy coded)	0.020	0.225	0.822
Control Condition 1 (dummy coded)	-0.078	-0.870	0.387
Control Condition 2 (dummy coded)	-0.110	-1.270	0.207
Individual Reflexivity (dummy coded)	0.027	0.306	0.760
Group Reflexivity (dummy coded)	-0.007	-0.083	0.934
age commander			
gender commander			
education commander			
computer expertise commander			
age specialist A	0.070	0.784	0.435
gender specialist A	-0.073	-0.744	0.459
education specialist A	0.056	0.644	0.521
computer expertise specialist A			
age specialist B	-0.077	-0.886	0.378
gender specialist B	0.038	0.429	0.669
education specialist B			
computer expertise specialist B	0.100	1.152	0.252

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 94 Results of multiple regression, predicting performance shift 8 controlling for precedent performance, with *input variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.331	.325						52.89	1	107	.000
2	.359	.347	.028	4.655	1	106	.033	29.68	2	106	.000
3	.388	.370	.029	4.902	1	105	.029	22.15	3	105	.000
4	.412	.390	.025	4.345	1	104	.040	18.23	4	104	.000
5	.429	.402	.017	3.111	1	103	.081	15.50	5	103	.000
6	.442	.409	.013	2.350	1	102	.128	13.48	6	102	.000
7	.455	.417	.013	2.344	1	101	.129	12.04	7	101	.000

Predictors in trimmed model	Beta	t	Sig.
mean performance shift 1 to shift 6	.541	6.760	.000
(2) Control Condition 2	-.177	-2.372	.020
(3) education commander	.175	2.278	.025
(4) computer expertise commander	.162	2.037	.044
(5) computer expertise specialist A	.150	2.002	.048
(6) computer expertise specialist B	.128	1.731	.087
(7) education specialist B	.117	1.531	.129

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.038	0.519	0.605
CHAT condition (dummy coded)	-0.097	-1.325	0.188
Control Condition 1 (dummy coded)	0.000	-0.001	1.000
Control Condition 2 (dummy coded)	-0.041	-0.563	0.575
Individual Reflexivity (dummy coded)	0.090	1.241	0.218
Group Reflexivity (dummy coded)	0.019	0.258	0.797
age commander			
gender commander	0.084	1.064	0.290
education commander			
computer expertise commander			
age specialist A	-0.052	-0.694	0.489
gender specialist A	-0.040	-0.552	0.582
education specialist A	-0.068	-0.917	0.361
computer expertise specialist A	0.018	0.241	0.810
age specialist B	-0.058	-0.793	0.430
gender specialist B	-0.073	-0.998	0.321
education specialist B	0.056	0.769	0.444
computer expertise specialist B	0.062	0.863	0.390

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

4 Predicting Performance: Summary Level Process Variables

Table 95 Results of multiple regression, predicting performance shift 1, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.096	.088	.096	11.37	1	107	.001	11.37	1	107	.001
2	.158	.142	.062	7.75	1	106	.006	9.92	2	106	.000
3	.185	.161	.027	3.48	1	105	.065	7.93	3	105	.000
4	.205	.174	.020	2.66	1	104	.106	6.70	4	104	.000
5	.229	.191	.024	3.18	1	103	.078	6.11	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
(1) duration Send Message, specialist A	-.330	-3.775	.000
(2) number Handle Threat, commander	.218	2.432	.017
(3) duration Send Message, commander	-.120	-1.280	.203
(4) number Read Message, specialist B	.185	2.058	.042
(5) duration Read Message, specialist B	-.169	-1.783	.078

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander			
number Read Message, commander	-0.128	-1.216	0.227
number Send Message, commander	0.023	0.217	0.829
number Show Info, commander	0.100	1.140	0.257
duration Read Message, commander	0.043	0.411	0.682
duration Send Message, commander			
number Read Message, specialist A	-0.030	-0.211	0.833
number Send Message, specialist A	0.066	0.717	0.475
number Show Info, specialist A	0.029	0.311	0.756
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B			
number Send Message, specialist B	-0.065	-0.717	0.475
number Show Info, specialist B	0.016	0.186	0.853
duration Read Message, specialist B	0.078	0.640	0.524
duration Send Message, specialist B	-0.058	-0.621	0.536

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 96 Results of multiple regression, predicting performance shift 1, with *input* and *summary level process* variables, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.076	.067	.076	8.812	1	107	.004	8.812	1	107	.004
2	.112	.095	.036	4.242	1	106	.042	6.660	2	106	.002
3	.130	.105	.018	2.204	1	105	.141	5.225	3	105	.002
4	.201	.170	.071	9.285	1	104	.003	6.549	4	104	.000
5	.259	.223	.058	7.993	1	103	.006	7.190	5	103	.000
6	.289	.248	.031	4.411	1	102	.038	6.926	6	102	.000
7	.304	.256	.015	2.115	1	101	.149	6.303	7	101	.000
8	.321	.267	.017	2.509	1	100	.116	5.912	8	100	.000

Predictors in trimmed model	Beta	t	Sig.
(1) education specialist A	.244	2.929	.004
(2) education commander	-.088	-1.016	.312
(3) computer expertise commander	.157	1.810	.073
(4) duration Send Message, specialist A	-.293	-3.473	.001
(5) number Handle Threat, commander	.199	2.297	.024
(6) duration Send Message, commander	-.147	-1.630	.106
(7) number Read Message, specialist B	.161	1.854	.067
(8) duration Read Message, specialist A	-.146	-1.584	.116

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.106	-1.218	0.226
CHAT condition (dummy coded)	-0.008	-0.088	0.930
Control Condition 1 (dummy coded)	0.039	0.461	0.646
Control Condition 2 (dummy coded)	0.112	1.355	0.178
Individual Reflexivity (dummy coded)	-0.051	-0.562	0.575
Group Reflexivity (dummy coded)	0.037	0.430	0.668
age commander	-0.044	-0.510	0.611
gender commander	-0.087	-0.942	0.348
education commander			
computer expertise commander			
age specialist A	0.035	0.404	0.687
gender specialist A	-0.062	-0.724	0.471
education specialist A			
computer expertise specialist A	0.085	0.983	0.328
age specialist B	0.003	0.036	0.971
gender specialist B	-0.075	-0.856	0.394
education specialist B	-0.060	-0.690	0.492
computer expertise specialist B	-0.003	-0.039	0.969
number Handle Threat, commander			
number Read Message, commander	-0.097	-0.938	0.350
number Send Message, commander	0.083	0.785	0.434
number Show Info, commander	0.060	0.713	0.478
duration Read Message, commander	-0.008	-0.078	0.938
duration Send Message, commander			
number Read Message, specialist A	-0.047	-0.348	0.729
number Send Message, specialist A	0.052	0.591	0.556
number Show Info, specialist A	0.010	0.109	0.913
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B			
number Send Message, specialist B	-0.074	-0.837	0.404
number Show Info, specialist B	0.064	0.745	0.458
duration Read Message, specialist B	-0.004	-0.033	0.974
duration Send Message, specialist B	-0.090	-0.998	0.321

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 97 Results of multiple regression, predicting performance shift 2, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.124	.116	.124	15.19	1	107	.000	15.19	1	107	.000
2	.150	.134	.025	3.16	1	106	.078	9.33	2	106	.000

Predictors in trimmed model	Beta	t	Sig.
(1) number Handle Threat, commander	.349	3.895	.000
(2) number Read Message, specialist B	-.159	-1.779	.078

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander			
number Read Message, commander	0.043	0.422	0.674
number Send Message, commander	-0.036	-0.352	0.725
number Show Info, commander	0.107	1.186	0.238
duration Read Message, commander	0.012	0.133	0.895
duration Send Message, commander	-0.064	-0.675	0.501
number Read Message, specialist A	0.140	1.188	0.237
number Send Message, specialist A	0.015	0.149	0.882
number Show Info, specialist A	0.071	0.781	0.437
duration Read Message, specialist A	0.086	0.828	0.409
duration Send Message, specialist A	-0.016	-0.175	0.861
number Read Message, specialist B			
number Send Message, specialist B	0.026	0.291	0.771
number Show Info, specialist B	0.068	0.735	0.464
duration Read Message, specialist B	0.038	0.294	0.770
duration Send Message, specialist B	0.031	0.342	0.733

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 98 Results of multiple regression, predicting performance shift 2, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.212	.205	.212	28.81	1	107	.000	28.81	1	107	.000
2	.236	.222	.024	3.303	1	106	.072	16.37	2	106	.000
3	.299	.279	.063	9.499	1	105	.003	14.95	3	105	.000
4	.320	.294	.021	3.178	1	104	.078	12.24	4	104	.000
5	.337	.305	.017	2.664	1	103	.106	10.48	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1	.422	5.150	.000
(2) gender commander	.075	.897	.372
(3) number Handle Threat, commander	.249	3.003	.003
(4) number Read Message, specialist B	-.158	-1.924	.057
(5) number Show Info, commander	.132	1.632	.106

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.089	1.099	0.274
CHAT condition (dummy coded)	0.049	0.585	0.560
Control Condition 1 (dummy coded)	0.079	0.957	0.341
Control Condition 2 (dummy coded)	-0.063	-0.753	0.453
Individual Reflexivity (dummy coded)	-0.063	-0.738	0.462
Group Reflexivity (dummy coded)	-0.028	-0.341	0.734
age commander	-0.026	-0.321	0.749
gender commander			
education commander	-0.072	-0.849	0.398
computer expertise commander	0.013	0.144	0.886
age specialist A	-0.044	-0.520	0.604
gender specialist A	0.079	0.964	0.337
education specialist A	-0.003	-0.039	0.969
computer expertise specialist A	0.034	0.417	0.677
age specialist B	-0.028	-0.341	0.734
gender specialist B	-0.061	-0.729	0.468
education specialist B	0.064	0.788	0.433
computer expertise specialist B	-0.022	-0.270	0.787
number Handle Threat, commander			
number Read Message, commander	0.010	0.101	0.920
number Send Message, commander	-0.058	-0.624	0.534
number Show Info, commander			
duration Read Message, commander	-0.064	-0.743	0.459
duration Send Message, commander	0.015	0.168	0.867
number Read Message, specialist A	0.150	1.411	0.161
number Send Message, specialist A	-0.045	-0.500	0.618
number Show Info, specialist A	0.008	0.094	0.925
duration Read Message, specialist A	0.104	1.129	0.262
duration Send Message, specialist A	0.094	1.110	0.269
number Read Message, specialist B			
number Send Message, specialist B	0.030	0.357	0.722
number Show Info, specialist B	0.043	0.513	0.609
duration Read Message, specialist B	-0.012	-0.097	0.923
duration Send Message, specialist B	0.031	0.375	0.709

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 99 Results of multiple regression, predicting performance shift 3, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.043	.034	.043	4.817	1	107	.030	4.82	1	107	.030
2	.068	.050	.024	2.778	1	106	.098	3.84	2	106	.025

Predictors in trimmed model	Beta	t	Sig.
(1) number Send Message, specialist A	.216	2.296	.024
(2) duration Send Message, commander	-.157	-1.667	.098

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander	-0.026	-0.267	0.790
number Read Message, commander	-0.095	-0.802	0.424
number Send Message, commander	-0.069	-0.554	0.581
number Show Info, commander	0.094	0.982	0.329
duration Read Message, commander	-0.155	-1.418	0.159
duration Send Message, commander			
number Read Message, specialist A	0.031	0.296	0.768
number Send Message, specialist A			
number Show Info, specialist A	0.081	0.856	0.394
duration Read Message, specialist A	0.018	0.160	0.874
duration Send Message, specialist A	0.100	1.062	0.291
number Read Message, specialist B	0.037	0.363	0.717
number Send Message, specialist B	-0.051	-0.526	0.600
number Show Info, specialist B	0.079	0.810	0.419
duration Read Message, specialist B	0.068	0.630	0.530
duration Send Message, specialist B	-0.079	-0.835	0.405

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 100 Results of multiple regression, predicting performance shift 3, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.323	.316	.323	50.94	1	107	.000	50.94	1	107	.000
2	.380	.368	.057	9.77	1	106	.002	32.44	2	106	.000
3	.407	.390	.028	4.88	1	105	.029	24.05	3	105	.000
4	.435	.413	.027	5.03	1	104	.027	19.99	4	104	.000
5	.468	.443	.034	6.56	1	103	.012	18.16	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 2	.583	7.932	.000
(2) gender commander	.285	3.855	.000
(3) age, specialist A	-.131	-1.801	.075
(4) number Send Message, commander	-.282	-3.306	.001
(5) number Read Message, specialist B	.220	2.561	.012

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.066	0.882	0.380
CHAT condition (dummy coded)	0.096	1.321	0.189
Control Condition 1 (dummy coded)	0.008	0.105	0.917
Control Condition 2 (dummy coded)	0.002	0.031	0.975
Individual Reflexivity (dummy coded)	-0.134	-1.787	0.077
Group Reflexivity (dummy coded)	-0.034	-0.456	0.649
age commander	-0.005	-0.072	0.943
gender commander			
education commander	0.011	0.140	0.889
computer expertise commander	0.108	1.366	0.175
age specialist A			
gender specialist A	0.008	0.111	0.912
education specialist A	0.063	0.844	0.401
computer expertise specialist A	0.017	0.229	0.819
age specialist B	-0.078	-1.037	0.302
gender specialist B	-0.042	-0.577	0.565
education specialist B	0.054	0.745	0.458
computer expertise specialist B	0.007	0.099	0.922
number Handle Threat, commander	-0.063	-0.842	0.402
number Read Message, commander	-0.054	-0.723	0.471
number Send Message, commander			
number Show Info, commander	0.027	0.358	0.721
duration Read Message, commander	-0.073	-0.869	0.387
duration Send Message, commander	-0.035	-0.365	0.716
number Read Message, specialist A	-0.006	-0.052	0.958
number Send Message, specialist A	-0.007	-0.092	0.927
number Show Info, specialist A	-0.001	-0.012	0.991
duration Read Message, specialist A	-0.049	-0.531	0.596
duration Send Message, specialist A	0.070	0.950	0.344
number Read Message, specialist B			
number Send Message, specialist B	-0.017	-0.237	0.813
number Show Info, specialist B	-0.006	-0.076	0.940
duration Read Message, specialist B	-0.004	-0.034	0.973
duration Send Message, specialist B	0.028	0.365	0.716

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of F is smaller than 0.15.

Table 101 Results of multiple regression, predicting performance shift 4, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.065	.056	.065	7.416	1	107	.008	7.416	1	107	.008
2	.118	.101	.053	6.329	1	106	.013	7.057	2	106	.001
3	.150	.126	.033	4.052	1	105	.047	6.191	3	105	.001

Predictors in trimmed model	Beta	t	Sig.
(1) duration Send Message, specialist A	-.276	-3.038	.003
(2) duration Read Message, commander	.220	2.425	.017
(3) number Show Info, specialist B	.182	2.013	.047

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander	-0.072	-0.786	0.434
number Read Message, commander	0.106	1.161	0.248
number Send Message, commander	0.096	0.978	0.330
number Show Info, commander	0.011	0.113	0.910
duration Read Message, commander			
duration Send Message, commander	-0.103	-0.981	0.329
number Read Message, specialist A	0.039	0.414	0.679
number Send Message, specialist A	0.118	1.295	0.198
number Show Info, specialist A	-0.016	-0.171	0.864
duration Read Message, specialist A	-0.069	-0.683	0.496
duration Send Message, specialist A			
number Read Message, specialist B	0.016	0.166	0.869
number Send Message, specialist B	0.076	0.827	0.410
number Show Info, specialist B			
duration Read Message, specialist B	-0.072	-0.694	0.489
duration Send Message, specialist B	-0.042	-0.425	0.672

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 102 Results of multiple regression, predicting performance shift 4, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.235	.228	.235	32.93	1	107	.000	32.93	1	107	.000
2	.281	.268	.046	6.791	1	106	.010	20.75	2	106	.000
3	.299	.279	.018	2.674	1	105	.105	14.95	3	105	.000
4	.319	.293	.020	3.072	1	104	.083	12.20	4	104	.000
5	.337	.304	.017	2.694	1	103	.104	10.46	5	103	.000
6	.353	.314	.016	2.505	1	102	.117	9.26	6	102	.000
7	.400	.358	.047	7.922	1	101	.006	9.61	7	103	.000
8	.419	.372	.019	3.317	1	100	.072	9.01	8	104	.000
9	.438	.387	.019	3.346	1	99	.070	8.57	9	105	.000
10	.457	.401	.019	3.413	1	98	.068	8.24	10	106	.000
11	.470	.410	.013	2.442	1	97	.121	7.83	11	107	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 3	.439	5.421	.000
(2) computer expertise, commander	.286	3.652	.000
(3) gender, specialist A	-.158	-2.069	.041
(4) CHAT condition	-.146	-1.913	.059
(5) age, commander	-.119	-1.532	.129
(6) education, commander	.168	2.091	.039
(7) duration Read Message, specialist B	-.119	-1.370	.174
(8) duration Send Message, specialist A	-.186	-2.258	.026
(9) number Handle Threat, commander	-.130	-1.675	.097
(10) number Show Info, specialist B	.148	1.881	.063
(11) duration Read Message, command.	.132	1.563	.121

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.040	-0.495	0.622
CHAT condition (dummy coded)			
Control Condition 1 (dummy coded)	-0.100	-1.268	0.208
Control Condition 2 (dummy coded)	0.032	0.405	0.686
Individual Reflexivity (dummy coded)	0.067	0.810	0.420
Group Reflexivity (dummy coded)	-0.041	-0.519	0.605
age commander			
gender commander	0.064	0.757	0.451
education commander			
computer expertise commander			
age specialist A	-0.015	-0.181	0.856
gender specialist A			
education specialist A	-0.024	-0.291	0.772
computer expertise specialist A	0.132	1.525	0.131
age specialist B	-0.008	-0.106	0.916
gender specialist B	0.030	0.362	0.718
education specialist B	0.003	0.044	0.965
computer expertise specialist B	0.012	0.152	0.879
number Handle Threat, commander			
number Read Message, commander	0.049	0.570	0.570
number Send Message, commander	0.021	0.242	0.809
number Show Info, commander	0.043	0.484	0.629
duration Read Message, commander			
duration Send Message, commander	-0.086	-0.795	0.428
number Read Message, specialist A	0.045	0.555	0.580
number Send Message, specialist A	0.072	0.815	0.417
number Show Info, specialist A	-0.040	-0.487	0.627
duration Read Message, specialist A	-0.069	-0.707	0.481
duration Send Message, specialist A			
number Read Message, specialist B	0.066	0.651	0.516
number Send Message, specialist B	-0.005	-0.062	0.951
number Show Info, specialist B			
duration Read Message, specialist B			
duration Send Message, specialist B	0.027	0.308	0.759

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 103 Results of multiple regression, predicting performance shift 5, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.071	.062	.071	8.124	1	107	.005	8.124	1	107	.005
2	.122	.106	.052	6.259	1	106	.014	7.391	2	106	.001
3	.149	.125	.027	3.302	1	105	.072	6.135	3	105	.001

Predictors in trimmed model	Beta	t	Sig.
(1) duration Read Message, specialist B	-.250	-2.765	.007
(2) number Show Info, specialist B	.212	2.330	.022
(3) number Show Info, commander	.165	1.817	.072

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander	0.128	1.394	0.166
number Read Message, commander	0.042	0.452	0.652
number Send Message, commander	0.141	1.409	0.162
number Show Info, commander	0.030	0.314	0.755
duration Read Message, commander	-0.104	-0.907	0.367
duration Send Message, commander			
number Read Message, specialist A	0.060	0.548	0.585
number Send Message, specialist A	0.109	1.201	0.232
number Show Info, specialist A	-0.087	-0.964	0.337
duration Read Message, specialist A	0.035	0.315	0.753
duration Send Message, specialist A	-0.005	-0.055	0.957
number Read Message, specialist B	0.092	0.798	0.427
number Send Message, specialist B	0.040	0.431	0.668
number Show Info, specialist B			
duration Read Message, specialist B			
duration Send Message, specialist B	-0.020	-0.201	0.841

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 104 Results of multiple regression, predicting performance shift 5, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.271	.264	.271	39.75	1	107	.000	39.75	1	107	.000
2	.308	.295	.037	5.655	1	106	.019	23.57	2	106	.000
3	.326	.307	.018	2.844	1	105	.095	16.93	3	105	.000
4	.370	.345	.044	7.181	1	104	.009	15.24	4	104	.000
5	.411	.383	.042	7.317	1	103	.008	14.34	5	103	.000
6	.431	.397	.019	3.469	1	102	.065	12.87	6	102	.000
7	.446	.407	.015	2.705	1	101	.103	11.60	7	101	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 4	.434	5.267	.000
(2) computer expertise, commander	.174	2.085	.040
(3) gender, commander	.136	1.637	.105
(4) number Show Info, specialist B	.207	2.709	.008
(5) number Show Info, specialist A	-.245	-3.138	.002
(6) duration Send Message, commander	-.142	-1.864	.065
(7) number Handle Threat, commander	.128	1.645	.103

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.045	0.586	0.559
CHAT condition (dummy coded)	0.094	1.083	0.281
Control Condition 1 (dummy coded)	0.004	0.056	0.955
Control Condition 2 (dummy coded)	0.039	0.505	0.614
Individual Reflexivity (dummy coded)	0.062	0.818	0.415
Group Reflexivity (dummy coded)	-0.042	-0.556	0.580
age commander	-0.029	-0.370	0.712
gender commander			
education commander	0.134	1.665	0.099
computer expertise commander			
age specialist A	-0.069	-0.892	0.375
gender specialist A	-0.109	-1.420	0.159
education specialist A	0.050	0.617	0.539
computer expertise specialist A	-0.004	-0.058	0.953
age specialist B	-0.093	-1.199	0.233
gender specialist B	-0.177	-2.349	0.021
education specialist B	0.067	0.894	0.374
computer expertise specialist B	0.039	0.506	0.614
number Handle Threat, commander			
number Read Message, commander	-0.090	-1.065	0.289
number Send Message, commander	0.097	1.011	0.314
number Show Info, commander	0.071	0.877	0.383
duration Read Message, commander	0.039	0.435	0.665
duration Send Message, commander			
number Read Message, specialist A	0.053	0.619	0.537
number Send Message, specialist A	0.035	0.424	0.672
number Show Info, specialist A			
duration Read Message, specialist A	0.100	1.010	0.315
duration Send Message, specialist A	0.004	0.055	0.956
number Read Message, specialist B	0.020	0.248	0.805
number Send Message, specialist B	-0.072	-0.906	0.367
number Show Info, specialist B			
duration Read Message, specialist B	-0.063	-0.653	0.515
duration Send Message, specialist B	-0.025	-0.312	0.755

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 105 Results of multiple regression, predicting performance shift 6, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.244	.059	.059	6.755	1	107	.011	6.755	1	107	.011
2	.345	.119	.060	7.171	1	106	.009	7.185	2	106	.001
3	.420	.176	.057	7.278	1	105	.008	7.481	3	105	.000
4	.444	.197	.021	2.723	1	104	.102	6.383	4	104	.000
5	.463	.215	.017	2.294	1	103	.133	5.629	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
(1) duration Read Message, specialist B	-.474	-3.834	.000
(2) number Read Message, specialist B	.584	3.618	.000
(3) number Read Message, specialist A	-.374	-2.878	.005
(4) number Send Message, specialist A	.267	2.242	.027
(5) number Read Message, commander	-.190	-1.515	.133

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander	0.099	1.075	0.285
number Read Message, commander			
number Send Message, commander	0.056	0.507	0.613
number Show Info, commander	0.016	0.173	0.863
duration Read Message, commander	-0.094	-0.943	0.348
duration Send Message, commander	0.032	0.294	0.769
number Read Message, specialist A			
number Send Message, specialist A			
number Show Info, specialist A	0.028	0.301	0.764
duration Read Message, specialist A	0.155	1.161	0.248
duration Send Message, specialist A	-0.069	-0.731	0.467
number Read Message, specialist B			
number Send Message, specialist B	-0.066	-0.363	0.717
number Show Info, specialist B	0.129	1.424	0.158
duration Read Message, specialist B			
duration Send Message, specialist B	-0.072	-0.809	0.420

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 106 Results of multiple regression, predicting performance shift 6, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.405	.400	.405	72.89	1	107	.000	72.89	1	107	.000
2	.423	.412	.017	3.196	1	106	.077	38.79	2	106	.000
3	.443	.427	.021	3.917	1	105	.050	27.88	3	105	.000
4	.464	.443	.020	3.968	1	104	.049	22.49	4	104	.000
5	.478	.453	.015	2.889	1	103	.092	18.90	5	103	.000
6	.489	.459	.011	2.186	1	102	.142	16.29	6	102	.000
7	.502	.467	.013	2.557	1	101	.113	14.55	7	101	.000
8	.515	.476	.013	2.601	1	100	.110	13.25	8	100	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 5	.537	6.893	.000
(2) age, commander	-.099	-1.332	.186
(3) computer expertise, commander	.203	2.665	.009
(4) education, commander	.136	1.844	.068
(5) duration Read Message, specialist B	-.283	-2.645	.009
(6) number Send Message, specialist A	.136	1.700	.092
(7) number Send Message, specialist B	-.172	-2.087	.039
(8) number Read Message, specialist B	.173	1.613	.110

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.006	0.083	0.934
CHAT condition (dummy coded)	-0.074	-1.024	0.308
Control Condition 1 (dummy coded)	0.024	0.325	0.746
Control Condition 2 (dummy coded)	-0.032	-0.446	0.656
Individual Reflexivity (dummy coded)	0.107	1.496	0.138
Group Reflexivity (dummy coded)	0.018	0.246	0.806
age commander			
gender commander	0.062	0.788	0.433
education commander			
computer expertise commander			
age specialist A	-0.077	-1.034	0.304
gender specialist A	-0.072	-0.989	0.325
education specialist A	-0.092	-1.272	0.206
computer expertise specialist A	0.024	0.333	0.740
age specialist B	-0.035	-0.478	0.634
gender specialist B	-0.052	-0.711	0.479
education specialist B	0.050	0.683	0.496
computer expertise specialist B	0.063	0.872	0.385
number Handle Threat, commander	-0.033	-0.443	0.659
number Read Message, commander	-0.090	-0.514	0.608
number Send Message, commander	-0.107	-1.316	0.191
number Show Info, commander	0.060	0.806	0.422
duration Read Message, commander	0.033	0.407	0.685
duration Send Message, commander	-0.055	-0.650	0.517
number Read Message, specialist A	-0.131	-1.222	0.225
number Send Message, specialist A			
number Show Info, specialist A	-0.042	-0.567	0.572
duration Read Message, specialist A	-0.028	-0.332	0.741
duration Send Message, specialist A	0.012	0.163	0.871
number Read Message, specialist B			
number Send Message, specialist B			
number Show Info, specialist B	0.095	1.248	0.215
duration Read Message, specialist B			
duration Send Message, specialist B	-0.001	-0.012	0.990

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 107 Results of multiple regression, predicting performance shift 8, with *summary level process variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.145	.137	.145	18.16	1	107	.000	18.16	1	107	.011
2	.225	.210	.080	10.92	1	106	.001	15.38	2	106	.001
3	.256	.235	.031	4.43	1	105	.038	12.06	3	105	.000
4	.273	.245	.017	2.44	1	104	.122	9.78	4	104	.000

Predictors in trimmed model	Beta	t	Sig.
(1) duration Send Message, specialist A	-.359	-4.177	.000
(2) number Read Message, specialist A	-.235	-2.707	.008
(3) number Send Message, specialist A	.183	2.129	.036
(4) number Show Info, specialist B	.132	1.561	.122

Excluded Predictors	Beta-In	t	Sig.
number Handle Threat, commander	0.068	0.777	0.439
number Read Message, commander	-0.102	-0.779	0.438
number Send Message, commander	0.004	0.039	0.969
number Show Info, commander	-0.039	-0.456	0.650
duration Read Message, commander	-0.043	-0.471	0.638
duration Send Message, commander	0.018	0.161	0.873
number Read Message, specialist A	-0.111	-0.886	0.378
number Send Message, specialist A			
number Show Info, specialist A	0.051	0.582	0.562
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B	0.065	0.658	0.512
number Send Message, specialist B	-0.018	-0.190	0.849
number Show Info, specialist B			
duration Read Message, specialist B	-0.044	-0.450	0.653
duration Send Message, specialist B	0.030	0.305	0.761

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 108 Results of multiple regression, predicting performance shift 6, with *input* and *summary level process* variables, controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.331	.325	.331	52.89	1	107	.000	52.89	1	107	.000
2	.359	.347	.028	4.66	1	106	.033	26.68	2	106	.000
3	.388	.370	.029	4.90	1	105	.029	22.15	3	105	.000
4	.412	.390	.025	4.35	1	104	.040	18.23	4	104	.000
5	.429	.402	.017	3.11	1	103	.081	15.50	5	103	.000
6	.442	.409	.013	2.35	1	102	.128	13.48	6	102	.000
7	.455	.417	.013	2.34	1	101	.129	12.04	7	101	.000
8	.508	.468	.053	10.75	1	100	.001	12.89	8	100	.000
9	.549	.508	.041	9.00	1	99	.003	13.38	9	99	.000
10	.563	.518	.014	3.14	1	98	.080	12.62	10	98	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 6	.446	5.900	.000
(2) Control Condition 2	-.164	-2.405	.018
(3) education, commander	.191	2.624	.010
(4) computer expertise, commander	.168	2.271	.025
(5) computer expertise, specialist A	.136	1.986	.050
(6) computer expertise, specialist B	.028	.388	.699
(7) education, specialist B	.129	1.855	.067
(8) duration Read Message, specialist A	-.202	-2.917	.004
(9) duration Send Message, specialist A	-.214	-3.027	.003
(10) number Show Info, specialist B	.131	1.771	.080

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.042	0.594	0.554
CHAT condition (dummy coded)	-0.027	-0.381	0.704
Control Condition 1 (dummy coded)	-0.038	-0.551	0.583
Control Condition 2 (dummy coded)			
Individual Reflexivity (dummy coded)	0.071	1.007	0.317
Group Reflexivity (dummy coded)	-0.128	-1.830	0.070
age commander	-0.044	-0.630	0.530
gender commander	0.042	0.556	0.580
education commander			
computer expertise commander			
age specialist A	0.055	0.760	0.449
gender specialist A	-0.004	-0.054	0.957
education specialist A			
computer expertise specialist A			
age specialist B	0.007	0.097	0.923
gender specialist B	-0.053	-0.695	0.489
education specialist B	0.006	0.086	0.932
computer expertise specialist B			
number Handle Threat, commander	0.009	0.130	0.897
number Read Message, commander	-0.017	-0.234	0.816
number Send Message, commander	-0.027	-0.325	0.746
number Show Info, commander	-0.053	-0.744	0.458
duration Read Message, commander	0.032	0.441	0.660
duration Send Message, commander	0.012	0.130	0.897
number Read Message, specialist A	-0.077	-0.791	0.431
number Send Message, specialist A	0.056	0.750	0.455
number Show Info, specialist A	0.013	0.185	0.854
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B	0.007	0.089	0.929
number Send Message, specialist B	-0.012	-0.170	0.866
number Show Info, specialist B			
duration Read Message, specialist B	-0.097	-1.202	0.232
duration Send Message, specialist B	0.000	0.002	0.999

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

5 Predicting Performance: Task Adaptive Behavior Variables

Table 109 Results of multiple regression, predicting performance shift 1, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.183	.176	.183	23.99	1	107	.000	23.99	1	107	.000
2	.226	.212	.043	5.882	1	106	.017	15.49	2	106	.000
3	.245	.223	.019	2.587	1	105	.111	11.34	3	105	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, commander	.397	4.646	.000
(2) Motivational and Corrective Leadership, commander	-.215	-2.520	.013
(3) Basic Task Mastery Specialist A	.137	1.609	.111

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander	-.152	-1.260	.211
Basic Task Mastery, specialist A			
Basic Task Mastery, specialist B	.015	.169	.866
Plane Handling, commander			
Plane Handling, specialist A	.056	.641	.523
Plane Handling, specialist B	.036	.415	.679
Message Handling, commander	.017	.170	.865
Message Handling, specialist A	.113	1.236	.219
Message Handling, specialist B	.033	.373	.710
Strategic Leadership, commander	.076	.870	.386
Motivational and Corrective Leadership, commander			

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 110 Results of multiple regression, predicting performance shift 1, with *input*, *summary level process variables*, and *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.076	.067	.076	8.812	1	107	.004	8.812	1	107	.004
2	.112	.095	.036	4.242	1	106	.042	6.660	2	106	.002
3	.130	.105	.018	2.204	1	105	.141	5.225	3	105	.002
4	.201	.170	.071	9.285	1	104	.003	6.549	4	104	.000
5	.259	.223	.058	7.993	1	103	.006	7.190	5	103	.000
6	.289	.248	.031	4.411	1	102	.038	6.926	6	102	.000
7	.304	.256	.015	2.115	1	101	.149	6.303	7	101	.000
8	.321	.267	.017	2.509	1	100	.116	5.912	8	100	.000
9	.604	.365	.044	6.825	1	99	.010	6.319	9	99	.000
10	.618	.382	.018	2.778	1	98	.099	6.067	10	98	.000
11	.629	.396	.013	2.112	1	97	.149	5.770	11	97	.000

Predictors in trimmed model	Beta	t	Sig.
(1) education specialist A	.232	2.893	.005
(2) education commander	-.058	-.692	.491
(3) computer expertise commander	.232	1.158	.250
(4) duration Send Message, specialist A	-.058	-2.585	.011
(5) number Handle Threat, commander	.098	.014	.989
(6) duration Send Message, commander	-.220	-1.109	.270
(7) number Read Message, specialist B	.002	1.390	.168
(8) duration Read Message, specialist A	-.100	-1.658	.101
(9) Plane Handling, commander	.117	2.378	.019
(10) Motivational and Corrective Leadership, commander	-.149	-1.686	.095
(11) Basic Task Mastery, specialist A	.302	1.453	.149

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-.133	-1.566	.121
CHAT condition (dummy coded)	.003	.031	.976
Control Condition 1 (dummy coded)	.042	.513	.609
Control Condition 2 (dummy coded)	.120	1.502	.137
Individual Reflexivity (dummy coded)	-.086	-.984	.328
Group Reflexivity (dummy coded)	.037	.451	.653
age commander	-.046	-.542	.589
gender commander	-.071	-.775	.440
education commander			
computer expertise commander	.172	1.866	.065
age specialist A	.080	.917	.362
gender specialist A	-.043	-.508	.613
education specialist A			
computer expertise specialist A	.122	1.436	.154
age specialist B	.015	.178	.859
gender specialist B	-.055	-.643	.522
education specialist B	-.045	-.536	.593
computer expertise specialist B	-.010	-.119	.906
number Handle Threat, commander			
number Read Message, commander	-.046	-.455	.650
number Send Message, commander	.031	.293	.770
number Show Info, commander	.048	.577	.566
duration Read Message, commander	.027	.269	.788
duration Send Message, commander			
number Read Message, specialist A	-.032	-.241	.810
number Send Message, specialist A	.100	1.146	.255
number Show Info, specialist A	-.021	-.245	.807
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B			
number Send Message, specialist B	-.093	-1.080	.283
number Show Info, specialist B	-.011	-.127	.899
duration Read Message, specialist B	.031	.267	.790
duration Send Message, specialist B	-.043	-.485	.629
Basis Task Mastery, commander	-.087	-.734	.465
Basic Task Mastery, specialist A			
Basic Task Mastery, specialist B	.006	.064	.949
Plane Handling, commander			
Plane Handling, specialist A	-.035	-.407	.685
Plane Handling, specialist B	.050	.596	.552
Message Handling, commander	.076	.760	.449
Message Handling, specialist A	.017	.190	.850
Message Handling, specialist B	.039	.454	.651
Strategic Leadership, commander	.124	1.413	.161
Motivational and Corrective Leadership, commander			

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 111 Results of multiple regression, predicting performance shift 2, with *task adaptive behavior variables* variables, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.361	.355	.361	60.44	1	107	.000	60.45	1	107	.000
2	.418	.407	.057	10.38	1	106	.002	38.06	2	106	.000
3	.458	.442	.040	7.722	1	105	.006	29.56	3	105	.000
4	.476	.456	.019	3.698	1	104	.057	23.66	4	104	.000
5	.501	.477	.025	5.120	1	103	.026	20.70	5	103	.000
6	.520	.492	.019	4.029	1	102	.047	18.43	6	102	.000
7	.530	.498	.010	2.181	1	101	.143	16.29	7	101	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, commander	.479	5.032	.000
(2) Basic Task Mastery, commander	-.355	-4.037	.000
(3) Plane Handling, specialist A	.209	2.995	.003
(4) Basic Task Mastery, specialist B	.190	2.517	.013
(5) Message Handling, commander	-.211	-2.572	.012
(6) Message Handling, specialist B	.153	2.140	.035
(7) Basic Task Mastery, specialist A	-.102	-1.477	.143

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander			
Basic Task Mastery, specialist A			
Basic Task Mastery, specialist B			
Plane Handling, commander			
Plane Handling, specialist A			
Plane Handling, specialist B	.079	1.094	.276
Message Handling, commander			
Message Handling, specialist A	.021	.294	.769
Message Handling, specialist B			
Strategic Leadership, commander	.032	.452	.652
Motivational and Corrective Leadership, commander	.087	1.260	.210

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 112 Results of multiple regression, predicting performance shift 2, with *input* and *summary level process variables*, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.212	.205	.212	28.81	1	107	.000	28.81	1	107	.000
2	.236	.222	.024	3.303	1	106	.072	16.37	2	106	.000
3	.299	.279	.063	9.499	1	105	.003	14.95	3	105	.000
4	.320	.294	.021	3.178	1	104	.078	12.24	4	104	.000
5	.337	.305	.017	2.664	1	103	.106	10.48	5	103	.000
6	.540	.513	.203	45.11	1	102	.000	19.99	6	102	.000
7	.574	.544	.033	7.929	1	101	.006	19.43	7	101	.000
8	.601	.569	.027	6.867	1	100	.010	18.85	8	100	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1	.265	3.941	.000
(2) gender commander	.015	.223	.824
(3) number Handle Threat, commander	-.203	-2.144	.034
(4) number Read Message, specialist B	-.292	-4.326	.000
(5) number Show Info, commander	.014	.213	.832
(6) Plane Handling, commander	.581	5.135	.000
(7) Basic Task Mastery, commander	-.293	-3.531	.001
(8) Basic Task Mastery, specialist B	.181	2.620	.010

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.003	0.047	0.963
CHAT condition (dummy coded)	0.025	0.368	0.714
Control Condition 1 (dummy coded)	0.070	1.085	0.281
Control Condition 2 (dummy coded)	-0.089	-1.345	0.182
Individual Reflexivity (dummy coded)	-0.111	-1.659	0.100
Group Reflexivity (dummy coded)	0.037	0.555	0.580
age commander	-0.052	-0.786	0.434
gender commander			
education commander	-0.041	-0.607	0.545
computer expertise commander	0.022	0.310	0.757
age specialist A	-0.029	-0.425	0.672
gender specialist A	0.063	0.978	0.331
education specialist A	-0.054	-0.794	0.429
computer expertise specialist A	0.015	0.238	0.813
age specialist B	0.002	0.033	0.973
gender specialist B	-0.009	-0.137	0.891
education specialist B	-0.128	-1.886	0.062
computer expertise specialist B	0.024	0.361	0.719
number Handle Threat, commander			
number Read Message, commander	-0.011	-0.145	0.885
number Send Message, commander	0.018	0.228	0.820
number Show Info, commander			
duration Read Message, commander	-0.005	-0.075	0.940
duration Send Message, commander	0.051	0.740	0.461
number Read Message, specialist A	0.095	1.113	0.268
number Send Message, specialist A	-0.032	-0.446	0.657
number Show Info, specialist A	0.019	0.285	0.776
duration Read Message, specialist A	0.033	0.451	0.653
duration Send Message, specialist A	0.007	0.098	0.922
number Read Message, specialist B			
number Send Message, specialist B	0.023	0.347	0.729
number Show Info, specialist B	0.062	0.911	0.365
duration Read Message, specialist B	-0.050	-0.530	0.597
duration Send Message, specialist B	-0.018	-0.279	0.781
Basis Task Mastery, commander			
Basic Task Mastery, specialist A	-0.058	-0.902	0.369
Basic Task Mastery, specialist B			
Plane Handling, commander			
Plane Handling, specialist A	0.094	1.422	0.158
Plane Handling, specialist B	0.062	0.944	0.347
Message Handling, commander	-0.041	-0.514	0.608
Message Handling, specialist A	0.006	0.085	0.932
Message Handling, specialist B	0.072	1.101	0.274
Strategic Leadership, commander	0.036	0.536	0.593
Motivational and Corrective Leadership, commander	0.053	0.816	0.416

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of F is smaller than 0.15.

Table 113 Results of multiple regression, predicting performance shift 3, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.403	.397	.403	72.10	1	107	.000	72.10	1	107	.000
2	.444	.434	.042	7.933	1	106	.006	42.35	2	106	.000
3	.470	.455	.026	5.199	1	105	.025	31.09	3	105	.000
4	.484	.464	.014	2.744	1	104	.101	24.39	4	104	.000
5	.499	.475	.015	3.080	1	103	.082	20.52	5	103	.000
6	.510	.481	.011	2.305	1	102	.132	17.70	6	102	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, commander	.513	6.549	.000
(2) Message Handling, specialist B	.130	1.683	.095
(3) Plane Handling, specialist B	.143	1.954	.053
(4) Plane Handling, specialist A	.127	1.785	.077
(5) Basic Task Mastery, commander	-.148	-1.897	.061
(6) Message Handling, specialist A	.114	1.518	.132

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander			
Basic Task Mastery, specialist A	-.035	-.482	.631
Basic Task Mastery, specialist B	-.052	-.707	.481
Plane Handling, commander			
Plane Handling, specialist A			
Plane Handling, specialist B			
Message Handling, commander	-.057	-.770	.443
Message Handling, specialist A			
Message Handling, specialist B			
Strategic Leadership, commander	.050	.658	.512
Motivational and Corrective Leadership, commander	-.056	-.791	.431

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 114 Results of multiple regression, predicting performance shift 3, with *input* and *summary level process* variables, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.323	.316	.323	50.94	1	107	.000	50.94	1	107	.000
2	.380	.368	.057	9.768	1	106	.002	32.44	2	106	.000
3	.407	.390	.028	4.882	1	105	.029	24.05	3	105	.000
4	.435	.413	.027	5.034	1	104	.027	19.99	4	104	.000
5	.468	.443	.034	6.557	1	103	.012	18.16	5	103	.000
6	.619	.596	.150	40.26	1	102	.000	27.61	6	102	.000
7	.637	.612	.018	5.050	1	101	.027	25.33	7	101	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 2	.397	5.856	.000
(2) gender commander	.227	3.650	.000
(3) age, specialist A	-.003	-.049	.961
(4) number Send Message, commander	-.246	-3.186	.002
(5) number Read Message, specialist B	.146	1.953	.054
(6) Plane Handling, commander	.432	6.315	.000
(7) Message Handling, specialist B	.153	2.247	.027

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.008	-0.131	0.896
CHAT condition (dummy coded)	0.101	1.667	0.099
Control Condition 1 (dummy coded)	0.006	0.101	0.920
Control Condition 2 (dummy coded)	-0.019	-0.303	0.762
Individual Reflexivity (dummy coded)	-0.138	-2.211	0.029
Group Reflexivity (dummy coded)	0.000	-0.008	0.994
age commander	-0.034	-0.545	0.587
gender commander			
education commander	-0.072	-1.097	0.275
computer expertise commander	0.057	0.849	0.398
age specialist A			
gender specialist A	-0.004	-0.065	0.948
education specialist A	0.062	1.001	0.319
computer expertise specialist A	0.000	0.004	0.997
age specialist B	-0.069	-1.101	0.274
gender specialist B	-0.018	-0.286	0.775
education specialist B	-0.008	-0.126	0.900
computer expertise specialist B	-0.009	-0.139	0.890
number Handle Threat, commander	-0.291	-4.616	0.000
number Read Message, commander	-0.118	-1.880	0.063
number Send Message, commander			
number Show Info, commander	0.026	0.415	0.679
duration Read Message, commander	0.021	0.287	0.774
duration Send Message, commander	-0.027	-0.329	0.743
number Read Message, specialist A	-0.021	-0.222	0.825
number Send Message, specialist A	-0.013	-0.197	0.844
number Show Info, specialist A	0.014	0.213	0.832
duration Read Message, specialist A	-0.041	-0.528	0.599
duration Send Message, specialist A	0.121	1.979	0.051
number Read Message, specialist B			
number Send Message, specialist B	-0.040	-0.646	0.520
number Show Info, specialist B	-0.061	-0.944	0.348
duration Read Message, specialist B	0.068	0.735	0.464
duration Send Message, specialist B	0.092	1.447	0.151
Basis Task Mastery, commander	-0.058	-0.839	0.404
Basic Task Mastery, specialist A	0.000	0.004	0.997
Basic Task Mastery, specialist B	-0.015	-0.236	0.814
Plane Handling, commander			
Plane Handling, specialist A	0.012	0.183	0.856
Plane Handling, specialist B	0.080	1.272	0.206
Message Handling, commander	-0.057	-0.834	0.407
Message Handling, specialist A	0.027	0.406	0.686
Message Handling, specialist B			
Strategic Leadership, commander	0.038	0.589	0.557
Motivational and Corrective Leadership, commander	-0.039	-0.632	0.529

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 115 Results of multiple regression, predicting performance shift 4, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.096	.088	.096	11.37	1	107	.001	11.37	1	107	.001
2	.149	.133	.053	6.572	1	106	.012	9.27	2	106	.000
3	.171	.147	.022	2.773	1	105	.099	7.21	3	105	.000
4	.188	.157	.018	2.248	1	104	.137	6.03	4	104	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, specialist A	.195	2.036	.044
(2) Message Handling, specialist A	.259	2.711	.008
(3) Plane Handling, specialist B	.150	1.682	.096
(4) Strategic Leadership, commander	.141	1.499	.137

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander	-.129	-1.382	.170
Basic Task Mastery, specialist A	-.031	-.352	.725
Basic Task Mastery, specialist B	-.011	-.124	.902
Plane Handling, commander	.135	1.407	.162
Plane Handling, specialist A			
Plane Handling, specialist B			
Message Handling, commander	-.054	-.583	.561
Message Handling, specialist A			
Message Handling, specialist B	.021	.205	.838
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander	-.049	-.541	.590

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 116 Results of multiple regression, predicting performance shift 4, with *input* and *summary level process variables*, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.235	.228	.235	32.93	1	107	.000	32.93	1	107	.000
2	.281	.268	.046	6.791	1	106	.010	20.75	2	106	.000
3	.299	.279	.018	2.674	1	105	.105	14.95	3	105	.000
4	.319	.293	.020	3.072	1	104	.083	12.20	4	104	.000
5	.337	.304	.017	2.694	1	103	.104	10.46	5	103	.000
6	.353	.314	.016	2.505	1	102	.117	9.26	6	102	.000
7	.400	.358	.047	7.922	1	101	.006	9.61	7	101	.000
8	.419	.372	.019	3.317	1	100	.072	9.01	8	100	.000
9	.438	.387	.019	3.346	1	99	.070	8.57	9	99	.000
10	.457	.401	.019	3.413	1	98	.068	8.24	10	98	.000
11	.470	.410	.013	2.442	1	97	.121	7.83	11	97	.000
12	.523	.463	.052	10.56	1	96	.002	8.76	12	96	.000
13	.543	.480	.020	4.142	1	95	.045	8.70	13	95	.000
14	.560	.495	.018	3.780	1	94	.055	8.56	14	94	.000
15	.580	.513	.020	4.419	1	93	.038	8.57	15	93	.000
16	.599	.529	.019	4.290	1	92	.041	8.59	16	92	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 3	.377	4.866	.000
(2) computer expertise, commander	.222	3.103	.003
(3) gender, specialist A	-.091	-1.292	.199
(4) CHAT condition	-.137	-1.950	.054
(5) age, commander	-.123	-1.758	.082
(6) education, commander	.168	2.319	.023
(7) duration Read Message, specialist B	-.137	-1.695	.093
(8) duration Send Message, specialist A	-.198	-2.555	.012
(9) number Handle Threat, commander	-.521	-4.252	.000
(10) number Show Info, specialist B	.115	1.610	.111
(11) duration Read Message, command.	.101	1.334	.185
(12) Plane Handling, commander	.453	3.482	.001
(13) Plane Handling, specialist A	.167	2.262	.026
(14) Basic Task Mastery, commander	-.210	-2.801	.006
(15) Message Handling, specialist B	-.179	-2.174	.032
(16) Basic Task Mastery, specialist B	.142	2.071	.041

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.002	0.031	0.975
CHAT condition (dummy coded)			
Control Condition 1 (dummy coded)	-0.114	-1.609	0.111
Control Condition 2 (dummy coded)	0.033	0.450	0.654
Individual Reflexivity (dummy coded)	0.060	0.776	0.440
Group Reflexivity (dummy coded)	-0.051	-0.703	0.484
age commander			
gender commander	0.048	0.620	0.537
education commander			
computer expertise commander			
age specialist A	-0.002	-0.030	0.976
gender specialist A	-.043	-.508	.613
education specialist A	-0.062	-0.833	0.407
computer expertise specialist A	0.095	1.199	0.233
age specialist B	0.037	0.515	0.608
gender specialist B	0.104	1.402	0.164
education specialist B	0.056	0.801	0.425
computer expertise specialist B	0.076	1.059	0.293
number Handle Threat, commander			
number Read Message, commander	0.001	0.018	0.986
number Send Message, commander	-0.005	-0.059	0.953
number Show Info, commander	-0.027	-0.331	0.741
duration Read Message, commander			
duration Send Message, commander	0.118	1.082	0.282
number Read Message, specialist A	0.012	0.155	0.877
number Send Message, specialist A	0.010	0.117	0.907
number Show Info, specialist A	-0.119	-1.483	0.142
duration Read Message, specialist A	-0.005	-0.054	0.957
duration Send Message, specialist A			
number Read Message, specialist B	0.026	0.245	0.807
number Send Message, specialist B	-0.010	-0.130	0.896
number Show Info, specialist B	-.011	-.127	.899
duration Read Message, specialist B			
duration Send Message, specialist B	-0.001	-0.016	0.987
Basis Task Mastery, commander			
Basic Task Mastery, specialist A	-0.082	-1.173	0.244
Basic Task Mastery, specialist B			
Plane Handling, commander			
Plane Handling, specialist A			
Plane Handling, specialist B	-0.025	-0.154	0.878
Message Handling, commander	-0.136	-1.355	0.179
Message Handling, specialist A	-0.007	-0.072	0.943
Message Handling, specialist B			
Strategic Leadership, commander	0.021	0.266	0.790
Motivational and Corrective Leadership, commander	0.029	0.417	0.677

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 117 Results of multiple regression, predicting performance shift 5, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.244	.237	.244	34.51	1	107	.000	34.51	1	107	.000
2	.328	.315	.084	13.29	1	106	.000	25.88	2	106	.000
3	.394	.377	.066	11.39	1	105	.001	22.74	3	105	.000
4	.436	.414	.042	7.758	1	104	.006	20.09	4	104	.000
5	.455	.428	.019	3.544	1	103	.063	17.18	5	103	.000
6	.469	.437	.014	2.676	1	102	.105	14.99	6	102	.000
7	.480	.444	.011	2.186	1	101	.142	13.31	7	101	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, commander	.490	5.489	.000
(2) Message Handling, specialist B	.302	3.700	.000
(3) Basic Task Mastery, commander	-.264	-3.448	.001
(4) Message Handling, commander	-.244	-2.867	.005
(5) Strategic Leadership, commander	.142	1.856	.066
(6) Message Handling, specialist A	.129	1.604	.112
(7) Motivational and Corrective leadership, commander	-.109	-1.479	.142

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander			
Basic Task Mastery, specialist A	-.001	-.020	.984
Basic Task Mastery, specialist B	.077	1.035	.303
Plane Handling, commander			
Plane Handling, specialist A	-.066	-.823	.412
Plane Handling, specialist B	.071	.936	.351
Message Handling, commander			
Message Handling, specialist A			
Message Handling, specialist B			
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander			

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 118 Results of multiple regression, predicting performance shift 5, with *input* and *summary level process* variables, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.271	.264	.271	39.75	1	107	.000	39.75	1	107	.000
2	.308	.295	.037	5.655	1	106	.019	23.57	2	106	.000
3	.326	.307	.018	2.844	1	105	.095	16.93	3	105	.000
4	.370	.345	.044	7.181	1	104	.009	15.24	4	104	.000
5	.411	.383	.042	7.317	1	103	.008	14.34	5	103	.000
6	.431	.397	.019	3.469	1	102	.065	12.87	6	102	.000
7	.446	.407	.015	2.705	1	101	.103	11.60	7	101	.000
8	.602	.570	.156	39.32	1	100	.000	18.91	8	100	.000
9	.630	.596	.028	7.431	1	99	.008	18.72	9	99	.000
10	.644	.608	.014	3.871	1	98	.052	17.72	10	98	.000
11	.660	.621	.016	4.451	1	97	.037	17.08	11	97	.000
12	.672	.631	.013	3.717	1	96	.057	16.41	12	96	.000
13	.686	.643	.013	4.076	1	95	.046	15.94	13	95	.000
14	.695	.649	.009	2.733	1	94	.102	15.27	14	94	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 4	.204	2.815	.006
(2) computer expertise, commander	.102	1.480	.142
(3) gender, commander	.138	2.128	.036
(4) number Show Info, specialist B	.348	3.176	.002
(5) number Show Info, specialist A	-.126	-1.990	.050
(6) duration Send Message, commander	.030	.426	.671
(7) number Handle Threat, commander	-.512	-3.835	.000
(8) Plane Handling, commander	.832	5.927	.000
(9) Basic Task Mastery, commander	-.158	-2.511	.014
(10) Message Handling, specialist A	.096	1.367	.175
(11) Message Handling, commander	-.173	-2.414	.018
(12) Message Handling, specialist B	.203	2.678	.009
(13) Plane Handling, specialist B	-.259	-2.345	.021
(14) Basic Task Mastery, specialist B	.102	1.653	.102

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.032	0.525	0.601
CHAT condition (dummy coded)	0.088	1.272	0.207
Control Condition 1 (dummy coded)	-0.033	-0.563	0.575
Control Condition 2 (dummy coded)	-0.009	-0.143	0.886
Individual Reflexivity (dummy coded)	0.065	1.094	0.277
Group Reflexivity (dummy coded)	-0.025	-0.428	0.669
age commander	-0.001	-0.021	0.983
gender commander			
education commander	0.091	1.434	0.155
computer expertise commander			
age specialist A	-0.046	-0.760	0.449
gender specialist A	-0.026	-0.428	0.670
education specialist A	-0.042	-0.623	0.535
computer expertise specialist A	-0.015	-0.254	0.800
age specialist B	-0.015	-0.235	0.815
gender specialist B	-0.105	-1.724	0.088
education specialist B	0.018	0.310	0.758
computer expertise specialist B	0.041	0.682	0.497
number Handle Threat, commander			
number Read Message, commander	-0.043	-0.571	0.569
number Send Message, commander	-0.122	-1.353	0.179
number Show Info, commander	-0.011	-0.174	0.862
duration Read Message, commander	0.000	0.003	0.998
duration Send Message, commander			
number Read Message, specialist A	-0.107	-1.493	0.139
number Send Message, specialist A	0.038	0.543	0.588
number Show Info, specialist A			
duration Read Message, specialist A	-0.034	-0.391	0.697
duration Send Message, specialist A	0.032	0.530	0.598
number Read Message, specialist B	-0.063	-0.923	0.359
number Send Message, specialist B	-0.038	-0.528	0.599
number Show Info, specialist B			
duration Read Message, specialist B	-0.092	-1.135	0.259
duration Send Message, specialist B	-0.003	-0.047	0.962
Basis Task Mastery, commander			
Basic Task Mastery, specialist A	-0.027	-0.461	0.646
Basic Task Mastery, specialist B			
Plane Handling, commander			
Plane Handling, specialist A	-0.030	-0.430	0.668
Plane Handling, specialist B			
Message Handling, commander			
Message Handling, specialist A	0.098	1.375	0.172
Message Handling, specialist B	0.037	0.558	0.578
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander			

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 119 Results of multiple regression, predicting performance shift 6, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.276	.269	.276	40.76	1	107	.000	40.76	1	107	.011
2	.370	.358	.094	15.79	1	106	.000	31.09	2	106	.001
3	.399	.382	.030	5.198	1	105	.025	23.28	3	105	.000
4	.416	.394	.017	2.975	1	104	.088	18.53	4	104	.000
5	.429	.401	.013	2.306	1	103	.132	15.47	5	103	.000
6	.442	.409	.013	2.300	1	102	.132	13.44	6	102	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Plane Handling, commander	.389	4.514	.000
(2) Message handling, specialist A	.194	2.234	.028
(3) Strategic Leadership, commander	.168	2.175	.032
(4) Message Handling, specialist B	.155	1.841	.069
(5) Plane Handling, specialist A	.157	1.848	.068
(6) Message Handling, commander	-.126	-1.517	.132

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander	-0.029	-0.368	0.713
Basic Task Mastery, specialist A	-0.015	-0.201	0.841
Basic Task Mastery, specialist B	-0.018	-0.235	0.815
Plane Handling, commander			
Plane Handling, specialist A			
Plane Handling, specialist B	0.006	0.072	0.942
Message Handling, commander			
Message Handling, specialist A			
Message Handling, specialist B			
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander	0.027	0.362	0.718

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 120 Results of multiple regression, predicting performance shift 6, with *input* and *summary level process variables*, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.405	.400	.405	72.89	1	107	.000	72.89	1	107	.000
2	.423	.412	.017	3.196	1	106	.077	38.79	2	106	.000
3	.443	.427	.021	3.917	1	105	.050	27.88	3	105	.000
4	.464	.443	.020	3.968	1	104	.049	22.49	4	104	.000
5	.478	.453	.015	2.889	1	103	.092	18.90	5	103	.000
6	.489	.459	.011	2.186	1	102	.142	16.29	6	102	.000
7	.502	.467	.013	2.557	1	101	.113	14.55	7	101	.000
8	.515	.476	.013	2.601	1	100	.110	13.25	8	100	.000
9	.556	.516	.042	9.303	1	99	.003	13.79	9	99	.000
10	.570	.527	.014	3.198	1	98	.077	13.01	10	98	.000
11	.581	.534	.011	2.474	1	97	.119	12.23	11	97	.000
12	.591	.540	.010	2.400	1	96	.125	11.57	12	96	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 5	.445	5.372	.000
(2) age, commander	-.107	-1.503	.136
(3) computer expertise, commander	.124	1.664	.099
(4) education, commander	.120	1.727	.087
(5) duration Read Message, specialist B	-.224	-2.137	.035
(6) number Send Message, specialist A	.075	.956	.341
(7) number Send Message, specialist B	-.141	-1.805	.074
(8) number Read Message, specialist B	.127	1.249	.215
(9) Strategic Leadership, commander	.177	2.586	.011
(10) Motivational and Corrective leadership, commander	.110	1.586	.116
(11) Plane Handling, commander	.137	1.661	.100
(12) Message Handling, specialist A	.120	1.549	.125

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	-0.026	-0.376	0.708
CHAT condition (dummy coded)	-0.011	-0.153	0.879
Control Condition 1 (dummy coded)	0.022	0.317	0.752
Control Condition 2 (dummy coded)	-0.062	-0.899	0.371
Individual Reflexivity (dummy coded)	0.046	0.632	0.529
Group Reflexivity (dummy coded)	-0.003	-0.041	0.967
age commander			
gender commander	0.021	0.279	0.781
education commander			
computer expertise commander	0.005	0.079	0.937
age specialist A	-0.060	-0.855	0.395
gender specialist A	-0.123	-1.756	0.082
education specialist A	-0.058	-0.832	0.408
computer expertise specialist A	.122	1.436	.154
age specialist B	-0.044	-0.640	0.523
gender specialist B	-0.020	-0.293	0.770
education specialist B	0.038	0.559	0.578
computer expertise specialist B	0.061	0.896	0.372
number Handle Threat, commander	-0.096	-1.195	0.235
number Read Message, commander	-0.083	-0.490	0.625
number Send Message, commander	-0.158	-2.029	0.045
number Show Info, commander	0.051	0.716	0.476
duration Read Message, commander	0.066	0.855	0.395
duration Send Message, commander	-0.155	-1.758	0.082
number Read Message, specialist A	-0.137	-1.288	0.201
number Send Message, specialist A			
number Show Info, specialist A	-0.037	-0.534	0.594
duration Read Message, specialist A	-0.039	-0.382	0.703
duration Send Message, specialist A	0.055	0.745	0.458
number Read Message, specialist B			
number Send Message, specialist B			
number Show Info, specialist B	0.088	1.227	0.223
duration Read Message, specialist B			
duration Send Message, specialist B	0.065	0.907	0.366
Basis Task Mastery, commander	0.017	0.242	0.809
Basic Task Mastery, specialist A	-0.033	-0.472	0.638
Basic Task Mastery, specialist B	0.035	0.500	0.618
Plane Handling, commander			
Plane Handling, specialist A	0.076	0.963	0.338
Plane Handling, specialist B	0.067	0.940	0.349
Message Handling, commander	-0.100	-1.127	0.262
Message Handling, specialist A			
Message Handling, specialist B	-0.061	-0.662	0.509
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander			

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of F is smaller than 0.15.

Table 121 Results of multiple regression, predicting performance shift 8, with *task adaptive behavior variables*, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.187	.179	.187	24.57	1	107	.000	24.57	1	107	.000
2	.282	.269	.096	14.14	1	106	.000	20.87	2	106	.000
3	.332	.313	.050	7.793	1	105	.006	17.40	3	105	.000
4	.346	.321	.014	2.250	1	104	.137	13.77	4	104	.000
5	.360	.329	.013	2.170	1	103	.144	11.57	5	103	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Message Handling, specialist A	.234	2.440	.016
(2) Strategic Leadership, commander	.249	3.041	.003
(3) Plane Handling, specialist A	.206	2.325	.022
(4) Message Handling, specialist B	.140	1.521	.131
(5) Plane Handling, commander	.123	1.473	.144

Excluded Predictors	Beta-In	t	Sig.
Basis Task Mastery, commander	constant, excluded from analyses		
Basic Task Mastery, specialist A	-.054	-.637	.525
Basic Task Mastery, specialist B	.080	.972	.333
Plane Handling, commander			
Plane Handling, specialist A			
Plane Handling, specialist B	.071	.883	.380
Message Handling, commander	.075	.915	.362
Message Handling, specialist A			
Message Handling, specialist B			
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander	-.070	-.872	.385

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

Table 122 Results of multiple regression, predicting performance shift 6, with *input* and *summary level process* variables, and *task adaptive behavior variables* controlling for performance of preceding shifts, trimmed model.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.331	.325	.331	52.89	1	107	.000	52.89	1	107	.000
2	.359	.347	.028	4.655	1	106	.033	26.68	2	106	.000
3	.388	.370	.029	4.902	1	105	.029	22.15	3	105	.000
4	.412	.390	.025	4.345	1	104	.040	18.23	4	104	.000
5	.429	.402	.017	3.111	1	103	.081	15.50	5	103	.000
6	.442	.409	.013	2.350	1	102	.128	13.48	6	102	.000
7	.455	.417	.013	2.344	1	101	.129	12.04	7	101	.000
8	.508	.468	.053	10.75	1	100	.001	12.89	8	100	.000
9	.549	.508	.041	9.002	1	99	.003	13.38	9	99	.000
10	.563	.518	.014	3.137	1	98	.080	12.62	10	98	.000
11	.610	.566	.047	11.75	1	97	.001	13.79	11	97	.000
12	.630	.583	.020	5.069	1	96	.027	13.60	12	96	.000
13	.642	.593	.013	3.387	1	95	.069	13.12	13	95	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 6	.354	4.866	.000
(2) Control Condition 2	-.108	-1.676	.097
(3) education, commander	.153	2.247	.027
(4) computer expertise, commander	.097	1.370	.174
(5) computer expertise, specialist A	.136	2.022	.046
(6) computer expertise, specialist B	.051	.761	.449
(7) education, specialist B	.164	2.531	.013
(8) duration Read Message, specialist A	-.179	-2.770	.007
(9) duration Send Message, specialist A	-.219	-3.285	.001
(10) number Show Info, specialist B	.163	2.382	.019
(11) Strategic Leadership, commander	.218	3.184	.002
(12) Message Handling, specialist B	.147	2.138	.035
(13) Basic Task Mastery, specialist B	.123	1.840	.069

Excluded Predictors	Beta-In	t	Sig.
Base Condition (reference category)	-	-	-
Goal condition (dummy coded)	0.014	0.205	0.838
CHAT condition (dummy coded)	0.036	0.537	0.593
Control Condition 1 (dummy coded)	-0.026	-0.417	0.678
Control Condition 2 (dummy coded)			
Individual Reflexivity (dummy coded)	0.004	0.053	0.958
Group Reflexivity (dummy coded)	-0.118	-1.786	0.077
age commander	-0.088	-1.366	0.175
gender commander	0.002	0.034	0.973
education commander			
computer expertise commander			
age specialist A	0.040	0.586	0.559
gender specialist A	-0.012	-0.170	0.865
education specialist A	0.000	0.001	1.000
computer expertise specialist A	.122	1.436	.154
age specialist B	-0.031	-0.470	0.639
gender specialist B	-0.013	-0.172	0.864
education specialist B			
computer expertise specialist B			
number Handle Threat, commander	-0.046	-0.699	0.486
number Read Message, commander	-0.050	-0.744	0.458
number Send Message, commander	-0.092	-1.195	0.235
number Show Info, commander	-0.095	-1.443	0.152
duration Read Message, commander	0.026	0.370	0.712
duration Send Message, commander	-0.097	-1.081	0.283
number Read Message, specialist A	-0.120	-1.322	0.189
number Send Message, specialist A	0.018	0.259	0.796
number Show Info, specialist A	0.044	0.664	0.509
duration Read Message, specialist A			
duration Send Message, specialist A			
number Read Message, specialist B	0.022	0.291	0.771
number Send Message, specialist B	-0.063	-0.925	0.357
number Show Info, specialist B			
duration Read Message, specialist B	-0.052	-0.669	0.505
duration Send Message, specialist B	-0.001	-0.014	0.988
Basis Task Mastery, commander	constant, excluded from analyses		
Basic Task Mastery, specialist A	0.010	0.143	0.887
Basic Task Mastery, specialist B			
Plane Handling, commander	0.028	0.382	0.703
Plane Handling, specialist A	0.027	0.346	0.730
Plane Handling, specialist B	-0.113	-1.170	0.245
Message Handling, commander	-0.011	-0.170	0.866
Message Handling, specialist A	0.080	0.933	0.353
Message Handling, specialist B			
Strategic Leadership, commander			
Motivational and Corrective Leadership, commander	-0.003	-0.049	0.961

Note. N = 109 teams. Performance of the preceding shifts was entered in to the regression equation first, all other variables were entered using the method forward. Independent variables are entered into the equation if the smallest probability of *F* is smaller than 0.15.

6 Lag Sequential Analysis

6.1 Descriptive Statistics Shift 1 and Shift 4

In shift 1 specialists have a higher activity than commanders. Just counting the events shows that specialist A have 10'311, specialist B 8'129 and the commanders only 4'698 initiated events. The main activity of the specialists is to look up plane information (Show Information) with relative frequency of 71%, specialists A and 63%, specialists B. The main activity for commanders in shift 1 - with a relative frequency of 56% - is Read Message. In shift 4 (first shift on day two), whose task structure is exactly like shift 1, – commanders have 4'941 events, specialists A 13'513, and specialists B 10'225 (details in Table 123).

Comparing the frequencies for low and high performing teams, again no great differences are observed. In shift 1 commanders of low performing teams show less Handle Threat and slightly more Read Message and Send Message than commanders of high performing teams. Specialists A of high performing teams have less Read Message and less Send Message, but more Show Information than specialists A of low performing teams. For specialists B there are no differences. Right from the start (shift 1) high performing teams seem to concentrate on the role specific task, whereas low performing teams have not only a lower frequency of activities but also spend more time exchanging, especially between the commander and specialist A. In shift 4 there are no differences for commanders and specialists A of low and high performing teams. But now specialists B of low performing teams have a slightly higher relative frequency of Send Message and Read Message than specialists B of high performing teams. See Table 123.

Table 123 Lag sequential analysis: Descriptive statistics, shift 1 and shift 4, lag 0.

shift 1

		frequency			relative frequency		
		all	low	high	all	low	high
commander	New Plane	218	112	106			
	New Message	2'533	1'292	1'241			
	Handle Threat	547	237	310	0.12	0.10	0.13
	Read Message	2'637	1'341	1'296	0.56	0.57	0.55
	Send Message	931	484	447	0.20	0.21	0.19
	Show Information	473	214	259	0.10	0.09	0.11
	Other Activities	110	66	44	0.02	0.03	0.02
	Totals	4'698	2'342	2'356	1.00	1.00	1.00
specialist A	New Plane	218	112	106			
	New Message	1'044	586	458			
	Handle Threat	547	237	296			
	Read Message	1'108	613	476	0.11	0.14	0.09
	Send Message	1'320	649	641	0.13	0.15	0.13
	Show Information	7'713	3'100	3'836	0.75	0.70	0.76
	Other Activities	170	75	94	0.02	0.02	0.02
	Totals	10'311	4'437	5'047	1.00	1.00	1.00
specialist B	New Plane	218	112	106			
	New Message	937	489	448			
	Handle Threat	547	234	310			
	Read Message	1'049	522	525	0.13	0.13	0.13
	Send Message	1'370	714	651	0.17	0.17	0.16
	Show Information	5'470	2'709	2'721	0.67	0.66	0.68
	Other Activities	240	159	81	0.03	0.04	0.02
	Totals	8'129	4'104	3'978	1.00	1.00	1.00

shift 4

		frequency			relative frequency		
		all	low	high	all	low	high
commander	New Plane	218	110	108			
	New Message	2'587	1'235	1'352			
	Handle Threat	854	438	416	0.17	0.18	0.16
	Read Message	2'683	1'275	1'408	0.54	0.54	0.55
	Send Message	889	436	453	0.18	0.18	0.18
	Show Information	483	215	268	0.10	0.09	0.10
	Other Activities	32	9	23	0.01	0.00	0.01
	Totals	4'941	2'373	2'568	1.00	1.00	1.00
specialist A	New Plane	218	110	108			
	New Message	1'134	570	564			
	Handle Threat	854	413	382			
	Read Message	1'153	555	512	0.09	0.10	0.09
	Send Message	1'343	598	647	0.10	0.11	0.11
	Show Information	10'963	4'386	4'513	0.81	0.79	0.79
	Other Activities	54	18	36	0.00	0.00	0.01
	Totals	13'513	5'557	5'708	1.00	1.00	1.00
specialist B	New Plane	218	110	108			
	New Message	1'126	587	539			
	Handle Threat	854	431	405			
	Read Message	1'144	583	519	0.11	0.13	0.11
	Send Message	1'389	669	688	0.14	0.15	0.14
	Show Information	7'656	3'159	3'591	0.75	0.71	0.75
	Other Activities	36	15	20	0.00	0.00	0.00
	Totals	10'225	4'426	4'818	1.00	1.00	1.00

Note. N = 109 teams; low = low performing teams, high = high performing teams, median split (shift 1 median = 68, shift 4 median = 79).

6.2 Technical Details SPSS Data File: Data Structure

Example (group 106, shift 1, commander):

```
ieS010,11.00-211.00 ieSi1,238.00-238.10 ieR100,269.00-314.00 ...
```

The commander sends a message with strategy related content. He needs 200 seconds to write the message, from second 11 to 211. Then he looks up the plane information, 27 seconds after he has finished writing the message; 31 seconds later the commanders reads a message, which will have some information on planes in it.

Data structure

```
<group number>
IEvent(1, shift 1), start time – end time IEvent(2, shift 1), start time – end time ...
&
SEvent(1, shift 1), start time – end time SEvent(2, shift 1), start time – end time ...
;
IEvent(1, shift 2), start time – end time IEvent(2, shift 2), start time – end time ...
&
SEvent(1, shift 2), start time – end time SEvent(2, shift 2), start time – end time ...
;
... shifts 3 to 8
(experimental condition) /
...next group...
```

Additional Information in Data File

<106>	group number
&	sign to separate the different streams
;	sign to separate shifts
(1) /	(1) = experimental condition (1 to 9)
/	/ = sign to separate groups

Table 124 Example of data file for lag sequential analysis.

```
<106>
ieS010,11.00-211.00 ieSi1,238.00-238.10 ieR100,269.00-314.00 ieR100,329.00-342.00 ieR100,351.00-382.00 ieSi1,392.00-392.10 ieR100,404.00-416.00 ieR100,424.00-433.00 ieR100,437.00-464.00 ieR100,469.00-481.00 ieR100,485.00-503.00 ieS010,509.00-601.00 ieOTHER,617.00-617.10 ieR001,633.00-670.00 ieR100,675.00-699.00 ieR100,708.00-739.00 ieOTHER,740.00-740.10 ieR100,746.00-781.00 ieR100,785.00-806.00 ieS010,820.00-1271.00
&
seNP1,17.00-17.10 seNewMsg,78.00-78.10 seNewMsg,126.00-126.10 seNewMsg,227.00-227.10 seNewMsg,261.00-261.10 seNewMsg,320.00-320.10 seNP2,333.00-333.10 seNewMsg,357.00-357.10 seNewMsg,393.00-393.10 seNewMsg,425.00-425.10 seNewMsg,515.00-515.10 seNewMsg,609.00-609.10 seNewMsg,660.00-660.10 seNewMsg,683.00-683.10 seNewMsg,723.00-723.10
&
dthr-2.0,17.00-265.00 dthr-1.0,266.00-315.00 dthr-3.0,316.00-447.00 dthr-2.0,448.00-900.00
;
ieS001,9.00-87.00 ieR100,107.00-127.00 ieR100,140.00-157.00 ieR010,161.00-167.00 ieR100,185.00-199.00 ieR100,205.00-214.00 ieR010,218.00-229.00 ieR100,232.00-242.00 ieR100,249.00-271.00 ieSi1,282.00-282.10 ieSi1,297.00-297.10 ieSi1,339.00-339.10 ieR100,351.00-388.00 ieR100,401.00-419.00 ieR100,425.00-438.00 ieR100,443.00-453.00 ieR100,456.00-465.00 ieR100,470.00-492.00 ieR100,496.00-518.00 ieH23,529.00-529.10 ieR100,563.00-575.00
```

ieR100,578.00-596.00 ieR100,599.00-608.00 ieR100,612.00-629.00 ieH24,637.00-637.10 ieR001,643.00-661.00
ieR100,666.00-686.00 ieR100,689.00-706.00 ieR100,709.00-724.00 ieH25,733.00-733.10 ieR100,737.00-758.00
ieR100,761.00-775.00 ieS100,780.00-810.00 ieS100,818.00-833.00 ieR001,876.00-898.00
&
seNP1,32.00-32.10 seNewMsg,69.00-69.10 seNewMsg,102.00-102.10 seNewMsg,128.00-128.10 seNewMsg,164.00-164.10
seNewMsg,171.00-171.10 seNewMsg,195.00-195.10 seNewMsg,197.00-197.10 seNP2,213.00-213.10 seNewMsg,237.00-
237.10 seNewMsg,276.00-276.10 seNP3,304.00-304.10 seNewMsg,330.00-330.10 seNewMsg,341.00-341.10 se-
NewMsg,360.00-360.10 seNewMsg,378.00-378.10 seNewMsg,413.00-413.10 seNewMsg,423.00-423.10 seNewMsg,437.00-
437.10 seNewMsg,473.00-473.10 seNewMsg,474.00-474.10 seNewMsg,507.00-507.10 seNewMsg,570.00-570.10 se-
NewMsg,600.00-600.10 seNewMsg,660.00-660.10 seNewMsg,674.00-674.10 seNewMsg,690.00-690.10 seNewMsg,737.00-
737.10 seNewMsg,852.00-852.10
&
dthr-2.0,32.00-212.00 dthr-4.0,213.00-303.00 dthr-3.0,304.00-528.00 dthr-2.0,529.00-821.00 dthr-1.0,822.00-900.00
;
ieSi1,13.00-13.10 ieS010,50.00-133.00 ieR001,142.00-175.00 ieR100,179.00-228.00 ieH14,241.00-241.10 ieS001,245.00-
278.00 ieR100,284.00-308.00 ieS001,312.00-337.00 ieSi1,352.00-352.10 ieH21,379.00-379.10 ieSi1,395.00-395.10
ieSi1,413.00-413.10 ieSi1,419.00-419.10 ieR001,429.00-444.00 ieR100,447.00-452.00 ieS010,457.00-506.00 ieR001,511.00-
558.00 ieR001,560.00-614.00 ieH33,628.00-628.10 ieR001,630.00-638.00 ieSi1,656.00-656.10 ieSi1,657.00-657.10
ieSi1,662.00-662.10 ieSi1,666.00-666.10 ieSi1,684.00-684.10 ieSi1,689.00-689.10 ieSi1,694.00-694.10 ieR100,707.00-761.00
ieR100,764.00-791.00 ieH34,802.00-802.10 ieR100,802.00-836.00 ieH35,847.00-847.10 ieR100,849.00-866.00
ieR100,871.00-882.00 ieR100,884.00-903.00
&
etc.

6.3 GSEQ-SDIS Command Files

A sample GSEQ-SDIS command file to calculate simple and lag sequential statistics for commanders and specialists, for all shifts.

I think that it is a big advantage that GESEQ-SDIS can be run using syntax files (like in SPSS). They are easy to understand and facilitate the work.

```
File "X:\projekt nac-d\Data\SequentialDataAnalyses\seq.mds";
VARS beding = 1 (BC=1 TIK=2 Comp=3 Goal=4 CHAT=5 CC1=6 CC2=7 IR=8 GR=9)
  rolle = 2 (commander = 1 specA = 2 specB = 3);
recode seNP = seNP1 seNP2 seNP3 seNP4;
recode seNM = seNewMsg;
recode ieH = ieH10 ieH11 ieH12 ieH13 ieH14 ieH15 ieH20 ieH21 ieH22 ieH23 ieH24 ieH25
  ieH30 ieH31 ieH32 ieH33 ieH34 ieH35 ieH40 ieH41 ieH42 ieH43 ieH44 ieH45;
recode ieR = ieR001 ieR010 ieR011 ieR100 ieR101 ieR110;
recode ieS = ieS001 ieS010 ieS011 ieS100 ieS101 ieS110;
recode ieSi = ieSi0 ieSi1;
recode ieOt = ieOTHER;
event;
Pool no+ no* ;
Simple freq relf rate dura reld prob avgd (seNP seNM ieH ieR ieS ieSi ieOt);
Stats jntf expf conp rsdl adjr pval xsq gsq yulq kappa phi odds;
target ieR ieS ieSi ieH ;
lags 1 ;
given seNP seNM ieH ieR ieS ieSi;
Export "X:\projekt nac-d\Data\SequentialDataAnalyses\seq cab (4) lag 1.tab" jntf adjr adjr$ xsq
  xsq$ gsq gsq$ tabs label overwrite;
```

Table 125 Codes used to name the lag sequential variables (lag frequencies, adjusted residuals, and recoded adjusted residuals) in the SPSS data file.

play 1	role	given/target	Read Message	Send Message	Show Information	Handle Threat	play 2	role	given/target	Read Message	Send Message	Show Information	Handle Threat				
shift 1	C	New Plane	1	2	3	4	shift 4	C	New Plane	181	182	183	184				
		New Message	5	6	7	8			New Message	185	186	187	188				
		Handle Threat	9	10	11	12			Handle Threat	189	190	191	192				
		Read Message	13	14	15	16			Read Message	193	194	195	196				
		Send Message	17	18	19	20			Send Message	197	198	199	200				
		Show Info	21	22	23	24			Show Info	201	202	203	204				
A	New Plane	New Plane	25	26	27	A	New Plane	New Plane	205	206	207	A	New Plane	New Plane	205	206	207
		New Message	28	29	30			New Message	208	209	210			New Message	208	209	210
		Handle Threat	31	32	33			Handle Threat	211	212	213			Handle Threat	211	212	213
		Read Message	34	35	36			Read Message	214	215	216			Read Message	214	215	216
		Send Message	37	38	39			Send Message	217	218	219			Send Message	217	218	219
		Show Info	40	41	42			Show Info	220	221	222			Show Info	220	221	222
B	New Plane	New Plane	43	44	45	B	New Plane	New Plane	223	224	225	B	New Plane	New Plane	223	224	225
		New Message	46	47	48			New Message	226	227	228			New Message	226	227	228
		Handle Threat	49	50	51			Handle Threat	229	230	231			Handle Threat	229	230	231
		Read Message	52	53	54			Read Message	232	233	234			Read Message	232	233	234
		Send Message	55	56	57			Send Message	235	236	237			Send Message	235	236	237
		Show Info	58	59	60			Show Info	238	239	240			Show Info	238	239	240
shift 2	C	New Plane	61	62	63	64	shift 5	C	New Plane	241	242	243	244				
		New Message	65	66	67	68			New Message	245	246	247	248				
		Handle Threat	69	70	71	72			Handle Threat	249	250	251	252				
		Read Message	73	74	75	76			Read Message	253	254	255	256				
		Send Message	77	78	79	80			Send Message	257	258	259	260				
		Show Info	81	82	83	84			Show Info	261	262	263	264				
A	New Plane	New Plane	85	86	87	A	New Plane	New Plane	265	266	267	A	New Plane	New Plane	265	266	267
		New Message	88	89	90			New Message	268	269	270			New Message	268	269	270
		Handle Threat	91	92	93			Handle Threat	271	272	273			Handle Threat	271	272	273
		Read Message	94	95	96			Read Message	274	275	276			Read Message	274	275	276
		Send Message	97	98	99			Send Message	277	278	279			Send Message	277	278	279
		Show Info	100	101	102			Show Info	280	281	282			Show Info	280	281	282
B	New Plane	New Plane	103	104	105	B	New Plane	New Plane	283	284	285	B	New Plane	New Plane	283	284	285
		New Message	106	107	108			New Message	286	287	288			New Message	286	287	288
		Handle Threat	109	110	111			Handle Threat	289	290	291			Handle Threat	289	290	291
		Read Message	112	113	114			Read Message	292	293	294			Read Message	292	293	294
		Send Message	115	116	117			Send Message	295	296	297			Send Message	295	296	297
		Show Info	118	119	120			Show Info	298	299	300			Show Info	298	299	300
shift 3	C	New Plane	121	122	123	124	shift 6	C	New Plane	301	302	303	304				
		New Message	125	126	127	128			New Message	305	306	307	308				
		Handle Threat	129	130	131	132			Handle Threat	309	310	311	312				
		Read Message	133	134	135	136			Read Message	313	314	315	316				
		Send Message	137	138	139	140			Send Message	317	318	319	320				
		Show Info	141	142	143	144			Show Info	321	322	323	324				
A	New Plane	New Plane	145	146	147	A	New Plane	New Plane	325	326	327	A	New Plane	New Plane	325	326	327
		New Message	148	149	150			New Message	328	329	330			New Message	328	329	330
		Handle Threat	151	152	153			Handle Threat	331	332	333			Handle Threat	331	332	333
		Read Message	154	155	156			Read Message	334	335	336			Read Message	334	335	336
		Send Message	157	158	159			Send Message	337	338	339			Send Message	337	338	339
		Show Info	160	161	162			Show Info	340	341	342			Show Info	340	341	342
B	New Plane	New Plane	163	164	165	B	New Plane	New Plane	343	344	345	B	New Plane	New Plane	343	344	345
		New Message	166	167	168			New Message	346	347	348			New Message	346	347	348
		Handle Threat	169	170	171			Handle Threat	349	350	351			Handle Threat	349	350	351
		Read Message	172	173	174			Read Message	352	353	354			Read Message	352	353	354
		Send Message	175	176	177			Send Message	355	356	357			Send Message	355	356	357
		Show Info	178	179	180			Show Info	358	359	360			Show Info	358	359	360
							shift 8	C	New Plane	361	362	363	364				
									New Message	365	366	367	368				
									Handle Threat	369	370	371	372				
									Read Message	373	374	375	376				
									Send Message	377	378	379	380				
									Show Info	381	382	383	384				
									A	New Plane	385	386	387				
										New Message	388	389	390				
										Handle Threat	391	392	393				
										Read Message	394	395	396				
										Send Message	397	398	399				
										Show Info	400	401	402				
										B	New Plane	403	404	405			
											New Message	406	407	408			
											Handle Threat	409	410	411			
											Read Message	412	413	414			
											Send Message	415	416	417			
											Show Info	418	419	420			

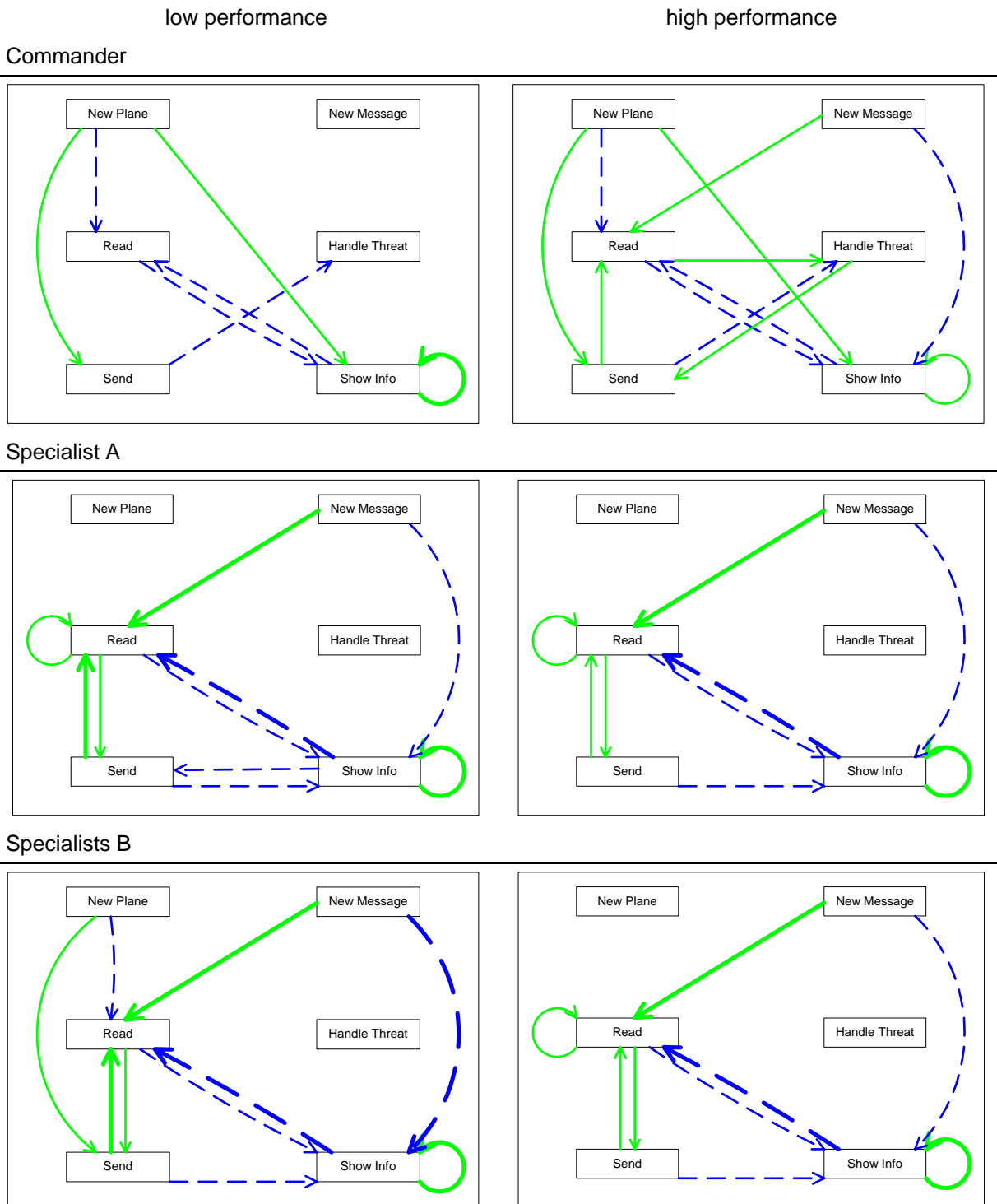
6.4 Adjusted Residuals, all Roles, lag 2 to lag 5, shift 1

Table 126 Adjusted residuals, lag 2, shift 1.

Commander						
		Read Message	Send Message	Show Information	Handle Threat	
all	commander					
	New Plane	-9.62 -	5.50 +	7.71 +	0.96	
	New Message	4.29 +	-1.79	-5.65 -	0.71	
	Handle Threat	-2.24	3.74 +	-0.15	-1.05	
	Read Message	1.85	-1.65	-5.32 -	3.92 +	
	Send Message	4.65 +	-2.08	1.18	-5.50 -	
low	Show Information	-8.72 -	1.68	14.05 +	-1.30	
			Read Message	Send Message	Show Information	Handle Threat
	New Plane	-6.06 -	4.63 +	3.55 +	0.37	
	New Message	2.27	-2.05	-2.48	1.28	
	Handle Threat	-0.72	1.68	-0.70	-0.45	
	Read Message	1.66	-0.81	-3.82 -	1.80	
high	Send Message	2.42	-0.09	-0.03	-3.67 -	
	Show Information	-6.13 -	0.95	10.80 +	-1.03	
			Read Message	Send Message	Show Information	Handle Threat
	New Plane	-7.47 -	3.21 +	7.02 +	0.90	
	New Message	3.77 +	-0.46	-5.36 -	-0.18	
	Handle Threat	-2.26	3.65 +	0.25	-1.11	
Specialist A	Read Message	0.87	-1.64	-3.62 -	3.81 +	
	Send Message	4.15 +	-2.90	1.61	-4.10 -	
	Show Information	-6.15 -	1.50	9.17 +	-0.94	
			Read Message	Send Message	Show Information	Handle Threat
	specialist					
	New Plane	-1.66	2.23	-0.55		
all	New Message	18.31 +	1.84	-14.82 -		
	Handle Threat	0.26	2.30	-2.00		
	Read Message	7.39 +	7.38 +	-11.22 -		
	Send Message	14.36 +	-1.92	-8.96 -		
	Show Information	-24.03 -	-5.89 -	22.19 +		
	low			Read Message	Send Message	Show Information
New Plane		-1.05	1.61	-0.46	.	
New Message		10.50 +	0.67	-8.57 -	.	
Handle Threat		-0.37	2.26	-1.49	.	
Read Message		4.24 +	4.11 +	-6.48 -	.	
Send Message		10.50 +	-1.76	-6.66 -	.	
high	Show Information	-15.67 -	-3.31 -	14.61 +	.	
			Read Message	Send Message	Show Information	Handle Threat
	New Plane	-1.94	0.88	0.66	.	
	New Message	13.28 +	1.00	-10.14 -	.	
	Handle Threat	0.58	0.81	-1.06	.	
	Read Message	4.91 +	5.03 +	-7.50 -	.	
Specialist B	Send Message	8.13 +	-1.77	-4.29 -	.	
	Show Information	-15.34 -	-2.94	13.14 +	.	
			Read Message	Send Message	Show Information	Handle Threat
	specialist					
	New Plane	-3.65 -	3.13 +	0.09		
	New Message	14.66 +	-0.51	-10.33 -		
all	Handle Threat	1.02	0.29	-0.99		
	Read Message	4.61 +	6.08 +	-8.39 -		
	Send Message	12.55 +	-2.41	-7.22 -		
	Show Information	-19.74 -	-2.93	16.89 +		
			Read Message	Send Message	Show Information	Handle Threat
	New Plane	-3.33 -	3.38 +	-0.39	.	
low	New Message	9.55 +	-0.21	-6.78 -	.	
	Handle Threat	1.57	-0.22	-0.96	.	
	Read Message	2.80	4.33 +	-5.65 -	.	
	Send Message	8.98 +	-1.47	-5.32 -	.	
	Show Information	-13.55 -	-2.51	11.96 +	.	
	high			Read Message	Send Message	Show Information
New Plane		-1.81	0.89	0.61	.	
New Message		11.21 +	-0.56	-7.83 -	.	
Handle Threat		-0.16	0.73	-0.48	.	
Read Message		3.65 +	4.26 +	-6.18 -	.	
Send Message		8.77 +	-2.10	-4.77 -	.	
Show Information	-14.24 -	-1.58	11.82 +	.		

Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53).

Figure 52 Adjusted residuals, all roles, lag 2, shift 1.



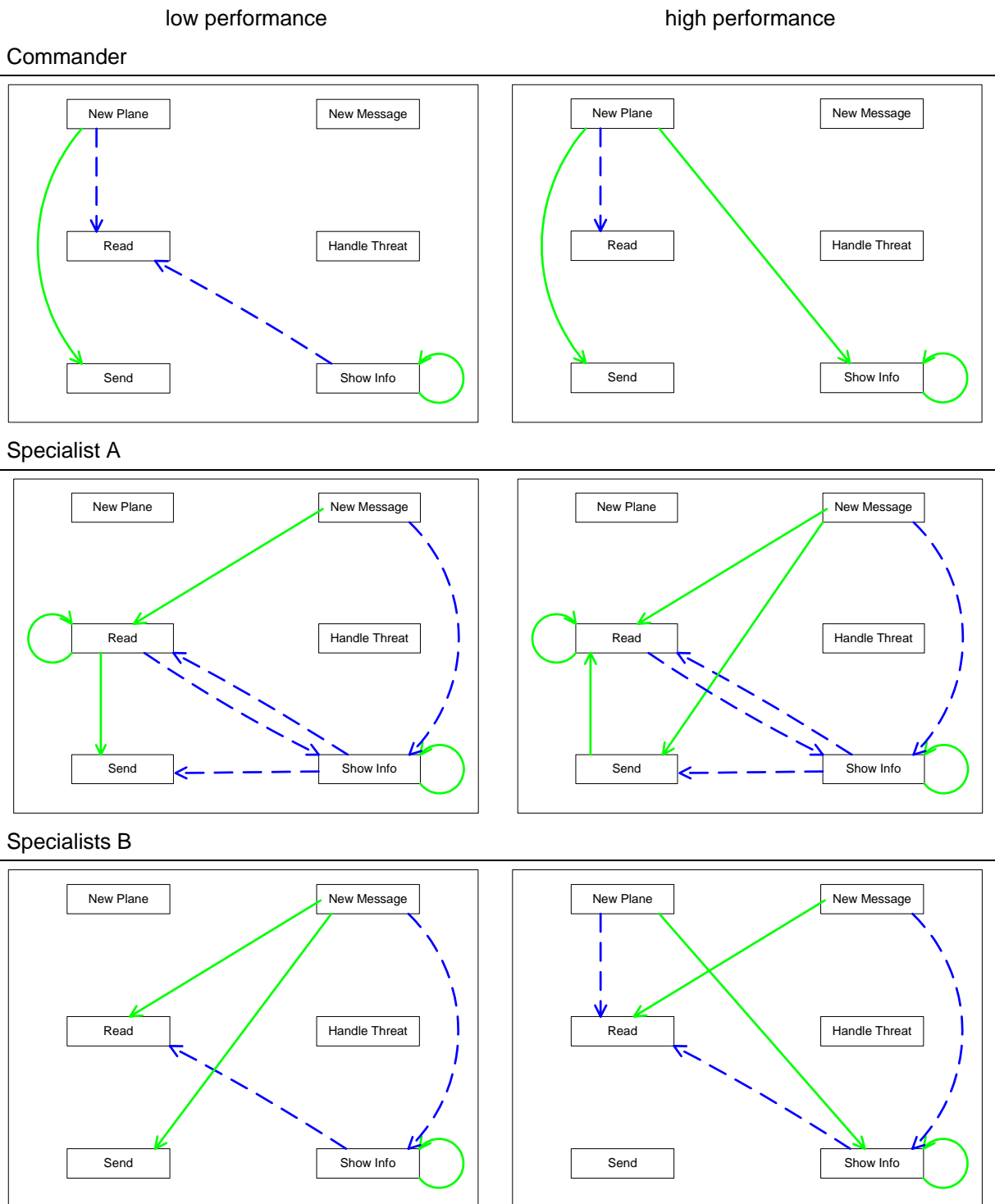
Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53); **green, bold lines** = enhancing, adj. residual > +10; **green, thin lines** = enhancing, adj. residual between +3.07 (commanders), respectively +2.98 (specialists) and +10; **blue, bold dashed lines** = inhibiting, adj. residual < -10; **blue, thin dashed lines** = inhibiting, adj. residual between -10 and -3.07 (commanders), respectively -2.98 (specialists).

Table 127 Adjusted residuals, all roles, lag 3, shift 1.

Commander						
	commander	Read Message	Send Message	Show Information	Handle Threat	
all	New Plane	-7.83 -	5.80 +	6.20 +	-0.61	
	New Message	2.78	-2.91	-3.87 -	2.68	
	Handle Threat	0.97	-0.03	-0.86	-0.67	
	Read Message	2.28	-1.14	-2.12	-0.22	
	Send Message	-0.70	3.29 +	-0.92	-2.12	
	Show Information	-4.22 -	-0.68	9.18 +	-0.80	
low		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-4.94 -	4.32 +	2.83	-0.28	
	New Message	2.42	-2.52	-2.37	1.52	
	Handle Threat	0.26	-0.06	0.26	-0.57	
	Read Message	1.24	-0.32	-1.98	0.19	
	Send Message	-0.66	2.47	-1.28	-1.06	
high		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-6.15 -	3.87 +	5.85 +	-0.56	
	New Message	1.40	-1.67	-2.98	2.42	
	Handle Threat	1.16	0.10	-1.40	-0.57	
	Read Message	2.00	-1.28	-1.09	-0.50	
	Send Message	-0.35	2.16	-0.05	-1.87	
all	show Information	-2.80	-0.03	4.90 +	-0.17	
	Specialist A					
		specialist	Read Message	Send Message	Show Information	Handle Threat
	all	New Plane	-3.62 -	0.02	2.64	
		New Message	11.15 +	5.38 +	-12.41 -	
		Handle Threat	2.66	-1.26	-0.96	
Read Message		6.13 +	6.17 +	-9.35 -		
Send Message		3.94 +	0.39	-3.20 -		
Show Information		-12.90 -	-6.51 -	14.59 +		
low		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-2.90	0.67	1.71	.	
	New Message	6.55 +	2.01	-6.62 -	.	
	Handle Threat	0.86	-1.54	0.54	.	
	Read Message	3.64 +	4.33 +	-6.20 -	.	
	Send Message	1.02	-0.17	-0.65	.	
high		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-2.62	-1.22	2.83	.	
	New Message	7.66 +	4.79 +	-9.26 -	.	
	Handle Threat	2.74	-0.55	-1.49	.	
	Read Message	3.56 +	2.61	-4.61 -	.	
	Send Message	3.29 +	-0.08	-2.26	.	
all	Show Information	-9.06 -	-3.50 -	9.21 +	.	
	Specialist B					
		specialist	Read Message	Send Message	Show Information	Handle Threat
	all	New Plane	-3.46 -	-1.23	3.57 +	
		New Message	7.26 +	2.70	-7.58 -	
		Handle Threat	0.41	-0.07	-0.24	
Read Message		1.82	2.50	-3.40 -		
Send Message		3.92 +	-0.31	-2.64		
Show Information		-7.33 -	-2.51	7.48 +		
low		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-1.65	-1.05	2.08	.	
	New Message	5.68 +	3.96 +	-7.45 -	.	
	Handle Threat	0.23	-1.14	0.78	.	
	Read Message	1.55	1.97	-2.77	.	
	Send Message	2.61	-0.35	-1.62	.	
high		Read Message	Send Message	Show Information	Handle Threat	
	New Plane	-3.26 -	-0.71	3.00 +	.	
	New Message	4.56 +	-0.47	-3.02 -	.	
	Handle Threat	0.31	0.99	-1.04	.	
	Read Message	1.00	1.44	-1.92	.	
	Send Message	2.81	-0.10	-2.02	.	
all	Show Information	-4.37 -	-0.83	3.93 +	.	

Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53).

Figure 53 Adjusted residuals, all roles, lag 3, shift 1.



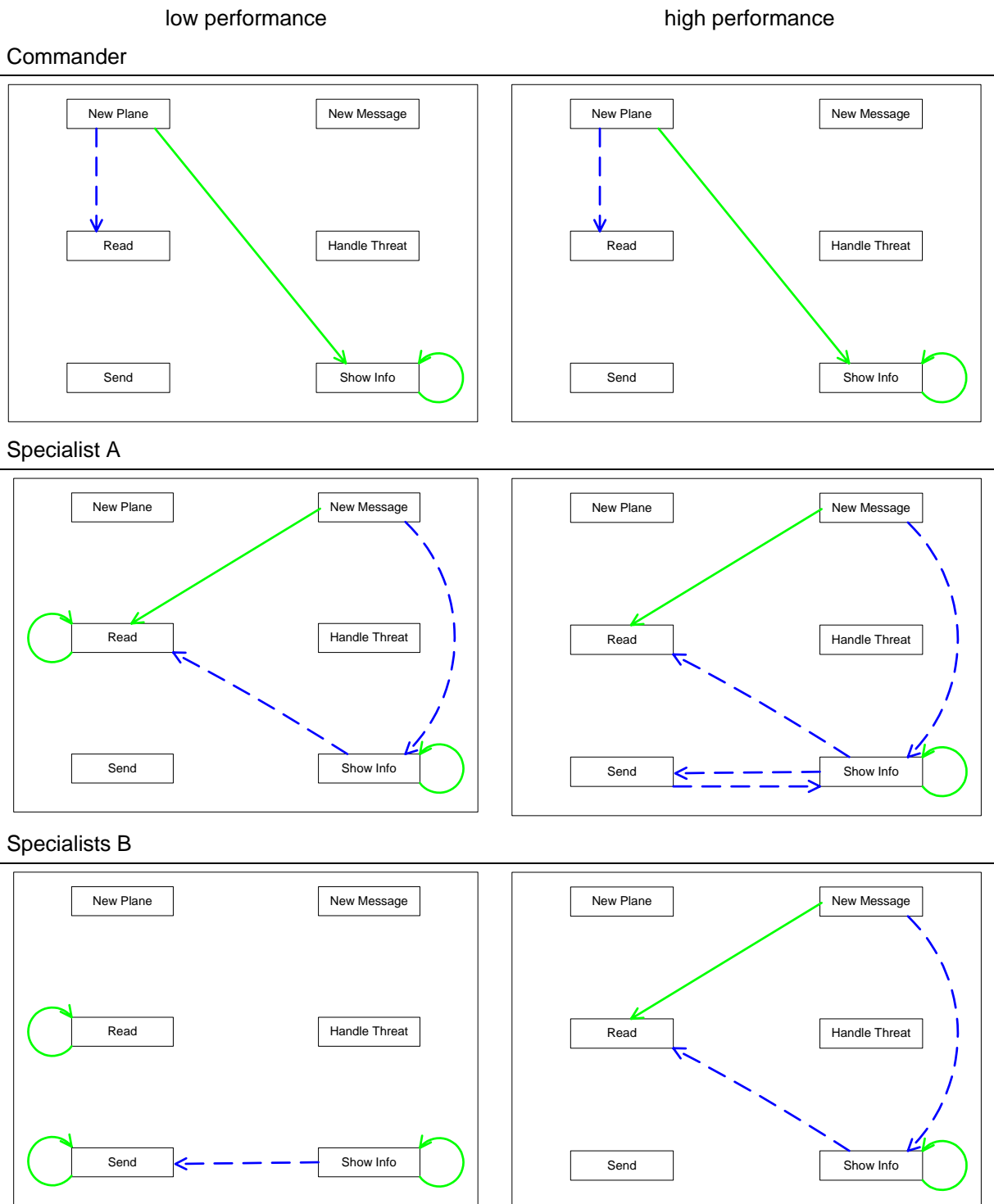
Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53); **green, bold lines** = enhancing, adj. residual > +10; **green, thin lines** = enhancing, adj. residual between +3.07 (commanders), respectively +2.98 (specialists) and +10; **blue, bold dashed lines** = inhibiting, adj. residual < -10; **blue, thin dashed lines** = inhibiting, adj. residual between -10 and -3.07 (commanders), respectively -2.98 (specialists).

Table 128 Adjusted residuals, all roles, lag 4, shift 1.

Commander					
	commander	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-5.50 -	3.44 +	4.89 +	-0.07
	New Message	2.52	-2.86	-1.62	1.03
	Handle Threat	1.21	-0.10	-1.73	-0.21
	Read Message	-0.48	1.54	-1.93	0.54
	Send Message	0.60	0.86	-1.47	-0.66
	Show Information	-2.10	-0.90	7.05 +	-1.83
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-3.84 -	2.38	3.37 +	0.07
	New Message	2.06	-1.74	-2.51	1.18
	Handle Threat	0.14	0.97	-0.71	-0.87
	Read Message	-1.07	1.23	-0.29	0.35
	Send Message	1.93	-1.14	-1.50	-0.28
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-3.93 -	2.51	3.53 +	-0.17
	New Message	1.51	-2.33	0.10	0.34
	Handle Threat	1.57	-0.94	-1.74	0.28
	Read Message	0.32	0.88	-2.29	0.52
	Send Message	-1.09	2.42	-0.60	-0.62
	Show Information	-0.93	-1.13	4.15 +	-0.95
Specialist A					
	specialist	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-1.09	0.65	0.29	.
	New Message	7.94 +	1.39	-6.94 -	.
	Handle Threat	0.38	-0.06	-0.23	.
	Read Message	4.96 +	1.88	-5.12 -	.
	Send Message	3.03 +	4.27 +	-5.59 -	.
	Show Information	-9.36 -	-4.87 -	10.72 +	.
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-0.28	-0.99	0.99	.
	New Message	4.10 +	0.75	-3.75 -	.
	Handle Threat	-0.28	-1.11	1.09	.
	Read Message	3.00 +	0.44	-2.67	.
	Send Message	0.85	2.25	-2.42	.
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-2.05	1.46	0.29	.
	New Message	5.96 +	-0.05	-4.19 -	.
	Handle Threat	0.65	0.51	-0.87	.
	Read Message	2.45	1.05	-2.58	.
	Send Message	2.37	2.78	-3.91 -	.
	Show Information	-5.92 -	-3.08 -	6.68 +	.
Specialist B					
	specialist	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-1.87	0.61	0.89	.
	New Message	4.70 +	1.49	-4.72 -	.
	Handle Threat	0.21	0.96	-0.95	.
	Read Message	3.17 +	0.04	-2.39	.
	Send Message	0.26	2.91	-2.57	.
	Show Information	-4.44 -	-3.60 -	6.25 +	.
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-0.90	0.24	0.46	.
	New Message	2.47	0.42	-2.17	.
	Handle Threat	-0.27	1.91	-1.37	.
	Read Message	3.02 +	0.35	-2.52	.
	Send Message	-0.56	3.23 +	-2.26	.
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-1.79	0.59	0.87	.
	New Message	4.14 +	1.72	-4.51 -	.
	Handle Threat	0.53	-0.36	-0.10	.
	Read Message	1.44	-0.28	-0.85	.
	Send Message	0.90	0.83	-1.35	.
	Show Information	-3.69 -	-1.42	3.92 +	.

Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53).

Figure 54 Adjusted residuals, all roles, lag 4, shift 1.



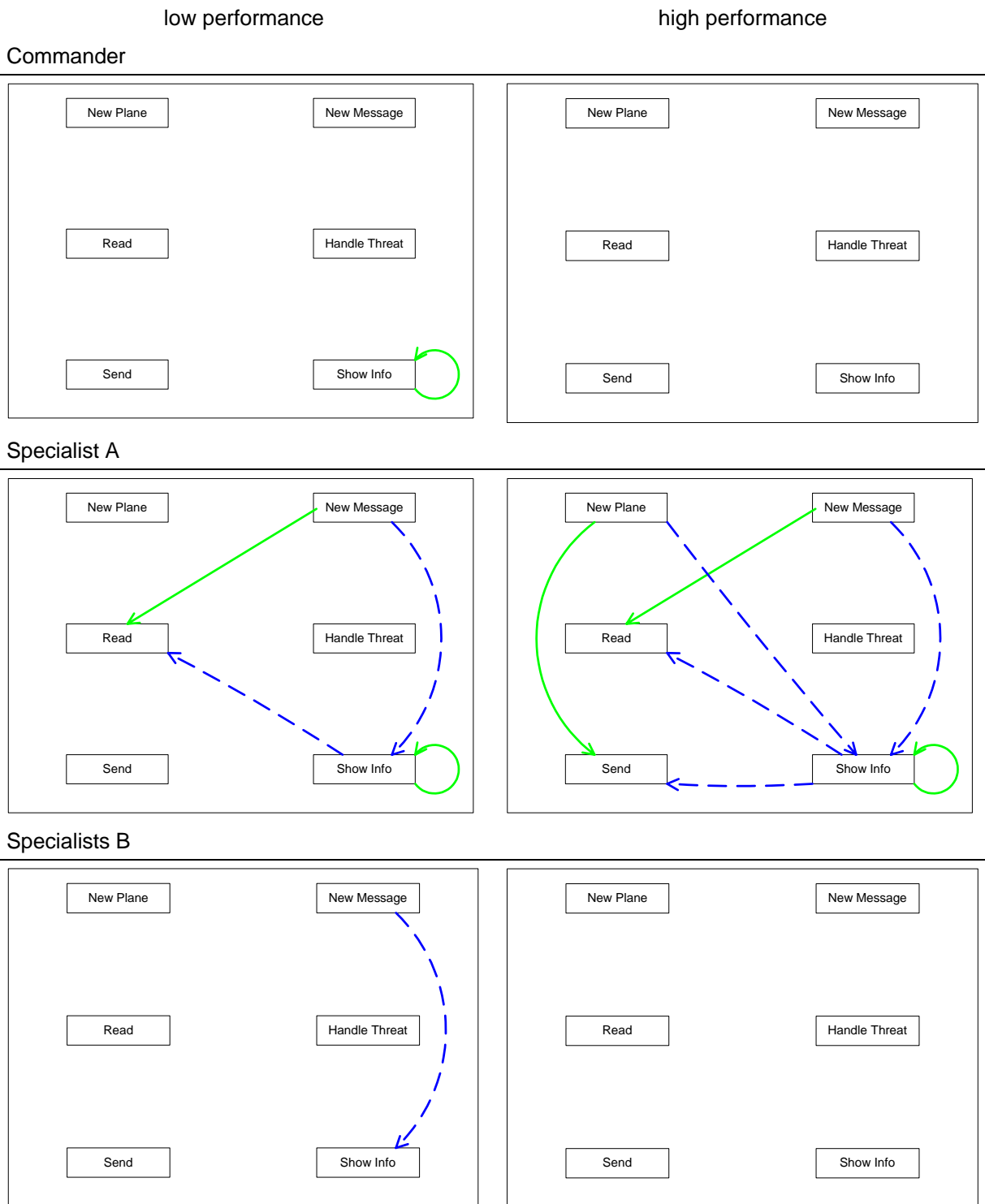
Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53); **green, bold lines** = enhancing, adj. residual > +10; **green, thin lines** = enhancing, adj. residual between +3.07 (commanders), respectively +2.98 (specialists) and +10; **blue, bold dashed lines** = inhibiting, adj. residual < -10; **blue, thin dashed lines** = inhibiting, adj. residual between -10 and -3.07 (commanders), respectively -2.98 (specialists).

Table 129 Adjusted residuals, all roles lag 5, shift 1.

Commander					
	commander	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-1.66	1.09	1.29	0.09
	New Message	-0.15	0.62	-0.45	-0.12
	Handle Threat	1.60	-0.15	-1.61	-0.82
	Read Message	1.09	-0.97	-1.49	0.80
	Send Message	-1.50	0.63	-0.35	1.79
	Show Information	-0.35	-0.74	4.90 +	-2.79
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	0.20	1.22	-1.34	-0.72
	New Message	0.73	-0.32	-0.47	-0.34
	Handle Threat	-0.43	-0.58	0.54	0.96
	Read Message	-0.83	0.95	-0.87	0.82
	Send Message	0.75	-0.72	-1.19	0.76
	Show Information	-0.57	-0.50	4.62 +	-2.43
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-2.51	0.31	2.91	0.75
	New Message	-1.01	1.17	-0.10	0.25
	Handle Threat	2.57	0.44	-2.57	-1.95
	Read Message	2.34	-2.38	-1.24	0.33
	Send Message	-2.97	1.66	0.69	1.83
	Show Information	0.10	-0.49	2.44	-1.68
Specialist A					
	specialist	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-1.49	3.66 +	-1.77	.
	New Message	8.02 +	3.23 +	-8.45 -	.
	Handle Threat	1.08	2.54	-2.79	.
	Read Message	2.83	0.71	-2.65	.
	Send Message	1.20	1.62	-2.16	.
	Show Information	-7.23 -	-5.48 -	9.63 +	.
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-1.88	0.07	1.40	.
	New Message	5.47 +	1.13	-5.11 -	.
	Handle Threat	-1.10	1.48	-0.31	.
	Read Message	1.10	-0.08	-0.79	.
	Send Message	0.74	0.78	-1.18	.
	Show Information	-3.63 -	-1.81	4.22 +	.
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-0.69	4.72 +	-3.28 -	.
	New Message	3.98 +	2.19	-4.59 -	.
	Handle Threat	2.42	1.19	-2.68	.
	Read Message	1.39	-0.08	-0.93	.
	Send Message	-0.14	0.09	0.03	.
	Show Information	-3.87 -	-3.08 -	5.22 +	.
Specialist B					
	specialist	Read Message	Send Message	Show Information	Handle Threat
all	New Plane	-1.64	-0.75	1.83	.
	New Message	3.63 +	1.95	-4.30 -	.
	Handle Threat	0.78	-0.40	-0.26	.
	Read Message	2.45	-0.98	-1.02	.
	Send Message	-0.02	1.75	-1.41	.
	Show Information	-3.52 -	-1.36	3.74 +	.
low		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-1.58	-1.72	2.59	.
	New Message	2.70	1.52	-3.25 -	.
	Handle Threat	0.20	-0.21	0.03	.
	Read Message	2.40	-0.44	-1.42	.
	Send Message	-0.23	1.57	-1.13	.
	Show Information	-2.53	-1.11	2.79	.
high		Read Message	Send Message	Show Information	Handle Threat
	New Plane	-0.72	0.76	-0.07	.
	New Message	2.43	1.10	-2.72	.
	Handle Threat	0.82	-0.26	-0.40	.
	Read Message	1.04	-1.07	0.09	.
	Send Message	0.07	0.92	-0.80	.
	Show Information	-2.32	-0.70	2.31	.

Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53).

Figure 55 Adjusted residuals, all roles, lag 5, shift 1.



Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53); **green, bold lines** = enhancing, adj. residual > +10; **green, thin lines** = enhancing, adj. residual between +3.07 (commanders), respectively +2.98 (specialists) and +10; **blue, bold dashed lines** = inhibiting, adj. residual < -10; **blue, thin dashed lines** = inhibiting, adj. residual between -10 and -3.07 (commanders), respectively -2.98 (specialists).

6.5 Adjusted Residuals, all Roles, lag 1 to lag 5, shift 2

Table 130 Adjusted residuals, shift 2, commander, N = 109 teams.

lag 1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-8.70 -	-2.37	18.11 +	-1.05
New Message	20.05 +	-17.72 -	-10.64 -	-0.64
Handle Threat	5.05 +	1.87	0.75	-9.00 -
Read Message	-11.81 -	10.97 +	-6.37 -	10.13 +
Send Message	-5.68 -	11.78 +	0.99	-4.64 -
Show Information	-13.75 -	5.33 +	15.39 +	0.40

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-8.50 -	3.17 +	9.73 +	0.35
New Message	2.89	-2.34	-6.36 -	3.50 +
Handle Threat	-1.42	2.82	-0.16	-0.73
Read Message	1.78	0.31	-4.80 -	1.17
Send Message	5.98 +	-2.90	3.11 +	-7.49 -
Show Information	-7.76 -	1.65	10.12 +	0.55

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-5.82 -	2.06	6.32 +	0.72
New Message	3.31 +	-1.21	-3.66 -	-0.32
Handle Threat	-0.57	-1.46	0.57	1.67
Read Message	2.82	-2.57	-2.90	1.02
Send Message	-3.60 -	5.22 +	2.67	-2.33
Show Information	-2.30	1.23	3.84 +	-1.15

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-4.31 -	2.90	4.58 +	-0.65
New Message	2.84	-4.70 -	-2.30	2.49
Handle Threat	1.42	-1.53	-1.03	0.39
Read Message	-0.06	1.54	-0.96	-0.63
Send Message	-0.81	2.67	-0.08	-1.40
Show Information	-2.63	2.37	3.94 +	-1.84

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.43	-0.30	4.87 +	-1.58
New Message	1.83	-0.55	-2.68 -	0.18
Handle Threat	0.84	-0.02	-1.61	0.16
Read Message	-1.11	-0.95	0.27	2.12
Send Message	0.03	1.71	-0.59	-1.18
Show Information	-1.33	1.08	3.43 +	-1.90

Table 131 Adjusted residuals, shift 2, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	3.54 +	-3.55 -	0.50	
New Message	44.30 +	-4.29 -	-26.71 -	
Handle Threat	4.38 +	1.72	-4.41 -	
Read Message	14.69 +	4.90 +	-14.07 -	
Send Message	7.40 +	-8.67 -	2.09	
Show Information	-41.44 -	4.80 +	24.35 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	3.92 +	2.21	-4.49 -	
New Message	21.13 +	2.34	-16.32 -	
Handle Threat	1.34	1.42	-2.09	
Read Message	7.31 +	5.16 +	-9.24 -	
Send Message	15.42 +	-2.07	-8.79 -	
Show Information	-27.74 -	-4.15 -	22.31 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.07	0.76	-0.58	
New Message	13.81 +	4.96 +	-13.49 -	
Handle Threat	1.25	-0.98	-0.04	
Read Message	6.55 +	3.30 +	-7.18 -	
Send Message	5.03 +	-0.80	-2.76	
Show Information	-15.14 -	-3.71 -	13.38 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.37	0.31	-0.50	
New Message	11.49 +	3.84 +	-10.99 -	
Handle Threat	-0.38	2.36	-1.69	
Read Message	4.32 +	1.52	-4.20 -	
Send Message	0.81	2.37	-2.51	
Show Information	-9.15 -	-5.86 -	11.07 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.77	3.48 +	-3.40 -	
New Message	9.74 +	3.00 +	-9.10 -	
Handle Threat	0.14	2.57	-2.22	
Read Message	3.99 +	2.77	-5.00 -	
Send Message	2.12	3.33 +	-4.19 -	
Show Information	-9.23 -	-7.80 -	12.72 +	

Table 132 Adjusted residuals, shift 2, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.55	-3.62 -	2.57	
New Message	37.35 +	-4.83 -	-23.11 -	
Handle Threat	3.32 +	-1.61	-1.09	
Read Message	12.91 +	1.52	-10.61 -	
Send Message	6.67 +	-8.74 -	2.34	
Show Information	-36.34 -	9.07 +	18.90 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.18	1.92	-1.70	
New Message	21.31 +	0.29	-15.72 -	
Handle Threat	-2.03	2.43	-0.52	
Read Message	6.23 +	2.87	-6.89 -	
Send Message	11.77 +	1.15	-9.50 -	
Show Information	-23.13 -	-4.63 -	20.61 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.22	0.26	0.67	
New Message	13.70 +	-1.30	-8.93 -	
Handle Threat	-0.35	-0.11	0.34	
Read Message	1.47	1.44	-2.25	
Send Message	2.83	1.46	-3.26 -	
Show Information	-10.26 -	-1.12	8.40 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.19	-1.28	1.19	
New Message	5.88 +	2.41	-6.27 -	
Handle Threat	0.21	-0.56	0.31	
Read Message	2.88	-1.32	-1.03	
Send Message	0.38	4.20 +	-3.71 -	
Show Information	-5.50 -	-2.78	6.29 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.57	1.43	-0.02	
New Message	8.49 +	2.00	-7.84 -	
Handle Threat	-1.07	0.26	0.57	
Read Message	1.25	0.39	-1.23	
Send Message	-0.44	1.97	-1.29	
Show Information	-4.31 -	-3.41 -	5.94 +	

6.6 Adjusted Residuals, lag 1 to lag 5, shift 3

Table 133 Adjusted residuals, shift 3, commander, N = 109 teams.

lag1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-12.73 -	-2.50	28.78 +	-3.32 -
New Message	22.25 +	-19.07 -	-8.83 -	-3.29 -
Handle Threat	6.40 +	4.17 +	-1.20	-11.13 -
Read Message	-13.44 -	11.73 +	-8.08 -	11.94 +
Send Message	-3.33 -	7.01 +	1.01	-3.22 -
Show Information	-15.55 -	7.02 +	9.31 +	5.92 +

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-12.22 -	5.16 +	8.49 +	4.38 +
New Message	1.47	-2.95	-5.59 -	4.94 +
Handle Threat	1.18	1.73	0.91	-3.76 -
Read Message	-1.02	1.52	-1.35	0.80
Send Message	10.98 +	-5.24 -	-0.35	-8.56 -
Show Information	-6.05 -	3.05	5.82 +	0.55

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-9.35 -	3.70 +	7.05 +	3.24 +
New Message	2.49	-2.11	-1.71	0.08
Handle Threat	0.09	0.70	-0.98	-0.08
Read Message	3.77 +	-2.02	-2.34	-1.18
Send Message	-2.84	2.67	1.07	0.29
Show Information	-1.47	0.90	2.36	-0.69

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-5.27 -	4.85 +	3.18 +	-0.18
New Message	2.05	-2.86	-0.52	0.47
Handle Threat	-0.15	-1.09	-0.95	1.89
Read Message	0.64	0.39	-2.42	0.56
Send Message	-0.73	2.10	1.10	-1.84
Show Information	0.18	-0.38	2.98	-2.00

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.13	-1.50	2.85	-0.45
New Message	0.60	-0.15	-0.42	-0.31
Handle Threat	1.88	-0.54	-2.06	-0.40
Read Message	-0.30	0.81	-1.62	0.76
Send Message	0.11	-1.42	1.29	0.26
Show Information	-3.11 -	2.35	2.88	-0.32

Table 134 Adjusted residuals, shift 3, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.31	-2.64	2.33	
New Message	51.86 +	-3.43 -	-33.41 -	
Handle Threat	4.13 +	0.55	-3.32 -	
Read Message	18.64 +	1.89	-14.51 -	
Send Message	6.43 +	-7.51 -	1.54	
Show Information	-45.75 -	5.14 +	27.78 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.08	4.06 +	-3.32 -	
New Message	27.69 +	-0.23	-19.11 -	
Handle Threat	1.53	0.33	-1.33	
Read Message	6.29 +	4.59 +	-8.07 -	
Send Message	17.39 +	-1.62	-10.82 -	
Show Information	-30.33 -	-2.78	23.37 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.53	0.08	-0.44	
New Message	17.40 +	5.11 +	-16.26 -	
Handle Threat	-0.18	1.92	-1.41	
Read Message	1.65	1.38	-2.26	
Send Message	7.90 +	-2.96	-3.16 -	
Show Information	-15.56 -	-2.76	13.09 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.63	1.13	-1.34	
New Message	12.98 +	2.35	-10.97 -	
Handle Threat	-0.16	0.81	-0.53	
Read Message	2.59	0.62	-2.31	
Send Message	4.73 +	2.24	-5.10 -	
Show Information	-11.73 -	-3.83 -	11.27 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.03	4.79 +	-3.10 -	
New Message	9.39 +	3.03 +	-9.00 -	
Handle Threat	1.12	3.20 +	-3.34 -	
Read Message	-0.12	3.55 +	-2.75	
Send Message	3.50 +	0.80	-3.09 -	
Show Information	-7.65 -	-7.27 -	11.16 +	

Table 135 Adjusted residuals, shift 3, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.73	-3.93 -	3.71 +	
New Message	44.25 +	-5.71 -	-27.17 -	
Handle Threat	4.01 +	0.94	-3.65 -	
Read Message	11.33 +	2.57	-10.23 -	
Send Message	5.23 +	-7.44 -	2.27	
Show Information	-38.24 -	6.53 +	22.18 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-2.23	1.84	0.11	
New Message	20.77 +	-1.26	-13.93 -	
Handle Threat	0.94	1.07	-1.54	
Read Message	3.38 +	2.38	-4.36 -	
Send Message	15.02 +	-1.49	-9.61 -	
Show Information	-23.49 -	-0.91	17.65 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-2.43	-2.80	4.02 +	
New Message	12.70 +	1.38	-10.31 -	
Handle Threat	0.04	-2.11	1.67	
Read Message	0.63	-1.46	0.73	
Send Message	6.74 +	0.67	-5.42 -	
Show Information	-11.50 -	1.67	6.97 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.10	-1.73	2.20	
New Message	7.43 +	2.44	-7.36 -	
Handle Threat	0.70	0.29	-0.74	
Read Message	-0.63	0.06	0.40	
Send Message	2.06	-0.84	-0.81	
Show Information	-5.37 -	-0.51	4.30 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.37	4.07 +	-2.31	
New Message	6.65 +	0.32	-5.08 -	
Handle Threat	-0.09	1.90	-1.48	
Read Message	-1.40	1.42	-0.14	
Send Message	-0.06	2.58	-2.04	
Show Information	-2.52	-5.13 -	5.98 +	

6.7 Adjusted Residuals, lag 1 to lag 5, shift 4

Table 136 Adjusted residuals, shift 4, commander, N = 109 teams.

lag 1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-10.78 -	-3.26 -	24.74 +	-2.09
New Message	28.20 +	-20.53 -	-12.92 -	-6.31 -
Handle Threat	2.40	6.60 +	-1.92	-8.18 -
Read Message	-16.07 -	13.52 +	-9.28 -	14.84 +
Send Message	-4.56 -	5.10 +	2.68	-1.20
Show Information	-16.88 -	4.94 +	23.42 +	-1.22

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-11.34 -	4.86 +	10.87 +	1.79
New Message	-0.65	-1.21	-7.82 -	7.89 +
Handle Threat	0.93	0.58	2.06	-3.33 -
Read Message	3.64 +	-0.43	-6.30 -	0.41
Send Message	9.61 +	-6.26 -	1.91	-7.72 -
Show Information	-9.92 -	6.32 +	13.71 +	-3.62 -

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-8.29 -	6.09 +	8.61 +	-1.52
New Message	5.77 +	-1.96	-5.95 -	-1.21
Handle Threat	-0.06	1.99	-1.77	-0.59
Read Message	0.65	-1.95	-2.48	2.87
Send Message	-2.51	1.28	1.45	0.93
Show Information	-3.44 -	-0.88	10.90 +	-2.63

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-4.86 -	2.52	5.13 +	0.12
New Message	0.47	-0.29	-3.21 -	2.00
Handle Threat	1.94	-1.27	-1.63	-0.10
Read Message	0.80	-0.98	-1.06	0.69
Send Message	0.00	2.42	-0.19	-2.22
Show Information	-1.50	-0.85	6.89 +	-2.22

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.69	0.41	3.14 +	-0.47
New Message	-0.69	1.29	-1.08	0.43
Handle Threat	0.00	0.50	-0.53	-0.10
Read Message	2.85	-2.51	-1.75	0.01
Send Message	-1.71	2.67	-1.25	0.52
Show Information	-0.88	-1.80	5.40 +	-1.00

Table 137 Adjusted residuals, shift 4, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.44	-2.40	2.88	
New Message	57.87 +	-3.92 -	-38.86 -	
Handle Threat	4.44 +	1.40	-4.29 -	
Read Message	15.45 +	8.26 +	-17.51 -	
Send Message	5.51 +	-5.95 -	0.58	
Show Information	-47.89 -	0.32	34.40 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.18	1.30	-1.85	
New Message	28.42 +	3.24 +	-23.04 -	
Handle Threat	2.12	0.58	-1.98	
Read Message	6.88 +	6.33 +	-9.84 -	
Send Message	19.39 +	-3.49 -	-11.34 -	
Show Information	-32.57 -	-3.96 -	26.59 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.34	1.69	-1.05	
New Message	15.98 +	3.89 +	-14.56 -	
Handle Threat	0.12	0.79	-0.70	
Read Message	3.14 +	3.10 +	-4.65 -	
Send Message	9.82 +	-0.89	-6.43 -	
Show Information	-16.59 -	-4.20 -	15.23 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.48	0.38	-1.36	
New Message	9.77 +	3.54 +	-9.79 -	
Handle Threat	-0.71	0.36	0.23	
Read Message	2.80	2.13	-3.67 -	
Send Message	5.86 +	2.09	-5.84 -	
Show Information	-10.63 -	-4.72 -	11.32 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	2.03	5.62 +	-5.77 -	
New Message	6.21 +	1.71	-5.81 -	
Handle Threat	-0.42	2.07	-1.28	
Read Message	2.47	3.59 +	-4.53 -	
Send Message	0.30	0.64	-0.71	
Show Information	-5.37 -	-5.87 -	8.39 +	

Table 138 Adjusted residuals, shift 4, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.11	-3.90 -	3.17 +	
New Message	47.57 +	-3.85 -	-31.75 -	
Handle Threat	2.98	1.05	-3.01 -	
Read Message	10.51 +	8.11 +	-14.11 -	
Send Message	6.35 +	-6.85 -	0.77	
Show Information	-40.46 -	1.57	28.35 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.57	1.23	-0.56	
New Message	24.17 +	1.03	-18.53 -	
Handle Threat	2.49	0.53	-2.24	
Read Message	4.69 +	3.46 +	-6.18 -	
Send Message	17.39 +	-1.55	-11.52 -	
Show Information	-29.07 -	-2.29	23.12 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.09	-1.84	2.26	
New Message	13.39 +	3.56 +	-12.64 -	
Handle Threat	1.65	-1.51	-0.02	
Read Message	1.17	3.79 +	-3.86 -	
Send Message	6.77 +	-2.49	-3.00 -	
Show Information	-13.43 -	-1.44	10.99 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.35	-0.96	1.01	
New Message	9.06 +	2.43	-8.58 -	
Handle Threat	-1.22	1.76	-0.50	
Read Message	2.17	2.22	-3.35 -	
Send Message	2.08	2.28	-3.33 -	
Show Information	-7.22 -	-4.86 -	9.14 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.69	3.03 +	-1.89	
New Message	6.50 +	4.05 +	-7.98 -	
Handle Threat	0.44	0.63	-0.82	
Read Message	1.27	2.29	-2.75	
Send Message	-0.41	4.43 +	-3.21 -	
Show Information	-4.30 -	-7.73 -	9.27 +	

6.8 Adjusted Residuals, all Roles, lag 1 to lag 5, shift 5

Table 139 Adjusted residuals, shift 5, commander, N = 109 teams.

lag 1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-12.31 -	-2.86	26.62 +	-2.73
New Message	25.33 +	-18.15 -	-13.72 -	-5.39 -
Handle Threat	3.19 +	6.96 +	1.34	-10.79 -
Read Message	-14.06 -	9.15 +	-6.08 -	14.19 +
Send Message	-2.39	6.47 +	0.93	-3.22 -
Show Information	-17.16 -	7.17 +	12.47 +	5.55 +

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-11.30 -	2.63	8.96 +	5.00 +
New Message	1.10	-2.91	-7.34 -	6.50 +
Handle Threat	2.11	1.43	0.76	-4.34 -
Read Message	2.47	-1.02	-2.37	-0.42
Send Message	7.80 +	-2.99	2.31	-8.72 -
Show Information	-8.78 -	6.79 +	7.27 +	-0.33

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-10.97 -	8.07 +	7.87 +	0.93
New Message	3.85 +	-3.87 -	-2.88	0.62
Handle Threat	1.24	2.23	-3.07	-1.15
Read Message	2.32	-3.46 -	-0.19	0.20
Send Message	-2.49	1.23	0.81	1.43
Show Information	-1.83	3.19 +	2.63	-2.34

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-3.58 -	3.74 +	0.85	0.66
New Message	1.78	-2.02	-1.78	0.78
Handle Threat	0.73	-0.42	-0.56	-0.15
Read Message	-1.13	-0.66	0.48	1.59
Send Message	0.14	1.08	1.80	-2.36
Show Information	0.50	1.44	0.47	-2.14

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-2.88	4.42 +	1.03	-0.87
New Message	0.34	-1.98	0.23	1.05
Handle Threat	2.88	-1.00	-2.52	-0.89
Read Message	0.24	-0.50	-0.63	0.57
Send Message	-1.15	0.94	0.34	0.39
Show Information	-1.41	1.48	3.04	-1.67

Table 140 Adjusted residuals, shift 5, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	2.52	-3.89 -	1.31	
New Message	62.20 +	-2.55	-41.10 -	
Handle Threat	4.84 +	0.83	-4.01 -	
Read Message	16.19 +	9.05 +	-18.33 -	
Send Message	5.41 +	-5.85 -	0.85	
Show Information	-49.26 -	0.12	34.03 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	2.58	2.31	-3.60 -	
New Message	31.55 +	2.03	-23.37 -	
Handle Threat	2.97	2.49	-4.02 -	
Read Message	10.31 +	3.34 +	-9.75 -	
Send Message	18.19 +	-4.00 -	-9.40 -	
Show Information	-35.04 -	-2.52	26.18 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.88	2.33	-2.44	
New Message	20.10 +	3.03 +	-16.26 -	
Handle Threat	1.27	2.27	-2.66	
Read Message	4.93 +	2.81	-5.61 -	
Send Message	10.47 +	-1.68	-5.90 -	
Show Information	-20.48 -	-3.95 -	17.25 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.03	-0.08	-0.64	
New Message	15.44 +	5.26 +	-14.79 -	
Handle Threat	1.84	1.80	-2.68	
Read Message	4.81 +	0.94	-4.06 -	
Send Message	3.48 +	-0.55	-1.97	
Show Information	-14.06 -	-3.87 -	12.74 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.80	5.40 +	-5.50 -	
New Message	11.75 +	2.64	-10.19 -	
Handle Threat	2.07	3.02 +	-3.80 -	
Read Message	1.89	4.16 +	-4.58 -	
Send Message	1.43	3.28 +	-3.57 -	
Show Information	-9.69 -	-8.76 -	13.58 +	

Table 141 Adjusted residuals, shift 5, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.93	-4.25 -	2.80	
New Message	46.89 +	-5.34 -	-28.37 -	
Handle Threat	1.83	1.80	-2.74	
Read Message	18.34 +	3.42 +	-15.57 -	
Send Message	4.62 +	-6.59 -	2.13	
Show Information	-41.00 -	4.86 +	24.66 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.86	-0.01	-1.29	
New Message	23.35 +	1.08	-17.16 -	
Handle Threat	0.73	0.78	-1.14	
Read Message	7.03 +	2.21	-6.70 -	
Send Message	14.81 +	-1.58	-9.04 -	
Show Information	-27.16 -	-1.24	19.95 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.22	-1.58	2.14	
New Message	16.59 +	2.42	-13.52 -	
Handle Threat	-0.73	0.81	-0.15	
Read Message	2.86	0.53	-2.42	
Send Message	5.02 +	0.26	-3.70 -	
Show Information	-13.21 -	-1.75	10.63 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.11	-1.01	1.59	
New Message	10.22 +	2.31	-8.99 -	
Handle Threat	1.10	3.07 +	-3.26 -	
Read Message	1.57	0.02	-1.11	
Send Message	2.37	2.21	-3.45 -	
Show Information	-8.27 -	-4.13 -	9.12 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.78	3.26 +	-2.11	
New Message	7.98 +	2.65	-7.71 -	
Handle Threat	0.45	1.97	-1.91	
Read Message	4.15 +	2.33	-4.79 -	
Send Message	1.31	5.35 +	-5.27 -	
Show Information	-7.49 -	-8.35 -	12.01 +	

6.9 Adjusted Residuals, all Roles, lag 1 to lag 5, shift 6

Table 142 Adjusted residuals, shift 6, commander, N = 109 teams.

lag 1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-12.70 -	-5.32 -	32.11 +	-3.59 -
New Message	29.11 +	-22.19 -	-12.84 -	-5.64 -
Handle Threat	3.16 +	11.19 +	-3.25 -	-11.91 -
Read Message	-15.51 -	10.74 +	-6.59 -	14.19 +
Send Message	-5.62 -	8.64 +	1.29	-2.08
Show Information	-18.51 -	5.44 +	14.32 +	7.04 +

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-11.94 -	1.09	9.38 +	6.98 +
New Message	0.27	-2.63	-6.33 -	6.68 +
Handle Threat	1.04	3.01	-0.94	-3.43 -
Read Message	2.49	-0.28	-3.07	-0.60
Send Message	11.98 +	-5.95 -	1.25	-10.15 -
Show Information	-10.96 -	7.81 +	9.23 +	-0.41

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-11.45 -	10.11 +	4.37 +	1.61
New Message	2.02	-2.70	-3.42 -	2.46
Handle Threat	1.40	0.87	-0.57	-2.13
Read Message	4.60 +	-4.29 -	-3.06	0.50
Send Message	-2.26	1.37	1.07	0.77
Show Information	-2.52	2.33	8.37 +	-5.03 -

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-5.29 -	3.43 +	2.28	1.77
New Message	2.23	-1.86	-2.64	0.84
Handle Threat	1.98	-0.41	0.29	-2.29
Read Message	-0.35	0.99	-2.97	1.64
Send Message	-1.30	0.08	1.24	0.66
Show Information	-0.56	-0.48	7.06 +	-3.90 -

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.17	2.62	-0.83	-0.36
New Message	0.86	0.12	-1.99	0.24
Handle Threat	1.83	-0.58	-1.24	-0.85
Read Message	1.11	-0.86	-1.35	0.38
Send Message	-1.98	1.19	0.79	0.80
Show Information	-2.77	-1.31	7.58 +	-0.76

Table 143 Adjusted residuals, shift 6, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.30	-1.59	0.32	
New Message	63.17 +	-1.16	-43.41 -	
Handle Threat	6.46 +	1.90	-6.00 -	
Read Message	20.94 +	7.81 +	-20.72 -	
Send Message	7.63 +	-4.20 -	-2.11	
Show Information	-54.13 -	-2.36	39.79 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.84	3.40 +	-3.22 -	
New Message	36.59 +	3.70 +	-28.50 -	
Handle Threat	2.51	2.16	-3.43 -	
Read Message	7.15 +	7.81 +	-11.05 -	
Send Message	21.88 +	-2.53	-13.37 -	
Show Information	-37.34 -	-6.76 -	31.39 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.97	2.40	-2.54	
New Message	20.62 +	6.35 +	-19.38 -	
Handle Threat	0.67	2.83	-2.65	
Read Message	4.12 +	0.13	-2.99 -	
Send Message	14.52 +	-0.38	-9.90 -	
Show Information	-22.15 -	-5.37 -	19.69 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.55	0.52	-1.49	
New Message	12.24 +	3.40 +	-11.22 -	
Handle Threat	0.90	2.22	-2.34	
Read Message	1.64	1.76	-2.51	
Send Message	6.64 +	4.53 +	-8.16 -	
Show Information	-12.11 -	-6.71 -	13.68 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.29	7.07 +	-6.36 -	
New Message	9.13 +	2.31	-8.20 -	
Handle Threat	1.37	4.29 +	-4.27 -	
Read Message	0.88	4.21 +	-3.86 -	
Send Message	2.47	3.61 +	-4.52 -	
Show Information	-7.84 -	-9.80 -	13.07 +	

Table 144 Adjusted residuals, shift 6, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.22	-2.69	1.97	
New Message	46.20 +	-3.71 -	-30.37 -	
Handle Threat	3.58 +	1.85	-4.04 -	
Read Message	16.20 +	6.71 +	-16.98 -	
Send Message	6.26 +	-7.80 -	1.65	
Show Information	-41.77 -	1.90	28.60 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.53	2.14	-1.31	
New Message	25.14 +	3.59 +	-20.98 -	
Handle Threat	0.05	0.54	-0.46	
Read Message	7.58 +	5.12 +	-9.52 -	
Send Message	14.88 +	-3.70 -	-7.82 -	
Show Information	-27.61 -	-3.63 -	22.80 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.26	-0.96	0.95	
New Message	16.29 +	4.23 +	-15.13 -	
Handle Threat	0.66	-1.12	0.40	
Read Message	4.53 +	-0.18	-3.13 -	
Send Message	5.70 +	-0.40	-3.81 -	
Show Information	-15.62 -	-1.12	12.18 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-2.24	-1.56	2.85	
New Message	11.95 +	2.65	-10.75 -	
Handle Threat	-0.62	1.36	-0.62	
Read Message	2.92	-0.50	-1.72	
Send Message	3.50 +	2.75	-4.71 -	
Show Information	-9.59 -	-3.25 -	9.51 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.15	4.11 +	-3.35 -	
New Message	9.59 +	1.66	-8.26 -	
Handle Threat	0.66	2.43	-2.39	
Read Message	1.39	3.18 +	-3.52 -	
Send Message	1.38	2.94	-3.32 -	
Show Information	-7.46 -	-7.21 -	11.09 +	

6.10 Adjusted Residuals, all Roles, lag 1 to lag 5, shift 8

Table 145 Adjusted residuals, shift 8, commander, N = 109 teams.

lag 1

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-14.52 -	-5.40 -	28.90 +	-1.05
New Message	25.53 +	-16.78 -	-14.33 -	-5.78 -
Handle Threat	5.52 +	9.03 +	1.88	-14.94 -
Read Message	-12.51 -	5.58 +	-6.70 -	15.45 +
Send Message	-3.18 -	8.08 +	-0.24	-2.38
Show Information	-18.92 -	7.87 +	9.65 +	8.58 +

lag 2

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-15.99 -	2.56	11.99 +	7.78 +
New Message	3.70 +	-4.55 -	-8.94 -	5.86 +
Handle Threat	2.59	1.40	0.67	-4.61 -
Read Message	1.97	-1.14	-2.99	0.81
Send Message	10.28 +	-5.39 -	1.55	-8.95 -
Show Information	-10.02 -	11.28 +	8.29 +	-3.24 -

lag 3

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-12.67 -	11.90 +	5.11 +	1.81
New Message	3.60 +	-2.94	-4.26 -	1.23
Handle Threat	-0.24	0.95	-0.61	-0.01
Read Message	4.78 +	-4.26 -	-1.63	-1.08
Send Message	-0.65	-0.17	0.94	0.20
Show Information	-3.88 -	2.25	6.33 +	-1.89

lag 4

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-6.46 -	7.16 +	3.61 +	-0.58
New Message	4.22 +	-3.66 -	-3.75 -	0.63
Handle Threat	0.98	-1.39	0.21	-0.24
Read Message	-1.57	0.89	-0.09	1.23
Send Message	-0.06	1.81	1.04	-2.09
Show Information	-0.94	-0.66	2.57	-0.30

lag 5

commander	Read Message	Send Message	Show Information	Handle Threat
New Plane	-3.31 -	1.04	3.34 +	0.62
New Message	0.07	0.83	-3.23 -	1.68
Handle Threat	-0.28	1.28	1.04	-1.41
Read Message	1.56	-2.27	0.02	-0.12
Send Message	-0.14	0.59	-0.11	-0.20
Show Information	0.20	-0.58	1.77	-1.11

Table 146 Adjusted residuals, shift 8, specialist A, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.34	-1.33	0.84	
New Message	58.05 +	-2.61	-36.66 -	
Handle Threat	5.02 +	0.57	-3.81 -	
Read Message	21.31 +	5.57 +	-18.71 -	
Send Message	5.63 +	-6.13 -	1.18	
Show Information	-47.38 -	1.46	30.45 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	4.13 +	5.42 +	-7.12 -	
New Message	32.22 +	1.05	-22.32 -	
Handle Threat	0.71	2.53	-2.51	
Read Message	8.29 +	2.80	-7.78 -	
Send Message	22.43 +	-4.72 -	-11.14 -	
Show Information	-35.07 -	-2.34	25.25 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	2.36	2.33	-3.45 -	
New Message	17.95 +	4.01 +	-15.21 -	
Handle Threat	-0.38	0.30	0.01	
Read Message	3.61 +	2.44	-4.37 -	
Send Message	12.97 +	-0.94	-7.90 -	
Show Information	-19.14 -	-3.54 -	15.62 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	0.62	1.09	-1.29	
New Message	11.13 +	5.50 +	-11.85 -	
Handle Threat	-0.53	3.10 +	-2.15	
Read Message	2.99 +	0.33	-2.25	
Send Message	5.46 +	3.09 +	-6.14 -	
Show Information	-10.23 -	-6.93 -	12.41 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	1.13	2.27	-2.58	
New Message	8.20 +	4.12 +	-8.79 -	
Handle Threat	0.51	3.27 +	-2.98	
Read Message	-0.38	3.08 +	-2.23	
Send Message	0.65	2.41	-2.38	
Show Information	-4.92 -	-7.66 -	9.45 +	

Table 147 Adjusted residuals, shift 8, specialist B, N = 109 teams.

lag 1

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.07	-4.05 -	4.05 +	
New Message	46.95 +	-4.50 -	-28.67 -	
Handle Threat	0.82	-1.62	0.76	
Read Message	17.93 +	3.26 +	-15.02 -	
Send Message	4.97 +	-7.50 -	2.70	
Show Information	-38.85 -	6.95 +	21.09 +	

lag 2

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-2.15	2.76	-0.77	
New Message	21.60 +	-1.42	-13.75 -	
Handle Threat	-0.03	-0.74	0.62	
Read Message	10.01 +	2.27	-8.77 -	
Send Message	14.46 +	-2.62	-7.84 -	
Show Information	-25.21 -	0.76	16.79 +	

lag 3

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.72	0.92	0.44	
New Message	16.25 +	2.80	-13.53 -	
Handle Threat	-1.20	-2.59	2.94	
Read Message	6.82 +	-2.43	-2.74	
Send Message	3.78 +	-1.45	-1.43	
Show Information	-13.54 -	2.01	7.74 +	

lag 4

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-1.30	-1.82	2.39	
New Message	9.90 +	1.76	-8.30 -	
Handle Threat	0.05	1.45	-1.21	
Read Message	2.66	-2.79	0.43	
Send Message	1.33	0.38	-1.23	
Show Information	-7.20 -		4.99 +	

lag 5

specialist	Read Message	Send Message	Show Information	Handle Threat
New Plane	-0.13	2.40	-1.87	
New Message	9.77 +	1.17	-7.74 -	
Handle Threat	-0.23	4.04 +	-3.13 -	
Read Message	3.96 +	-0.03	-2.72	
Send Message	-1.25	2.23	-0.95	
Show Information	-6.37 -	-5.33 -	8.77 +	

6.11 Predicting Performance: Lag Sequential Analyses

Table 148 Results of multiple regression, predicting performance shift 1 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.062	.054	.062	7.117	1	107	.009	7.117	1	107	.009
2	.100	.083	.038	4.431	1	106	.038	5.888	2	106	.004
3	.145	.120	.045	5.508	1	105	.021	5.928	3	105	.001
4	.175	.143	.030	3.740	1	104	.056	5.497	4	104	.000
5	.208	.169	.033	4.289	1	103	.041	5.395	5	103	.000
6	.240	.195	.032	4.356	1	102	.039	5.368	6	102	.000
7	.266	.216	.026	3.632	1	101	.060	5.239	7	101	.000
8	.288	.231	.022	3.033	1	100	.085	5.055	8	100	.000
9	.315	.252	.027	3.838	1	99	.053	5.048	9	99	.000
10	.344	.277	.029	4.325	1	98	.040	5.128	10	98	.000
11	.363	.291	.020	3.043	1	97	.084	5.036	11	97	.000
12	.384	.306	.020	3.125	1	96	.080	4.978	12	96	.000
13	.401	.319	.017	2.723	1	95	.102	4.887	13	95	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Read Message -> Show Information, C 14	.346	4.138	.000
(2) Send Message -> Show Information, spec B 57	-.188	-2.229	.028
(3)New Message -> Read Message, spec B 28	-.343	-3.805	.000
(4) Show Information -> Read Message, spec A 40	-.262	-2.968	.004
(5) New Message -> Show Information, spec A 48	-.174	-2.006	.048
(6) Send Message -> Send Message, C 18	.220	2.266	.026
(7) Send Message -> Read Message, C 17	.192	2.094	.039
(8) New Message -> Show Information, C 7	-.235	-2.731	.008
(9) Read Message -> Show Information, C 15	.256	2.621	.010
(10) Handle Threat -> Handle Threat, C 12	.234	2.368	.020
(11) New Plane -> Read Message, spec B 43	.188	2.229	.028
(12) New Plane -> Show Information, C 3	.173	1.921	.058
(13) New Plane -> Read Message, spec A 25	.136	1.650	.102

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 149 Results of multiple regression, predicting performance shift 1 with preceding performance, *input, summary level process variables, and adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.076	.067	.076	8.812	1	107	.004	8.812	1	107	.004
2	.112	.095	.036	4.242	1	106	.042	6.660	2	106	.002
3	.130	.105	.018	2.204	1	105	.141	5.225	3	105	.002
4	.201	.170	.071	9.285	1	104	.003	6.549	4	104	.000
5	.259	.223	.058	7.993	1	103	.006	7.190	5	103	.000
6	.289	.248	.031	4.411	1	102	.038	6.926	6	102	.000
7	.304	.256	.015	2.115	1	101	.149	6.303	7	101	.000
8	.321	.267	.017	2.509	1	100	.116	5.921	8	100	.000
9	.364	.306	.043	6.683	1	99	.011	6.296	9	99	.000
10	.398	.337	.034	5.596	1	98	.020	6.489	10	98	.000
11	.427	.362	.029	4.844	1	97	.030	6.571	11	97	.000
12	.456	.388	.029	5.092	1	96	.026	6.702	12	96	.000
13	.479	.408	.023	4.234	1	95	.042	6.720	13	95	.000
14	.495	.420	.016	3.004	1	94	.086	6.586	14	94	.000
15	.509	.430	.014	2.588	1	93	.111	6.424	15	93	.000
16	.522	.439	.013	2.530	1	92	.115	6.279	16	92	.000
17	.533	.446	.011	2.164	1	91	.145	6.112	17	91	.000
18	.546	.456	.013	2.656	1	90	.107	6.025	18	90	.000

Predictors in trimmed model	Beta	t	Sig.
(1) education, specialist A	.228	2.945	.004
(2) education, commander	-.151	-1.847	.068
(3) computer expertise, commander	.149	1.821	.072
(4) duration Send Message, specialist A	-.298	-3.776	.000
(5) number of Handle Threat, commander	.247	3.102	.003
(6) duration of Send Message, commander	-.170	-2.085	.040
(7) number of Read Message, specialist B	.073	.872	.385
(8) duration or Read Message, specialist A	-.083	-.974	.333
(9) New Message -> Read message, spec A 28	-.301	-3.763	.000
(10) Read Message -> Send Message, spec C 14	.229	2.959	.004
(11) New Plane -> Read Message, spec A 25	.173	2.336	.022
(12) Read Message -> Send Message, spec B 53	.149	1.895	.061
(13) Send Message -> Show Info, spec B 57	-.160	-2.087	.040
(14) New Message -> Handle Threat, C 8	-.091	-1.207	.230
(15) Send Message -> Handle Threat, C 20	-.152	-1.983	.050
(16) Read Message -> Read Message, spec A 34	-.166	-1.994	.049
(17) Show Info -> Read Message, spec A 40	-.150	-1.769	.080
(18) Read Message -> Read Message, spec B 52	.143	1.630	.107

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 150 Results of multiple regression, predicting performance shift 2 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.090	.081	.090	10.531	1	107	.002	10.531	1	107	.002
2	.134	.118	.045	5.493	1	106	.021	8.233	2	106	.000
3	.167	.143	.033	4.133	1	105	.045	7.029	3	105	.000
4	.202	.171	.035	4.507	1	104	.036	6.547	4	104	.000
5	.221	.183	.019	2.533	1	103	.115	5.844	5	103	.000
6	.243	.199	.022	3.023	1	102	.085	5.469	6	102	.000
7	.264	.213	.020	2.774	1	101	.099	5.166	7	101	.000
8	.284	.227	.020	2.848	1	100	.095	4.959	8	100	.000
9	.304	.241	.020	2.902	1	99	.092	4.814	9	99	.000
10	.320	.251	.016	2.311	1	98	.132	4.621	10	98	.000
11	.338	.263	.017	2.518	1	97	.116	4.495	11	97	.000
12	.353	.273	.016	2.338	1	96	.130	4.372	12	96	.000
13	.372	.286	.019	2.856	1	95	.094	4.333	13	95	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Show Information -> Read Message, C 81	-.263	-3.078	.003
(2) Handle Threat – Read Message, spec A 91	-.273	-3.211	.002
(3) Send Message -> Read Message, spec B 115	-.112	-1.140	.257
(4) Send Message -> Send Message, spec A 98	-.094	-1.042	.300
(5) New Message -> Show Information, spec B 108	-.178	-2.039	.044
(6) New Plane -> Show Information, C 63	.254	2.953	.004
(7) Handle Threat -> Handle Threat, C 72	-.133	-1.557	.123
(8) Show Information -> Send Message, C 82	-.155	-1.771	.080
(9) Show Info -> Send Message, spec B 119	-.237	-2.395	.019
(10) Read Message -> Read Message, spec A 94	.151	1.818	.072
(11) New Plane -> Handle Threat, C 64	.134	1.506	.136
(12) Send Message -> Show Information, C 79	.161	1.860	.066
(13) Send Message -> Show Info, spec B 117	.181	1.690	.094

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 151 Results of multiple regression, predicting performance shift 2 with preceding performance, *input, summary-level process variables, and adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.212	.205	.212	28.807	1	107	.000	28.807	1	107	.004
2	.236	.222	.024	3.303	1	106	.072	16.368	2	106	.002
3	.299	.279	.063	9.499	1	105	.003	14.951	3	105	.002
4	.320	.294	.021	3.178	1	104	.078	12.240	4	104	.000
5	.337	.305	.017	2.664	1	103	.106	10.482	5	103	.000
6	.368	.331	.031	5.045	1	102	.027	9.919	6	102	.000
7	.404	.363	.036	6.099	1	101	.015	9.788	7	101	.000
8	.436	.391	.031	5.548	1	100	.020	9.653	8	100	.000
9	.455	.406	.020	3.574	1	99	.062	9.198	9	99	.000
10	.473	.419	.017	3.244	1	98	.075	8.790	10	98	.000
11	.494	.436	.021	3.957	1	97	.050	8.592	11	97	.000
12	.519	.459	.026	5.158	1	96	.025	8.644	12	96	.000
13	.545	.483	.026	5.449	1	95	.022	8.768	13	95	.000
14	.563	.498	.018	3.833	1	94	.053	8.658	14	94	.000
15	.576	.507	.012	2.733	1	93	.102	8.412	15	93	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1	.369	5.216	.000
(2) gender, commander	.064	.864	.390
(3) number of Handle Threat, commander	.338	4.025	.000
(4) number of Read Message, specialist B	-.216	-2.897	.005
(5) number of Show Information, commander	.064	.752	.454
(6) New Message -> Read Message, C 65	.301	2.836	.006
(7) New Message -> Send Message, C 66	.241	2.478	.015
(8) Read Message -> Handle Threat, C 76	-.193	-2.411	.018
(9) Handle Threat -> Read Message, spec A 91	-.149	-2.132	.036
(10) Read Message -> Read Message, spec A 94	.186	2.558	.012
(11) New Plane -> Show Information, C 63	.212	2.786	.006
(12) New Message -> Show Info, spec B 108	-.202	-2.722	.008
(13) Send Message -> Show Information, C 79	.194	2.679	.009
(14) New Plane -> Handle Threat, C 64	.145	2.088	.040
(15) Show Info -> Read Message, C 81	-.129	-1.653	.102

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 152 Results of multiple regression, predicting performance shift 3 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.044	.035	.044	4.961	1	107	.028	4.961	1	107	.028
2	.101	.084	.057	6.726	1	106	.011	5.976	2	106	.003
3	.148	.123	.046	5.698	1	105	.019	6.060	3	105	.001
4	.188	.157	.040	5.178	1	104	.025	6.020	4	104	.000
5	.230	.192	.042	5.554	1	103	.020	6.138	5	103	.000
6	.260	.216	.030	4.156	1	102	.044	5.964	6	102	.000
7	.288	.239	.029	4.068	1	101	.046	5.847	7	101	.000
8	.310	.255	.022	3.184	1	100	.077	5.625	8	100	.000
9	.328	.267	.018	2.596	1	99	.110	5.368	9	99	.000
10	.346	.280	.018	2.757	1	98	.100	5.193	10	98	.000
11	.365	.293	.019	2.899	1	97	.092	5.076	11	97	.000
12	.388	.311	.022	3.513	1	96	.064	5.066	12	96	.000
13	.414	.334	.026	4.271	1	95	.041	5.164	13	95	.000
14	.434	.349	.020	3.280	1	94	.073	5.145	14	94	.000
15	.449	.360	.015	2.590	1	93	.111	5.055	15	93	.000
16	.463	.370	.014	2.459	1	92	.120	4.967	16	92	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Read Message -> Handle Threat, C 136	-.290	-3.045	.003
(2) Read Message -> Read Message, C 133	-.176	-1.734	.086
(3) New Message -> Show information, C 127	-.225	-2.721	.008
(4) Handle Threat -> Show Information, spec B 171	-.280	-3.056	.003
(5) Handle Threat -> Read Message, spec B 169	-.214	-2.440	.017
(6) Send Message -> Read Message, spec B 175	-.128	-1.614	.110
(7) Read Message -> Read Message, spec B 172	.206	2.463	.016
(8) Handle Threat -> Handle Threat, C 132	.098	1.151	.253
(9) New Message -> Send Message, spec A 149	.207	2.519	.014
(10) Show Info -> Handle Threat, C 144	.164	2.000	.048
(11) Send Message -> Send Message, C 138	-.251	-2.765	.007
(12) New Message -> Send Message, C 126	-.332	-3.206	.002
(13) Show Info -> Read Message, spec B 178	.181	2.213	.029
(14) Read Message -> Send Message, spec A 155	-.156	-1.911	.059
(15) Send Message -> Send Message, spec A 158	-.124	-1.588	.116
(16) New Message -> Read Message, C 125	-.154	-1.568	.120

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 153 Results of multiple regression, predicting performance shift 3 with preceding performance, *input, summary-level process variables, and adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.323	.316	.323	50.944	1	107	.000	50.944	1	107	.000
2	.380	.368	.057	9.768	1	106	.002	32.443	2	106	.000
3	.407	.390	.028	4.882	1	105	.029	24.048	3	105	.000
4	.435	.413	.027	5.034	1	104	.027	19.988	4	104	.000
5	.468	.443	.034	6.557	1	103	.012	18.156	5	103	.000
6	.518	.489	.049	10.440	1	102	.002	18.257	6	102	.000
7	.539	.508	.022	4.746	1	101	.032	16.901	7	101	.000
8	.556	.521	.017	3.774	1	100	.055	15.667	8	100	.000
9	.574	.536	.018	4.204	1	99	.043	14.839	9	99	.000
10	.590	.548	.016	3.779	1	98	.055	14.108	10	98	.000
11	.605	.560	.015	3.598	1	97	.061	13.493	11	97	.000
12	.619	.571	.014	3.540	1	96	.063	12.987	12	96	.000
13	.631	.581	.012	3.162	1	95	.079	12.501	13	95	.000
14	.640	.587	.009	2.417	1	94	.123	11.954	14	94	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 2	.590	8.876	.000
(2) gender, commander	.287	4.114	.000
(3) age, specialist A	-.095	-1.403	.164
(4) number of Send Message, commander	-.309	-3.853	.000
(5) number of Read Message, specialist B	.223	2.766	.007
(6) Send Message -> Read Message, spec B 175	-.212	-3.215	.002
(7) Show Info -> Send Message, spec A 161	-.140	-2.151	.034
(8) Read Message -> Handle Threat, C 136	-.293	-3.597	.001
(9) New Plane -> Send Message, C 122	-.158	-2.311	.023
(10) Read Message -> Read Message, C 133	-.264	-2.834	.006
(11) Send Message -> Send Message, spec B 176	-.162	-2.315	.023
(12) Read Message -> Send Message, C 134	-.143	-1.901	.060
(13) Handle Threat -> Show Info, spec B 171	-.113	-1.696	.093
(14) Handle Threat -> Handle Threat, C 132	.106	1.555	.123

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 154 Results of multiple regression, predicting performance shift 4 with *adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.043	.034	.043	4.802	1	107	.031	4.802	1	107	.028
2	.074	.056	.031	3.512	1	106	.064	4.213	2	106	.003
3	.108	.082	.034	3.998	1	105	.048	4.221	3	105	.001
4	.140	.107	.032	3.870	1	104	.052	4.220	4	104	.000
5	.166	.125	.026	3.216	1	103	.076	4.019	5	103	.000
6	.201	.154	.035	4.490	1	102	.037	4.273	6	102	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Send Message -> Read Message, spec B 235	.241	2.658	.009
(2) New Plane -> Send Message, C 182	-.197	-2.167	.033
(3) Read Message -> Handle Threat, C 196	-.211	-2.340	.021
(4) Show Info -> Show Info, spec B 240	-.208	-2.282	.025
(5) New Plane -> Show Info, C 183	.222	2.339	.021
(6) Show Info -> Red Message, C 201	-.197	-2.119	.037

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 155 Results of multiple regression, predicting performance shift 4 with preceding performance, *input, summary-level process variables, and adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.235	.228	.235	32.932	1	107	.000	32.932	1	107	.028
2	.281	.268	.046	6.791	1	106	.010	20.753	2	106	.003
3	.299	.279	.018	2.674	1	105	.105	14.945	3	105	.001
4	.319	.293	.020	3.072	1	104	.083	12.198	4	104	.000
5	.337	.304	.017	2.694	1	103	.104	10.456	5	103	.000
6	.353	.314	.016	2.505	1	102	.117	9.258	6	102	.000
7	.400	.358	.047	7.922	1	101	.006	9.606	7	101	.000
8	.419	.372	.019	3.317	1	100	.072	9.012	8	100	.000
9	.438	.387	.019	3.346	1	99	.070	8.571	9	99	.000
10	.457	.401	.019	3.413	1	98	.068	8.243	10	98	.000
11	.470	.410	.013	2.442	1	97	.121	7.826	11	97	.000
12	.492	.428	.022	4.069	1	96	.046	7.740	12	96	.000
13	.505	.438	.014	2.628	1	95	.108	7.468	13	95	.000
14	.524	.454	.019	3.769	1	94	.055	7.406	14	94	.000
15	.538	.464	.014	2.798	1	93	.098	7.231	15	93	.000
16	.555	.477	.016	3.347	1	92	.071	7.159	16	92	.000
17	.566	.485	.011	2.334	1	91	.130	6.973	17	91	.000
18	.576	.491	.010	2.187	1	90	.143	6.793	18	90	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 3	.360	4.394	.000
(2) computer expertise, commander	.360	4.588	.000
(3) gender, specialist A	-.187	-2.467	.016
(4) CHAT condition	-.080	-1.090	.278
(5) age, commander	-.093	-1.259	.211
(6) education, commander	.206	2.614	.010
(7) duration Read Message, specialist B	-.159	-1.897	.061
(8) duration Send Message, specialist A	-.276	-3.441	.001
(9) number of Handle Threat, commander	-.253	-2.897	.005
(10) number of Show Information, specialist B	.270	2.981	.004
(11) duration of Read Message, commander	.217	2.524	.013
(12) Read Message -> Send Message, C 194	-.255	-2.782	.007
(13) Show Info -> Send message, C 202	-.170	-2.135	.035
(14) Read Message -> Read Message, C 193	-.177	-1.997	.049
(15) New Message, Send Message, spec B 227	-.198	-2.375	.020
(16) New Plane -> Send Message, C 182	-.162	-2.073	.041
(17) Read Message -> Show Info, spec A 216	.112	1.559	.123
(18) Send Message -> Read Message, spec B 235	.120	1.479	.143

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 156 Results of multiple regression, predicting performance shift 5 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.108	.100	.108	12.956	1	107	.000	12.956	1	107	.028
2	.170	.155	.062	7.946	1	106	.006	10.872	2	106	.003
3	.222	.200	.052	7.037	1	105	.009	10.006	3	105	.001
4	.252	.223	.029	4.068	1	104	.046	8.741	4	104	.000
5	.277	.241	.025	3.546	1	103	.063	7.873	5	103	.000
6	.303	.262	.027	3.885	1	102	.051	7.392	6	102	.000
7	.319	.271	.015	2.295	1	101	.133	6.744	7	101	.000
8	.333	.280	.015	2.186	1	100	.142	6.244	8	100	.000
9	.361	.302	.027	4.248	1	99	.042	6.202	9	99	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Show Info -> Handle Threat, C 264	.272	3.129	.002
(2) New Message -> Show Info, C 247	-.275	-3.338	.001
(3) New Plane -> Show Info, C 243	.231	2.662	.009
(4) Handle Threat -> Send Message, C 250	.158	1.850	.067
(5) Send Message -> Send Message, spec A 278	-.147	-1.799	.075
(6) Read Message -> Send Message, spec A 275	-.156	-1.869	.065
(7) Send Message -> Show Info, C 259	.135	1.634	.105
(8) Show Info -> Show Info, spec A 282	-.177	-2.066	.041
(9) New Message -> Show Info, spec B 288	-.180	-2.061	.042

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 157 Results of multiple regression, predicting performance shift 5 with preceding performance, *input*, *summary-level process variables*, and *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.271	.264	.271	39.753	1	107	.000	39.753	1	107	.028
2	.308	.295	.037	5.655	1	106	.019	23.569	2	106	.003
3	.326	.307	.018	2.844	1	105	.095	16.934	3	105	.001
4	.370	.345	.044	7.181	1	104	.009	15.243	4	104	.000
5	.411	.383	.042	7.317	1	103	.008	14.399	5	103	.000
6	.431	.397	.019	3.469	1	102	.065	12.865	6	102	.000
7	.446	.407	.015	2.705	1	101	.103	11.598	7	101	.000
8	.473	.431	.027	5.203	1	100	.025	11.221	8	100	.000
9	.498	.452	.025	4.862	1	99	.030	10.899	9	99	.000
10	.519	.470	.022	4.389	1	98	.039	10.584	10	98	.000
11	.534	.481	.015	3.056	1	97	.084	10.102	11	97	.000
12	.546	.489	.012	2.460	1	96	.120	9.604	12	96	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 4	.375	4.664	.000
(2) computer expertise, commander	.210	2.583	.011
(3) gender, commander	.147	1.884	.063
(4) number of Show Information, specialist B	.154	2.100	.038
(5) number of Show Information, specialist A	-.262	-3.470	.001
(6) duration Send Message, commander	-.202	-2.568	.012
(7) number of Handel Threat, commander	.159	2.103	.038
(8) Show Info -> Handle Threat, C 264	.156	2.032	.045
(9) Send Message -> Send Message, spec A 278	-.138	-1.888	.062
(10) Show Info -> Read Message, spec A 280	-.160	-2.055	.043
(11) New Message -> Read Message, spec B 286	.126	1.779	.078
(12) Handle Threat -> Send Message, C 250	.120	1.568	.120

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 158 Results of multiple regression, predicting performance shift 6 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.053	.044	.053	5.950	1	107	.016	5.950	1	107	.016
2	.097	.080	.044	5.196	1	106	.025	5.690	2	106	.004
3	.141	.116	.044	5.335	1	105	.023	5.727	3	105	.001
4	.181	.149	.040	5.100	1	104	.026	5.738	4	104	.000
5	.207	.169	.026	3.413	1	103	.068	5.379	5	103	.000
6	.232	.187	.025	3.275	1	102	.073	5.128	6	102	.000
7	.254	.202	.022	3.011	1	101	.086	4.912	7	101	.000
8	.275	.216	.021	2.832	1	100	.096	4.730	8	100	.000
9	.291	.227	.017	2.371	1	99	.127	4.525	9	99	.000

Predictors in trimmed model	Beta	t	Sig.
(1) Read Message -> Send Message, C 314	.231	2.662	.009
(2) Read Message -> Read Message, spec B 352	.228	2.588	.011
(3) Show Info -> Show Info, spec A 342	-.219	-2.446	.016
(4) New Plane -> Send message, C 302	-.341	-3.357	.001
(5) New Plane -> Read Message, spec B 343	.176	1.982	.050
(6) New Message -> Handle Threat, C 308	-.208	-2.289	.024
(7) Read Message -> Send Message, spec A 335	-.149	-1.650	.102
(8) Send Message -> Show Info, C 319	.180	1.791	.076
(9) Send Message -> Send Message, C 318	.135	1.540	.127

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 159 Results of multiple regression, predicting performance shift 6 with preceding performance, *input, summary-level process variables, and adjusted residuals.*

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.405	.400	.405	72.890	1	107	.000	72.890	1	107	.000
2	.423	.412	.017	3.196	1	106	.077	38.791	2	106	.000
3	.443	.427	.021	3.917	1	105	.050	27.878	3	105	.000
4	.464	.443	.020	3.968	1	104	.049	22.492	4	104	.000
5	.478	.453	.015	2.889	1	103	.092	18.898	5	103	.000
6	.489	.459	.011	2.186	1	102	.142	16.294	6	102	.000
7	.502	.467	.013	2.557	1	101	.113	14.545	7	101	.000
8	.515	.476	.013	2.601	1	100	.110	13.254	8	100	.000
9	.543	.502	.029	6.190	1	99	.015	13.080	9	99	.000
10	.562	.518	.019	4.310	1	98	.041	12.597	10	98	.000
11	.576	.528	.013	3.076	1	97	.083	11.974	11	97	.000
12	.587	.536	.011	2.620	1	96	.109	11.378	12	96	.000
13	.598	.543	.011	2.542	1	95	.114	10.867	13	95	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 5	.545	7.423	.000
(2) age, commander	-.118	-1.650	.102
(3) computer expertise, commander	.201	2.691	.008
(4) education, commander	.124	1.789	.077
(5) duration Read Message, specialist B	-.185	-1.770	.080
(6) number of Send Message, specialist A	.147	1.948	.054
(7) number of Send Message, specialist B	-.162	-1.993	.049
(8) number of Read Message, specialist B	.055	.513	.609
(9) Read Message -> Send Message, C 314	.138	1.950	.054
(10) New Plane -> Send Message, C 302	-.143	-2.118	.037
(11) Handle Threat -> Read Message, spec A 331	-.139	-2.014	.047
(12) Read Message -> Handle Threat, C 316	-.114	-1.685	.095
(13) Read Message -> Show Info, spec B 354	-.114	-1.594	.114

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 160 Results of multiple regression, predicting performance shift 8 with *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.061	.052	.061	6.916	1	107	.010	6.916	1	107	.010
2	.128	.112	.068	8.224	1	106	.005	7.804	2	106	.001
3	.173	.149	.045	5.683	1	105	.019	7.326	3	105	.000
4	.223	.193	.050	6.688	1	104	.011	7.465	4	104	.000
5	.250	.214	.027	3.724	1	103	.056	6.873	5	103	.000
6	.273	.230	.023	3.201	1	102	.077	6.383	6	102	.000
7	.296	.247	.023	3.243	1	101	.075	6.055	7	101	.000
8	.317	.262	.021	3.094	1	100	.082	5.795	8	100	.000
9	.341	.282	.025	3.711	1	99	.057	5.703	9	99	.000
10	.356	.291	.015	2.277	1	98	.135	5.426	10	98	.000
11	.374	.303	.017	2.677	1	97	.105	5.261	11	97	.000

Predictors in trimmed model	Beta	t	Sig.
(1) New Plane -> Handle Threat, C 364	.386	4.530	.000
(2) Show Info -> Show Info, spec A 402	-.271	-2.999	.003
(3) Handle Threat -> Send Message, spec B 410	.195	2.325	.022
(4) Send Message -> Read Message, spec A 397	-.213	-2.501	.014
(5) New Plane -> Show Info, C 363	.106	1.249	.215
(6) New Plane -> Show Info, spec B 405	-.123	-1.484	.141
(7) Read Message -> Show Info 414	.157	1.798	.075
(8) Handle Threat -> Send Message, spec A 392	.203	2.323	.022
(9) Handle Threat -> Read Message, spec B 409	.213	2.365	.020
(10) New Message -> Send Message, spec B 407	-.158	-1.787	.077
(11) Send Message -> Send Message, spec B 416	.145	1.636	.105

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15 C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

Table 161 Results of multiple regression, predicting performance shift 8 with preceding performance, *input*, *summary-level process variables*, and *adjusted residuals*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.331	.325	.331	52.894	1	107	.000	52.894	1	107	.028
2	.359	.347	.028	4.655	1	106	.033	29.678	2	106	.003
3	.388	.370	.029	4.902	1	105	.029	22.148	3	105	.001
4	.412	.390	.025	4.345	1	104	.040	18.226	4	104	.000
5	.429	.402	.017	3.111	1	103	.081	15.499	5	103	.000
6	.442	.409	.013	2.350	1	102	.128	13.477	6	102	.000
7	.455	.417	.013	2.344	1	101	.129	12.039	7	101	.000
8	.508	.468	.053	10.749	1	100	.001	12.894	8	100	.000
9	.549	.508	.041	9.002	1	99	.003	13.379	9	99	.000
10	.563	.518	.014	3.137	1	98	.080	12.615	10	98	.000
11	.594	.547	.031	7.344	1	97	.008	12.878	11	97	.000
12	.609	.560	.015	3.680	1	96	.058	12.437	12	96	.000
13	.624	.572	.015	3.789	1	95	.055	12.106	13	95	.000
14	.640	.586	.016	4.249	1	94	.042	11.929	14	94	.000
15	.651	.594	.011	2.857	1	93	.094	11.544	15	93	.000
16	.663	.604	.012	3.341	1	92	.071	11.304	16	92	.000
17	.675	.614	.012	3.421	1	91	.068	11.120	17	91	.000
18	.688	.626	.013	3.812	1	90	.054	11.039	18	90	.000
19	.700	.636	.012	3.623	1	89	.060	10.953	19	89	.000
20	.713	.648	.013	3.844	1	88	.053	10.930	20	88	.000

Predictors in trimmed model	Beta	t	Sig.
(1) mean performance shift 1 to shift 6	.435	6.361	.000
(2) Control Condition 2 (bed7)	-.133	-2.218	.029
(3) education, commander	.118	1.770	.080
(4) computer expertise, commander	.158	2.429	.017
(5) computer expertise, specialist A	.113	1.881	.063
(6) computer expertise, specialist B	.100	1.470	.145
(7) education, specialist B	.145	2.328	.022
(8) duration Read Message, specialist A	-.275	-4.436	.000
(9) duration Send Message, specialist A	-.224	-3.570	.001
(10) number of Show Information, specialist B	.007	.098	.922
(11) New Plane -> Show Info, spec A 387	.198	3.256	.002
(12) Read Message -> Read Message, C 373	-.248	-3.375	.001
(13) Handle Threat -> Read Message, spec B 409	.250	3.795	.000
(14) New Message -> Send Message, spec A 389	-.113	-1.804	.075
(15) New Plane -> Handle Threat, C 364	.119	1.939	.056
(16) Read Message -> Show Info, spec A 396	.171	2.679	.009
(17) New Message -> Send Message, spec B 407	-.122	-1.938	.056
(18) Show Info -> Read Message, C 381	.136	2.236	.028
(19) New message -> Handle Threat, C 368	.163	2.131	.036
(20) Read Message -> Read Message, spec B 412	.126	1.961	.053

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15. C = commander, spec A = specialist A, spec B = specialist B, Show Info = Show Information.

7 PROcedural NETwork Representations (PRONET)

PRONET uses the KNOT and the Pathfinder algorithm to run the sequential analyses. The input file for Pathfinder is a distance, similarity or correlation matrix. Pathfinder uses a handy tool to collect similarity data. But this works only if similarity ratings of concepts are gathered (the input file is a list of concepts which is then presented to the subject pair by pair). That conditional probabilities can be used as input for Pathfinder/PRONET analyses they must be transformed into matrices adding a head with all the necessary definitions. I used an Excel sheet to construct all the matrices. An example is given in Table 162.

Table 162 Example of an input for pathfinder analyses (shift 1, commanders of high performing teams, median split).

```

DATA:  slch.prx
distances
6 nodes
2 decimals
0.01 min
0.99 max
matrix:
0.00 0.00  0.11  0.12  0.13  0.65
0.00 0.00  0.15  0.74  0.07  0.04
0.00 0.00  0.03  0.67  0.20  0.10
0.00 0.00  0.18  0.46  0.31  0.06
0.00 0.00  0.07  0.41  0.41  0.11
0.00 0.00  0.11  0.16  0.26  0.46

```

Pathfinder is a MS-DOS based program. Most results are written into ASCII files that can be read in MS-Excel or transferred to SPSS. An example of a Pathfinder layout file is given in Table 163, an output file comparing network representations in Table 164.

Table 163 Example of a pathfinder layout output file.

```
LAYOUT
1 level
6 nodes
1.0 size factor
2 dimensions
-1.208 1.828 min max x
-0.285 2.722 min max y
1.828 0.701 New Plane
0.649 2.722 New Message
-0.677 0.223 Handle Threat
-1.208 1.418 Read Message
-0.262 -0.285 Send Message
-1.011 0.789 Show Information
PFNET C:\KNOT\S1CH.PRX
6 nodes
12 links
directed with loops
5 q (5 = n-1)
infinite r
0.03 minimum link weight
0.20 maximum link weight
links:
node1 node2 Weight type
1 3 0.11 x
1 4 0.12 x
1 5 0.13 x
2 5 0.07 x
2 6 0.04 x
3 3 0.03 x
3 5 0.20 x
3 6 0.10 x
4 6 0.06 x
5 3 0.07 x
6 3 0.11 x
6 4 0.16 x
```

Table 164 Example of a pathfinder output file comparing four network representations.

KNOT Setup Summary:

Batch file: btchcmds.lst

Output file: KNOT.OUT

q = n-1

r = infinity

Coherence File# File Name

-0.206 1 S1CH.PRX

-0.046 2 S1CL.PRX

-0.287 3 S4CH.PRX

-0.286 4 S4CL.PRX

Similarities of pfnets:

fl1	fl2	ln1	ln2	Cmn	E[C]	O-EC	Sim	E[S]	O-ES	PtPrb	TIPrb	Info
2	1	12	12	11	4.00	7.00	0.846	0.206	0.641	0.00000	0.00000	22.05
3	1	13	12	11	4.33	6.67	0.786	0.215	0.571	0.00000	0.00000	19.40
3	2	13	12	10	4.33	5.67	0.667	0.215	0.452	0.00006	0.00006	14.04
4	1	13	12	12	4.33	7.67	0.923	0.215	0.708	0.00000	0.00000	26.52
4	2	13	12	12	4.33	7.67	0.923	0.215	0.708	0.00000	0.00000	26.52
4	3	13	13	11	4.69	6.31	0.733	0.226	0.508	0.00001	0.00001	16.82

Correlations between data files:

0.987

0.967 0.931

0.978 0.961 0.974

7.1 Conditional Probabilities Used in PRONET Analyses

The conditional probabilities were calculated with SDIS-GSEQ (Bakeman & Quera, 1995a), according to the instructions given by Cooke et al. (1996, p. 38). The values are not different from the values presented in the chapter on lag sequential analyses (shift 1 Table 61, page 165; shift 4 Table 165, page 111).

Table 165 Conditional probabilities, all roles, lag 1, shift 4.

		Commander					
		New Plane	New Message	Handle Threat	Read Message	Send Message	Show Information
low	New Plane	0.00	0.00	0.05	0.19	0.19	0.57
	New Message	0.00	0.00	0.11	0.74	0.10	0.05
	Handle Threat	0.00	0.00	0.03	0.67	0.22	0.08
	Read Message	0.00	0.00	0.15	0.52	0.30	0.03
	Send Message	0.00	0.00	0.03	0.39	0.47	0.11
	Show Information	0.00	0.00	0.07	0.20	0.28	0.45
high	New Plane	0.00	0.00	0.11	0.15	0.09	0.64
	New Message	0.00	0.00	0.14	0.75	0.08	0.04
	Handle Threat	0.00	0.00	0.04	0.66	0.18	0.11
	Read Message	0.00	0.00	0.18	0.48	0.29	0.05
	Send Message	0.00	0.00	0.05	0.46	0.39	0.10
	Show Information	0.00	0.00	0.12	0.16	0.26	0.47
		Specialist A					
		New Plane	New Message	Handle Threat	Read Message	Send Message	Show Information
low	New Plane	0.00	0.00	0.00	0.07	0.05	0.88
	New Message	0.00	0.00	0.00	0.48	0.09	0.43
	Handle Threat	0.00	0.00	0.00	0.13	0.16	0.71
	Read Message	0.00	0.00	0.00	0.29	0.19	0.53
	Send Message	0.00	0.00	0.00	0.24	0.05	0.71
	Show Information	0.00	0.00	0.00	0.03	0.15	0.82
high	New Plane	0.00	0.00	0.00	0.07	0.06	0.88
	New Message	0.00	0.00	0.00	0.49	0.12	0.39
	Handle Threat	0.00	0.00	0.00	0.12	0.17	0.71
	Read Message	0.00	0.00	0.00	0.29	0.12	0.59
	Send Message	0.00	0.00	0.00	0.21	0.04	0.74
	Show Information	0.00	0.00	0.00	0.03	0.15	0.82
		Specialist B					
		New Plane	New Message	Handle Threat	Read Message	Send Message	Show Information
low	New Plane	0.00	0.00	0.00	0.05	0.06	0.89
	New Message	0.00	0.00	0.00	0.50	0.13	0.37
	Handle Threat	0.00	0.00	0.00	0.18	0.19	0.63
	Read Message	0.00	0.00	0.00	0.29	0.12	0.60
	Send Message	0.00	0.00	0.00	0.25	0.04	0.71
	Show Information	0.00	0.00	0.00	0.03	0.20	0.78
high	New Plane	0.00	0.00	0.00	0.13	0.08	0.79
	New Message	0.00	0.00	0.00	0.51	0.12	0.37
	Handle Threat	0.00	0.00	0.00	0.14	0.21	0.64
	Read Message	0.00	0.00	0.00	0.26	0.19	0.55
	Send Message	0.00	0.00	0.00	0.17	0.05	0.77
	Show Information	0.00	0.00	0.00	0.04	0.21	0.75

Note. N = 109 teams, low = commanders, specialist of low performing teams (median split performance shift 1, N = 56), high = high performing teams (N = 53).

7.2 PRONET Results

The following tables show the results of the PRONET analyses in the raw form. Table 166 shows the results for shift 1, Table 167 for shift 4. Table 168 shows the result of the Pathfinder C calculation, comparing different network representations.

Table 166 Pathfinder analyses results for shift 1.

commander, low	sepc A, low	spec B, low
LAYOUT	LAYOUT	LAYOUT
1 level	1 level	1 level
6 nodes	6 nodes	6 nodes
1.0 size factor	1.0 size factor	1.0 size factor
2 dimensions	2 dimensions	2 dimensions
-1.368 1.891 min max x	-0.540 2.376 min max x	-0.540 2.376 min max x
-1.064 0.459 min max y	-2.555 0.788 min max y	-2.555 0.788 min max y
1.031 0.245 New Plane	2.376 -0.747 New Plane	2.376 -0.747 New Plane
1.891 0.459 New Message	1.630 -2.555 New Message	1.630 -2.555 New Message
-0.825 0.421 Handle Threat	1.185 0.788 Handle Threat	1.185 0.788 Handle Threat
-0.893 -0.099 Read Message	-0.540 -0.496 Read Message	-0.540 -0.496 Read Message
-0.378 -1.064 Send Message	-0.488 -1.139 Send Message	-0.488 -1.139 Send Message
-1.368 -0.276 Show Informa- tion	-0.348 -1.769 Show Informa- tion	-0.348 -1.769 Show Informa- tion
PFNET S1CL.PRX	PFNET S1AL.PRX	PFNET S1BL.PRX
6 nodes	6 nodes	6 nodes
8 links	8 links	8 links
directed with loops	directed with loops	directed with loops
5 q (5 = n-1)	5 q (5 = n-1)	5 q (5 = n-1)
infinite r	infinite r	infinite r
10 minimum link weight	16 minimum link weight	11 minimum link weight
19 maximum link weight	85 maximum link weight	88 maximum link weight
links:	links:	links:
node1 node2 Weight type	node1 node2 Weight type	node1 node2 Weight type
1 5 16 x	1 6 85 x	1 6 88 x
2 3 10 x	2 6 40 x	2 5 11 x
2 5 11 x	3 4 16 x	2 6 39 x
3 5 19 x	3 5 18 x	3 4 17 x
3 6 11 x	4 5 18 x	4 5 17 x
4 3 15 x	4 6 53 x	4 6 59 x
5 6 10 x	5 4 26 x	5 4 23 x
6 4 19 x	6 5 16 x	6 5 21 x

(continued on next page)

commander, high	spec A, high	spec B, high
LAYOUT	LAYOUT	LAYOUT
1 level	1 level	1 level
6 nodes	6 nodes	6 nodes
1.0 size factor	1.0 size factor	1.0 size factor
2 dimensions	2 dimensions	2 dimensions
-0.980 1.912 min max x	-0.540 2.376 min max x	-0.540 2.376 min max x
-0.549 2.648 min max y	-2.555 0.788 min max y	-2.555 0.788 min max y
1.912 1.102 New Plane	2.376 -0.747 New Plane	2.376 -0.747 New Plane
-0.009 2.648 New Message	1.630 -2.555 New Message	1.630 -2.555 New Message
-0.980 0.469 Handle Threat	1.185 0.788 Handle Threat	1.185 0.788 Handle Threat
-0.820 -0.127 Read Message	-0.540 -0.496 Read Message	-0.540 -0.496 Read Message
0.263 -0.549 Send Message	-0.488 -1.139 Send Message	-0.488 -1.139 Send Message
-0.372 0.378 Show Informa- tion	-0.348 -1.769 Show Informa- tion	-0.348 -1.769 Show Informa- tion
PFNET S1CH.PRX	PFNET S1AH.PRX	PFNET S1BH.PRX
6 nodes	6 nodes	6 nodes
10 links	8 links	8 links
directed with loops	directed with loops	directed with loops
5 q (5 = n-1)	5 q (5 = n-1)	5 q (5 = n-1)
infinite r	infinite r	infinite r
10 minimum link weight	10 minimum link weight	13 minimum link weight
20 maximum link weight	90 maximum link weight	56 maximum link weight
links:	links:	links:
node1 node2 Weight type	node1 node2 Weight type	node1 node2 Weight type
1 3 11 x	1 6 90 x	1 4 13 x
1 4 12 x	2 5 13 x	2 5 14 x
1 5 13 x	2 6 43 x	2 6 35 x
2 3 15 x	3 4 10 x	3 4 15 x
3 5 20 x	4 5 13 x	4 5 14 x
3 6 10 x	4 6 59 x	4 6 56 x
4 3 18 x	5 4 19 x	5 4 18 x
5 6 11 x	6 5 14 x	6 5 19 x
6 3 11 x		
6 4 16 x		

Table 167 Pathfinder analyses results for shift 4.

commander, low	sepc A, low	spec B, low
LAYOUT	LAYOUT	LAYOUT
1 level	1 level	1 level
6 nodes	6 nodes	6 nodes
1.0 size factor	1.0 size factor	1.0 size factor
2 dimensions	2 dimensions	2 dimensions
-1.368 1.891 min max x	-0.540 2.376 min max x	-0.540 2.376 min max x
-1.064 0.459 min max y	-2.555 0.788 min max y	-2.555 0.788 min max y
1.031 0.245 New Plane	2.376 -0.747 New Plane	2.376 -0.747 New Plane
1.891 0.459 New Message	1.630 -2.555 New Message	1.630 -2.555 New Message
-0.825 0.421 Handle Threat	1.185 0.788 Handle Threat	1.185 0.788 Handle Threat
-0.893 -0.099 Read Message	-0.540 -0.496 Read Message	-0.540 -0.496 Read Message
-0.378 -1.064 Send Message	-0.488 -1.139 Send Message	-0.488 -1.139 Send Message
-1.368 -0.276 Show Informa- tion	-0.348 -1.769 Show Informa- tion	-0.348 -1.769 Show Informa- tion
PFNET S4CL.PRX	PFNET S4AL.PRX	PFNET S4BL.PRX
6 nodes	6 nodes	6 nodes
8 links	8 links	8 links
directed with loops	directed with loops	directed with loops
5 q (5 = n-1)	5 q (5 = n-1)	5 q (5 = n-1)
infinite r	infinite r	infinite r
10 minimum link weight	13 minimum link weight	12 minimum link weight
22 maximum link weight	88 maximum link weight	89 maximum link weight
links:	links:	links:
node1 node2 Weight type	node1 node2 Weight type	node1 node2 Weight type
1 4 19 x	1 6 88 x	1 6 89 x
1 5 19 x	2 6 43 x	2 5 13 x
2 3 11 x	3 4 13 x	2 6 37 x
2 5 10 x	3 5 16 x	3 4 18 x
3 5 22 x	4 5 19 x	4 5 12 x
4 3 15 x	4 6 53 x	4 6 60 x
5 6 11 x	5 4 24 x	5 4 25 x
6 4 20 x	6 5 15 x	6 5 20 x

(continued on next page)

commander, high	spec A, high	spec B, high
LAYOUT	LAYOUT	LAYOUT
1 level	1 level	1 level
6 nodes	6 nodes	6 nodes
1.0 size factor	1.0 size factor	1.0 size factor
2 dimensions	2 dimensions	2 dimensions
-0.980 1.912 min max x	-0.540 2.376 min max x	-0.540 2.376 min max x
-0.549 2.648 min max y	-2.555 0.788 min max y	-2.555 0.788 min max y
1.912 1.102 New Plane	2.376 -0.747 New Plane	2.376 -0.747 New Plane
-0.009 2.648 New Message	1.630 -2.555 New Message	1.630 -2.555 New Message
-0.980 0.469 Handle Threat	1.185 0.788 Handle Threat	1.185 0.788 Handle Threat
-0.820 -0.127 Read Message	-0.540 -0.496 Read Message	-0.540 -0.496 Read Message
0.263 -0.549 Send Message	-0.488 -1.139 Send Message	-0.488 -1.139 Send Message
-0.372 0.378 Show Information	-0.348 -1.769 Show Information	-0.348 -1.769 Show Information
PFNET S4CH.PRX	PFNET S4AH.PRX	PFNET S4BH.PRX
6 nodes	6 nodes	6 nodes
9 links	8 links	8 links
directed with loops	directed with loops	directed with loops
5 q (5 = n-1)	5 q (5 = n-1)	5 q (5 = n-1)
infinite r	infinite r	infinite r
10 minimum link weight	12 minimum link weight	12 minimum link weight
18 maximum link weight	88 maximum link weight	55 maximum link weight
links:	links:	links:
node1 node2 Weight type	node1 node2 Weight type	node1 node2 Weight type
1 3 11 x	1 6 88 x	1 4 13 x
1 4 15 x	2 5 12 x	2 5 12 x
2 3 14 x	2 6 39 x	2 6 37 x
3 5 18 x	3 4 12 x	3 4 14 x
3 6 11 x	4 5 12 x	4 5 19 x
4 3 18 x	4 6 59 x	4 6 55 x
5 6 10 x	5 4 21 x	5 4 17 x
6 3 12 x	6 5 15 x	6 5 21 x
6 4 16 x		

Table 168 Pathfinder C results (similarities), shift 1 and shift 4, all teams.

KNOT Setup Summary:
 File specification: *.prx
 Output file: S14CAB.OUT
 q = 5
 r = infinity

Coherence	File#	File Name
0.083	1	S1AH.PRX
-0.012	2	S1AL.PRX
0.022	3	S1BH.PRX
-0.061	4	S1BL.PRX
-0.206	5	S1CH.PRX
-0.046	6	S1CL.PRX
0.003	7	S4AH.PRX
0.052	8	S4AL.PRX
-0.025	9	S4BH.PRX
-0.029	10	S4BL.PRX
-0.157	11	S4CH.PRX
-0.102	12	S4CL.PRX

Similarities of pfnets:

f11	f12	ln1	ln2	Cmn	E[C]	O-EC	Sim	E[S]	O-ES	PtPrb	TlPrb	Info
2	1	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
3	1	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
3	2	8	8	6	2.13	3.87	0.600	0.161	0.439	0.00111	0.00114	9.78
4	1	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
4	2	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
4	3	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
5	1	10	8	0	2.67	-2.67	0.000	0.181	-0.181	0.02152	1.00000	-0.00
5	2	10	8	1	2.67	-1.67	0.059	0.181	-0.122	0.13245	0.97848	0.03
5	3	10	8	1	2.67	-1.67	0.059	0.181	-0.122	0.13245	0.97848	0.03
5	4	10	8	0	2.67	-2.67	0.000	0.181	-0.181	0.02152	1.00000	-0.00
6	1	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
6	2	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
6	3	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
6	4	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
6	5	8	10	7	2.67	4.33	0.636	0.181	0.456	0.00041	0.00042	11.23
7	1	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
7	2	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
7	3	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
7	4	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
7	5	8	10	0	2.67	-2.67	0.000	0.181	-0.181	0.02152	1.00000	-0.00
7	6	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
8	1	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
8	2	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
8	3	8	8	6	2.13	3.87	0.600	0.161	0.439	0.00111	0.00114	9.78
8	4	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
8	5	8	10	1	2.67	-1.67	0.059	0.181	-0.122	0.13245	0.97848	0.03
8	6	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
8	7	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
9	1	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
9	2	8	8	6	2.13	3.87	0.600	0.161	0.439	0.00111	0.00114	9.78
9	3	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
9	4	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
9	5	8	10	1	2.67	-1.67	0.059	0.181	-0.122	0.13245	0.97848	0.03
9	6	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
9	7	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
9	8	8	8	6	2.13	3.87	0.600	0.161	0.439	0.00111	0.00114	9.78
10	1	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
10	2	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
10	3	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
10	4	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
10	5	8	10	0	2.67	-2.67	0.000	0.181	-0.181	0.02152	1.00000	-0.00
10	6	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
10	7	8	8	8	2.13	5.87	1.000	0.161	0.839	0.00000	0.00000	22.48
10	8	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
10	9	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
11	1	9	8	0	2.40	-2.40	0.000	0.172	-0.172	0.03477	1.00000	0.00
11	2	9	8	1	2.40	-1.40	0.063	0.172	-0.109	0.17880	0.96523	0.05
11	3	9	8	1	2.40	-1.40	0.063	0.172	-0.109	0.17880	0.96523	0.05
11	4	9	8	0	2.40	-2.40	0.000	0.172	-0.172	0.03477	1.00000	0.00
11	5	9	10	9	3.00	6.00	0.900	0.194	0.706	0.00000	0.00000	20.45
11	6	9	8	6	2.40	3.60	0.545	0.172	0.374	0.00301	0.00314	8.31
11	7	9	8	0	2.40	-2.40	0.000	0.172	-0.172	0.03477	1.00000	0.00
11	8	9	8	1	2.40	-1.40	0.063	0.172	-0.109	0.17880	0.96523	0.05
11	9	9	8	1	2.40	-1.40	0.063	0.172	-0.109	0.17880	0.96523	0.05
11	10	9	8	0	2.40	-2.40	0.000	0.172	-0.172	0.03477	1.00000	0.00
12	1	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	2	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	3	8	8	2	2.13	-0.13	0.143	0.161	-0.018	0.35694	0.71226	0.49
12	4	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	5	8	10	7	2.67	4.33	0.636	0.181	0.456	0.00041	0.00042	11.23
12	6	8	8	7	2.13	4.87	0.778	0.161	0.617	0.00003	0.00003	15.01
12	7	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	8	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	9	8	8	2	2.13	-0.13	0.143	0.161	-0.018	0.35694	0.71226	0.49
12	10	8	8	1	2.13	-1.13	0.067	0.161	-0.095	0.23311	0.94537	0.08
12	11	8	9	6	2.40	3.60	0.545	0.172	0.374	0.00301	0.00314	8.31

Correlations between data files:

0.993
 0.993 0.994
 0.989 0.995 0.993
 0.464 0.543 0.510 0.530
 0.433 0.513 0.486 0.495 0.987
 0.998 0.997 0.997 0.994 0.495 0.465
 0.997 0.999 0.993 0.993 0.514 0.484 0.997
 0.990 0.993 0.998 0.994 0.508 0.482 0.994 0.992
 0.992 0.996 0.994 0.998 0.537 0.505 0.997 0.994 0.992
 0.464 0.544 0.511 0.527 0.997 0.990 0.495 0.515 0.506 0.537
 0.423 0.505 0.477 0.489 0.988 0.997 0.456 0.474 0.476 0.496 0.986

Note. N = 109 teams.

8 Data Mining applied to the ATC Data

Data coding. The data for data mining analyses can be represented in log-files reporting each event on a single line. An example is given in Table 169. The commander of team 106 starts writing a message (67) in second 11, which lasts until second 211. Meanwhile a new plane comes into the airspace (81, at second 17). This changes immediately the threat level, and because the commander is still writing his message and he does not set the appropriate threat level a -102 is the results. This means that plane number 1 is underestimated (the minus sign) by 2 points (stars). Of course this changes also the overall threat assignment, which is now 502, which indicates that overall the threat assignment is two points too low. Those two numbers correspond, because only one plane is present in the airspace for the moment. As soon as there are more planes in the airspace those two numbers start to diverge. In second 78 a new message (80) comes into the inbox, another messages arrives at second 126, and again at second 227. Because the commander writes a new message from second 11 to 211 all events, except the last new message happened without him noticing that something happened. How the variables were built and named is described en detail in the appendix, chapter 3.

Table 169 Data structure for data-mining analyses.

Team	Role	Shift	DAEVE	EV_S	EV_E
106	1	1	67	11	211
106	1	1	81	17	17
106	1	1	-102	17	17
106	1	1	502	17	17
106	1	1	80	78	78
106	1	1	80	126	126
106	1	1	80	227	227
106	1	1	72	238	238
(...)					

Note. Group = number of team, Role = role of participant (1 = commander, 2 = specialist A, 3 = specialist B), DAEVE = number of event, EV_S = event start time, EV_E = event end time

8.1 Technical Details of the Data Sets used in Data Mining Analyses

The events are either represented as plain text variables like `ieR100` = reading a message with task related content or with a numeric value, which is for `ieR100` = 53. Details in Table 170.

To run data mining analyses two files are stored: (i) data file V-A follows the rule that there is no temporal overlap within one single stream. Therefore stream 1 to stream 7 are represented in seven distinct variables (Table 171), whereas (ii) data file V-B combines all information in one single variable (structure in Table 172, the necessary transformation are documented in Table 173).

Table 170 Correspondence of plain text and numeric variable representations, initiated events and system events.

<code>ieR111</code> 51	<code>ieR110</code> 52	<code>ieR100</code> 53	<code>ieR101</code> 54	<code>ieR011</code> 55	<code>ieR001</code> 56	<code>ieR010</code> 57	
<code>ieS111</code> 61	<code>ieS110</code> 62	<code>ieS100</code> 63	<code>ieS101</code> 64	<code>ieS011</code> 65	<code>ieS001</code> 66	<code>ieS010</code> 67	
<code>ieSi0</code> 71	<code>ieSi1</code> 72						
<code>ieH10*</code> 10	<code>ieH11</code> 11	<code>ieH12</code> 12	<code>ieH13</code> 13	<code>ieH14</code> 14	<code>ieH15</code> 15	<code>ieH16</code> 16	<code>ieH17</code> 17
<code>ieH20*</code> 20	<code>ieH21</code> 21	<code>ieH22</code> 22	<code>ieH23</code> 23	<code>ieH24</code> 24	<code>ieH25</code> 25	<code>ieH26</code> 26	<code>ieH27</code> 27
<code>ieH30*</code> 30	<code>ieH31</code> 31	<code>ieH32</code> 32	<code>ieH33</code> 33	<code>ieH34</code> 34	<code>ieH35</code> 35	<code>ieH36</code> 36	<code>ieH37</code> 37
<code>ieH40*</code> 40	<code>ieH41</code> 41	<code>ieH42</code> 42	<code>ieH43</code> 43	<code>ieH44</code> 44	<code>ieH45</code> 45	<code>ieH46</code> 46	<code>ieH47</code> 47
<code>ieH**</code> 70							
<code>ieOTHER</code> 90							
<code>seNewMsg</code> 80	<code>seNP1</code> 81	<code>seNP2</code> 82	<code>seNP3</code> 83	<code>seNP4</code> 84			

Note. *`ieH10`, `ieH20`, `ieH30`, `ieH40` = The commander started to assign a new threat level to a plane but something went wrong. This could be that the commander cancelled the operation or that there was an error in the ATC log-file. The information in this variable has to be interpreted with caution. The 0 at the end signifies not setting the threat level to 0, but that we have no information on the threat level! The information on the plane (the first number) is ok. All in all this happens very rarely. For all teams, in all shifts 99'834 events are recorded for the commander. `ieH10`, `ieH20`, `ieH30`, and `ieH40` together sum up to 32 events, this is 0.003% of all events.

**`ieH70` = Handle Threat of commander = any event `ieH10` to `ieH47`

Table 171 Structure data file V-A, no temporal overlap within one stream of events.

row position	row label	description
1	gruppe	group number
2	rolle	role, 1 = commander, 2 = specialist A, 3 = specialist B
3	beding	experimental condition (see Table 13)
4	schicht	number of shift (1 to 8)
5	daeve1	stream 1: events of commanders or specialists
6	ev1_s	onset time
7	ev1_e	offset time
8	daeve2	stream 2: system events
9	ev2_s	onset time
10	ev2_e	offset time
11	daeve3	stream 3: accuracy of threat assignment, plane 1
12	ev3_s	onset time
13	ev3_e	offset time
14	daeve4	stream 4: accuracy of threat assignment, plane 2
15	ev4_s	onset time
16	ev4_e	offset time
17	daeve5	stream 5: accuracy of threat assignment, plane 3
18	ev5_s	onset time
19	ev5_e	offset time
20	daeve6	stream 6: accuracy of threat assignment, plane 4
21	ev6_s	onset time
22	ev6_e	offset time
23	daeve7	overall accuracy of threat assignment (0 = perfect fit, the higher the value the less accurate is the threat assignment)
24	ev7_s	onset time
24	ev7_e	offset time

Table 172 Structure of data file V-B, all streams combined in one variable

row position	row label	description
1	gruppe	group number
2	rolle	role, 1 = commander, 2 = specialist A, 3 = specialist B
3	beding	experimental condition (see Table 13)
4	schicht	number of shift (1 to 8)
5	daeve	stream 1 to 7
6	ev_s	onset time
7	ev_e	offset time

Table 173 Necessary transformations to represent all information in one single variable (type A to type B transformations).

The data in the file V-A is e.g., presented as follows:

GRUPPE	(...)	DAEVE2	EV2_S	EV2_E	DAEVE3	EV3_S	EV3_E	(...)	DAEVE7	EV7_S	EV7_E
(...)											
106	(...)	21	17	17	-2	17	17	(...)	-3	17	17
(...)											

In file V-B this looks like:

GRUPPE	ROLLE	BEDING	SCHICHT	DAEVE	EV_S	EV_E
(...)						
106	1	1	1		11	211
106	1	1	1	81	17	17.1
106	1	1	1	-1.2	17	17
106	1	1	1	2	17	17
(...)						

Data stream 3 to stream 6 are recoded as follows:

stream 3: if (daeve3 < 0) daeve3 = -1* (100 + abs(daeve3)).
if (daeve3 >= 0) daeve3 = 100 + abs(daeve3).

stream 4: if (daeve4 < 0) daeve4 = -1* (200 + abs(daeve4)).
if (daeve4 >= 0) daeve4 = 200 + abs(daeve4).

stream 5: if (daeve5 < 0) daeve5 = -1* (300 + abs(daeve5)).
if (daeve5 >= 0) daeve5 = 300 + abs(daeve5).

stream 6: if (daeve6 < 0) daeve6 = -1* (400 + abs(daeve6)).
if (daeve6 >= 0) daeve6 = 400 + abs(daeve6).

stream 7: if (daeve7 < 0) daeve7 = -1* (500 + abs(daeve7)).
if (daeve7 >= 0) daeve7 = 500 + abs(daeve7).

Format: [-]XYZ

[-] - = underestimation, no - = overestimation

X = plane number

Y = always 0

Z = the difference real threat level minus threat assignment of the team.

-103 = threat level is assigned 3 stars too low for plane 1

102 = threat level is assigned 2 stars too high for plane 1.

8.2 Support Values for Specialists of Low and High Performing Teams

Table 174 Support values for patterns of specialists A of low and high performing teams, day one and day two.

Sequence		day 1			day 2			
		low	high		low	high		
1	ieR-ieR	50-50	0.72	0.75	equal	0.77	0.74	equal
2	ieR-ieS001	50-66	0.52	0.00	different	0.46	0.41	equal
3	ieR-ieS100	50-63	.	.	.	0.46	0.00	different
4	ieR-ieSi0	50-71	0.99	0.93	different	0.94	0.84	different
5	ieR-ieSi1	50-72	0.64	0.75	equal	0.63	0.80	different
6	ieS001-ieR	66-50	0.72	0.57	different	0.63	0.55	equal
7	ieS001-ieSi0	66-71	0.66	0.58	equal	0.64	0.55	equal
8	ieS001-ieSi1	66-72	.	.	.	0.00	0.41	different
9	ieS100-ieR	63-50	0.78	0.75	equal	0.70	0.80	equal
10	ieS100-ieSi0	63-71	0.81	0.80	equal	0.72	0.78	equal
11	ieS100-ieSi1	63-72	0.48	0.59	equal	0.00	0.59	different
12	ieSi0-ieR	71-50	0.77	0.80	equal	0.86	0.86	equal
13	ieSi0-ieS001	71-66	0.80	0.79	equal	0.82	0.72	equal
14	ieSi0-ieS100	71-63	0.90	0.92	equal	0.88	0.93	equal
15	ieSi0-ieSi0	71-71	1.00	1.00	equal	0.99	1.00	equal
16	ieSi0-ieSi1	71-72	0.96	0.96	equal	0.99	0.99	equal
17	ieSi1-ieR	72-50	0.00	0.45	different	0.44	0.48	equal
18	ieSi1-ieS001	72-66	.	.	.	0.44	0.00	different
19	ieSi1-ieS100	72-63	0.67	0.79	different	0.65	0.81	different
20	ieSi1-ieSi0	72-71	0.98	0.97	equal	0.99	0.99	equal
21	ieSi1-ieSi1	72-72	0.64	0.76	equal	0.77	0.81	equal

1	ieR-ieR-ieR	50-50-50	0.42	0.00	different	.	.	.
2	ieR-ieR-ieSi0	50-50-71	0.47	0.47	equal	0.58	0.43	different
3	ieR-ieSi0-ieS100	50-71-63	0.42	0.00	different	.	.	.
4	ieR-ieSi0-ieSi0	50-71-71	0.76	0.71	equal	0.75	0.67	equal
5	ieR-ieSi0-ieSi1	50-71-72	0.56	0.00	different	0.58	0.50	equal
6	ieR-ieSi1-ieSi0	50-72-71	.	.	.	0.00	0.45	different
7	ieS001-ieR-ieSi0	66-50-71	0.45	0.00	different	.	.	.
8	ieS001-ieSi0-ieSi0	66-71-71	0.47	0.00	different	0.45	0.00	different
9	ieS100-ieR-ieR	63-50-50	.	.	.	0.00	0.45	different
10	ieS100-ieR-ieSi0	63-50-71	0.50	0.43	equal	.	.	.
11	ieS100-ieR-ieSi1	63-50-71	.	.	.	0.40	0.47	equal
12	ieS100-ieSi0-ieSi0	63-71-71	0.61	0.60	equal	0.54	0.56	equal
13	ieS100-ieR-ieSi0	71-50-71	0.44	0.44	equal	0.45	0.44	equal
14	ieSi0-ieS001-ieR	71-66-50	0.56	0.45	equal	0.48	0.46	equal
15	ieSi0-ieS001-ieSi0	71-66-71	0.49	0.47	equal	0.51	0.00	different
16	ieSi0-ieS100-ieR	71-63-50	0.64	0.53	equal	0.54	0.64	equal
17	ieSi0-ieS100-ieSi0	71-63-71	0.67	0.70	equal	0.57	0.65	equal
18	ieSi0-ieS100-ieSi1	71-63-72	0.00	0.45	different	.	.	.
19	ieSi0-ieSi0-ieR	71-71-50	0.69	0.64	equal	0.73	0.70	equal
20	ieSi0-ieSi0-ieS001	71-71-66	0.76	0.69	equal	0.78	0.61	different
21	ieSi0-ieSi0-ieS100	71-71-63	0.81	0.83	equal	0.71	0.84	different
22	ieSi0-ieSi0-ieSi0	71-71-71	0.94	0.96	equal	0.96	0.97	equal
23	ieSi0-ieSi0-ieSi1	71-71-72	0.92	0.90	equal	0.96	0.98	equal
24	ieSi0-ieSi1-ieS100	71-72-63	.	.	.	0.00	0.51	different
25	ieSi0-ieSi1-ieSi0	71-72-71	0.94	0.86	equal	0.96	0.93	equal
26	ieSi0-ieSi1-ieSi1	71-72-72	0.46	0.50	equal	0.67	0.69	equal
27	ieSi1-ieS100-ieR	72-63-50	.	.	.	0.00	0.41	different
28	ieSi1-ieS100-ieSi0	72-63-71	0.41	0.50	equal	.	.	.
29	ieSi1-ieS100-ieSi1	72-63-72	.	.	.	0.00	0.44	different
30	ieSi1-ieSi0-ieS100	72-71-63	.	.	.	0.00	0.46	different
31	ieSi1-ieSi0-ieSi0	72-71-71	0.95	0.95	equal	0.97	0.97	equal
32	ieSi1-ieSi0-ieSi1	72-71-72	.	.	.	0.45	0.55	equal
33	ieSi1-ieSi1-ieS100	72-72-63	.	.	.	0.00	0.46	different
34	ieSi1-ieSi1-ieSi0	72-72-71	0.51	0.63	equal	0.71	0.72	equal
35	ieSi1-ieSi1-ieSi1	72-72-72	0.00	0.50	different	0.53	0.58	equal

1	ieR-ieR-ieSi0-ieSi0	50-50-71-71	.	.	.	0.40	0.00	different
2	ieR-ieSi0-ieSi0-ieSi0	50-71-71-71	0.44	0.50	equal	0.54	0.00	different
3	ieR-ieSi0-ieSi1-ieSi0	50-71-72-71	0.43	0.00	different	0.48	0.41	equal
4	ieS100-ieSi0-ieSi0-ieSi0	63-71-71-71	0.43	0.48	equal	0.45	0.44	equal
5	ieSi0-ieS100-ieSi0-ieSi0	71-63-71-71	0.47	0.53	equal	.	.	.
6	ieSi0-ieSi0-ieS001-ieR	71-71-66-50	0.44	0.00	different	0.40	0.00	different
7	ieSi0-ieSi0-ieS001-ieSi0	71-71-66-71	0.44	0.00	different	.	.	.
8	ieSi0-ieSi0-ieS100-ieR	71-71-63-50	0.43	0.00	different	0.00	0.43	different
9	ieSi0-ieSi0-ieS100-ieSi0	71-71-63-71	0.50	0.52	equal	0.00	0.42	different
10	ieSi0-ieSi0-ieSi0-ieR	71-71-71-50	0.44	0.52	equal	0.57	0.44	equal
11	ieSi0-ieSi0-ieSi0-ieS001	71-71-71-66	0.61	0.54	equal	0.62	0.44	different
12	ieSi0-ieSi0-ieSi0-ieS100	71-71-71-63	0.55	0.61	equal	0.56	0.53	equal
13	ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71	0.84	0.85	equal	0.89	0.83	equal
14	ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-72	0.79	0.81	equal	0.91	0.85	equal
15	ieSi0-ieSi0-ieSi1-ieSi0	71-71-72-71	0.81	0.77	equal	0.88	0.87	equal
16	ieSi0-ieSi0-ieSi1-ieSi1	71-71-72-72	0.00	0.46	different	0.58	0.64	equal
17	ieSi0-ieSi1-ieSi0-ieSi0	71-72-71-71	0.84	0.83	equal	0.88	0.85	equal
18	ieSi0-ieSi1-ieSi1-ieSi0	71-72-72-71	.	.	.	0.50	0.53	equal
19	ieSi0-ieSi1-ieSi1-ieSi1	71-72-72-72	.	.	.	0.40	0.41	equal
20	ieSi1-ieSi0-ieSi0-ieR	72-71-71-50	.	.	.	0.42	0.00	different
21	ieSi1-ieSi0-ieSi0-ieS001	72-71-71-66	0.43	0.00	different	0.40	0.00	different
22	ieSi1-ieSi0-ieSi0-ieS100	72-71-71-63	0.43	0.42	equal	0.00	0.56	different
23	ieSi1-ieSi0-ieSi0-ieSi0	72-71-71-71	0.83	0.89	equal	0.89	0.88	equal
24	ieSi1-ieSi0-ieSi0-ieSi1	72-71-71-72	.	.	.	0.45	0.56	equal
25	ieSi1-ieSi1-ieSi0-ieSi0	72-72-71-71	0.45	0.53	equal	0.61	0.65	equal
26	ieSi1-ieSi1-ieSi1-ieSi0	72-72-72-71	.	.	.	0.46	0.47	equal

(continued on next page)

Sequence	day 1			day 2			
	low	high		low	high		
1 ieR-ieSi0-ieSi0-ieSi0-ieSi0	0.00	0.41	different	0.41	0.00	different	
2 ieSi0-ieSi0-ieSi0-ieSi0-ieR	71-71-71-71-50	0.00	0.43	different	0.42	0.00	different
3 ieSi0-ieSi0-ieSi0-ieSi0-ieS001	71-71-71-71-66	0.46	0.00	different	0.44	0.00	different
4 ieSi0-ieSi0-ieSi0-ieSi0-ieS100	71-71-71-71-63	0.00	0.44	different	0.40	0.00	different
5 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71	0.69	0.71	equal	0.80	0.71	equal
6 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-72	0.64	0.59	equal	0.76	0.73	equal
7 ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-72-71	0.62	0.59	equal	0.76	0.68	equal
8 ieSi0-ieSi0-ieSi0-ieSi1-ieSi1	71-71-71-72-72	.	.	.	0.52	0.46	equal
9 ieSi0-ieSi0-ieSi1-ieSi0-ieSi0	71-71-72-71-71	0.70	0.63	equal	0.78	0.69	equal
10 ieSi0-ieSi0-ieSi1-ieSi1-ieSi0	71-71-72-72-71	.	.	.	0.42	0.43	equal
11 ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-72-71-71-71	0.67	0.68	equal	0.72	0.67	equal
12 ieSi0-ieSi1-ieSi1-ieSi0-ieSi0	71-72-72-71-71	.	.	.	0.42	0.44	equal
13 ieSi1-ieSi0-ieSi0-ieSi0-ieSi0	72-71-71-71-71	0.67	0.67	equal	0.77	0.75	equal
14 ieSi1-ieSi0-ieSi0-ieSi0-ieSi1	72-71-71-71-72	.	.	.	0.42	0.42	equal
15 ieSi1-ieSi1-ieSi0-ieSi0-ieSi0	72-72-71-71-71	0.00	0.49	different	0.53	0.53	equal
16 ieSi1-ieSi1-ieSi1-ieSi0-ieSi0	72-72-72-71-71	.	.	.	0.40	0.43	equal
1 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71	0.57	0.62	equal	0.71	0.64	equal
2 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-71-72	0.47	0.49	equal	0.63	0.55	equal
3 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-71-72-71	0.50	0.00	different	0.58	0.52	equal
4 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-72-72	.	.	.	0.41	0.42	equal
5 ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-72-71-71	0.54	0.50	equal	0.65	0.49	different
6 ieSi0-ieSi0-ieSi1-ieSi0-ieSi0	71-71-72-71-71-71	0.53	0.49	equal	0.63	0.55	equal
7 ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-72-71-71-71-71	0.47	0.45	equal	0.61	0.55	equal
8 ieSi1-ieSi0-ieSi0-ieSi0-ieSi0	72-71-71-71-71-71	0.50	0.52	equal	0.64	0.63	equal
9 ieSi1-ieSi1-ieSi0-ieSi0-ieSi0	72-72-71-71-71-71	.	.	.	0.41	0.44	equal
1 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71	0.50	0.55	equal	0.58	0.54	equal
2 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-71-72	0.00	0.41	different	0.55	0.46	equal
3 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-71-71-72-71	.	.	.	0.42	0.00	different
4 ieSi0-ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-71-72-71-71	0.44	0.00	different	0.47	0.00	different
5 ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-72-71-71-71	.	.	.	0.48	0.00	different
6 ieSi0-ieSi0-ieSi1-ieSi0-ieSi0	71-71-72-71-71-71-71	.	.	.	0.48	0.43	equal
7 ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-72-71-71-71-71-71	.	.	.	0.48	0.00	different
8 ieSi1-ieSi0-ieSi0-ieSi0-ieSi0	72-71-71-71-71-71-71	0.00	0.44	different	0.57	0.52	equal
1 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71-71	0.43	0.50	equal	0.49	0.46	equal
2 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71-72	.	.	.	0.43	0.00	different
3 ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-72-71-71-71-71-71	.	.	.	0.43	0.00	different
4 ieSi1-ieSi0-ieSi0-ieSi0-ieSi0	72-71-71-71-71-71-71	.	.	.	0.46	0.44	equal
1 ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71-71	0.00	0.44	different	0.45	0.00	different

Note. The 109 teams were parted into three groups of the same size according to their performance (low – medium – high). Results are presented for the two extreme groups: all the teams with the lowest performance and all the teams with the highest performance on day one, respectively on day two.

Table 175 Support values for patterns of specialists B of low and high performing teams, day one and day two.

Sequence		day 1			day 2			
		low	high		low	high		
1	ieR-ieR	50-50	0.75	0.79	equal	0.78	0.77	equal
2	ieR-ieS001	50-66	0.42	0.41	equal	0.51	0.45	equal
3	ieR-ieS100	50-63	0.00	0.44	different	.	.	.
4	ieR-ieSi0	50-71	0.90	0.88	equal	0.91	0.93	equal
5	ieR-ieSi1	50-72	0.69	0.74	equal	0.67	0.69	equal
6	ieS001-ieR	66-50	0.66	0.00	different	0.72	0.50	different
7	ieS001-ieSi0	66-71	0.59	0.44	different	0.59	0.46	equal
8	ieS100-ieR	63-50	0.78	0.80	equal	0.70	0.79	equal
9	ieS100-ieSi0	63-71	0.84	0.80	equal	0.68	0.69	equal
10	ieS100-ieSi1	63-72	0.56	0.58	equal	0.47	0.54	equal
11	ieSi0-ieR	71-50	0.69	0.75	equal	0.74	0.74	equal
12	ieSi0-ieS001	71-66	0.67	0.61	equal	0.73	0.55	different
13	ieSi0-ieS100	71-63	0.89	0.91	equal	0.78	0.86	equal
14	ieSi0-ieSi0	71-71	0.98	1.00	equal	0.99	1.00	equal
15	ieSi0-ieSi1	71-72	0.94	0.97	equal	0.98	1.00	equal
16	ieSi1-ieR	72-50	0.54	0.65	equal	0.57	0.64	equal
17	ieSi1-ieS001	72-66	0.62	0.49	different	0.72	0.71	equal
18	ieSi1-ieS100	72-63	0.77	0.83	equal	0.68	0.81	different
19	ieSi1-ieSi0	72-71	0.92	0.94	equal	0.95	1.00	different
20	ieSi1-ieSi1	72-72	0.74	0.79	equal	0.75	0.81	equal

1	ieR-ieR-ieSi0	50-50-71	0.54	0.50	equal	0.50	0.52	equal
2	ieR-ieSi0-ieS100	50-71-63	0.45	0.50	equal	.	.	.
3	ieR-ieSi0-ieSi0	50-71-71	0.71	0.71	equal	0.80	0.84	equal
4	ieS001-ieSi0-ieSi0	66-71-71	0.45	0.00	different	0.47	0.00	different
5	ieS100-ieR-ieR	63-50-50	0.00	0.41	different	.	.	.
6	ieS100-ieR-ieSi0	63-50-71	0.50	0.52	equal	0.00	0.51	different
7	ieS100-ieSi0-ieS100	63-71-63	0.00	0.46	different	.	.	.
8	ieS100-ieSi0-ieSi0	63-71-71	0.70	0.69	equal	0.48	0.60	equal
9	ieSi0-ieS001-ieR	71-66-50	.	.	.	0.42	0.00	different
10	ieSi0-ieS100-ieR	71-63-50	0.62	0.53	equal	0.42	0.65	different
11	ieSi0-ieS100-ieSi0	71-63-71	0.69	0.67	equal	0.45	0.47	equal
12	ieSi0-ieS100-ieSi1	71-63-72	0.00	0.42	different	.	.	.
13	ieSi0-ieSi0-ieR	71-71-50	0.43	0.50	equal	0.42	0.00	different
14	ieSi0-ieSi0-ieS100	71-71-63	0.69	0.65	equal	0.43	0.50	equal
15	ieSi0-ieSi0-ieSi0	71-71-71	0.89	0.89	equal	0.88	0.87	equal
16	ieSi0-ieSi0-ieSi1	71-71-72	0.92	0.95	equal	0.96	0.99	equal
17	ieSi0-ieSi1-ieR	71-72-50	.	.	.	0.00	0.41	different
18	ieSi0-ieSi1-ieS001	71-72-66	0.44	0.00	different	0.52	0.51	equal
19	ieSi0-ieSi1-ieS100	71-72-63	0.54	0.52	equal	0.42	0.56	equal
20	ieSi0-ieSi1-ieSi0	71-72-71	0.75	0.84	equal	0.88	0.94	equal
21	ieSi0-ieSi1-ieSi1	71-72-72	0.59	0.67	equal	0.58	0.73	different
22	ieSi1-ieS001-ieR	72-66-50	.	.	.	0.40	0.00	different
23	ieSi1-ieS100-ieR	72-63-50	0.44	0.45	equal	0.00	0.46	different
24	ieSi1-ieS100-ieSi0	72-63-71	0.47	0.51	equal	0.00	0.51	different
25	ieSi1-ieS100-ieSi1	72-63-72	.	.	.	0.00	0.44	different
26	ieSi1-ieSi0-ieR	72-71-50	.	.	.	0.46	0.51	equal
27	ieSi1-ieSi0-ieS001	72-71-66	0.42	0.00	different	0.47	0.00	different
28	ieSi1-ieSi0-ieS100	72-71-63	0.41	0.43	equal	0.44	0.57	equal
29	ieSi1-ieSi0-ieSi0	72-71-71	0.82	0.85	equal	0.89	0.94	equal
30	ieSi1-ieSi0-ieSi1	72-71-72	0.00	0.46	different	0.00	0.54	different
31	ieSi1-ieSi1-ieSi0	72-72-71	0.59	0.57	equal	0.59	0.69	equal
32	ieSi1-ieSi1-ieSi1	72-72-72	0.48	0.57	equal	0.45	0.59	different

1	ieR-ieSi0-ieSi0-ieSi0	50-71-71-71	0.45	0.00	different	.	.	.
2	ieR-ieSi0-ieSi0-ieSi1	50-71-71-72	0.41	0.44	equal	0.64	0.62	equal
3	ieS100-ieSi0-ieSi0-ieSi0	63-71-71-71	0.44	0.47	equal	.	.	.
4	ieS100-ieSi0-ieSi0-ieSi1	63-71-71-72	.	.	.	0.00	0.44	different
5	ieSi0-ieS100-ieSi0-ieSi0	71-63-71-71	0.52	0.54	equal	.	.	.
6	ieSi0-ieSi0-ieSi0-ieS100	71-71-71-63	0.45	0.00	different	.	.	.
7	ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71	0.66	0.73	equal	0.60	0.68	equal
8	ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-72	0.75	0.81	equal	0.77	0.84	equal
9	ieSi0-ieSi0-ieSi1-ieS001	71-71-72-66	.	.	.	0.42	0.45	equal
10	ieSi0-ieSi0-ieSi1-ieS100	71-71-72-63	0.44	0.00	different	0.00	0.46	different
11	ieSi0-ieSi0-ieSi1-ieSi0	71-71-72-71	0.67	0.75	equal	0.84	0.83	equal
12	ieSi0-ieSi0-ieSi1-ieSi1	71-71-72-72	0.50	0.62	equal	0.53	0.65	equal
13	ieSi0-ieSi1-ieSi0-ieR	71-72-71-50	.	.	.	0.00	0.49	different
14	ieSi0-ieSi1-ieSi0-ieS001	71-72-71-66	.	.	.	0.40	0.00	different
15	ieSi0-ieSi1-ieSi0-ieS100	71-72-71-63	.	.	.	0.40	0.43	equal
16	ieSi0-ieSi1-ieSi0-ieSi0	71-72-71-71	0.53	0.64	equal	0.70	0.69	equal
17	ieSi0-ieSi1-ieSi1-ieSi0	71-72-72-71	.	.	.	0.00	0.44	different
18	ieSi0-ieSi1-ieSi1-ieSi1	71-72-72-72	0.00	0.42	different	0.00	0.51	different
19	ieSi1-ieS100-ieSi0-ieSi0	72-63-71-71	.	.	.	0.00	0.41	different
20	ieSi1-ieSi0-ieSi0-ieSi0	72-71-71-71	0.62	0.65	equal	0.78	0.80	equal
21	ieSi1-ieSi0-ieSi0-ieSi1	72-71-71-72	0.00	0.42	different	0.55	0.73	different
22	ieSi1-ieSi1-ieSi0-ieSi0	72-72-71-71	0.46	0.47	equal	0.48	0.60	equal
23	ieSi1-ieSi1-ieSi1-ieSi0	72-72-72-71	.	.	.	0.00	0.43	different
24	ieSi1-ieSi1-ieSi1-ieSi1	72-72-72-72	0.00	0.42	different	0.00	0.44	different

1	ieR-ieSi0-ieSi0-ieSi1-ieSi0	50-71-71-72-71	.	.	.	0.52	0.41	equal
2	ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71	0.55	0.50	equal	0.00	0.45	different
3	ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-72	0.56	0.57	equal	0.46	0.59	equal
4	ieSi0-ieSi0-ieSi0-ieSi1-ieSi0	71-71-71-72-71	0.51	0.43	equal	0.00	0.47	different
5	ieSi0-ieSi0-ieSi0-ieSi1-ieSi1	71-71-71-72-72	0.00	0.46	different	0.00	0.48	different
6	ieSi0-ieSi0-ieSi1-ieSi0-ieR	71-71-72-71-50	.	.	.	0.00	0.42	different
7	ieSi0-ieSi0-ieSi1-ieSi0-ieSi0	71-71-72-71-71	0.00	0.46	different	0.55	0.56	equal
8	ieSi0-ieSi0-ieSi1-ieSi1-ieSi0	71-71-72-72-72	.	.	.	0.00	0.44	different
9	ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-72-71-71-71	0.00	0.43	different	0.48	0.52	equal
10	ieSi1-ieSi0-ieSi0-ieSi0-ieSi0	72-71-71-71-71	0.00	0.44	different	0.47	0.57	equal
11	ieSi1-ieSi0-ieSi0-ieSi0-ieSi1	72-71-71-71-72	.	.	.	0.50	0.49	equal
12	ieSi1-ieSi1-ieSi0-ieSi0-ieSi0	72-72-71-71-71	.	.	.	0.00	0.44	different

(continued on next page)

1	ieSi0-ieSi0-ieSi0-ieSi0-ieSi0-ieSi0	71-71-71-71-71-71	0.41	0.00	different	.	.	.
2	ieSi0-ieSi0-ieSi0-ieSi0-ieSi0-ieSi1	71-71-71-71-71-72	.	.	.	0.00	0.43	different
3	ieSi0-ieSi0-ieSi1-ieSi0-ieSi0-ieSi0	71-71-72-71-71-71	.	.	.	0.00	0.44	different

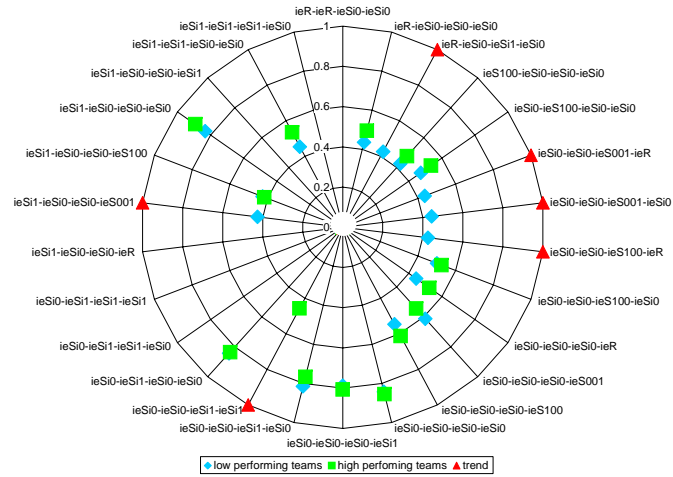
Note. The 109 teams were parted into three groups of the same size according to their performance (low – medium – high). Results are presented for the two extreme groups: all the teams with the lowest performance and all the teams with the highest performance on day one, respectively on day two.

8.3 Sequences Detected on Day One and Day Two

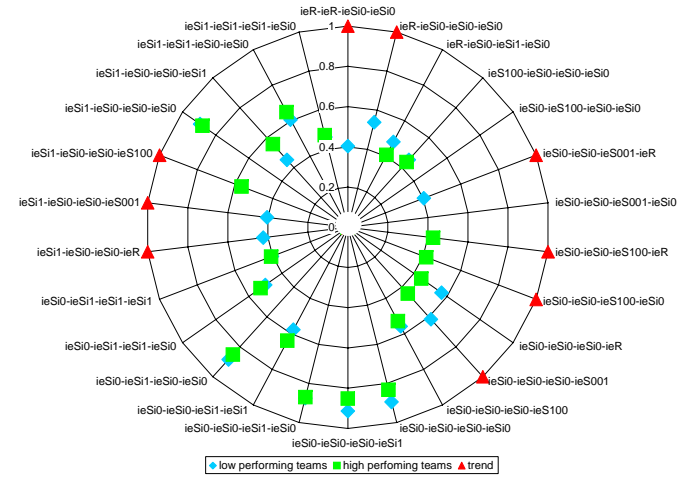
The following figures for specialists A and B contain the graphical representation of the support values and the information if they statistically significant differ.

The graphical representations for commanders are found in Figure 50 (page 224).

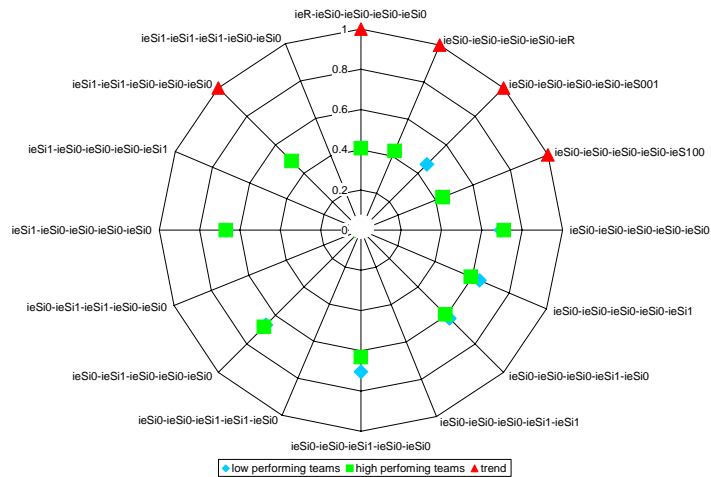
sequences of 4 events – day one



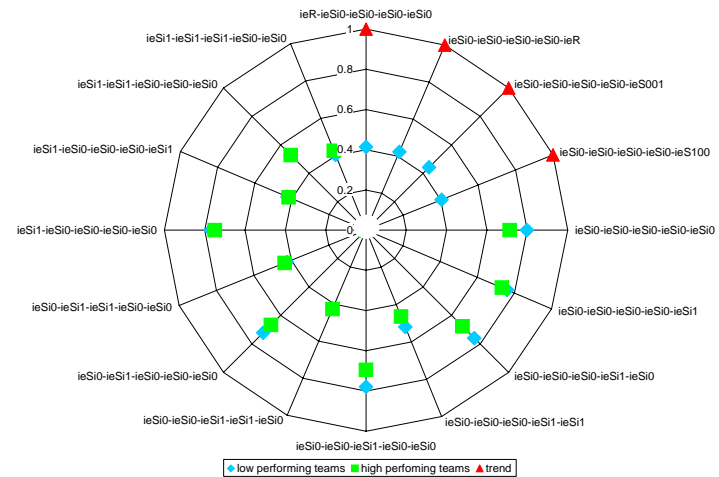
sequences of 4 events – day two



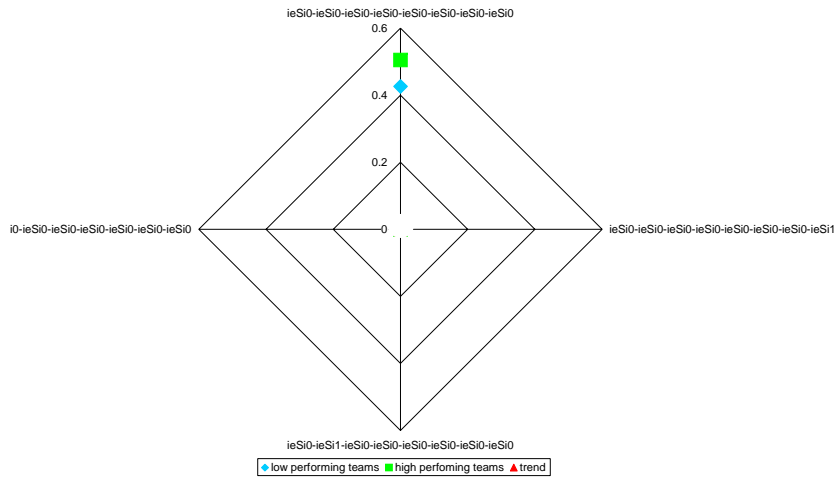
sequences of 5 events – day one



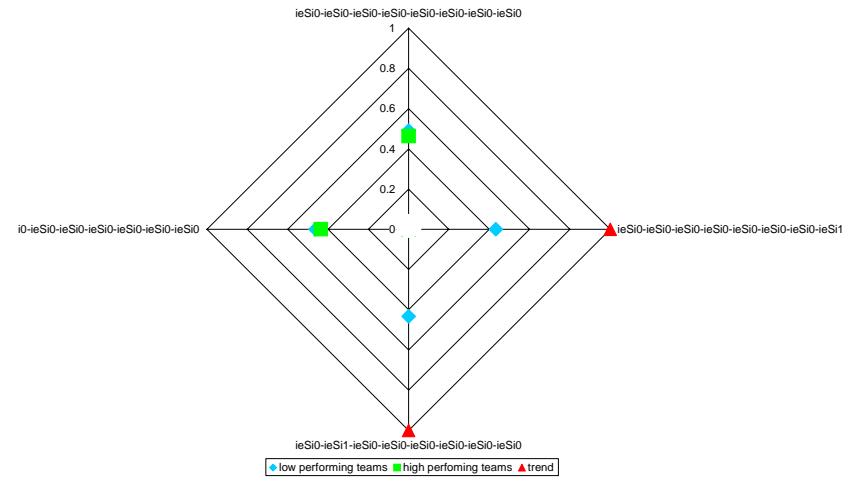
sequences of 5 events – day two



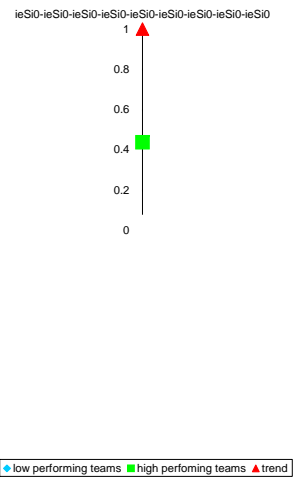
sequences of 8 events – day one



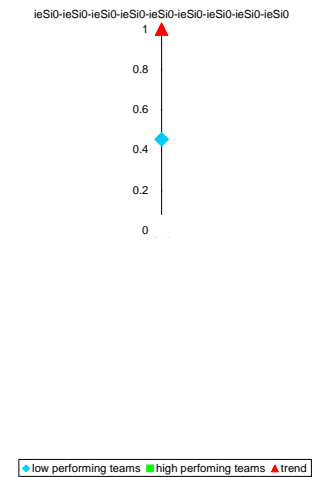
sequences of 8 events – day two



sequences of 9 events – day one



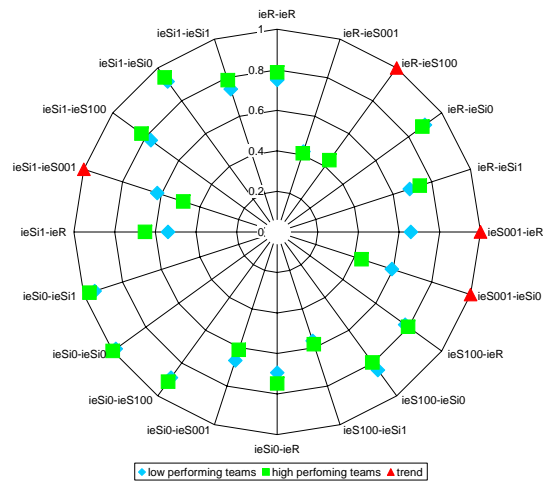
sequences of 9 events – day two



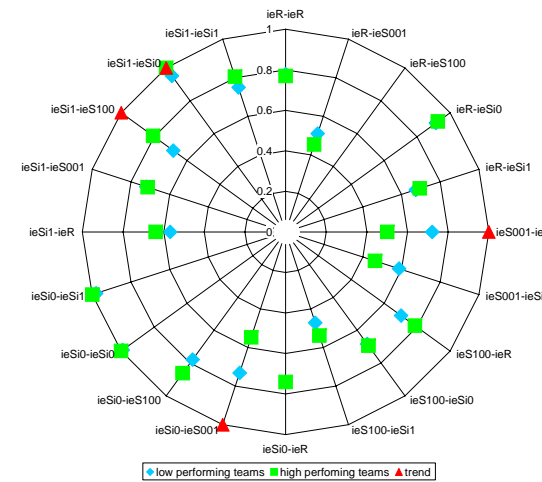
Note. Results are presented for the two extreme groups: all the teams with the lowest performance and all the teams with the highest performance on day one and day two. N = 108 streams day one low performance, 103 streams day one high performance, 104 streams day two, low performance, 108 streams day two, high performance.

Figure 57 Sequences for specialists B of low and high performing teams (triple) for day one and day two.

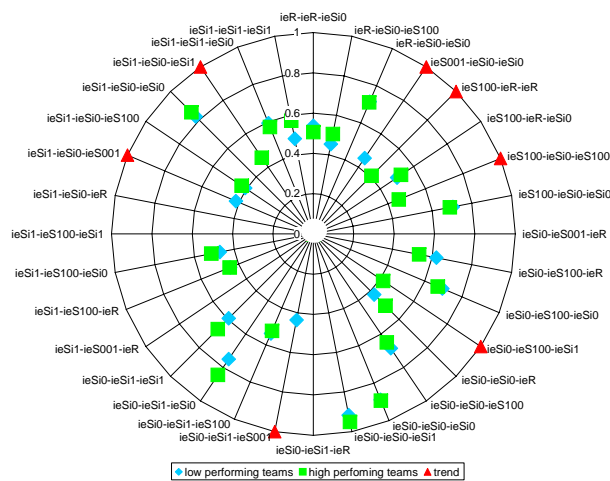
sequences of 2 events – day one



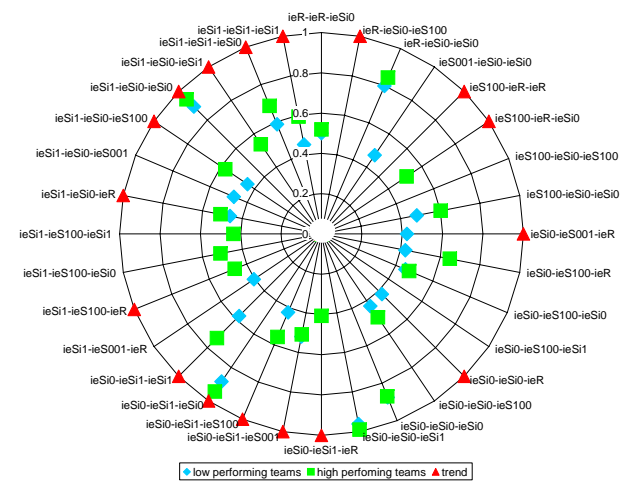
sequences of 2 events – day two



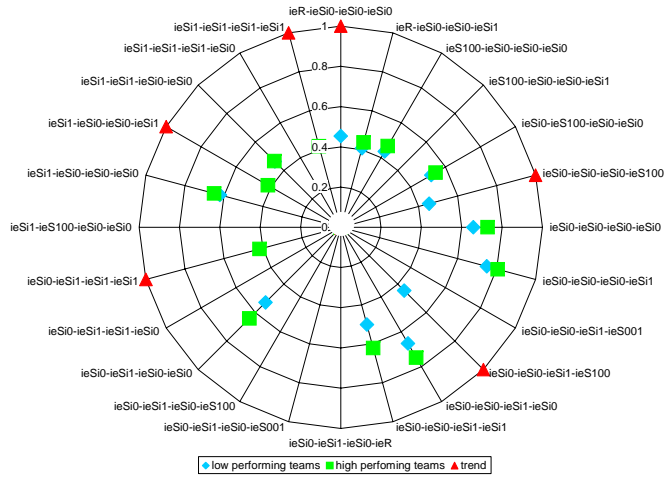
sequences of 3 events – day one



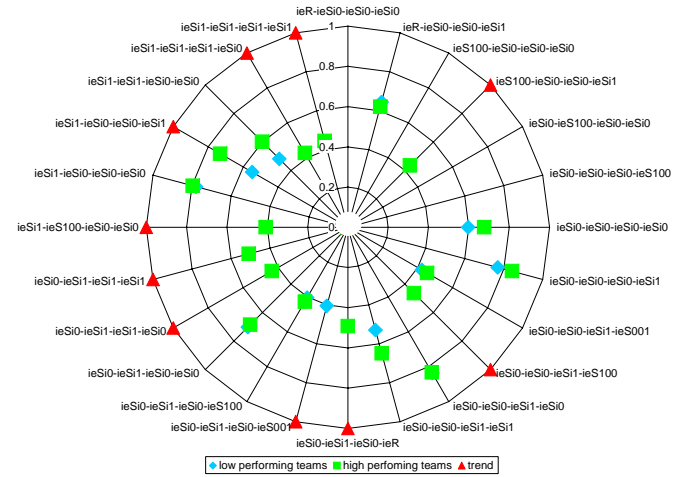
sequences of 3 events – day two



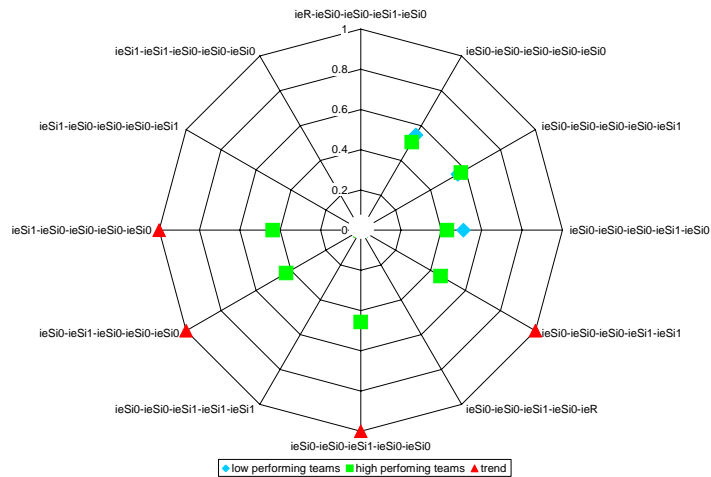
sequences of 4 events – day one



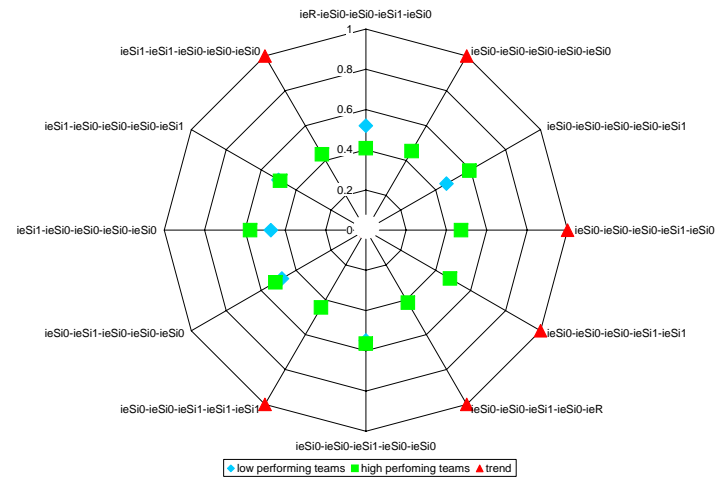
sequences of 4 events – day two



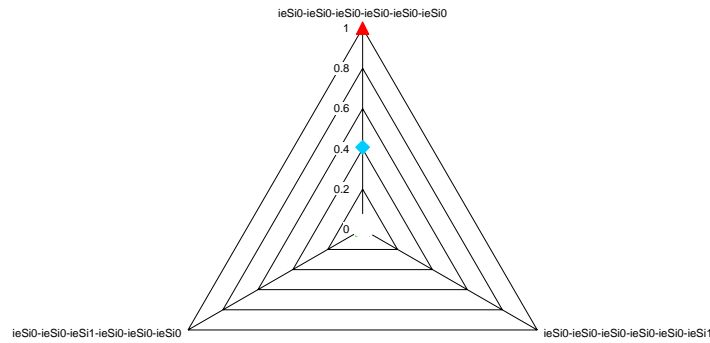
sequences of 5 events – day one



sequences of 5 events – day two



sequences of 6 events – day one



◆ low performing teams ■ high performing teams ▲ trend

sequences of 7 events – day one

-

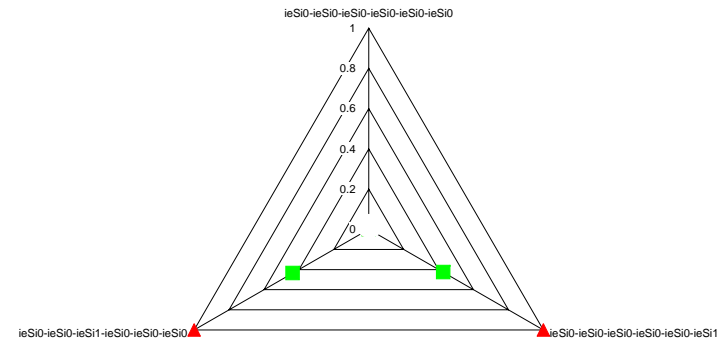
sequences of 8 events – day one

-

sequences of 9 events – day one

-

sequences of 6 events – day two



◆ low performing teams ■ high performing teams ▲ trend

sequences of 7 events – day two

-

sequences of 8 events – day two

-

sequences of 9 events – day two

-

Note. Results are presented for the two extreme groups: all the teams with the lowest performance and all the teams with the highest performance on day one and day two. N = 108 streams day one low performance, 103 streams day one high performance, 104 streams day two, low performance, 108 streams day two, high performance.

8.4 Predicting Performance: Data Mining

The following tables contain all information on the details of the regression analyses run to predict performance using sequences found with data mining techniques. There are always two regression equations per shift. The first equation predicts performance taking only sequences as predictors. The second equation controls for preceding performance, *input variables* and *summary-level process variables*.

Table 176 Results of multiple regression, predicting performance shift 1 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.094	.086	.094	11.17	1	107	.001	11.16	1	107	.001
2	.170	.155	.076	9.675	1	106	.002	10.87	2	106	.000
3	.216	.194	.046	6.164	1	105	.015	9.66	3	105	.000
4	.261	.233	.045	6.295	1	104	.014	9.18	4	104	.000
5	.303	.269	.042	6.211	1	103	.014	8.96	5	103	.000
6	.340	.301	.037	5.734	1	102	.018	8.76	6	102	.000
7	.366	.322	.026	4.096	1	101	.046	8.23	7	101	.000
8	.391	.343	.025	4.189	1	100	.043	8.04	8	100	.000
9	.406	.352	.015	2.511	1	99	.116	7.53	9	99	.000
10	.426	.368	.020	3.401	1	98	.068	7.28	10	98	.000
11	.440	.377	.014	2.455	1	97	.120	6.94	11	97	.000
12	.455	.387	.015	2.633	1	96	.108	6.68	12	96	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieH-ieSi1, commander EC25S1	.247	2.879	.005
(2) ieH-ieS100, commander EC23S1	.270	3.388	.001
(3) ieSi1-ieSi0-ieSi1, specialist B EB330S1	.169	2.126	.036
(4) ieS100-ieR-ieH, commander EC318S1	.191	2.184	.031
(5) ieS001-ieR, specialist A EA26S1	-.350	-3.305	.001
(6) ieS001-ieR-ieSi0, specialist A EA37S1	.230	2.144	.035
(7) ieSi1-ieSi1, commander EC218S1	.169	2.098	.039
(8) ieS100-ieR, specialist B EB28S1	.127	1.602	.112
(9) ieSi1-ieSi1-ieSi1-ieSi0-ieSi0, specialist A EA516S1	-.203	-2.359	.020
(10) ieS001-ieSi0-ieSi0, specialist B EB34S1	-.169	-2.069	.041
(11) ieSi0-ieSi0-ieSi0-ieSi1-ieSi1, specialist A EA58S1	.144	1.649	.102
(12) ieSi0-ieSi0-ieSi1-ieS001, specialist B EB49S	.127	1.623	.108

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 177 Results of multiple regression, predicting performance shift 1, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.076	.067	.076	8.812	1	107	.004	8.82	1	107	.004
2	.112	.095	.036	4.242	1	106	.042	6.60	2	106	.002
3	.130	.105	.018	2.204	1	105	.141	5.23	3	105	.002
4	.201	.170	.071	9.285	1	104	.003	6.55	4	104	.000
5	.259	.223	.058	7.993	1	103	.006	7.19	5	103	.000
6	.289	.248	.031	4.411	1	102	.038	6.93	6	102	.000
7	.304	.256	.015	2.115	1	101	.149	6.30	7	101	.000
8	.321	.267	.017	2.509	1	100	.116	5.91	8	100	.000
9	.370	.313	.049	7.669	1	99	.007	6.46	9	99	.000
10	.401	.340	.031	5.142	1	98	.026	6.57	10	98	.000
11	.424	.359	.023	3.848	1	97	.053	6.50	11	97	.000
12	.441	.371	.017	2.888	1	96	.092	6.31	12	96	.000
13	.455	.380	.014	2.369	1	95	.127	6.09	13	95	.000
14	.470	.391	.015	2.671	1	94	.106	5.95	14	94	.000
15	.482	.398	.012	2.176	1	93	.144	5.76	15	93	.000

Predictors in trimmed model	Beta	t	Sig.
(1) education, specialist A	.152	1.923	.058
(2) education, commander	-.094	-1.152	.252
(3) computer expertise, commander	.167	2.053	.043
(4) duration Send Message, specialist A	-.275	-3.446	.001
(5) number Handle Threat, commander	.110	1.243	.217
(6) duration Send Message, commander	-.137	-1.646	.103
(7) number Read Message, specialist B	.066	.738	.463
(8) duration Read Message, specialist A	-.060	-.690	.492
(9) ieSi1-ieSi0-ieSi1, specialist B EB330S1	.245	3.084	.003
(10) ieS100-ieR-ieH, commander EC318S1	.198	2.263	.026
(11) ieH-ieS100, commander EC23S1	.168	1.972	.052
(12) ieS100-ieR, specialist B EB28S1	.143	1.699	.093
(13) ieSi1-ieSi1, commander EC218S1	.134	1.697	.093
(14) ieS100-ieR-ieR, specialist A EA39S1	-.147	-1.818	.072
(15) ieSi1-ieSi1-ieSi1-ieSi0-ieSi0, specialist A EA516S1	-.118	-1.475	.144

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 178 Results of multiple regression, predicting performance shift 2 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.157	.149	.157	19.97	1	107	.000	19.97	1	107	.001
2	.230	.215	.073	9.990	1	106	.002	15.82	2	106	.000
3	.276	.255	.046	6.655	1	105	.011	13.23	3	105	.000
4	.316	.290	.040	6.111	1	104	.015	12.01	4	104	.000
5	.355	.324	.039	6.204	1	103	.014	11.33	5	103	.000
6	.400	.365	.045	7.710	1	102	.007	11.34	6	102	.000
7	.438	.400	.038	6.883	1	101	.010	11.27	7	101	.000
8	.461	.418	.023	4.195	1	100	.043	10.69	8	100	.000
9	.481	.434	.020	3.794	1	99	.054	10.19	9	99	.000
10	.507	.456	.026	5.127	1	98	.026	10.07	10	98	.000
11	.530	.477	.024	4.871	1	97	.030	9.96	11	97	.000
12	.557	.501	.026	5.671	1	96	.019	10.04	12	96	.000
13	.572	.514	.016	3.472	1	95	.065	9.77	13	95	.000
14	.619	.563	.047	11.62	1	94	.001	10.92	14	94	.000
15	.639	.581	.020	5.133	1	93	.026	10.98	15	93	.000
16	.653	.593	.014	3.676	1	92	.058	10.82	16	92	.000
18	.661	.598	.008	2.189	1	91	.142	10.45	17	91	.000
18	.670	.604	.009	2.479	1	90	.119	10.16	18	90	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieH-ieSi1, commander EC24S2	.714	5.567	.000
(2) ieR-ieR-ieR-ieH-ieR, commander EC59S2	.107	1.207	.230
(3) ieR-ieH-ieSi1, commander EC36S2	-.547	-4.056	.000
(4) ieSi0-ieSi1-ieR, specialist B EB317S2	-.204	-3.187	.002
(5) ieSi1-ieSi1, specialist A EA221S2	.195	2.975	.004
(6) ieS001-ieSi1, specialist A EA28S2	-.092	-1.349	.181
(7) ieR-ieR-ieR-ieR-ieR-ieR, commander EC66S2	-.237	-3.363	.001
(8) ieH-ieR-ieR-ieR, commander EC43S2	.154	1.938	.056
(9) ieSi0-ieSi0-ieSi1-ieSi0, specialist A EA415S2	-.231	-2.594	.011
(10) ieR-ieSi1-ieH, EC315S2	.137	1.920	.058
(11) ieH-ieR-ieR-ieH-ieR, commander EC52S2	-.309	-3.326	.001
(12) ieR-ieH, commander EC25S2	.264	2.186	.031
(13) ieSi0-ieSi0-ieSi0-ieSi1-ieSi0-ieSi0, specialist A EA65S2	.598	4.799	.000
(14) ieSi0-ieSi0-ieSi1-ieSi0-ieSi0-ieSi0-ieSi0, specialist A EA76S2	-.521	-4.548	.000
(15) ieSi1-ieSi0-ieSi0-ieS100, specialist A EA422S2	-.175	-2.476	.015
(16) ieR-ieS001, specialist B EB22S2	-.124	-1.796	.076
(17) ieSi1-ieS100-ieSi0-ieSi0, specialist B EB419S2	-.117	-1.737	.086
(18) ieSi0-ieSi0-ieS100, specialist B EB314S	.107	1.575	.119

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 179 Results of multiple regression, predicting performance shift 2, with preceding performance, *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.212	.205	.212	28.81	1	107	.000	28.81	1	107	.000
2	.236	.222	.024	3.303	1	106	.072	16.37	2	106	.000
3	.299	.279	.063	9.499	1	105	.003	14.95	3	105	.000
4	.320	.294	.021	3.178	1	104	.078	12.24	4	104	.000
5	.337	.305	.017	2.664	1	103	.106	10.48	5	103	.000
6	.394	.359	.057	9.638	1	102	.002	11.07	6	102	.000
7	.455	.417	.060	11.13	1	101	.001	12.03	7	101	.000
8	.478	.437	.024	4.553	1	100	.035	11.46	8	100	.000
9	.509	.464	.030	6.079	1	99	.015	11.38	9	99	.000
10	.531	.483	.022	4.622	1	98	.034	11.08	10	98	.000
11	.547	.495	.016	3.463	1	97	.066	10.64	11	97	.000
12	.565	.511	.018	4.000	1	96	.048	10.39	12	96	.000
13	.584	.527	.019	4.396	1	95	.039	10.27	13	95	.000
14	.622	.566	.038	9.387	1	94	.003	11.05	14	94	.000
15	.644	.586	.022	5.710	1	93	.019	11.21	15	93	.000
16	.661	.602	.017	4.593	1	92	.035	11.12	16	92	.000
17	.673	.612	.012	3.354	1	91	.070	11.01	17	91	.000
18	.687	.625	.014	4.171	1	90	.044	11.00	18	90	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1	.274	4.183	.000
(2) gender, commander	-.001	-.016	.988
(3) frequency Handle Threat, commander	.192	2.043	.044
(4) frequency Read Message, specialist B	-.117	-1.675	.097
(5) frequency Show Information, commander	.065	.973	.333
(6) ieH-ieR-ieR-ieH-ieR, commander EC52S2	-.280	-3.385	.001
(7) ieH-ieSi1, commander EC24S2	.624	5.057	.000
(8) ieR-ieR-ieR-ieH-ieR, commander EC59S2	.164	2.072	.041
(9) ieR-ieH-ieSi1, commander EC36S2	-.467	-3.660	.000
(10) ieSi0-ieSi1-ieR, specialist B EB317S2	-.149	-2.219	.029
(11) ieR-ieR-ieR-ieR-ieR-ieR, commander EC66S2	-.219	-3.203	.002
(12) ieH-ieR-ieR-ieR, commander EC43S2	.183	2.409	.018
(13) ieSi0-ieSi0-ieSi1-ieSi0-ieSi0-ieSi0, specialist A EA76S2	-.468	-4.152	.000
(14) ieSi0-ieSi0-ieSi0-ieSi1-ieSi0-ieSi0, specialist A EA65S2	.654	4.437	.000
(15) ieSi1-ieSi0-ieSi0-ieS100, specialist A EA422S2	-.168	-2.457	.016
(16) ieSi0-ieSi0-ieSi0-ieSi1-ieSi0, specialist A EA57S2	-.261	-2.074	.041
(17) ieSi1-ieSi1, specialist A EA221S2	.138	2.110	.038
(18) ieS001-ieSi1, specialist A EA28S	-.129	-2.042	.044

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, *sequences* entered in the fourth step with method forward, PIN = 0.15

Table 180 Results of multiple regression, predicting performance shift 3 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.090	.082	.090	10.59	1	107	.002	10.59	1	107	.002
2	.162	.146	.072	9.120	1	106	.003	10.26	2	106	.000
3	.216	.194	.054	7.220	1	105	.008	9.65	3	105	.000
4	.270	.242	.054	7.753	1	104	.006	9.64	4	104	.000
5	.316	.282	.045	6.787	1	103	.011	9.50	5	103	.000
6	.347	.308	.031	4.881	1	102	.029	9.03	6	102	.000
7	.381	.338	.034	5.498	1	101	.021	8.86	7	101	.000
8	.413	.366	.032	5.535	1	100	.021	8.80	8	100	.000
9	.441	.390	.028	4.950	1	99	.028	8.68	9	99	.000
10	.468	.413	.027	4.911	1	98	.029	8.61	10	98	.000
11	.489	.431	.021	4.064	1	97	.047	8.44	11	97	.000
12	.504	.442	.015	2.983	1	96	.087	8.14	12	96	.000
13	.526	.461	.022	4.346	1	95	.040	8.11	13	95	.000
14	.547	.479	.020	4.249	1	94	.042	8.10	14	94	.000
15	.560	.489	.013	2.769	1	93	.099	7.88	15	93	.000
16	.574	.499	.014	2.993	1	92	.087	7.74	16	92	.000
17	.589	.512	.015	3.301	1	91	.073	7.66	17	91	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieS100-ieS100, commander EC214S3	-.289	-3.655	.000
(2) ieS100-ieSi1, specialist A EA211S3	.209	2.486	.015
(3) ieR-ieSi0-ieS100, specialist B EB32S3	-.251	-3.509	.001
(4) ieSi1-ieR, commander EC216S3	.327	4.121	.000
(5) ieSi1-ieS100-ieSi1, specialist B EB325S3	.203	2.658	.009
(6) ieR-ieR, specialist B EB21S3	.225	2.855	.005
(7) ieSi0-ieSi0-ieS001-ieSi0, specialist A EA47S3	-.234	-3.146	.002
(8) ieSi1-ieSi1-ieSi1-ieSi0, specialist B EB423S3	.147	1.944	.055
(9) ieSi1-ieS001, specialist B EB217S3	-.375	-3.745	.000
(10) ieR-ieS010, commander EC28S3	.216	2.841	.006
(11) ieR-ieSi1, commander EC210S3	-.161	-1.982	.050
(12) ieSi0-ieSi0-ieR, specialist A EA319S3	.169	2.231	.028
(13) ieSi0-ieR, specialist B EB211S3	-.225	-2.641	.010
(14) ieR-ieSi1, specialist B EB25S3	.171	2.205	.030
(15) ieR-ieS100, specialist A EA23S3	-.161	-1.918	.058
(16) ieR-ieS100-ieR-ieR, commander EC412S3	.150	1.916	.058
(17) ieSi0-ieSi1-ieS001, specialist B EB318S	.175	1.817	.073

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15.

Table 181 Results of multiple regression, predicting performance shift 3, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.323	.316	.323	50.94	1	107	.000	50.94	1	107	.000
2	.380	.368	.057	9.768	1	106	.002	32.44	2	106	.000
3	.407	.390	.028	4.882	1	105	.029	24.05	3	105	.000
4	.435	.413	.027	5.034	1	104	.027	19.99	4	104	.000
5	.468	.443	.034	6.557	1	103	.012	18.16	5	103	.000
6	.493	.463	.025	4.994	1	102	.028	16.55	6	102	.000
7	.523	.490	.029	6.229	1	101	.014	15.80	7	101	.000
8	.553	.518	.031	6.835	1	100	.010	15.48	8	100	.000
9	.576	.538	.023	5.380	1	99	.022	14.96	9	99	.000
10	.597	.556	.021	5.096	1	98	.026	14.53	10	98	.000
11	.617	.573	.019	4.933	1	97	.029	14.19	11	97	.000
12	.631	.585	.014	3.767	1	96	.055	13.69	12	96	.000
13	.642	.593	.011	2.898	1	95	.092	13.11	13	95	.000
14	.656	.605	.014	3.787	1	94	.055	12.80	14	94	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1-2	.449	6.621	.000
(2) gender, commander	.132	1.950	.054
(3) age, specialist A	-.154	-2.445	.016
(4) frequency Send Message, commander	-.071	-.800	.426
(5) frequency Read Message, specialist B	-.088	-.686	.494
(6) ieR-ieSi0-ieS100, specialist B EB32S3	-.198	-3.074	.003
(7) ieS100-ieS100, commander EC214S3	-.283	-3.675	.000
(8) ieSi1-ieR, commander EC216S3	.197	3.111	.002
(9) ieSi1-ieS100-ieSi1, specialist B EB325S3	.155	2.311	.023
(10) ieSi1-ieS001, specialist B EB217S3	-.195	-2.937	.004
(11) ieR-ieSi1, specialist B EB25S3	.163	2.196	.031
(12) ieR-ieR, specialist B EB21S3	.271	2.426	.017
(13) ieSi1-ieSi1-ieSi1-ieSi0, specialist B EB423S3	.133	2.015	.047
(14) ieSi0-ieSi0-ieS001-ieSi0, specialist A EA47S3	-.134	-1.946	.055

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, sequences entered in the fourth step with method forward, PIN = 0.15.

Table 182 Results of multiple regression, predicting performance shift 4 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.079	.070	.079	9.130	1	107	.003	9.13	1	107	.003
2	.144	.128	.065	8.076	1	106	.005	8.91	2	106	.000
3	.200	.177	.056	7.301	1	105	.008	8.72	3	105	.000
4	.236	.207	.036	4.965	1	104	.028	8.03	4	104	.000
5	.285	.250	.049	7.049	1	103	.009	8.21	5	103	.000
6	.350	.312	.065	10.21	1	102	.002	9.15	6	102	.000
7	.387	.344	.037	6.079	1	101	.015	9.10	7	101	.000
8	.412	.365	.025	4.215	1	100	.043	8.75	8	100	.000
9	.435	.383	.023	4.024	1	99	.048	8.46	9	99	.000
10	.458	.403	.024	4.267	1	98	.041	8.29	10	98	.000
11	.479	.420	.021	3.916	1	97	.051	8.12	11	97	.000
12	.497	.434	.018	3.395	1	96	.068	7.91	12	96	.000
13	.527	.462	.030	5.961	1	95	.016	8.13	13	95	.000
14	.550	.483	.023	4.793	1	94	.031	8.20	14	94	.000
15	.578	.510	.028	6.215	1	93	.014	8.49	15	93	.000
16	.594	.524	.016	3.679	1	92	.058	8.42	16	92	.000
17	.612	.539	.018	4.117	1	91	.045	8.43	17	91	.000
18	.624	.549	.012	2.904	1	90	.092	8.30	18	90	.000
19	.635	.558	.012	2.841	1	89	.095	8.17	19	89	.000
20	.653	.575	.018	4.528	1	88	.036	8.29	20	88	.000
21	.663	.581	.010	2.461	1	87	.120	8.15	21	87	.000
22	.674	.590	.011	2.871	1	86	.094	8.07	22	86	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieR-ieR-ieS100-ieR-ieR, commander EC512S4	.021	.167	.868
(2) ieSi1-ieSi1, specialist A EA221S4	.137	1.861	.066
(3) ieR-ieR-ieR-ieR-ieH-ieR, commander EC65S4	.411	4.241	.000
(4) ieR-ieR-ieR-ieSi1, commander EC410S4	-.211	-2.832	.006
(5) ieH-ieR-ieR-ieH-ieR, commander EC52S4	-.177	-2.233	.028
(6) ieR-ieS010-ieR, commander EC313S4	-.304	-4.364	.000
(7) ieSi1-ieSi0-ieSi0-ieSi0, specialist B EB420S4	.332	4.449	.000
(8) ieSi0-ieSi1-ieS100, specialist B EB319S4	.217	3.328	.001
(9) ieS100-ieS100, commander EC214S4	-.376	-3.200	.002
(10) ieH-ieR-ieH-ieR, commander EC41S4	-.200	-2.772	.007
(11) ieS100-ieS100-ieR, commander EC320S4	.321	2.678	.009
(12) ieSi0-ieSi0-ieSi0-ieS001, specialist A EA411S4	.875	4.533	.000
(13) ieSi0-ieSi0-ieSi0-ieSi0-ieS001, specialist A EA53S4	-.741	-3.904	.000
(14) ieR-ieSi0-ieSi0, specialist B EB33S4	-.178	-2.472	.015
(15) ieR-ieR-ieR-ieH-ieR-ieR, commander EC64S4	-.294	-2.847	.006
(16) ieR-ieR-ieR-ieS100, commander EC49S4	.316	3.126	.002
(17) ieR-ieR-ieS100, commander EC310S4	-.299	-1.835	.070
(18) ieR-ieR-ieS100-ieR, commander EC411S4	.243	1.412	.162
(19) ieR-ieS001, commander EC27S4	.375	3.124	.002
(20) ieR-ieS001-ieR, commander EC312S4	-.304	-2.544	.013
(21) ieS001-ieSi0-ieSi0, specialist A EA38S4	-.161	-1.903	.060
(22) ieSi0-ieSi0-ieSi0-ieS100, specialist B EB46S	-.119	-1.694	.094

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 183 Results of multiple regression, predicting performance shift 4, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.235	.228	.235	32.93	1	107	.000	32.93	1	107	.000
2	.281	.268	.046	6.791	1	106	.010	20.75	2	106	.000
3	.299	.279	.018	2.674	1	105	.105	14.95	3	105	.000
4	.319	.293	.020	3.072	1	104	.083	12.20	4	104	.000
5	.337	.304	.017	2.694	1	103	.104	10.46	5	103	.000
6	.353	.314	.016	2.505	1	102	.117	9.26	6	102	.000
7	.400	.358	.047	7.922	1	101	.006	9.61	7	101	.000
8	.419	.372	.019	3.317	1	100	.072	9.01	8	100	.000
9	.438	.387	.019	3.346	1	99	.070	8.57	9	99	.000
10	.457	.401	.019	3.413	1	98	.068	8.24	10	98	.000
11	.470	.410	.013	2.442	1	97	.121	7.83	11	97	.000
12	.527	.468	.057	11.53	1	96	.001	8.91	12	96	.000
13	.551	.490	.024	5.156	1	95	.025	8.98	13	95	.000
14	.574	.511	.023	5.082	1	94	.027	9.06	14	94	.000
15	.604	.541	.030	7.045	1	93	.009	9.47	15	93	.000
16	.630	.565	.025	6.333	1	92	.014	9.78	16	92	.000
17	.650	.585	.020	5.308	1	91	.024	9.95	17	91	.000
18	.662	.594	.011	3.051	1	90	.084	9.78	18	90	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1-3	.311	4.406	.000
(2) computer expertise, commander	.258	3.885	.000
(3) gender, specialist A	-.107	-1.664	.100
(4) Control Condition 1	-.101	-1.552	.124
(5) age, commander	-.194	-2.938	.004
(6) education commander	.181	2.684	.009
(7) duration Read Message, specialist B	-.098	-1.330	.187
(8) duration Send Message, specialist A	-.198	-2.774	.007
(9) frequency Handle Threat, commmander	-.180	-2.356	.021
(10) frequency Show Information, specialist B	.194	2.897	.005
(11) duration Read Message, commander	.052	.651	.517
(12) ieR-ieR-ieR-ieR-ieH-ieR, commander EC65S4	.289	3.983	.000
(13) ieR-ieS001, commander EC27S4	.354	3.289	.001
(14) ieR-ieR-ieR-ieSi1, commander EC410S4	-.257	-3.733	.000
(15) ieR-ieS010-ieR, commander EC313S4	-.230	-3.310	.001
(16) ieH-ieR-ieR-ieH-ieR, commander EC52S4	-.236	-3.091	.003
(17) ieR-ieS001-ieR, commander EC312S4	-.253	-2.376	.020
(18) ieR-ieS001, specialist A EA221S	.124	1.747	.084

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, sequences entered in the fourth step with method forward, PIN = 0.15

Table 184 Results of multiple regression, predicting performance shift 5 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.168	.160	.168	21.55	1	107	.000	21.55	1	107	.000
2	.302	.289	.134	20.36	1	106	.000	22.91	2	106	.000
3	.385	.368	.083	14.26	1	105	.000	21.93	3	105	.000
4	.417	.395	.032	5.673	1	104	.019	18.60	4	104	.000
5	.446	.419	.029	5.347	1	103	.023	16.57	5	103	.000
6	.470	.439	.024	4.666	1	102	.033	15.08	6	102	.000
7	.501	.467	.031	6.295	1	101	.014	14.50	7	101	.000
8	.522	.483	.020	4.283	1	100	.041	13.63	8	100	.000
9	.540	.498	.018	3.894	1	99	.051	12.90	9	99	.000
10	.559	.514	.019	4.266	1	98	.042	12.42	10	98	.000
11	.572	.524	.013	2.995	1	97	.087	11.79	11	97	.000
12	.583	.531	.011	2.479	1	96	.119	11.18	12	96	.000
13	.592	.537	.009	2.206	1	95	.141	10.62	13	95	.000
14	.617	.560	.025	6.121	1	94	.015	10.83	14	94	.000
15	.628	.568	.010	2.567	1	93	.112	10.45	15	93	.000
16	.639	.576	.012	2.952	1	92	.089	10.19	16	92	.000
17	.653	.588	.014	3.635	1	91	.060	10.08	17	91	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieH-ieSi1, commander EC24S5	.482	5.502	.000
(2) ieR-ieS010-ieR, commander EC313S5	-.335	-5.102	.000
(3) ieSi0-ieSi0-ieS100, specialist B EB314S5	.123	1.644	.104
(4) ieSi1-ieSi1-ieSi0-ieSi0-ieSi0, specialist B EB512S5	.247	3.294	.001
(5) ieSi1-ieSi0-ieSi1, specialist A EA332S5	.155	2.323	.022
(6) ieR-ieH-ieSi1, commander EC36S5	-.291	-2.872	.005
(7) ieR-ieSi0-ieSi0, specialist A EA34S5	-.152	-2.270	.026
(8) ieR-ieR-ieH, commander EC37S5	.091	1.072	.286
(9) ieR-ieSi0-ieSi0, specialist B EB33S5	-.105	-1.356	.179
(10) ieSi0-ieSi0-ieR, specialist B EB313S5	.118	1.422	.158
(12) ieR-ieSi1, specialist B EB25S5	-.166	-2.291	.024
(13) ieS100-ieSi0, specialist A EA210S5	.115	1.465	.146
(14) ieR-ieR-ieR-ieS100, commander EC49S5	-.303	-3.088	.003
(15) ieR-ieS100-ieR-ieR, commander EC412S5	.230	2.810	.006
(16) ieR-ieS100, specialist A EA23S5	.184	2.193	.031
(17) ieR-ieR-ieR-ieR-ieH-ieR, commander EC65S5	.159	1.984	.050
(18) ieSi1-ieSi0, specialist B EB219S	.152	1.906	.060

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 185 Results of multiple regression, predicting performance shift 5, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.271	.264	.271	39.75	1	107	.000	39.75	1	107	.000
2	.308	.295	.037	5.655	1	106	.019	23.57	2	106	.000
3	.326	.307	.018	2.844	1	105	.095	16.93	3	105	.000
4	.370	.345	.044	7.181	1	104	.009	15.24	4	104	.000
5	.411	.383	.042	7.317	1	103	.008	14.40	5	103	.000
6	.431	.397	.019	3.469	1	102	.065	12.87	6	102	.000
7	.446	.407	.015	2.705	1	101	.103	11.60	7	101	.000
8	.496	.455	.050	9.918	1	100	.002	12.28	8	100	.000
9	.535	.493	.039	8.334	1	99	.005	12.65	9	99	.000
10	.569	.525	.034	7.828	1	98	.006	12.95	10	98	.000
11	.597	.552	.028	6.787	1	97	.011	13.08	11	97	.000
12	.625	.578	.028	7.106	1	96	.009	13.34	12	96	.000
13	.648	.600	.023	6.178	1	95	.015	13.45	13	95	.000
14	.668	.619	.020	5.650	1	94	.019	13.51	14	94	.000
15	.685	.634	.017	4.961	1	93	.028	13.47	15	93	.000
16	.695	.643	.011	3.229	1	92	.076	13.13	16	92	.000
17	.706	.651	.010	3.117	1	91	.081	12.83	17	91	.000
18	.726	.671	.020	6.646	1	90	.012	13.24	18	90	.000
19	.734	.677	.008	2.684	1	89	.105	12.92	19	89	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1-4	.352	5.439	.000
(2) computer expertise, commander	.074	1.100	.274
(3) gender, commander	.178	2.810	.006
(4) frequency Show Information, specialist AB	-.030	-.293	.770
(5) frequency Show Information, specialist A	-.184	-2.792	.006
(6) duration Send Message, commander	-.102	-1.474	.144
(7) frequency Handle Threat, commander	.060	.940	.350
(8) ieSi0-ieSi0-ieR, specialist B EB313S5	.198	2.744	.007
(9) ieR-ieSi1, specialist B EB25S5	-.199	-3.172	.002
(10) ieSi1-ieSi1-ieSi0-ieSi0-ieSi0, specialist B EB512S5	.308	3.192	.002
(11) ieH-ieSi1, commander EC24S5	.331	4.032	.000
(12) ieR-ieS010-ieR, commander EC313S5	-.180	-2.757	.007
(13) ieSi1-ieSi0-ieSi1, specialist A EA332S5	.170	2.932	.004
(14) ieS100-ieSi0, specialist A EA210S5	.315	3.821	.000
(15) ieSi0-ieS001-ieSi0, specialist A EA315S5	.129	2.048	.044
(16) ieR-ieH-ieSi1, commander EC36S5	-.224	-2.600	.011
(17) ieR-ieR-ieR-ieS100, commander EC49S5	-.242	-2.980	.004
(18) ieR-ieS100-ieR-ieR, commander EC412S5	.195	2.557	.012
(19) ieSi1-ieS100-ieSi0, specialist A EA328S	-.131	-1.638	.105

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, sequences entered in the fourth step with method forward, PIN = 0.15

Table 186 Results of multiple regression, predicting performance shift 6 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.125	.117	.125	15.28	1	107	.000	15.28	1	107	.000
2	.201	.186	.076	10.04	1	106	.002	13.31	2	106	.000
3	.269	.248	.068	9.764	1	105	.002	12.86	3	105	.000
4	.300	.273	.032	4.708	1	104	.032	11.16	4	104	.000
5	.324	.291	.024	3.581	1	103	.061	9.87	5	103	.000
6	.361	.323	.037	5.894	1	102	.017	9.60	6	102	.000
7	.388	.346	.028	4.570	1	101	.035	9.17	7	101	.000
8	.414	.367	.025	4.281	1	100	.041	8.82	8	100	.000
9	.438	.387	.024	4.286	1	99	.041	8.57	9	99	.000
10	.460	.405	.022	3.944	1	98	.050	8.34	10	98	.000
11	.478	.419	.018	3.383	1	97	.069	8.07	11	97	.000
12	.495	.432	.017	3.236	1	96	.075	7.84	12	96	.000
13	.511	.444	.016	3.107	1	95	.081	7.64	13	95	.000
14	.528	.458	.017	3.440	1	94	.067	7.52	14	94	.000
15	.541	.468	.013	2.703	1	93	.104	7.32	15	93	.000
16	.554	.476	.012	2.534	1	92	.115	7.14	16	92	.000
17	.573	.493	.019	4.064	1	91	.047	7.18	17	91	.000
18	.594	.513	.022	4.802	1	90	.031	7.33	18	90	.000
19	.609	.525	.014	3.267	1	89	.074	7.29	19	89	.000
20	.623	.538	.015	3.417	1	88	.068	7.29	20	88	.000
21	.635	.547	.012	2.811	1	87	.097	7.22	21	87	.000
22	.644	.553	.009	2.151	1	86	.146	7.08	22	86	.000
23	.664	.573	.020	4.981	1	85	.028	7.30	23	85	.000
24	.672	.579	.008	2.135	1	84	.148	7.18	24	84	.000
25	.683	.587	.011	2.777	1	83	.099	7.15	25	83	.000
26	.694	.597	.011	3.052	1	82	.084	7.16	26	82	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieSi1-ieSi1-ieS100, specialist A EA333S6	.204	2.733	.008
(2) ieSi1-ieSi0, specialist B EB219S6	.224	3.147	.002
(3) ieH-ieSi1, commander EC24S6	.223	2.602	.011
(4) ieS100-ieSi1, specialist B EB210S6	.112	1.281	.204
(5) ieS100-ieR, specialist A EA29S6	-.403	-3.733	.000
(6) ieS100-ieR-ieSi0, specialist A EA310S6	.245	2.580	.012
(7) ieR-ieS100-ieR, commander EC314S6	.235	3.156	.002
(8) ieSi0-ieR, specialist A EA212S6	-.159	-1.920	.058
(9) ieSi0-ieS001-ieR, specialist A EA314S6	-.172	-2.405	.018
(10) ieSi1-ieS100-ieSi0-ieSi0, specialist B EB419S6	-.138	-1.707	.092
(11) ieR-ieH-ieSi1, commander EC36S6	-.212	-2.511	.014
(12) ieSi0-ieS100-ieSi0-ieSi0, specialist B EB45S6	.085	1.031	.306
(13) ieR-ieS010, commander EC28S6	.123	1.753	.083
(14) ieR-ieH-ieR-ieH-ieR, commander EC54S6	.235	2.667	.009
(15) ieR-ieSi0-ieS100, specialist B EB32S6	-.091	-1.108	.271
(16) ieSi0-ieSi1-ieSi0, specialist A EA325S6	.721	3.987	.000
(17) ieSi0-ieSi0-ieSi1-ieSi0, specialist A EA415S6	-.659	-3.606	.001
(18) ieSi0-ieSi0-ieSi0-ieSi0-ieS001, specialist A EA53S6	.170	2.321	.023
(19) ieR-ieS100, specialist B EB22S6	-.171	-2.126	.037
(20) ieR-ieR-ieH-ieR-ieH, commander EC57S6	-.221	-2.490	.015
(21) ieSi1-ieS100-ieR, specialist A EA327S6	.157	1.856	.067
(22) ieR-ieR, specialist B EB21S6	.246	2.728	.008
(23) ieR-ieR, specialist A, EA21S6	-.207	-2.376	.020
(24) ieR-ieR-ieR-ieR, commander EC48S6	-.221	-2.308	.024
(25) ieH-ieS100-ieR, commander EC33S6	-.124	-1.841	.069
(26) ieH-ieR-ieH-ieR-ieR, commander EC510S6	.167	1.747	.084

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 187 Results of multiple regression, predicting performance shift 6, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.405	.400	.405	72.89	1	107	.000	72.89	1	107	.000
2	.423	.412	.017	3.196	1	106	.077	38.79	2	106	.000
3	.443	.427	.021	3.917	1	105	.050	27.88	3	105	.000
4	.464	.443	.020	3.968	1	104	.049	22.49	4	104	.000
5	.478	.453	.015	2.889	1	103	.092	18.90	5	103	.000
6	.489	.459	.011	2.186	1	102	.142	16.29	6	102	.000
7	.502	.467	.013	2.557	1	101	.113	14.55	7	101	.000
8	.515	.476	.013	2.601	1	100	.110	13.25	8	100	.000
9	.555	.514	.040	8.880	1	99	.004	13.70	9	99	.000
10	.578	.535	.024	5.520	1	98	.021	13.44	10	98	.000
11	.599	.554	.021	5.080	1	97	.026	13.19	11	97	.000
12	.614	.566	.015	3.621	1	96	.060	12.72	12	96	.000
13	.626	.575	.012	3.025	1	95	.085	12.22	13	95	.000
14	.636	.582	.010	2.673	1	94	.105	11.74	14	94	.000
15	.652	.596	.016	4.207	1	93	.043	11.61	15	93	.000
16	.702	.650	.050	15.44	1	92	.000	13.54	16	92	.000
17	.709	.654	.007	2.141	1	91	.147	13.03	17	91	.000
18	.716	.659	.007	2.223	1	90	.139	12.59	18	90	.000
19	.728	.670	.012	3.893	1	89	.052	12.52	19	89	.000
20	.736	.676	.008	2.705	1	88	.104	12.26	20	88	.000
21	.743	.681	.007	2.390	1	87	.126	11.97	21	87	.000
22	.749	.685	.007	2.255	1	86	.137	11.69	22	86	.000
23	.756	.690	.007	2.318	1	85	.132	11.46	23	85	.000
24	.762	.694	.006	2.188	1	84	.143	11.22	24	84	.000
25	.773	.705	.011	3.948	1	83	.050	11.31	25	83	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1-5	.404	5.996	.000
(2) age, commander	-.050	-.827	.411
(3) computer expertise, commander	.140	2.270	.026
(4) education, commander	.082	1.360	.178
(5) duration Read Message, specialist B	-.288	-3.247	.002
(6) frequency Send Message, specialist A	.245	3.324	.001
(7) frequency Read Message, specialist B	.068	.850	.398
(8) frequency Read Message, specialist B	.166	1.810	.074
(9) ieR-ieS010, commander EC28S6	.100	1.750	.084
(10) ieSi1-ieS100-ieSi0-ieSi0, specialist B EB419S6	-.166	-2.314	.023
(11) ieR-ieH-ieR-ieH-ieR, commander EC54S6	.207	3.077	.003
(12) ieSi0-ieS100-ieSi0-ieSi0, specialist B EB45S6	.063	.859	.393
(13) ieR-ieSi0-ieS100, specialist B EB32S6	-.034	-.479	.633
(14) ieSi0-ieSi0, specialist A EA215S6	-.337	-4.136	.000
(15) ieSi1-ieSi1-ieSi0-ieSi0-ieSi0, specialist A EA69S6	.964	4.260	.000
(16) ieSi1-ieSi1-ieSi0-ieSi0-ieSi0, specialist A EA515S6	-.849	-4.067	.000
(17) ieSi1-ieSi1-ieS100, specialist A EA333S6	.183	2.579	.012
(18) ieS100-ieR, specialist A EA29S6	-.199	-2.329	.022
(19) ieS100-ieR-ieSi0, specialist A EA310S6	.198	2.255	.027
(20) ieR-ieR-ieR-ieR, commander EC48S6	-.163	-2.136	.036
(21) ieH-ieR, commander EC22S6	-.161	-2.186	.032
(22) ieSi0-ieS001-ieR, specialist A EA314S6	-.119	-1.987	.050
(23) ieSi0-ieSi0-ieSi0-ieSi0-ieS001, specialist A EA53S6	.138	1.956	.054
(24) ieSi0-ieSi1-ieSi0, specialist A EA325S6	.136	2.185	.032
(25) ieR-ieSi0-ieSi1, specialist A EA35S6	-.144	-1.987	.050

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, sequences entered in the fourth step with method forward, PIN = 0.15

Table 188 Results of multiple regression, predicting performance shift 8 with *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.226	.219	.226	31.24	1	107	.000	31.24	1	107	.000
2	.306	.293	.080	12.26	1	106	.001	23.39	2	106	.000
3	.373	.355	.067	11.14	1	105	.001	20.80	3	105	.000
4	.413	.391	.041	7.230	1	104	.008	18.33	4	104	.000
5	.451	.424	.037	6.998	1	103	.009	16.91	5	103	.000
6	.480	.450	.030	5.812	1	102	.018	15.72	6	102	.000
7	.507	.473	.027	5.518	1	101	.021	14.86	7	101	.000
8	.531	.493	.024	5.039	1	100	.027	14.15	8	100	.000
9	.551	.510	.020	4.372	1	99	.039	13.49	9	99	.000
10	.565	.520	.014	3.153	1	98	.079	12.72	10	98	.000
11	.580	.533	.015	3.563	1	97	.062	12.19	11	97	.000
12	.592	.542	.012	2.885	1	96	.093	11.63	12	96	.000
13	.617	.564	.024	6.059	1	95	.016	11.77	13	95	.000
14	.631	.576	.014	3.476	1	94	.065	11.46	14	94	.000
15	.644	.586	.013	3.482	1	93	.065	11.21	15	93	.000
16	.656	.596	.012	3.277	1	92	.074	10.97	16	92	.000
17	.668	.606	.012	3.370	1	91	.070	10.79	17	91	.000

Predictors in trimmed model	Beta	t	Sig.
(1) ieSi1-ieSi1-ieS100, specialist A EA333S8	.204	2.733	.008
(2) ieSi0-ieSi0-ieSi0-ieS100, specialist B EB46S8	.224	3.147	.002
(3) ieSi1-ieSi0-ieSi0, specialist B EB329S8	.223	2.602	.011
(4) ieR-ieS001, specialist A EA22S8	.112	1.281	.204
(5) ieR-ieS010, commander EC28S8	-.403	-3.733	.000
(5) ieR-ieSi0-ieSi1, specialist A EA35S8	.245	2.580	.012
(6) ieSi0-ieSi0-ieSi1-ieS100, specialist B EB410S8	.235	3.156	.002
(7) ieSi0-ieSi1-ieSi0-ieSi0, specialist B EB416S8	-.159	-1.920	.058
(8) ieS100-ieR-ieR, specialist B EB35S8	-.172	-2.405	.018
(9) ieS001-ieR, specialist B EB26S8	-.138	-1.707	.092
(10) ieSi1-ieS100-ieSi0-ieSi0, specialist B EB419S8	-.212	-2.511	.014
(11) ieSi1-ieSi0-ieSi0-ieSi1, specialist A EA424S8	.085	1.031	.306
(12) ieSi1-ieSi0-ieSi0-ieSi0-ieSi1, specialist A EA514S8	.123	1.753	.083
(13) ieR-ieSi1-ieH, commander EC315S8	.235	2.667	.009
(14) ieS001-ieR-ieR, commander EC316S8	-.091	-1.108	.271
(15) ieR-ieS001-ieR, commander EC312S8	.721	3.987	.000
(16) ieSi1-ieSi1, commander EC218S	-.659	-3.606	.001

Note. Trimmed model. N = 109 teams, method = forward, PIN = 0.15

Table 189 Results of multiple regression, predicting performance shift 8, with *input*, *summary-level process variables*, and *data mining sequences*.

step	R ²	R ² _{adj.}	ΔR ²	F _{change}	df1	df2	sig Δ F	F	df1	df2	Sig.
1	.331	.325	.331	52.89	1	107	.000	52.89	1	107	.000
2	.359	.347	.028	4.655	1	106	.033	29.68	2	106	.000
3	.388	.370	.029	4.902	1	105	.029	22.15	3	105	.000
4	.412	.390	.025	4.345	1	104	.040	18.23	4	104	.000
5	.429	.402	.017	3.111	1	103	.081	15.50	5	103	.000
6	.442	.409	.013	2.350	1	102	.128	13.48	6	102	.000
7	.455	.417	.013	2.344	1	101	.129	12.04	7	101	.000
8	.508	.468	.053	10.75	1	100	.001	12.89	8	100	.000
9	.549	.508	.041	9.002	1	99	.003	13.38	9	99	.000
10	.563	.518	.014	3.137	1	98	.080	12.62	10	98	.000
11	.620	.577	.057	14.67	1	97	.000	14.40	11	97	.000
12	.640	.595	.020	5.274	1	96	.024	14.22	12	96	.000
13	.660	.614	.020	5.725	1	95	.019	14.21	13	95	.000
14	.677	.629	.016	4.763	1	94	.032	14.06	14	94	.000
15	.691	.641	.014	4.294	1	93	.041	13.87	15	93	.000
16	.713	.663	.021	6.871	1	92	.010	14.25	16	92	.000
17	.734	.685	.022	7.474	1	91	.008	14.80	17	91	.000
18	.746	.695	.012	4.196	1	90	.043	14.70	18	90	.000
19	.759	.708	.013	4.823	1	89	.031	14.77	19	89	.000

Predictors in trimmed model	Beta	t	Sig.
(1) performance shift 1-6	.338	5.217	.000
(2) Control Condition 2	-.198	-3.453	.001
(3) education, commander	.097	1.663	.100
(4) computer expertise, commander	.160	2.762	.007
(5) computer expertise, specialist A	.056	.986	.327
(6) computer expertise, specialist B	-.023	-.405	.686
(7) education, specialist B	.168	2.785	.007
(8) duration Read Message, specialist A	-.139	-2.348	.021
(9) duration Send Message, specialist A	-.251	-4.127	.000
(10) frequency Show Information, specialist B	.076	1.170	.245
(11) ieR-ieS010, commander EC28S8	.293	4.849	.000
(12) ieSi1-ieSi1-ieS100, specialist A EA333S8	.247	3.932	.000
(13) ieH-ieR-ieH-ieR-ieR, commander EC512S8	-.183	-3.155	.002
(14) ieSi0-ieS001-ieR, specialist A EA314S8	.130	2.098	.039
(15) ieS001-ieR-ieR, commander EC316S8	-.375	-4.385	.000
(16) ieR-ieS001-ieR, commander EC312S8	.261	3.123	.002
(17) ieSi0-ieSi1-ieSi1-ieSi0, specialist B EB417S8	.190	3.162	.002
(18) ieR-ieSi1-ieH, commander EC315S8	-.125	-2.246	.027
(19) ieSi1-ieS100-ieSi0-ieSi0, specialist B EB419S8	-.128	-2.196	.031

Note. Trimmed model. N = 109 teams, preceding performance entered in the first step with method enter, *input variables* entered in the second step with method forward, *summary-level process variables* entered in the third step with method forward, sequences entered in the fourth step with method forward, PIN = 0.15

9 Index of Tables and Figures

All tables and figures are listed in this index.

Table 1	Perspectives on small groups.	23
Table 2	Characteristic process losses and gains for performance (Hackman, 2002, p. 170).	28
Table 3	Group cohesion from the Group Environment Questionnaire GEQ (Carless & Paola, 2000; Carron et al., 2002).	34
Table 4	Work group "process" variables used by Campion et al. (1993; 1996).	35
Table 5	Work group "process" variables used by Hyatt and Ruddy (1997),	36
Table 6	Group potency (Gibson, 2001; Guzzo et al., 1993).	37
Table 7	IPA categories used for direct observation of the interaction process (adapted from Bales, 2002, p. 165).	40
Table 8	IPA profile of a satisfied and dissatisfied group on a case discussion task (adapted from Bales, 2002, p. 226).	41
Table 9	Types of irregular communications in ATC/pilot transcripts (Prinzo et al., 1995, p. 4).	43
Table 10	NOTECHS behavioral markers (Klampfer et al., 2001, p. 26).	45
Table 11	Nine categories used by Putnam (1981, p. 336; Putnam, 1983, p. 474) to code communication.	50
Table 12	Storing and retrieving own knowledge and knowledge about other people's knowledge (Brauner, 2002, p. 118).	55
Table 13	Overview of all experiments in the period of 1996 to 2002 using the ATC simulation.	66
Table 14	Written instruction handed out to the specialist A or specialist B.	69
Table 15	Paper given to commanders to calculate the threat level of planes.	70
Table 16	Excerpt of automatically stored log-file, commander, team 113, shift 1 (Gabrys, 1994).	78
Table 17	Planes in the Base Condition.	79
Table 18	Planes in the CHAT Condition.	81
Table 19	Formula to calculate the performance at a certain point in time.	83
Table 20	Coding scheme of all initiated events (ie), commander and specialists.	85
Table 21	Coding of message content [XXX].	86
Table 22	Coding scheme of Threat Assignment.	87
Table 23	Coding scheme of all system events (se), commander and specialists.	87
Table 24	Definition of the Task Adaptive Behavior (TAB) for commanders and specialists (based on Tschan, Semmer, Nägele et al., 2000).	90
Table 25	Means and Standard Deviations for Computer Expertise.	97

Table 26	Means and standard deviations of the age of the participants in years.	99
Table 27	Crosstable of gender of participants and experimental conditions.....	100
Table 28	Crosstable of education of participants and experimental conditions.	100
Table 29	Means and standard deviations of performance, shift 1 to shift 8, all experimental conditions.....	102
Table 30	Means and standard deviations for Read Message commander shift 1 to shift 8. ...	105
Table 31	Means and standard deviations for Read Message specialist A shift 1 to shift 8.	106
Table 32	Means and standard deviations for Read Message specialist B shift 1 to shift 8.	108
Table 33	Means and standard deviations for Send Message commander shift 1 to shift 8.....	109
Table 34	Means and standard deviations for Send Message specialist A shift 1 to shift 8.	111
Table 35	Means and standard deviations for Send Message specialist B shift 1 to shift 8.	112
Table 36	Means and standard deviations for Show Information commander shift 1 to shift 8.	114
Table 37	Means and standard deviations for Show Information specialist A shift 1 to shift 8.	115
Table 38	Means and standard deviations for Show Information specialist B shift 1 to shift 8.	117
Table 39	Means and standard deviations for Handle Threat commander shift 1 to shift 8.....	118
Table 40	Summary of ANOVA (GLM repeated) analyses for summary-level process variables, shift 1 to shift 8.	122
Table 41	Means and standard deviations Basic Task Mastery commander shift 1 to shift 8. .	123
Table 42	Means and standard deviations for Basic Task Mastery specialist A shift 1 to shift 8.	125
Table 43	Frequencies and standard deviations for initiated event: Handle Threat commander shift 1 to shift 8.	126
Table 44	Means and standard deviations for Plane Handling commander shift 1 to shift 8. ...	128
Table 45	Means and standard deviations for Plane Handling specialist A shift 1 to shift 8.	129
Table 46	Means and standard deviations for Plane Handling specialist B shift 1 to shift 8.	130
Table 47	Means and standard deviations Message Handling commander shift 1 to shift 8.	132
Table 48	Frequencies and standard deviations for initiated event: Handle Threat commander shift 1 to shift 8.	133
Table 49	Frequencies and standard deviations for initiated event: Handle Threat commander shift 1 to shift 8.	135
Table 50	Means and standard deviations for Strategic Leadership commander shift 1 to shift 8.	136
Table 51	Means and standard deviations for Motivational and Corrective Leadership commander shift 1 to shift 8.	138
Table 52	Summary of ANOVA (GLM repeated) analyses for summary-level process variables and task adaptive behaviors, shifts 1 to 8.....	141
Table 53	Summary of results: Explained variance (R ²) using only input variables as predictors of performance.....	146

Table 54	Summary of results: Input variables predicting performance in shift 1 to shift 8, after controlling for the preceding performance (except shift 1).....	148
Table 55	Summary of results: Explained variance (R2) using preceding performance, input and summary-level process variables as predictors of performance.....	150
Table 56	Summary of results: Summary-level process variables predicting performance in shift 1 to shift 8, controlling for preceding performance (except in shift 1) and input variables.	152
Table 57	Explained variance (R2) using preceding performance, input, summary-level process variables, and task adaptive behavior variables as predictors of performance.	154
Table 58	Task adaptive behavior variables as predictors of performance in shift 1 to shift 8. .	155
Table 59	Results of the chi-square analyses testing for overall sequential associations in contingency tables, shift 1 (lag 1 to lag 5), shift 4 (lag 1).....	162
Table 60	Lag sequential analyses: Lag frequencies, lag 1, shift 1.	163
Table 61	Lag sequential analyses: Conditional probabilities, lag 1, shift 1.....	165
Table 62	Lag frequencies and conditional probabilities and adjusted residuals (z-scores), a fictitious example.....	166
Table 63	Calculation of adjusted residuals (Bakeman & Quera, 1995a, p. 84).	167
Table 64	Lag sequential analyses: Adjusted residuals, lag 1, shift 1.....	169
Table 65	Lag sequential analyses: Adjusted residuals, lag 1, shift 4.....	175
Table 66	Summary Results: Lag Sequential Analyses comparing shift 1 and shift 4 lag 1 contingencies (adjusted residuals).....	178
Table 67	Observed lag frequencies and chi-square statistics, groups 412 and 507, shift 1, lag 1.....	181
Table 68	Summary of results: Explained variance (R2) using only input variables, summary-level process variables and recoded adjusted residuals as predictors of performance.	183
Table 69	Summary of results: Adjusted residuals (lag 1), shift 1 to shift 8, controlling for preceding performance (except in shift 1), and input variables and summary level process variables.	185
Table 70	Hypothetical proximity data (Goldsmith et al., 1991, p. 89).	190
Table 71	PRONET: Coherence of proximity data, an example.	201
Table 72	Means, standard deviations, and t-test of minimal, maximal, mean, and median link weights of Pathfinder network representations.....	204
Table 73	Tallies for lag 1 sequences given a sequence of sixteen events A, B, C D.....	211
Table 74	Sequences of three events, taking sequences of two events with a support of minimal 50% as base.	212
Table 75	Sequences of four events, taking sequences of three events with a support of minimal 50% as base.	213
Table 76	Support values of sequences found with data mining analyses, commanders of low and high performing teams on day one and day two.....	215

Table 77	Summaries of number of sequences found with a specific number of events, using data mining analyses, low and high performing teams.....	216
Table 78	Data mining analyses: Means and standard deviations of the sequence ieR-ieS001 for commanders, day one.	225
Table 79	Explained variance (R ²) using sequences found by data mining analyses (equation 1), and controlling for preceding performance, input variables and summary-level process variables (equation 2).....	229
Table 80	Summary Data mining: Sequences found with data mining techniques as predictors of performance.....	230

Appendix

Table 81	Effects of the additional plane on performance in shift 5, CHAT-condition.....	5
Table 82	Results of multiple regression, predicting performance shift 1, with <i>input variables</i> , trimmed model.	7
Table 83	Results of multiple regression, predicting performance shift 2, with <i>input variables</i> , trimmed model.	8
Table 84	Results of multiple regression, predicting performance shift 2 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	9
Table 85	Results of multiple regression, predicting performance shift 3, with <i>input variables</i> , trimmed model.	10
Table 86	Results of multiple regression, predicting performance shift 3 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	11
Table 87	Results of multiple regression, predicting performance shift 4, with <i>input variables</i> , trimmed model.	12
Table 88	Results of multiple regression, predicting performance shift 4 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	13
Table 89	Results of multiple regression, predicting performance shift 5, with <i>input variables</i> , trimmed model.	14
Table 90	Results of multiple regression, predicting performance shift 5 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	15
Table 91	Results of multiple regression, predicting performance shift 6, with <i>input variables</i> , trimmed model.	16
Table 92	Results of multiple regression, predicting performance shift 6 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	17
Table 93	Results of multiple regression, predicting performance shift 8, with <i>input variables</i> , trimmed model.	18
Table 94	Results of multiple regression, predicting performance shift 8 controlling for precedent performance, with <i>input variables</i> , trimmed model.....	19
Table 95	Results of multiple regression, predicting performance shift 1, with <i>summary level process variables</i> , trimmed model.....	20

Table 96	Results of multiple regression, predicting performance shift 1, with <i>input</i> and <i>summary level process</i> variables, trimmed model.	21
Table 97	Results of multiple regression, predicting performance shift 2, with <i>summary level process</i> variables, trimmed model.	23
Table 98	Results of multiple regression, predicting performance shift 2, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	24
Table 99	Results of multiple regression, predicting performance shift 3, with <i>summary level process</i> variables, trimmed model.	26
Table 100	Results of multiple regression, predicting performance shift 3, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	27
Table 101	Results of multiple regression, predicting performance shift 4, with <i>summary level process</i> variables, trimmed model.	29
Table 102	Results of multiple regression, predicting performance shift 4, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	30
Table 103	Results of multiple regression, predicting performance shift 5, with <i>summary level process</i> variables, trimmed model.	32
Table 104	Results of multiple regression, predicting performance shift 5, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	33
Table 105	Results of multiple regression, predicting performance shift 6, with <i>summary level process</i> variables, trimmed model.	35
Table 106	Results of multiple regression, predicting performance shift 6, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	36
Table 107	Results of multiple regression, predicting performance shift 8, with <i>summary level process</i> variables, trimmed model.	38
Table 108	Results of multiple regression, predicting performance shift 6, with <i>input</i> and <i>summary level process</i> variables, controlling for performance of preceding shifts, trimmed model.....	39
Table 109	Results of multiple regression, predicting performance shift 1, with <i>task adaptive behavior variables</i> , trimmed model.	41
Table 110	Results of multiple regression, predicting performance shift 1, with <i>input</i> , <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> , trimmed model.....	42
Table 111	Results of multiple regression, predicting performance shift 2, with <i>task adaptive behavior variables</i> variables, trimmed model.....	44
Table 112	Results of multiple regression, predicting performance shift 2, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	45

Table 113	Results of multiple regression, predicting performance shift 3, with <i>task adaptive behavior variables</i> , trimmed model.....	47
Table 114	Results of multiple regression, predicting performance shift 3, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	48
Table 115	Results of multiple regression, predicting performance shift 4, with <i>task adaptive behavior variables</i> , trimmed model.....	50
Table 116	Results of multiple regression, predicting performance shift 4, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	51
Table 117	Results of multiple regression, predicting performance shift 5, with <i>task adaptive behavior variables</i> , trimmed model.....	53
Table 118	Results of multiple regression, predicting performance shift 5, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	54
Table 119	Results of multiple regression, predicting performance shift 6, with <i>task adaptive behavior variables</i> , trimmed model.....	56
Table 120	Results of multiple regression, predicting performance shift 6, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	57
Table 121	Results of multiple regression, predicting performance shift 8, with <i>task adaptive behavior variables</i> , trimmed model.....	59
Table 122	Results of multiple regression, predicting performance shift 6, with <i>input</i> and <i>summary level process</i> variables, and <i>task adaptive behavior variables</i> controlling for performance of preceding shifts, trimmed model.....	60
Table 123	Lag sequential analysis: Descriptive statistics, shift 1 and shift 4, lag 0.	64
Table 124	Example of data file for lag sequential analysis.	65
Table 125	Codes used to name the lag sequential variables (lag frequencies, adjusted residuals, and recoded adjusted residuals) in the SPSS data file.....	68
Table 126	Adjusted residuals, lag 2, shift 1.....	69
Table 127	Adjusted residuals, all roles, lag 3, shift 1.	71
Table 128	Adjusted residuals, all roles, lag 4, shift 1.	73
Table 129	Adjusted residuals, all roles lag 5, shift 1.	75
Table 130	Adjusted residuals, shift 2, commander, N = 109 teams.....	77
Table 131	Adjusted residuals, shift 2, specialist A, N = 109 teams.....	78
Table 132	Adjusted residuals, shift 2, specialist B, N = 109 teams.....	79
Table 133	Adjusted residuals, shift 3, commander, N = 109 teams.....	80
Table 134	Adjusted residuals, shift 3, specialist A, N = 109 teams.....	81
Table 135	Adjusted residuals, shift 3, specialist B, N = 109 teams.....	82
Table 136	Adjusted residuals, shift 4, commander, N = 109 teams.....	83

Table 137	Adjusted residuals, shift 4, specialist A, N = 109 teams.	84
Table 138	Adjusted residuals, shift 4, specialist B, N = 109 teams.	85
Table 139	Adjusted residuals, shift 5, commander, N = 109 teams.	86
Table 140	Adjusted residuals, shift 5, specialist A, N = 109 teams.	87
Table 141	Adjusted residuals, shift 5, specialist B, N = 109 teams.	88
Table 142	Adjusted residuals, shift 6, commander, N = 109 teams.	89
Table 143	Adjusted residuals, shift 6, specialist A, N = 109 teams.	90
Table 144	Adjusted residuals, shift 6, specialist B, N = 109 teams.	91
Table 145	Adjusted residuals, shift 8, commander, N = 109 teams.	92
Table 146	Adjusted residuals, shift 8, specialist A, N = 109 teams.	93
Table 147	Adjusted residuals, shift 8, specialist B, N = 109 teams.	94
Table 148	Results of multiple regression, predicting performance shift 1 with <i>adjusted residuals</i>	95
Table 149	Results of multiple regression, predicting performance shift 1 with preceding performance, <i>input</i> , <i>summary level process</i> variables, and <i>adjusted residuals</i>	96
Table 150	Results of multiple regression, predicting performance shift 2 with <i>adjusted residuals</i>	97
Table 151	Results of multiple regression, predicting performance shift 2 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	98
Table 152	Results of multiple regression, predicting performance shift 3 with <i>adjusted residuals</i>	99
Table 153	Results of multiple regression, predicting performance shift 3 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	100
Table 154	Results of multiple regression, predicting performance shift 4 with <i>adjusted residuals</i>	100
Table 155	Results of multiple regression, predicting performance shift 4 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	101
Table 156	Results of multiple regression, predicting performance shift 5 with <i>adjusted residuals</i>	102
Table 157	Results of multiple regression, predicting performance shift 5 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	103
Table 158	Results of multiple regression, predicting performance shift 6 with <i>adjusted residuals</i>	103
Table 159	Results of multiple regression, predicting performance shift 6 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	104
Table 160	Results of multiple regression, predicting performance shift 8 with <i>adjusted residuals</i>	105
Table 161	Results of multiple regression, predicting performance shift 8 with preceding performance, <i>input</i> , <i>summary-level process</i> variables, and <i>adjusted residuals</i>	106

Table 162	Example of an input for pathfinder analyses (shift 1, commanders of high performing teams, median split).	107
Table 163	Example of a pathfinder layout output file.	108
Table 164	Example of a pathfinder output file comparing four network representations.	109
Table 165	Conditional probabilities, all roles, lag 1, shift 4.	111
Table 166	Pathfinder analyses results for shift 1.	112
Table 167	Pathfinder analyses results for shift 4.	114
Table 168	Pathfinder C results (similarities), shift 1 and shift 4, all teams.	115
Table 169	Data structure for data-mining analyses.	118
Table 170	Correspondence of plain text and numeric variable representations, initiated events and system events.	119
Table 171	Structure data file V-A, no temporal overlap within one stream of events.	120
Table 172	Structure of data file V-B, all streams combined in one variable.	120
Table 173	Necessary transformations to represent all information in one single variable (type A to type B transformations).	121
Table 174	Support values for patterns of specialists A of low and high performing teams, day one and day two.	122
Table 175	Support values for patterns of specialists B of low and high performing teams, day one and day two.	124
Table 176	Results of multiple regression, predicting performance shift 1 with <i>data mining sequences</i>	134
Table 177	Results of multiple regression, predicting performance shift 1, with <i>input, summary-level process</i> variables, and <i>data mining sequences</i>	135
Table 178	Results of multiple regression, predicting performance shift 2 with <i>data mining sequences</i>	136
Table 179	Results of multiple regression, predicting performance shift 2, with preceding performance, <i>input, summary-level process</i> variables, and <i>data mining sequences</i>	137
Table 180	Results of multiple regression, predicting performance shift 3 with <i>data mining sequences</i>	138
Table 181	Results of multiple regression, predicting performance shift 3, with <i>input, summary-level process</i> variables, and <i>data mining sequences</i>	139
Table 182	Results of multiple regression, predicting performance shift 4 with <i>data mining sequences</i>	140
Table 183	Results of multiple regression, predicting performance shift 4, with <i>input, summary-level process</i> variables, and <i>data mining sequences</i>	141
Table 184	Results of multiple regression, predicting performance shift 5 with <i>data mining sequences</i>	142
Table 185	Results of multiple regression, predicting performance shift 5, with <i>input, summary-level process</i> variables, and <i>data mining sequences</i>	143

Table 186	Results of multiple regression, predicting performance shift 6 with <i>data mining sequences</i>	144
Table 187	Results of multiple regression, predicting performance shift 6, with <i>input, summary-level process variables, and data mining sequences</i>	146
Table 188	Results of multiple regression, predicting performance shift 8 with <i>data mining sequences</i>	148
Table 189	Results of multiple regression, predicting performance shift 8, with <i>input, summary-level process variables, and data mining sequences</i>	149
Figure 1	Framework for research on teams: Input -> Process -> Output model (Hackman & Morris, 1975).	24
Figure 2	Framework for discussing several types of group process variables.	30
Figure 3	Example of a lag profile taken from Putnam (1983, p. 478).	51
Figure 4	Conditional probabilities for the four behavioral types <i>withdrawal, conflict, sympathy, and accomplishment</i> given the criterion <i>accomplishment</i> . + and – indicate stat. significantly increased or decreased conditional probabilities (Becker-Beck & Fisch, 1987, p. 203).	52
Figure 5	Example Pathfinder network ($r = \text{infinity}$, $q = 9$) based on conditional transition probabilities (Cooke et al., 1996, p. 42).	57
Figure 6	Knowledge Discovery in Databases (KDD) Process.	59
Figure 7	Schematic representation of the formula to calculate threat (Tschan, 2000b).	68
Figure 8	Screen of the ATC simulation.	74
Figure 9	Screen shot of the electronic questionnaire applied after each shift.	74
Figure 10	Example of performance feedback after a shift.	75
Figure 11	Schematic representation of the Base Condition.	80
Figure 12	Schematic representation of the Goal Condition.	80
Figure 13	Schematic representation of the CHAT Condition.	81
Figure 14	Schematic representation of the Reflexivity Conditions.	82
Figure 15	Means and standard deviations for Computer Expertise.	98
Figure 16	Means and standard deviations of the age of the participants in years.	99
Figure 17	Mean performance shift 1 to shift 8.	103
Figure 18	Means and standard deviations for Read Message commander shift 1 to shift 8.	105
Figure 19	Means and standard deviations for Read Message specialist A shift 1 to shift 8.	107
Figure 20	Means and standard deviations for Read Message specialist B shift 1 to shift 8.	108
Figure 21	Means and standard deviations for Send Message commander shift 1 to shift 8.	110
Figure 22	Means and standard deviations for Send Message specialist A shift 1 to shift 8.	111
Figure 23	Means and standard deviations for Send Message specialist B shift 1 to shift 8.	113

Figure 24	Means and standard deviations for Show Information commander shift 1 to shift 8.	114
Figure 25	Means and standard deviations for Show Information specialist A shift 1 to shift 8.	116
Figure 26	Means and standard deviations for Show Information specialist B shift 1 to shift 8.	117
Figure 27	Means and standard deviations for Handle Threat commander shift 1 to shift 8.	119
Figure 28	Means and standard deviations for Basic Task Mastery commander shift 1 to shift 8.	124
Figure 29	Means and standard deviations for Basic Task Mastery specialist A shift 1 to shift 8.	125
Figure 30	Means and standard deviations for Basic Task Mastery specialist B shift 1 to shift 8.	127
Figure 31	Means and standard deviations for Plane Handling commander shift 1 to shift 8.	128
Figure 32	Means and standard deviations for Plane Handling specialist A shift 1 to shift 8.	129
Figure 33	Means and standard deviations for Plane Handling specialist B shift 1 to shift 8.	131
Figure 34	Means and standard deviations for Message Handling commander shift 1 to shift 8.	132
Figure 35	Means and standard deviations for Message Handling specialist A shift 1 to shift 8.	134
Figure 36	Means and standard deviations for Message Handling specialist B shift 1 to shift 8.	135
Figure 37	Means and standard deviations for Strategic leadership commander shift 1 to shift 8.	137
Figure 38	Means and standard deviations for Motivational and Corrective Leadership commander shift 1 to shift 8.	138
Figure 39	Lag sequential analyses: Adjusted residuals, lag 1, shift 1	170
Figure 40	Lag sequential analyses: Adjusted residuals, lag 1, shift 4	176
Figure 41	Pathfinder network representation of hypothetical proximity data (Goldsmith et al., 1991, p. 90).....	191
Figure 42	Two hypothetical Pathfinder network representations for two given two network representations.	191
Figure 43	Calculation of Pathfinder C.	192
Figure 44	PRONET: Pathfinder network representations for commanders, lag 1 conditional probabilities, shift 1 and shift 4.	195
Figure 45	PRONET: Pathfinder network representations for specialists A specialists A lag 1 conditional probabilities, shift 1 and shift 4.	196
Figure 46	PRONET: Pathfinder network representations for specialists B lag 1 conditional probabilities, shift 1 and shift 4.	197
Figure 47	Pathfinder C: similarity of network representations for lag 1 sequences in shift 1 and 4 for commanders of low and high performing teams.	198

Figure 48	Pathfinder C: similarity of network representations for lag 1 sequences in shift 1 and 4 for specialists A of low and high performing teams.....	199
Figure 49	Pathfinder C: similarity of network representations for lag 1 sequences in shift 1 and 4 for specialists B of low and high performing teams.....	199
Figure 50	Data mining analyses: Sequences for commanders of low and high performing teams for day one and day two.	224
Figure 51	Sequence ieR – ieS001 for commanders of low and high performing teams (median split) on day one.	227

Appendix

Figure 52	Adjusted residuals, all roles, lag 2, shift 1.	70
Figure 53	Adjusted residuals, all roles, lag 3, shift 1.	72
Figure 54	Adjusted residuals, all roles, lag 4, shift 1.	74
Figure 55	Adjusted residuals, all roles, lag 5, shift 1.	76
Figure 56	Sequences for specialists A of low and high performing teams (triple) for day one and day two.	127
Figure 57	Sequences for specialists B of low and high performing teams (triple) for day one and day two.	131