

## EMA OCCASIONAL PAPERS

8 / 2019



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Volume VIII

**Better Leaders Through Military Psychology – Methods, Challenges, and Success Stories. Conference Programme. The 61th IMTA Conference, Tallinn, Estonia, 2019**

Edited by Aarne Ermus and Inga Karton

ESTONIAN MILITARY ACADEMY  
INTERNATIONAL MILITARY TESTING ASSOCIATION

THE 61<sup>ST</sup> IMTA CONFERENCE  
TALLINN, ESTONIA  
OCTOBER 9–11, 2019

**BETTER LEADERS THROUGH  
MILITARY PSYCHOLOGY –  
METHODS, CHALLENGES,  
AND SUCCESS STORIES**

CONFERENCE PROGRAMME



**EDITORS:**

AARNE ERMUS AND INGA KARTON

**SERIES EDITORS:**

ANDRES SAUMETS AND KARL SALUM

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8 / 2019

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# LETTER OF WELCOME

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The Estonian Military Academy and the IMTA 2019 Organizing Committee are delighted and honoured to welcome you to the 61<sup>st</sup> International Military Testing Association Conference, taking place in Tallinn, Estonia from 7<sup>th</sup> to 11<sup>th</sup> October, 2019.

We are also pleased to see that the 2019 IMTA conference theme – *Better Leaders Through Military Psychology – Methods, Challenges, and Success Stories* – has inspired a wide range of thought-provoking and innovative research covering such topics as occupational analysis, recruitment/retention, selection/classification, cognitive and non-cognitive assessment, strategic personnel management, organizational behaviour, leadership, and military operations.

Taking into consideration the changing world around us – one that is becoming more and more dynamic, unpredictable, uncertain, and complex – we are faced with a challenging problem: how to prepare our future military leaders to navigate this kind of environment successfully? Furthermore, from the perspective of research, we also face new difficulties by applying multi-dimensional and interdisciplinary approaches – how to adequately measure or assess different phenomena and processes? Therefore, we appreciate that, in addition to presenting success stories, you have also shared your insights about the challenges and predicaments encountered in the course of your research.

We are looking forward to an excellent meeting with researchers from around the world and we wish you have an enjoyable stay in Tallinn!



Col (Ret), M.Sc. **Aarne Ermus**  
IMTA 2019 Co-Chair



Ph.D. **Inga Karton**  
IMTA 2019 Co-Chair

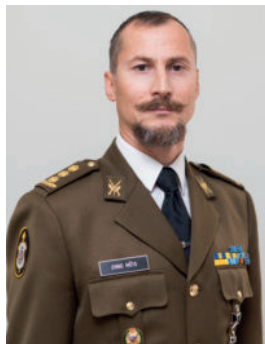
**Dear IMTA members, colleagues and friends,**

It is my pleasure to welcome you on behalf of the Estonian Military Academy to the 2019 IMTA Conference and to our beautiful homeland Estonia. We are honoured to be a part of this worldwide knowledge-sharing community and the Estonian Military Academy is grateful for the privilege to host the IMTA conference for the second time.

As the International Military Testing Association enters its sixth decade, it remains an indispensable forum for collaboration, bringing together rigorous academic research and invaluable insights from around the world. Most importantly, our work has practical application beyond the military sphere, benefiting the society at large. In this context it is important to acknowledge that in addition to exchanging ideas and promoting our success stories, the IMTA also provides a unique platform for sharing the challenges and predicaments encountered in the course of research that offer valuable lessons to us all.

I am excited to see that this year's central theme – *Better Leaders Through Military Psychology – Methods, Challenges, and Success Stories* – has inspired a wide range of cutting-edge research and we hope that it offers new insights and inspiration for your own research going forward as well. The Organising Committee has put a lot of effort into setting up this year's conference and we are grateful for your trust and the support received from all over the world, proving once again that this Conference is truly an embodiment of good will.

I wish you all a very fruitful and rewarding Conference, and on a personal note, I hope you find some time to explore Estonia as well!



**Colonel Enno Mõts**  
Commandant of the Estonian Military Academy



## KEYNOTE SPEAKERS



Grete Arro

### **Applying Educational Psychology to the Military Context – Teaching, Training, Practice**

Grete Arro, Ph.D. in Psychology, is a researcher at the School of Educational Sciences at the Tallinn University, Estonia. Since 2006, she has participated as a researcher in various longitudinal education research projects both with the University of Tartu and Tallinn University. Her research interests cover a wide range, from self-regulated learning to conceptual change, with a particular focus on metacognitive learning skills, development of word meaning structure, emotion regulation and motivation. She also lectures at the Tallinn University (different subjects from the fields of educational and cultural psychology) and occasionally trains teachers, lecturers and teacher educators in other institutions (i.e. schools, universities and companies).



Kim-Yin Chan

**From Understanding the Motivation to Lead  
to an Expanded Criterion Space for Individual Differences  
and Leadership: Implications for Military Leader Development**

Kim-Yin Chan, Ph.D., is an Associate Professor in Organizational Behaviour and Human Resource Management at the Division of Strategy, Management & Organization of the Nanyang Business School (NBS), Nanyang Technological University in Singapore. He started his full-time academic career at the Nanyang Business School in 2009 after a 25-year military career in the Singapore Armed Forces (SAF) where he served as an infantry officer, while also holding appointments as a military psychologist at the Applied Behavioural Sciences Department and SAF Centre for Leadership Development. In 1999, he received his Ph.D. from the University of Illinois at Urbana-Champaign, majoring in Industrial-Organizational Psychology with a minor in Quantitative Psychology; having previously graduated from the University of London's Royal Holloway and Bedford New College with a First Class Honours degree in Psychology in 1988.

Kim-Yin Chan's research has been published in top management journals, and he is also the lead author of "*Military Leadership in the 21st century: Science and Practice*", published by Cengage Learning in 2011. He has presented his work at the Academy of Management, Society of Industrial-Organizational Psychology, International Congress of Applied Psychology, European Association of Work and Organizational Psychology, Australian-New Zealand Academy of Management, International Leadership Association, International Military Testing Association, and International Applied Military Symposium. Dr Chan is a member of the Society of Industrial-Organizational Psychology. From 2014 to 2017, he led a team of researchers on a multi-year project measuring entrepreneurial, professional and leadership career aspirations for the Innovation and Enterprise Office of the Nanyang Technological University. During this period, he was also seconded to Singapore's Agency for Science, Technology and Research to assist in the area of scientist-researcher social and human capital (i.e., organizational, leadership, talent) development for innovation.



Jaanus Harro

### **Can we learn from experience? A personal translational journey**

Jaanus Harro, M.D., Ph.D., has held professorships at the University of Tartu, Estonia in neuropsychopharmacology, health promotion and psychophysiology. His main research area is affective neuroscience and includes psychopharmacological and molecular genetic approaches in animals and humans, and population-based longitudinal studies on neurobiology of personality and health-related behaviour.

Dr. Harro has authored or co-authored about 250 original articles, reviews and book chapters in broadly distributed international publications. Jaanus Harro has served on various committees of the CINP (International College of Neuropsychopharmacology) and ECNP (European College of Neuropsychopharmacology), and is currently the Associate Editor of “*European Neuropsychopharmacology*”, while also serving on the editorial board of “*Acta Neuropsychiatrica*”. Dr. Harro has been the Principal Member for Estonia at the Human Factors and Medicine Panel of the NATO Science & Technology Organization and the Capability and Technology National Coordinator at the European Defence Agency (EDA). In addition, Dr. Harro is also a Foreign Member of the Royal Society of Sciences in Uppsala, and currently serves as the Sigrid Juselius Visiting Professor at the University of Helsinki.



Kenn Konstabel

**Testing Personality, Interests and Abilities for Placement Decisions:  
Steps Toward a Useful Assessment Battery  
for the Estonian Defence Forces**

Dr. Kenn Konstabel is a senior research fellow at the National Institute for Health Development (Tallinn, Estonia) and a Professor of Personality and Health Psychology at Tallinn University, Estonia. His research focuses on the assessment and implications of personality and physical activity, as well as personality theory.

Dr. Konstabel has authored or co-authored over 60 peer-reviewed international publications, and has participated in numerous applied research projects, including the development of the personnel selection test battery for the Estonian Defence Forces.

# CONFERENCE SCHEDULE



Monday, 7 October	
14.00–18.00	<b>Registration</b> and paper submission desk open (Hotel Meriton – White Hall)
13.00–15.30	IMTA <b>Management Board Meeting</b> (MB members only) room: Panso Theatre
13.30–15.30	IMLA <b>Workshop &amp; annual meeting</b> (IMLA members only) room: Alver Theatre
16.00–18.00	<b>Steering Committee Meeting</b> (Steering committee members only) room: Panso Theatre
18.00–21.00	<b>Meet &amp; Greet</b> for Conference participants and their guests (White Hall)

Tuesday, 8 October	
08.00–18.00	<b>Registration</b> and paper submission desk open (Hotel Meriton – White Hall)
09.00–10.00	<b>Opening Ceremony –</b> Opening Address – Maj Gen Indrek Sirel, Deputy Chief of Estonian Defence Forces Opening Address – Col Enno Möts, Commandant of the Estonian Military Academy Hotel Meriton – Peterson Theatre
10.00–10.30	<b>Group Photo IMTA 2019</b>
10.30–11.00	Morning break (Hotel Meriton – White Hall)
11.00–12.15	<b>Keynote Address:</b> Dr Jaanus Harro, M.D., Ph.D. <b><i>Can we learn from experience? A personal translational journey</i></b> (Hotel Meriton – Peterson I+III)
12.15–13.15	Lunch (Hotel Meriton – Restaurant)

Tuesday, 8 October (continued)			
12.15–13.15	Lunch (Hotel Meriton – Restaurant)		
Room	Peterson I+III	Peterson II	Panso+Alver
13.15–14.15	<b>Symposium: Competency Retention Research: A Multinational Perspective</b> Rankin, K. J. ID39	<b>Symposium: Psychometric Instruments for Selection and Assessment in the Estonian Defence Forces</b> Kasemaa, A. ID109	<b>Symposium: Modernization Efforts of the ASVAB Testing Programme</b> Salyer, S. ID69
	<b>Canadian Armed Forces Skill Fade Research: A Methodological Example</b> Rankin, K. J. ID40  <b>Skills Management and Retention</b> Deighton, C. ID41  <b>Towards a Computational Dynamic Personal Retention Model</b> van der Pal, J. ID42	<b>Pilot Study to Develop Personnel Assessment and Selection Instruments for the Estonian Defence Forces</b> Konstabel, K. ID110  <b>Using Psychometric Tests to Select Candidates for the Leadership Path in the Estonian Defence Forces</b> Kalle, A. ID111	<b>ASVAB Testing Program Modernization and Implications for Standardization</b> Pommerich, M. ID70  <b>Modernizing the Collection, Analysis, and Dissemination of Military Occupational Data</b> Bayer, J. ID71
14.15–14.45	Afternoon break (Hotel Meriton – White Hall)		
14.45–15.45	<b>Symposium (continued):</b>	<b>Symposium (continued)</b>	<b>Symposium (continued)</b>
	<b>Improving Retention in Civil Aviation with Virtual Reality and Serious Games</b> Chittaro, L. ID43  <b>Improving Detecting Pre-Symptomatic Hypoxia Beyond Competency Retention Training</b> van Puyvelde, M. ID44  <b>Competence Retention in Military Helicopter Underwater Egress Training</b> Oprins, E. ID45	<b>Group Differences in Cognitive Ability, Personality Traits and other Constructs</b> Konstabel, K. ID112  <b>Relations between Cognitive Ability, Personality, other Constructs and Performance</b> Kasemaa, A. ID113	<b>The ASVAB Career Exploration Program: Modernization and Lessons Learned</b> Salyer, S. ID72
16.30–18.50	<b>Evening programme: Guided tour</b> in the Estonian Open Air Museum (optional event)		
19.00–22.00	<b>Evening programme: IBTA</b> for participants and their guests. (Estonian Open Air Museum)		

Wednesday, 9 October				
08.00–18.00	Registration and help desk open			
08.50–09.00	Announcements (Peterson I+III)			
09.00–10.00	<b>Keynote Address:</b> Kim-Yin Chan, Ph.D., Nanyang Technological University, Singapore <i>From Understanding the Motivation to Lead to an Expanded Criterion Space for Individual Differences and Leadership: Implications for Military Leader Development</i> (Peterson I+III)			
10.15–11.15	<b>Keynote Address:</b> Kenn Konstabel, Ph.D. <i>Testing Personality, Interests and Abilities for Placement Decisions: Steps Toward a Useful Assessment Battery for the Estonian Defence Forces</i> (Peterson I+III)			
11.15–11.30	Morning break (Hotel Meriton – White Hall)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
11.30–13.00	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Human Factors and Wellbeing	(D) Selection and Evaluation
	<b>Effect of Supportive Organizational Climate on the Professionalism of Instructors</b> Syahidu, S., Setiabudi, W. ID87  <b>The Rise of Ineffective Leadership: What Role does the Organisation Play?</b> Goyne, A., van der Linden, N. ID91  <b>Hazardous attitudes and risk perception among Indonesian pilots</b> Gunardi, S., Padjajaran, U. P., Hidayatullah, J. S. ID117	<b>PCFAT: A high-fidelity online practice aptitude test for military prospects</b> Kemp, C. ID28  <b>Intelligence test scores for 1-day vs. 2-day selections of Danish Officers</b> Thomsen, R. ID22  <b>Increasing Reliability of Forced-Choice Tests using Augmented Scores</b> Stark, S., Zhang, B., Drasgow, F., Nye, C. ID105	<b>Military Personnel with Deployment-Related PTSD and the Perception of their Families and Relatives – Resource that can be Activated</b> Wesemann, U. ID01  <b>18–34-Year-Old Veteran Suicide Rate: Socioeconomic Indicators</b> Haworth, J., Blackstone, T. ID89  <b>Suicidality among Estonian Veterans: Protective and Risk Factors</b> Helenurm, J., Värnik, P., Värnik, A., Kiis, K. ID115	<b>The Applicability of Universal Design to Canadian Armed Forces Selection</b> Boyes, F., Sobhani, S. ID14  <b>Systematic follow-up of the psychological selection to the Swedish Armed Forces</b> Jonsson, E., Svensén, S., Lindqvist, A., Lantz, J. ID19  <b>Performance Evaluation Framework: An Integration of Selection and Training</b> Misra, N., Jha, H., Behera, S., Gupta, A. ID51
13.00–13.45	Lunch (Hotel Meriton, restaurant)			

Wednesday, 9 October (continued)				
13.00–13.45	Lunch (Hotel Meriton, restaurant)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
13.45–15.15	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Human Factors and Wellbeing	(D) Selection and Evaluation
	<p><b>Leadership Styles in the Indonesian Army: Transformational Leadership in the Making</b> Rindipati, E., Dewanty, G., Hinduan, Z., Hidayat, E. ID99</p> <p><b>How leadership styles affect militarily relevant objectives</b> Annen, H. ID104</p> <p><b>An Exploratory Study of Crisis Leadership Qualities: CARE Survey</b> Koh, C. ID34</p>	<p><b>Development of situation appreciation tests: A measure of implicit motives</b> Arumugam, S., Gupta, A. ID50</p> <p><b>Validity of Non-Cognitive Assessments for Predicting Drill Sergeant Performance</b> Nye, C., White, L., Draggow, F., Chernyshenko, O. ID54</p> <p><b>Development of Non-Cognitive screening test to identify potential officers</b> Thangaraj, G., Gupta, A., Mishra, N., Arumugam, S. ID53</p>	<p><b>Effects of Hardiness and Need Satisfaction on Soldiers Engagement</b> Rybakovaite, J. ID55</p> <p><b>A Study on Measuring Social Desirability Bias of Military Officers</b> Hong, S. ID03</p> <p><b>Self-Regulation of Feelings and Emotions for Impulse Control in the Military</b> Rawat, S., Deshpande, A., Rawat, L. ID64</p>	<p><b>Profiling and Selection of IT specialists for Danish Defense</b> Hoxer, C., Nielsen, J. ID23</p> <p><b>Predicting Potential for Future Cyber Warfare Operators</b> CAPT Boga, D., Di Pietro, N. ID10</p> <p><b>Continuous visual/auditory attention of Counter-Terrorism Police Officers</b> Tedeholm, P., Sjöberg, A., Larsson, A. ID75</p>
15.15–15.30	Afternoon break (Hotel Meriton – White Hall)			



Wednesday, 9 October (continued)				
15.15–15.30	Afternoon break (Hotel Meriton – White Hall)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
15.35–17.05	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Human Factors and Wellbeing	(D) Selection and Evaluation
	<p><b>The Role of Moral Efficacy and Ethical Climate in Predicting Ethical Leadership</b> O’Keefe, D. ID97</p> <p><b>Next Generation in Charge: Role Perception and Identity of Military Leaders</b> Meerits, A., Truusa, T.-T., Säälilik, Ü. ID107</p> <p><b>Differences in Balanced Leadership Behaviour in the Norwegian Armed Forces</b> Austad, S., Johansen, R., Bang, H., Boe, O. ID74</p>	<p><b>Predictive Validity of the Inspire Resilience Scale as Selection Instrument</b> Kamphuis, W., Oprins, E. ID38</p> <p><b>Predicting Performance in Military Occupations with Vocational Interests</b> Nye, C., Rounds, J., Kirkendall, C., Drasgow, F. ID46</p> <p><b>Development of Extended Authentic Leadership Questionnaire</b> Meerits, A., Kivipõld, K., Akuffo, I. ID96</p>	<p><b>Evaluation of the current R2MR Smart Phone Application</b> Binsch, O. ID35</p> <p><b>Hardiness and personality among Norwegian police students</b> Skoglund, T., Risan, P. ID49</p> <p><b>Command Climate: The Foundation of a Ready and Resilient Unit</b> Wolfe, M., Fallesen, J., Riley, R., Cavanaugh, C. ID27</p>	<p><b>Big Five Profiles in the Norwegian Special Operation Forces</b> Skoglund, T., Boe, O. ID47</p> <p><b>The Changing Quality of the 17–24-Year-Old Population: Recruiting Implications</b> Blackstone, T., van Rensselaer, K., Haworth, J. ID88</p> <p><b>Using Information Technology in Decision-Making Processes</b> Rupar, R., Leš Kumin, M. ID118</p>

Thursday, 10 October			
08.00–18.00	Registration and help desk open		
08.50–09.00	Announcements (Peterson I+III)		
09.00–10.00	<b>Keynote Address:</b> Grete Arro, Ph.D. <i>Applying Educational Psychology to the Military Context – Teaching, Training, Practice</i> (Peterson I+III)		
Room	Peterson I+III	Peterson II	Alver+Adson
10.10–11.10	<b>Symposium:</b> <b>Military Education:</b> <b>Aiming from Good to Great</b> Säälük, Ü. ID118	<b>Symposium:</b> <b>Developing Learning</b> <b>Organizations</b> Calton, M. ID30	<b>Symposium:</b> <b>Leader Development</b> <b>in Military Academies:</b> <b>Content, Process, and</b> <b>Outcomes</b> Watola, D. J. ID57
	<b>Supporting the Autonomy</b> <b>of Conscripts and its Effect on</b> <b>Self-Efficacy, Appreciation for</b> <b>Learning and Intentions</b> <b>to Quit Compulsory</b> <b>Military Service</b> Lementa, M., Karton, I., Säälük, Ü. ID116  <b>The Evolution of Ethical</b> <b>Leadership Education</b> <b>in the Australian</b> <b>Defence Force</b> Goyne, M. ID92  <b>Teaching Military Psychology</b> <b>at a Public University</b> Truhon, S. ID93	<b>Developing Learning</b> <b>Organizations –</b> <b>Needs and Challenges</b> Freeman, T. ID31  <b>Developing Learning</b> <b>Organizations –</b> <b>Modeling and Assessing</b> Calton, M. ID32	<b>Leader Development</b> <b>at the United States Air</b> <b>Force Academy</b> Watola, D. J. ID58  <b>Leader Development</b> <b>at the Royal Military</b> <b>College of Canada</b> MacIntyre, A. ID59
11.10–11.30	Morning break (Hotel Meriton – White Hall)		

Thursday, 10 October (continued)				
11.10–11.30	Morning break (Hotel Meriton – White Hall)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
11.30–13.00	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Human Factors and Wellbeing	(D) Selection and Evaluation
	<p><b>Selecting Cadets for Leadership Positions in the Armed Forces of the Netherlands</b> Verboom, M., Hol Horeman, E. ID106</p> <p><b>Development of an Intrapreneurship Programme for Future Officers</b> Kraus, R., Rudel, S. ID108</p> <p><b>Leadership Development: Lessons from Coaching Programmes</b> Scherin, M. ID80</p>	<p><b>A Generalizability Theory Analysis of the New Military Personality Inventory of the Republic of Korea Army</b> Kim, S. ID63</p> <p><b>Usability of Personality Assessment in Military Settings</b> Lubenko, J., Perepjolkina, V., Kolesnjikova, J., Strelcova, M. ID73</p> <p><b>Social Perspective Taking Instrument Developed for the Indonesian Navy</b> Handayani, D. ID102</p>	<p><b>Taking AIM at Training to Improve Learning, Transfer, and Impact</b> Surface, E., Kraiger, K. ID101</p> <p><b>Types of Job-Mobility in the Armed Forces and Perceived (Dis-) Advantages</b> Abendroth, J., Breyer, F., Heiß, A., Röttger, S. ID20</p> <p><b>Cognitive and Psychomotor Requirements for Operators of Military UAS</b> Melcher, W., Neumann, M., Eißfeldt, H., Schwab, A. ID18</p>	<p><b>Learning Analytics in Military Simulator Training (TACTIS)</b> Oprins, E., Pennings, H. ID85</p> <p><b>Development Centers and Prognostic Assessment Centers for Personnel Development: Results from a Pilot Project</b> Klein, F. ID24</p> <p><b>Selection interview in Army: a Pluralistic Integrated Model</b> Pizzo, M. ID98</p>
13.00–13.45	Lunch (Hotel Meriton – Restaurant)			

Thursday, 10 October (continued)				
13.00–13.45	Lunch (Hotel Meriton – Restaurant)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
13.45–15.15	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Training	(D) Managing Diversity
	<p><b>The US Army's Experience with 360-degree Feedback</b> Aude, S., Wolfe, M. ID79</p> <p><b>Importance of Organizational 'Promises' in Predicting Key Outcomes</b> Laplante, J., Beauregard, D., Norris, M., Otis, N. ID12</p> <p><b>Perceived Organizational Support Scale Developed for the Indonesian Army</b> Hilman, F., Purwono, U., Hidayat, E. ID82</p>	<p><b>Development of the Indonesian Army's Work-Life Balance Scale</b> Simanjuntak, F., Purwono, U., Hidayat, E. ID81</p> <p><b>Organizational Climate Scale Validation Study in the Romanian Armed Forces</b> Marineanu, V., Pirlitescu, E. ID83</p> <p><b>Assessing Mental Health at the Danish Draft Board</b> Andreasen, J. ID61</p>	<p><b>The Influence of Exercise on Mental Health in the Navy</b> Harding, C., Gottschall, S., Huebner, M. ID17</p> <p><b>The Changing Face of Deployment: Psychological Challenges</b> Gouws, J. ID26</p> <p><b>Are soldiers accountable for their actions? Agency in the Military</b> Lo Bue, S., Caspar, E. ID29</p>	<p><b>Intervening and Measuring Cultural Interoperability</b> Binsch, O., Hemert, Van, D. ID09</p> <p><b>The Canadian Armed Forces Employment Systems Review: Retention Survey Findings</b> Wright, J., Silins, S. ID11</p> <p><b>Diversity and Retention within the UK Defence</b> Fisher, N., Kenny, E., Winterton, M., Newell, K. ID48</p>
15.15–15.35	Afternoon break (Hotel Meriton – White Hall)			

Thursday, 10 October (continued)				
15.15–15.35	Afternoon break (Hotel Meriton – White Hall)			
Room	Peterson I+III	Peterson II	Panso	Alver+Adson
15.35–17.05	(A) Leadership and Organizational Behaviour	(B) Testing and Measurement	(C) Training	(D) Human factors and Wellbeing
	<p><b>A Study about the Effect of Soldier's LMX on Organizational Effectiveness</b> Kim, K. ID21</p> <p><b>Leadership Testing in a Nutshell</b> Toomepuu, J. ID114</p>	<p><b>Using Behavioural Insights to Improve Pre-Enlistee Medical Compliance Rates</b> Chan, A., Tan, J., Koh, C. ID60</p> <p><b>Using 'Digital Footprints' for Understanding Employee Engagement</b> State-Davey, H., Taylor, C., Bertman, S., Hillyer, C., Wragge, A., Fisher, N., Rankin, A., Thompson, G. ID62</p> <p><b>Unproctored Internet Testing: Operational Experience</b> Bradshaw, J. ID16</p>	<p><b>What is FamCAS? Discussing the importance of the survey and how we can adapt it</b> Fairclough, E., Elliott-Mabey, N. ID100</p> <p><b>Development of the Work Analysis Competency Model (WACM) for the Canadian Armed Forces</b> Girard, M. ID13</p>	<p><b>Into the deep end – evaluating criteria to assess divers' psychological fitness</b> Grams, M., Vetter, S., Roettger, S. ID52</p> <p><b>Measuring individual differences in multitasking ability: An eye-tracking study</b> Oksama, L., Kulomäki, J., Rantanen, E., Hyönä, J. ID103</p>
19.00–23.00	<b>Evening programme: Conference Banquet</b> , Harry Greer Award presentation (Seaplane Harbour)			

Friday, 11 November	
09.00 – ...	<b>Optional: Excursions</b> for participants and their guests Meet at hotel lobby



# CONFERENCE ABSTRACTS

■  
ID 01

## **Military Personnel with Deployment-Related Post-Traumatic Stress Disorder and the Perception of their Families and Relatives – Qualitative Evaluation of a Resource that can be Activated**

Dr. Ulrich Wesemann

*Bundeswehr Hospital Berlin, Germany*

**Background:** The German armed forces report an average of more than 340 new cases of deployment-related mental disorders each year. However, the majority of affected service members do not receive any professional help. What is more, there have been no investigations into how their families and relatives are affected by these psychological changes.

**Methods:** N = 47 family members and relatives of service members of the *Bundeswehr* with reported deployment-related post-traumatic stress disorder (PTSD) were questioned about the perceived stresses and burdens of those concerned. The analysis was conducted during workshops organized for family members from 2011 to 2017. The qualitative evaluation was based on the six phases of thematic analysis developed by Braun and Clarke.

**Results:** The family members and relatives mentioned problem areas that they identified with the *Bundeswehr* service members suffering from PTSD, e. g. “expressed feelings and emotions”, “withdrawal and avoidance behaviour”, “aggression and hostility”, “communication”, “physical closeness”, “trust”, “physical symptoms”, “changes in personality and behaviour” and a “residual category”.

**Discussion:** The identified problems were categorised without any difficulty. All established categories influence families and relatives either directly or indirectly. Apart from the category overlap with PTSD according to ICD-10 diagnostic criteria, the research identified additional problem areas of “physical closeness”, “communication” and “trust”.

**Conclusions:** The stress that the families and relatives of affected *Bundeswehr* service members are dealing with is enormous. The researchers offer recommendations regarding specific measures for engaging families and relatives more actively. Identified problem areas serve as a basis for a questionnaire to be filled out by the families and relatives. This would facilitate faster diagnosis of stressed service members and classification of their symptoms. As a result, affected service members are more likely to seek professional help and even do that at an earlier stage. This would enable tackling one of the most acute problems in psychiatric care.

**Keywords:** Families and relatives of military personnel, post-traumatic stress disorder, hostility, quality of life, use of offers of help

ID 03

**A Study on Measuring Social Desirability Bias of Military Officers**

Suk-ji Hong

*Korea Institute for Defense Analyses*

When looking at the results of the Republic of Korea (ROK) Armed Forces survey across several years, it appears that ROK Armed Forces officers tend to give socially desirable responses to most self-reported questionnaires. Therefore, we decided to focus our attention on the impact of social desirability bias. To that end, we applied the Social Desirability Scale (Bora Jung, 2005) covering 20 items to investigate tendencies to respond in a socially desirable manner. In order to check whether there was a difference in general military survey results due to high and low social desirability, the annual ROK Armed Forces satisfaction survey incorporated the 20 items outlined in the Social Desirability Scale. The results indicated that officers exhibit higher social desirability bias compared to other groups (e.g. conscript soldiers, the general public, etc.). What is more, the groups with higher social desirability bias tended to respond more positively to specific military survey items. In addition, correlation and regression analysis indicated that the social desirability bias also affected responses to specific military survey items. The research concludes with a discussion of implications and recommendations for controlling social desirability bias among military officers.



ID 09

**Intervening and Measuring Cultural Interoperability  
in the Context of a Bilateral Mixed Military Unit**

Dr. Olaf Binsch and Dr. Dianne van Hemert

*Netherlands Organisation for Applied Scientific Research,**Department of Human Factors, TNO Soesterberg, The Netherlands*

Increased military cooperation between the member states of the European Union and NATO countries is a political necessity. The Netherlands and Germany are leading this process by example, having recently integrated entire military units under higher-level units of the other nation. This unprecedented level of integration contests the synchronization of technical and doctrinal interoperability, but foremost, cultural interoperability, requiring knowledge in the human factor domains of cultural and social psychology. In a study of the German-Dutch Bilateral Mixed Combat Tank Unit, Wermser *et al.* (2019) revealed that many see the complementarity between the Dutch and the Germans; however, issues such as language incompatibility and a lack of mutual understanding remain. Therefore, the goal of this study is to deliver a methodology to establish behavioural measurements and a number of interventions for military units comprising different nationalities in repeatable contexts. It is also our ambition to examine and dashboard the impact of the developed interventions by applying reliable measurements of operational effectiveness (OE). We will present this approach and its underlying principles based on scientific literature on intercultural collaboration. Furthermore, we will also discuss the results of our initial interviews, the dashboard parameters and the measures of OE by applying the Dutch combat simulation environment TACTIS.

ID 10

**Predicting Potential for Future Cyber Warfare Operators**

Mrs Natalene Di Pietro and CAPT Danny Boga

*Australian Department of Defence*

The threat and reality of cyber warfare is emerging globally, which has implications for the Australian Defence Force (ADF) and similar industries in ensuring the protection of both Australia's national interests and its citizens. In response, countries around the world are building their cyber security workforce by targeting information technology (IT) professionals, software engineers and data scientists to form both offensive and defensive cyber capabilities. The world's militaries will need to overcome many challenges when establishing their new workforce, including determining the optimal workforce structures for cyber, developing accurate employee profiles with the right mix of skills, and targeting individuals with motivation to perform the role. To facilitate effective personnel selection, the Directorate of Occupational Psychology (DOP) of the Australian Department of Defence was asked to develop an evidenced-based cyber operator person specification. Research was conducted on industry and allied militaries' cyber activities and workforce structures. Cognitive and behavioural characteristics were investigated to determine the factors most likely to influence cyber trainability, performance, retention, and job fit. Key attributes were clustered into domains representing essential hard-to-train elements for competent cyber operators. A prototype profile based upon those attributes was created and tested against ADF criteria, with all three Services heavily involved in refining the construct. The resulting profile identified four key domains (cognitive ability, motivation, maturity and interpersonal ability) that were deemed essential for cyber operator candidates. The cyber operator psychological profile will be applied in the future to inform selection for ADF cyber operator roles with ongoing refinement to ensure effective recruitment practices continue to meet Australia's cyber security needs.

ID 11

**The Canadian Armed Forces Employment Systems Review:  
Retention Survey Findings**

Justin Wright and Dr. Stacey Silins

*Director General Military Personnel Research and Analysis,  
Department of National Defence, Canada*

As part of its obligation under the Employment Equity Act, the Canadian Armed Forces (CAF) are required to conduct employment systems reviews (ESR) on a regular basis. These reviews are conducted to determine whether barriers exist for designated groups (e.g., women, visible minorities, and Indigenous people) that prevent them from fully participating in military employment. The ESR examines several areas of personnel management, including recruitment, promotion, training, accommodation and release. As part of the first stage of the current ESR, this study examines the reasons CAF members choose to remain or release from the CAF, using data collected in the CAF Retention Survey. This survey was administered to CAF members in the Regular Force and Primary Reserve between January and May, 2019, with a final sample of 5,764 respondents and an overall response rate of 37.7%. Results are presented by occupational category (e.g., combat arms, support, medical and dental), and statistical tests of significance were conducted to assess key group differences (e.g., gender, designated group status). These findings constitute one part of the ongoing ESR, and will be used to develop an upcoming qualitative component focused on CAF members in key positions (e.g., career managers, recruiters, military supervisors, leadership). Taken together, these ESR results will inform the CAF's next Employment Equity Plan and will have direct implications for strategic personnel management.

ID 12

**Importance of Organizational 'Promises' in Predicting Key Outcomes**

Joelle Laplante, Devin Beauregard, Marie Norris,

Nancy Otis &amp; Irina Goldenberg

*Director General Military Personnel Research & Analysis,**Department of National Defence, Canada*

Presented by: LCol Marie Norris

*Canadian Armed Forces*

Early career attrition remains high in comparison to most other time points in a Canadian Armed Forces (CAF) member's career. Previous research has pointed to the role of unmet expectations in military turnover and in particular, early attrition. Certain job and career expectations are rooted in the information conveyed about the organization and military life, including during the recruitment process. In order to assess new CAF members' beliefs about the promises made to them, and the level of fulfilment of these promises made, Kickul and Lester's (2001) approach to psychological contract breach was adopted. Cross-sectional survey data, collected at the end of CAF members' first year of service ( $n = 751$ ), were analysed (this data was collected as part of Project Horizon, a longitudinal study of early attrition). Analyses sought to identify promises commonly made (e.g., job training and retirement benefits) or believed to have been made (e.g., control over frequency of postings and deployments), and to assess the degree to which these promises were fulfilled by the CAF after one year of service. The relative importance of each of these promises in predicting key outcomes such as job satisfaction, commitment, and release intentions was also examined. Results suggest that CAF members' perceptions of a psychological contract breach, whether pertaining to actual or perceived promises, contribute to negative outcomes, including early attrition. The discussion focuses on the importance of accuracy and precision of information conveyed during recruitment and socialization to ensure consistent messaging and to avoid misinterpretations.

ID 13

**Development of the Work Analysis Competency Model (WACM)  
for the Canadian Armed Forces**

Marcelle Girard, M.A.

*Director General Military Personnel Research & Analysis  
Department of National Defence, Canada*

Presented by: LCol Marie Norris

*Canadian Armed Forces*

The current Director General Military Personnel Research and Analysis (DGMPRA) work analysis process relies on subject matter experts to generate, from memory, an exhaustive list of knowledge, skills, abilities, and other attributes, which are then sorted into various competencies to be used in selection measure design. Not only are there certain challenges inherent in this process, which could result in a truncated list of competencies, but a review of past work analysis reports demonstrates a lack of consistency in the use of terms and definitions referring to competencies. A structured competency model provides a holistic means for avoiding these challenges by ensuring all pertinent competencies are captured and are comparable across work analysis projects. A review of DGMPRA work analysis research reports from 2005 to 2016 identified 558 individual skills, abilities, and other attributes across several Canadian Armed Forces occupations. Using Q-Sort methodology and working group discussion, the current research produced a work analysis competency model (WACM) consisting of 78 facets grouped under 17 competencies. The WACM can be used to facilitate competency generation in the work analysis process resulting in a more robust and standardized list of competencies for use in selection.

ID 14

**The Applicability of Universal Design to Canadian  
Armed Forces Selection**

Fraser A. J. Boyes & Shayda Sobhani

*Director General Military Personnel Research & Analysis,  
Department of National Defence, Canada*

Presented by: LCol Marie Norris

*Canadian Armed Forces*

The concept of Universal Design originated in the architectural domain with the goal to create barrier-free buildings and facilities in a manner that would make them accessible to everyone. The concept of Universal Design has since spread to other fields, such as recreation and education, given the benefits associated with providing all persons with the opportunity to perform to the best of their ability. Despite the evolution of Universal Design, there is a dearth of research that examines these principles in the context of personnel selection and assessment for employment purposes. Canada's Defence Policy introduces a new and comprehensive Diversity Strategy and Action Plan to promote a diverse and inclusive organizational culture with modernized career management policies and practices. This paper reviews the history, purpose, principles, and application of Universal Design and examines the potential for the adoption of these principles within the Canadian Armed Forces (CAF) selection system. A step-by-step guide was developed for potential implementation within the existing CAF selection system and for processes associated with the identification, development, and implementation of new selection tools. The implications associated with the adoption of Universal Design principles into the CAF selection system are discussed, as are the requirements for a research program to support this initiative.

ID 16

**Unproctored Internet Testing: Operational Experience**

Jonathan Bradshaw

*Eikonika Ltd, United Kingdom*

Unproctored internet testing (UIT) can reduce the financial cost of large-scale testing. However, unsupervised assessment also provides the opportunity for candidates to cheat the system. There are four layers of protection against candidate malpractice. These are test design, administrative procedures, forensic psychometrics and organisational policy.

In November 2018, the Danish Defence Personnel Organisation (DDPO) implemented a UIT programme for the assessment of candidates. The DDPO programme adopted all four layers of protection and used an online test battery called Predict. This battery comprises three measures of general mental ability and covers the constructs of logical reasoning, spatial ability, numerical facility & working memory. Currently over 800 individuals have been assessed, providing over ten months of operational experience.

Four different types of forensic psychometrics were developed specifically for the DDPO programme. This paper provides an empirical evaluation of these techniques.

ID 17

**The Influence of Exercise on Mental Health in  
the Royal Canadian Navy**

LCdr Chris Harding  
*Canadian Armed Forces*

Dr. Shannon Gottschall & Matt Huebner  
*Department of National Defence, Canada*

This study evaluated a stratified a random sample of 930 members of the Royal Canadian Navy, both ashore and on ship, in order to determine the moderating effect of physical activity on the relationship between job stress and psychological distress. The association between job stress and psychological distress was significant with a large effect size, and a significant three-way interaction indicated that physical fitness had a partial moderating effect on the association between job stress and psychological distress for those on ship in particular. What is more, those on ship report significantly higher levels of job stress and psychological distress, which makes moderators and mitigating factors particularly important to explore in order to determine scientifically valid avenues for change. Emphasizing physical activity, both in infrastructure and policy, and maintaining fitness while employed in the Navy, particularly while serving on ship, may positively influence the well-being of personnel and, in doing so, their operational effectiveness.



ID 18

**Cognitive and Psychomotor Requirements  
for Operators of Military UAS**

Wiebke Melcher, Markus F. Neumann, Hinnerk Eißfeldt

*German Aerospace Center, Aviation and Space Psychology, Hamburg, Germany*

Anja Schwab

*German Air Force, Centre of Aerospace Medicine, Fürstenfeldbruck, Germany*

In military contexts, unmanned aerial systems (UAS) efficiently fulfil reconnaissance duties and increase the safety of military personnel. Operators of HALE/MALE (High/Medium Altitude Long Endurance) systems are often recruited from among pilots of manned military aviation. These dual careers in manned and unmanned aviation offer some advantages, but other things being equal, manned aircraft require more personnel, which is difficult to find in today's competitive labour market, and the training is cost-intensive. As yet, little is known about the specific demands for personnel operating UAS. The aim of this study, conducted in cooperation with the Centre of Aerospace Medicine of the German Air Force, is to empirically assess the demands of the UAS operating positions within the German Bundeswehr and to develop specific requirement profiles. A sample of  $N = 192$  UAS operators and sensor/payload operators of the German Air Force system Heron, and the German Army systems Luna and KZO completed the Fleishman Job Analysis Survey (F-JAS). The F-JAS consists of 73 scales, to assess the required abilities and skills from cognitive, psychomotor, physical, sensory and interactive/social domains and was extended by two additional scales (operational monitoring and vigilance) developed at the German Aerospace Center. With regard to the cognitive and psychomotor domains, our results show a large degree of congruence between the systems, but differences between the operating positions (aerial vehicle operator vs. sensor/payload operator). Further distinctions between the systems on basis of the single F-JAS scales will be reported, and implications for future steps will be discussed.

ID 19

**Systematic Follow-up of the Psychological Selection to  
the Swedish Armed Forces**

Emma Jonsson, Researcher  
Sofia Svensén, Researcher  
*Swedish Defence University*

Anne Lindqvist, Chief of Military Psychology (Project Leader)  
Johan Lantz, Psychologist  
*Swedish Armed Forces*

Rose-Marie Lindgren, former Chief Psychologist  
Britta Törner, Psychologist  
*Swedish Defence Recruitment Agency*

The aim of this project is to develop a method for the systematic follow-up of the psychological selection to the Swedish Armed Forces. The project aims to gain a better understanding of the reasons for attrition from basic training at the Swedish Armed Forces in order to predict potential for attrition and successful recruitment for the purposes of making necessary modifications to the selection criteria, tests and training in the future.

In Sweden, military recruits complete two questionnaires, one in the beginning of basic military training and one at the end of the training, or alternatively, when they drop out. Data from the admission test is linked to each individual, as well as to the military grades for recruits who complete the training.

Logistic regression analysis was conducted to predict attrition, attrition caused by other factors than injuries, and successful recruitment, i.e. when recruits enter into contract after the training.

The project's strengths lie in its longitudinal design as well as the combination of both quantitative and qualitative data, which allow insights from multiple perspectives.

The project is a collaboration between the Swedish Armed Forces, the Swedish Defence Recruitment Agency and the Swedish Defence University.

ID 20

**Types of Job-Mobility in the German Armed Forces and  
Perceived [Dis-]Advantages**

Johanna Abendroth, Felix Breyer, Andrea Hei, & Stefan Rttger  
*German Armed Forces Office*

Thomas Jacobsen  
*Helmut-Schmidt University Bundeswehr, Germany*

Jens Kowalski  
*University of Applied Sciences for Public Administration and Services, Germany*

Modern lifestyles and working conditions require military personnel to adapt to an increased degree of spatial mobility that is often associated with stress and health consequences. Moreover, research suggests that different types of job-related mobility are perceived to lead to different positive and negative occupational and social consequences. Using data from 3191 members of the German Armed Forces, we investigated the effects of four different types of job-related mobility (long-distance commuters, overnighters, residential mobiles and multi-mobiles) on 1) the level of subjective job performance and 2) their willingness to remain job-mobile. Moreover, we expected the beliefs related to social and occupational advantages and disadvantages to mediate the effects of job-related mobility. Most importantly, beliefs about occupational and social consequences were differently associated with different types of job-related mobility and partially mediated the direct effects of job-related mobility on the dependent variables. For example, results revealed that a single specific event in terms of relocation (i.e., residential mobility) has less negative consequences compared to the effects of circular mobility or multi-mobility. Implications and recommendations for providing additional support to mobile military personnel are discussed.

ID 21

**The Effect of Soldiers' LMX on Organizational Effectiveness**

Kyuhyun Kim, Ph.D.

*Korea Institute for Defense Analyses*

The purpose of this study is to verify the effects of LMX (Leader Member Exchange) on military organizational effectiveness through PSM (psychological service motive) and self-efficacy using a quantitative research method. To facilitate more effective and precise management by group, empirical results were obtained by comparing psychological service motive mechanisms based on military status (i.e. soldiers, NCOs, officers) and employment types (i.e. short- and long-term service).

As a result of the LMX structure model analysis, the category of 'affect' and 'contribution' showed a large total effect on organizational effectiveness mainly through the PSM. However, the results of the 'loyalty' category were contrary to previous findings. It is thought that the belief in unconditional protection and support from superiors lowers concentration and internalization of military organizational duties, reducing active attitudes and motivations for the organization and others.

According to the analysis of status and employment type, the LMX induces positive organizational attitudes and behaviours among soldiers by increasing PSM, whereas the comparison of NCOs and officers showed that 'affect' had the greatest impact on job satisfaction and 'contribution' to organizational commitment and OCB (organizational citizenship behaviour). For short-term service, LMX was found to have greater and more effective indirect effects mediating self-efficacy.

Through quantitative verification of the relationship between soldiers and their psychological and behavioural processes, this study draws implications for the establishment of more detailed organizational management strategies by status and employment type in the leadership area.

ID 22

**Intelligence Test Scores for 1-Day vs. 2-Day Selections of Danish Officers**

Rasmus Risager Thomsen, MSc (Psych), Psychologist  
*Danish Ministry of Defence Personnel Agency, Denmark*

In 2018, the selection of Officers in the Danish Armed Forces was changed from a two-day selection process to a one-day selection. The reason for this shift was, among other things, to avoid any recruitment barriers by requiring applicants to devote two full days to taking part in the selection process.

As a result, the selection process was modified to fit a one-day format. This resulted in a more tightly scheduled programme for the applicants, in which physical tests (muscular and respiratory) were performed a short time before proceeding to take the cognitive tests. This raised concerns about whether the intense programme might stress and exhaust applicants too much, resulting in poorer performances on cognitive tests as compared to the previous two-day selection process, where the physical tests were performed the day before the cognitive tests. If applicants performed poorer on the cognitive tests, it could potentially have implications for the assessment of the applicants with a risk of underestimating their capabilities and could potentially serve as a recruitment barrier.

This paper will present results from a comparative analysis of the intelligence test BPP (Børge Priens Prøve) administered by the Danish Draft Board for applicants to the Danish Officer School before and after the transition from a two-day to a one-day selection process.

ID 23

**Profiling and Selection of IT Specialists for the Danish Defence Sector**

Christina Rams Hoxer, MSc (Psych) and

Janne Hellerup Nielsen, MSc (Psych)

*Danish Ministry of Defence Personnel Agency*

In recent years, cyber warfare has become a dominant topic on the political agenda, resulting in increased resources being allocated to digital warfare on cyber-terrorism. As a result, the Danish Ministry of Defence Personnel Agency has taken part in the selection of IT specialists for a variety of purposes in a military setting.

The Defence Agreement for 2019 foresees a cyber military service, posing a novel challenge for the selection and education of conscripts and highlighting the need for integrating a digital mindset in the larger Danish defence strategy.

Compared to the general segment of applicants for the defence sector, IT specialists differ from the rest on parameters related to physical, social, cognitive and psychological characteristics. Among others, “digital readiness” has become a sought after competency, i.e. in addition to the need to incorporate IT functions in traditional military positions.

These variations call for a differentiated psychological profiling and testing methods in order to target applicants with suitable potential for IT positions in a military setting.

The presentation will provide an overview of implications, experiences and recommendations with regard to the selection of IT specialists.

ID 24

**Development Centers and Prognostic Assessment Centers for  
Personnel Development: Results from a Pilot Project**

Florentin Klein

*Federal Ministry of Defence, Germany*

Between June and November 2018, the German MOD carried out a total of four pilot applications of Development Centers (DC) and Prognostic Assessment Centers (PAC) for use in personnel development in the German armed forces.

Although personnel recruitment assessment centers have been used in the German armed forces for almost 100 years, personnel development decisions are still made almost entirely on the basis of supervisor appraisals and self-assessments. In accordance with the new personnel strategy, the German armed forces have decided to develop and test assessment procedures that could support the development of civil and military personnel alike. Together with a contractor (TÜV Rheinland Akademie GmbH), two assessment procedures were developed, with each having a civilian and a military variant. First, a DC for assessing basic strengths and abilities with the primary goal of helping the individual to get a realistic self-assessment and also to be used as a basis for the allocation of career models and supplementary qualification. Secondly, a PAC as an additional source of knowledge to identify high potential candidates as a basis for selecting top-level personnel.

In addition to evaluating effectiveness and efficiency, the pilot study aimed to gain insights into the acceptance of the proposed model by different target groups. The evaluation was carried out by the University of Bamberg in cooperation with the IABG mbH. The results showed that assessment procedures can be used both effectively and efficiently in the personnel development of the German armed forces. The DC met with approval from most respondents, but the feedback on the PAC was mixed.

ID 26

**The Changing Face of Deployment: Psychological Challenges**

Lt. Col. (Rt) Dr. Jacques J. Gouws, MMM, C. Psych.

*Human and System Interface Consulting Inc. (HSIC), Canada*

The dissolution of the Soviet Union and the Warsaw Pact changed the international power structure to only one remaining major superpower, the United States of America. Around 1995, the U.S. Department of Defense (DoD) assessed that asymmetric threats to the USA would arise in the post-Cold War world. These threats materialized when the power vacuum left by the defunct USSR was filled by smaller, more dangerous players, as compared to the Cold War adversaries.

The envisaged asymmetric warfare threat to the USA materialized on September 11, 2001, drastically changing the face of war and the role played by the USA and its allies' counterforces tasked with eliminating the asymmetric threat.

Eighteen years later, the USA and its allies still face insurmountable obstacles to counter asymmetric warfare in theatres around the world originating from a multitude of groups operating in many countries around the world. The changing face of deployment in such operations has brought about serious psychological challenges for both the deployed soldiers and for the military and political leadership. Against this background, the role of Military Psychology as a force multiplier available to military leadership in countering psychological challenges is discussed.



ID 27

**Command Climate: The Foundation of a Ready and Resilient Unit**

Melissa Wolfe, Ph.D. & Jon Fallesen, Ph.D.

*U.S. Center for Army Profession and Leadership,  
Department of the Army, the U.S. Department of Defense*

Ryan Riley & Cate Cavanaugh

*ICF International*

Soldiers and leaders have told countless stories on the importance of command climate for unit readiness and operational success. However the exact manner in which command climate impacts readiness and performance is often less clear, especially for operational units. Recent U.S. Army studies with operational units have shown that command climate – the shared perceptions and attitudes within a unit – has a strong impact on critical individual Soldier and unit-level outcomes, such as morale, trust, commitment, readiness, and performance. Command climate issues such as workload stress and poor morale can keep individuals from engaging in their work and distract them from the mission. Similarly, a positive climate establishes the conditions for trust and rapport to mediate leadership decisions and actions to produce effective outcomes. While many factors such as effective leadership, sound judgment, rigorous training, teamwork, and available resources affect readiness and mission accomplishment, command climate has emerged as the central point where these factors have a combined impact. Analyses revealed that perceptions of command climate serve as a mediator for leadership behaviors' effect on unit preparedness, readiness, and performance. The demands of more complex, multi-domain operational environments make it critical that the U.S. Army ensures its units have healthy command climates that encourage disciplined initiative. This presentation explores conceptualizations of command climate as well as its impact on the relationship between leadership and key unit and individual-level outcomes. Limitations of current military climate assessments will be discussed along with strategies for building and maintaining a positive command climate.

ID 28

**PCFAT: A High-Fidelity Online Practice Aptitude Test  
for Military Prospects**

Colin Kemp

*Department of National Defence, Canada*

Successful performance on the Canadian Forces Aptitude Test (CFAT), a three-domain, 60-item measure of general cognitive ability, is a *sine qua non* for admission into the Canadian Armed Forces (CAF). Until recently, however, no realistic practice version of this test has existed. To address this lacuna, the CAF has created a high-fidelity, time-constrained, internet-based parallel CFAT test form, known as the Practice Canadian Forces Aptitude Test (PCFAT). The PCFAT was developed using item response theory and a state-of-the-art automated test assembly method, in order to build the test to exacting statistical and content specifications. The purpose of the PCFAT is to prepare prospective applicants for the high-stakes version of the CFAT, and to provide them with an estimate of their expected CFAT performance relative to the minimum entry standard. To date, over 7,000 prospects have completed the online PCFAT; analyses of these data indicate that the psychometric profile is similar to high-stakes proctored CFAT, which suggests that the test assembly algorithm performs well and that prospective applicants take the PCFAT seriously. This paper discusses the technical development of the PCFAT, online implementation of the test, psychometric analyses of extant data, and future proposed experimental studies involving the test platform.

ID 29

# **Are Soldiers Accountable for their Actions? Agency in the Military**

Salvatore Lo Bue & Emilie Caspar

*Military Academy of Belgium (RMA)*

International and national laws expect contemporary soldiers to take full responsibility for their actions. Receiving an order or following the suggestions of artificial intelligence does not constitute a valid excuse to perform an illegal or an illegitimate act. Although previous experiments, such as those of Milgram, have already shed some light on the effects of obedience to authority, those past studies are flawed due to methodological limitations and do not really inform us about an individual's sense of agency. In cognitive sciences, agency is defined as "the sense that I am the one who is causing or generating an action" (Gallagher, 2000, p. 15). Measuring such a consciousness state objectively remained a complicated problem until 2002, when Haggard, Clark and Kalogeras demonstrated a relationship between voluntary/involuntary conditions in a given situation and time perception between actions and their consequences. Their research showed that time appeared shorter when the action was voluntarily, as compared to the same action performed involuntarily. This "intentional binding" effect has offered new ways to measure agency in an implicit way and thus enables us to overcome the limitations of previous studies. Research conducted among civilians indicated several variables that have a negative effect on agency: being under command, making moral judgements, and working with automated systems. In other words, social relationships and human-machine interactions influence agency, responsibility and the human decision-making process. Because contemporary soldiers must preserve their agency even under command or in interactions with artificial intelligence, the intentional binding methodology opens fascinating venues for research in the military context.

ID 30

**Developing Learning Organizations**

Dr. Michele A. Calton

*U.S. Army Research Institute for Behavioral and Social Sciences*

Future capability overmatch in our militaries will rely heavily on investment in technological advancement, but it stands to reason that it is investment in knowledge that will result in the greatest returns on future mission success. Many military acquisition processes have struggled to keep up with the rapid rate of changing technology. Further, with the increased likelihood of technological failure and cyber-attacks, the knowledge possessed by our military members and units may prove to be the most valuable source of competitive advantage our organizations will have in future operating environments. We contend that investment in knowledge will require an organizational-level commitment by senior leaders to developing learning organizations (LOs). An LO is an organization that continuously orients itself in a future-focused posture and positions itself to readily acquire new skills and knowledge to allow for prompt responsiveness to ever-changing demands and requirements. An LO adapts by integrating ongoing learning into its systems, processes and structures. This symposium will open with discussion of LOs in the civilian and military sectors and the unique needs and challenges associated with developing LOs in those settings. Next, we will present the U.S. Army's recent efforts to develop a model and assessment of LOs in the U.S. Army. Finally, we will conclude with a discussion of future research designed to provide answers on how to build stronger LOs within our forces that are better positioned to succeed in future joint operating environments.

ID 31

**Developing Learning Organizations – Needs and Challenges**

Dr. Tyler Freeman

*ICF, LLC*

Dr. Michele A. Calton

*U.S. Army Research Institute for Behavioral and Social Sciences*

The future operating environment will be complex, chaotic and lethal. Joint and multi-national military operations will be increasingly common, requiring military organizations to coordinate and leverage expertise across national, cultural, regional, and organizational boundaries. To the extent that military organizations and their members embody and embrace what it means to be a learning organization (LO), they will be better prepared to meet the demands of the uncertain future operating environment. However, military organizations face unique challenges to maturing as LOs. For example, sustaining continuity of organizational knowledge becomes especially difficult in military organizations where personnel are frequently rotated in and out of assignments. Additionally, in an environment where there is constant flux, learning must be continuous and prevalent at all organizational echelons. As military organizations overcome such barriers to LO maturity, they can realize a number of benefits. For example, LOs establish a culture of open communication and information sharing which allows organizations to make the most of their intellectual capital. A culture of open communication facilitates the synthesis of diverse perspectives which can lead to better decisions, plans and strategies. Similarly, a culture of open communication can improve talent management practices by identifying individuals' expertise and then matching it to organizational requirements as well as facilitating discovery of where learning and development is needed to optimize organizational performance. This paper will describe challenges associated with building a military LO in more depth, potential ways of overcoming those challenges to advance LO maturity and finally, the benefits of becoming an LO.

ID 32

**Developing Learning Organizations – Modeling and Assessing**

Dr. Michele A. Calton

*U.S. Army Research Institute for Behavioral and Social Sciences*

Dr. Tyler Freeman

*ICF, LLC*

Recognizing the need to maintain future capability overmatch by investing in our most priceless asset – military members and their units, the U.S. Army tackled the difficult research topic of understanding, describing, and assessing learning organizations (LOs). The objective of this presentation is to describe the research to develop the following tools: the U.S. Army Learning Organization Maturity Model (ALOMM); Army Learning Organization Assessment (ALOA); and the Learning Organization Maturity Report (LOMR) which summarizes ALOA results in a useful and meaningful way for organizational leaders. This presentation will begin with detailing the process of researching an ambiguously defined entity like a learning organization within a clearly defined organization like the military. We will also discuss how our findings of unique learning dimensions within a military population differ from and are similar to popular research findings on LOs in the civilian sector. We will then discuss our methods for translating those unique dimensions into a format that leaders can use to assess their organizations' learning maturity to identify areas of strength and areas in need of improvement. Finally, we will conclude with a discussion of future research aimed at identifying methods for building stronger LOs that would be better positioned to succeed in future joint operating environments.

ID 34

**An Exploratory Study of Crisis Leadership Qualities: CARE Survey**

Dr. LTC (Rt) Cheng Boon Koh

*Nanyang Technological University – Nanyang Business School, Singapore*

Such crises as the 9/11 attacks, the Boston Marathon bombing, the 2020 Bali bombings and numerous other low-probability but high-impact situations and events pose a significant threat to individuals, organizational performance, and stakeholders, if not properly managed. This study attempts to identify important crisis leadership qualities and thereby fill an important gap that needs to be addressed for both researchers and educators.

Finding answers to these questions is important for two reasons. First, it has been reported that 69% of leaders have to manage and lead in VUCA (volatile, uncertain, complex and ambiguous) environments (American Management Association, 2007). Studies have also asserted that crisis leadership is an essential competency for organizational survival in a VUCA environment. Second, understanding the key leadership qualities needed for such crisis management might provide a basis for the development of a psychometric tool to raise the awareness of leaders or individuals that would open the door to effective leadership during crisis and leadership development. Based on interviews with 20 subject matter experts (SMEs), the authors of this study proposed and validated (Phase 1) a survey model for measuring crisis leadership qualities, titled the Creative, Adaptive, Resilient, Emotional Intelligence (CARE) model. Phase 2 of the study involved 653 undergraduates and Phase 3 involved 213 military officers. This exploratory study found that the CARE (Creative, Adaptive, Resilient, Emotional Intelligence) Survey is a valid and reliable tool for measuring crisis leadership qualities. These findings have practical implications for using the CARE survey for leadership selection, education and development in the military.

ID 35

**Evaluation of the Current R2MR Smart Phone Application  
to Improve Mental Readiness and Resilience**

Dr. Olaf Binsch

*The Netherlands Organisation for Applied Scientific Research,  
Department of Human Factors, TNO Soesterberg, The Netherlands*

Enhancing mental health and resilience is one of the most important challenges in providing the best care for our military personnel. The newest technological innovations (i.e sensors, smart phone applications and virtual reality) that help facilitate assessment, education and training are increasingly used in education and other domains. However, the domain of military mental health is lagging behind in the application of these technologies, especially in the phases of mission preparation and deployment where they could be used in training, treatment, and identification of mental risks. To leverage these technologies, Canada launched a military mental health programme 'Road to Mental Readiness' (R2MR), and invited the Netherlands to collaborate in the development of technology to support mental health programmes in the Canadian and Dutch militaries. This study, describes our initial evaluation of the existing Canadian R2MR application that was translated into the Dutch language. In the Netherlands, We invited participants of the Netherlands Military Health Organisation and Special Forces to evaluate the functionalities of the R2MR app as a stand-alone application; whereas in Canada, it is embedded into the mental health curriculum of the armed forces. The results showed that the practical training (e.g. battle breathing) was widely accepted by the test population; however, the mental trainings like self-talk, visualization and attention control, that require more mental work and have no direct and perceptible advantage, received criticism. At the 61<sup>st</sup> IMTA, we will discuss the app training, experimental method, results that distinguish between age, ranks and language and we will also offer some suggestions to make mental training exercises more acceptable.



ID 38

# **Predictive Validity of the Inspire Resilience Scale as Selection Instrument**

Dr. Wim Kamphuis and Dr. Esther Oprins

*The Netherlands Organisation for Applied Scientific Research (TNO),  
The Netherlands*

Over the past couple of years, a group of European defence organisations (NLD, BEL, SWE, FIN, GER) and the Dutch police have collaborated in the framework of the European Defence Agency project INSPIRE (Improving Military Selection: Psychological Resilience Screening) to develop and test the Inspire Resilience Scale (IRS), an instrument that aims to assess the psychological resilience potential of candidates up for selection. In this presentation, we will present the final results of a longitudinal predictive validity study.

The IRS was submitted in the selection phase (T0) of five participating organisations. Criterion data about performance and health were collected in the second half of the first training year (T1; between 6 and 12 months after the selection). The total sample consisted of 11404 applicants at T0; at T1 the sample consisted of 726 remaining trainees. The predictor measure, the IRS, consists of six scales measuring individual determinants of resilience: coping diversity, emotional stability, optimism, self-efficacy, social competence, and self-reflection. The criterion measure for performance consisted of a 6-item self-assessment and a similar 6-item instructor-assessment. Health was measured using the GHQ-12.

The results showed that the overall IRS score significantly predicted the criterion measures with bivariate correlations between the IRS and the criteria around or above .20. Differences were found in predictive validity between participating organisations and between trainee functions (officer cadets vs. infantry/paratrooper recruits). Overall, the IRS proved to be a valid instrument to assess resilience potential in candidates for high-risk professions. Thus, the use of the IRS may contribute to training success and reduction of health problems.

ID 39

**Competency Retention Research: A Multinational Perspective**

Dr. Karen J. Rankin

*Department of National Defence, Canada*

As part of a NATO technical activity, representatives from several nations present their approaches to gaining a better understanding of human performance and competency retention. The high cost of training is an ongoing concern that has resulted in an attention shift towards assessing competency retention (the retention of skill competence following a period of non-use, which is the flipside of skill fade, which focuses on loss of skill). Competency retention not only has a monetary cost, but it can also have serious implications for personnel safety and operational effectiveness. Each nation will provide an example of competency/performance retention research, highlighting the methods used to measure it and to safeguard difficult-to-train competencies, including (1) assessing use of force skill fade in the Canadian Armed Forces military police; (2) examining helicopter underwater egress training (HUET) in the Royal Netherlands Air Force aircrew; (3) developing an overarching computational dynamic personal competency retention model at the Royal Netherlands Aerospace Centre; (4) developing a competence retention analysis technique in the UK; (5) developing voice stress analysis for hypoxia detection to improve competency retention in the Air Component of the Belgian Armed Forces; and (6) improving training and competency retention with virtual reality and serious games in Italy. Although individual competency retention research requires a tailored approach, these studies will illustrate common features, such as influencing factors, performance degradation, refresher training, and research challenges in a military setting. Further, this presentation will provide insight into different competency retention methodologies and the challenges military researchers face when trying to assess competency retention.

ID 40

**Canadian Armed Forces Skill Fade Research: A Methodological Example**

Dr. Karen J. Rankin

*Department of National Defence, Canada*

The Canadian Armed Forces (CAF) spends a large amount of time and resources selecting and training military members. The ability to assess and measure skill fade (the loss of skills following training after a period of time of non-use) is a complex process often requiring a tailored approach. The presentation of one applied approach to studying skill fade highlights the challenges of this area of research in a military setting. The Military Police (MP) are pivotal to enforcing laws and regulations and supporting CAF missions around the world. An essential aspect of policing involves the Use of Force (UoF), which includes everything from arrest, search, and handcuffing, to personal defense tactics and weapons firing. In recent years, the MP Branch has recognized the impact of skill fade associated with initial UoF Training. This prompted a longitudinal study aimed at determining the degree of UoF skill fade experienced by MPs over time. This presentation will focus primarily on the proposed methodology for a longitudinal study that included the development of a rigorous UoF assessment instrument, the training of UoF Instructors to assess MPs, and the discussion of two studies with different methods and objectives related to skill fade. Combined, these two studies were designed to provide longitudinal evidence to determine the optimal duration, frequency, and content for UoF recertification so that MPs can continue to provide top quality service and security to Canada. The challenges of these studies will highlight the difficulties military researchers face when trying to assess skill fade.

ID 41

**Skills Management and Retention**

Carole Deighton &amp; Helen J. Richards

*Defence Science and Technology Laboratory, UK*

A position paper on ‘Skills Management and Retention’ was written by the UK Defence Science and Technology Laboratory (DSTL) in 2019. The purpose of the paper was to develop options for the next generation of UK Ministry of Defence (MOD) research on skills management and retention. These options were based on: 1) an evaluation of the defence need for research on the retention of skills; 2) an assessment of the development needs that should be addressed by research and interventions on skill retention; 3) a stocktake of existing MOD research on skill retention; 4) an assessment of the skill retention challenges that may arise in the future force and; 5) an evaluation of the limitations, gaps and outstanding questions that exist in this area. Two activities were conducted as a basis for the position paper. The first activity was a systematic review of the previous MOD funded research on skills management and retention at the level of the individual, task/role, and collective. The second activity involved engagement with stakeholders from the Army, Navy, Air Force, training organisations, workforce planning, and the Science and Technology community. On the basis of this work, we recommend four options for future research. Options relate to the conduct of both qualitative and experimental research, within controlled and real-world environments. The goal is to collect the evidence that is needed to decide on how often particular types of skills should be refreshed and to identify innovative and effective ways to manage skill retention among military personnel.

ID 42

**Towards a Computational Dynamic Personal Retention Model**

Dr. Jelke van der Pal &amp; Armon Toubman

*Royal Netherlands Aerospace Centre NLR*

In the last decade, initiatives for performance-based training practices have been gradually implemented in military training. The performance monitoring systems that are required for performance-based training are important enablers of personalized training. The interest in personalized training is growing because of its promise to optimize training effectiveness and costs, to increase personnel satisfaction, and the willingness to remain in service. After being qualified, some types of refresher training may appear redundant, whereas other types of training is provided far too late, leading to serious losses in proficiency. This, in turn, may lead to frustration, feelings of uncertainty, and, of course, reduced combat readiness. The old “just in time and just enough” training adage is effectively a demand for personalized training that, in theory, should be achievable given today’s wide range of training media and developments in performance-based training. In our study, we focus on the feasibility of optimizing refresher training schedules for each individual combatant. This requires the development of a personal competency retention model that would adapt to gradual individual changes such as expertise development, shifts in motivation, and aging. We review conceptual retention models, as well as computational retention models, including recent advances in machine learning that may be suitable for integration as components into this highly ambitious model. We conclude with outlining the work ahead needed to achieve the goal of personalized refresher training, and the research we have already embarked upon.

ID 43

**Improving Retention in Civil Aviation with Virtual Reality and Serious Games**

Dr. Luca Chittaro

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The recent introduction of a new generation of virtual reality (VR) headsets, which are both low-cost and high-quality, offers an opportunity to make military training more realistic and immersive, especially when trainees have to familiarize themselves with dangerous and stressful situations. Moreover, combining VR and serious games can increase the trainee's engagement, learning, and retention. However, while the VR literature focuses mainly on engagement and immediate learning, competency retention is rarely considered. The first part of this presentation will illustrate the main findings regarding competency retention obtained in international aviation research projects carried out by our lab under U.S. Federal Aviation Administration (FAA) grants. The first study compares competency retention of materials learned through VR vs. traditional printed pictograms, demonstrating that VR yields higher levels of competency retention. The second study considers different types of VR equipment, and assesses if the different levels of immersion and fidelity provided by them have any influence on competency retention. The second part of the presentation illustrates the main findings that are emerging from additional competency retention studies that are currently being carried out in the context of airline training. These new studies extend consideration to other types of devices that can support interactive VR experiences. Moreover, they offer a starting point for separating the analysis of competency retention into different types of knowledge, such as procedural knowledge and spatial knowledge. Overall, these studies also illustrate and demonstrate practical examples of fully operational VR training systems.

ID 44

# **Improving Detecting Pre-Symptomatic Hypoxia Beyond Competency Retention Training**

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In aviation medicine, acute hypoxia – also called the “silent” killer – is still a hazard because of its insidious character. Even in case of well-trained service members, when the first symptoms of hypoxia are noticed, cognitive functioning may already be impaired, compromising any potential remedial action. We are testing the feasibility to detect acute hypoxia at a pre-symptomatic stage using voice-stress analysis from the perspective of a new model on human performance, the “Model for Voice and Effort” (MoVE). Based on a standardized two-syllable speech-sample, we examined voice reactivity to hypoxia in a hypobaric chamber at altitudes of 20000ft and 25000ft. To differentiate pre-symptomatic from symptomatic data, participants had to indicate any sensation of hypoxia. In general, the fundamental frequency (i.e., voice pitch, F0) already responds at a pre-symptomatic level with a significant increase ( $F = 24.91$ ,  $p < .001$ ,  $\eta^2 = .094$ ) at both altitudes in comparison with sea level. Notwithstanding this F0-increase, we observed two inverse pre-symptomatic response patterns which we hypothetically linked to ongoing cognitive top-down activity. In comparison with sea level, a decreased F0-range during the pre-symptomatic stage (due to increased F0 at the second word-syllables,  $p = .001$ ) was interpreted to express a warning state of the body to cope with increased cognitive load and top-down control. An increased F0-range (due to a large drop in F0 at the second word-syllables,  $p < .001$ ) was interpreted as the loss of cognitive top-down control indicating the onset of a life-threatening emergency situation. In conclusion. Voice Stress Analysis is a promising tool to add to hypoxia retention trainings.

ID 45

**Competence Retention  
in Military Helicopter Underwater Egress Training (HUET)**

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The Netherlands*

Helicopter aircrew of the Royal Netherlands Air Force (RNLAf) undergo Helicopter Underwater Egress Training (HUET) to prepare themselves for escaping the aircraft upon ditching into water. In addition to having the knowledge and skills needed for successful escape, self-confidence is also an important learning objective in HUET, especially considering that underwater events are experienced as stressful. As in other (international) military organizations, the frequency of refresher training depends on the expected degree of retention. However, thus far, it has not been grounded in evidence-based research. In our initial study, 132 military helicopter aircrew who went through HUET completed retrospective questionnaires (Bottenheft *et al.*, 2019). The participants' self-assessments reported increased competence levels corresponding with the number of refresher courses taken. They also gave their opinion on the preferred refresher interval: the interval should decrease over time as their competence level increases. The follow-up study was launched three years ago in order to obtain evidence on competence retention. In total, instructors assessed 357 military pilots and other aircrew, who also assessed themselves and rated their self-confidence in all initial and refresher HUET courses followed over a period of three years. The results confirm the findings of the first study, however, now they are based in evidence collected during the courses. A significant positive relation was found between the number of refresher courses taken, increased competence level over time (assessed by instructors and by participants themselves), and self-confidence. Additional, exploratory physiological data (heart rate) were collected for a subset of participants, which indicated a relationship with self-confidence as well.



ID 46

**Predicting Performance in Military Occupations  
with Vocational Interests**

Christopher D. Nye, *Michigan State University, USA*

James Rounds, *University of Illinois, USA*

Cristina Kirkendall, *U.S. Army Research Institute*

Fritz Drasgow, *University of Illinois, USA*

Oleksandr S. Chernyshenko, *Nanyang Technological University, Singapore*

Stephen Stark, *University of South Florida, USA*

Recent research has demonstrated that vocational interests are positively related to job performance and negatively related to attrition both at work and in school. This research indicates that individuals who are in jobs that they are interested in will be more satisfied with, successful in, and likely to stay in their jobs. Due to these positive empirical findings, the U.S. military has begun considering the use of vocational interest measures for assigning Soldiers to military occupations. This presentation will examine the validity of a new vocational interest measure developed by the U.S. Army known as the Adaptive Vocational Interest Diagnostic (AVID). To examine the validity of this measure, the AVID and a number of criterion measures were administered to two large samples of approximately 2,000 active-duty Soldiers each. The results of this study demonstrated that the AVID scales can predict important attitudes and behaviors in Active-Duty Soldiers. This measure also predicted an overall performance criterion composite. Moreover, results indicated that the validity of the AVID was highest when the fit between individuals and their occupations were considered. Finally, results also showed that the AVID dimensions that were the best predictors of overall performance differed across the five largest occupations in these samples. These results suggest that the AVID scales will not only be useful for predicting important outcomes but that they can also be useful for improving classification into military occupations.

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ID 47

**Big Five Profiles in the Norwegian Special Operation Forces**

Tom H. Skoglund

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Ole Boe

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Are special operations forces (SOF) operatives “special”? This presentation aims to investigate this question by reporting on results from a Big Five study of 192 male active duty service members of the Norwegian SOF. A factor-level test, the Norwegian Military Personality Inventory (NMPI), was administered to three groups: (1) SOF operatives selected and trained in an Army context, (2) SOF operatives selected and trained in a Navy context, and (3) SOF support personnel without selection and training as SOF operatives. The authors also had access to the NMPI scores of male officer applicants ( $N = 650$ ), and the NMPI norms based on a sample of conscripts ( $N = 13\,000$ ).

There were no statistically significant differences found in factor mean scores for SOF-Army operatives, SOF-Navy operatives, and SOF-support personnel. A “clinical” interpretation of factor-scores did however show a tendency for SOF-operatives to be less Agreeable and more Emotionally Stable compared to SOF-support personnel. Compared to male officer applicants, SOF operatives had significantly lower mean scores on Extraversion and Agreeableness, and a significantly higher mean score on Emotionally Stable. A similar pattern of differences emerged when comparing the scores of the SOF-operatives to that of the norm group.

Based on these results, the authors suggest a Big Five profile of the “average” Norwegian SOF operative, and argue that the extensively selected and rigorously trained operatives are indeed somewhat “special”.

ID 48

**Diversity and Retention within the United Kingdom Defence**

Natalie Fisher and Karen Newell

*QinetiQ*

Dr. Etlyn Kenny and Prof. Jo Duberley

*University of Birmingham, UK*

Dr. Mandy Winterton

*Edinburgh Napier University, UK*

The UK Ministry of Defence (MOD) understands that a diverse and inclusive organisation is one that is stronger, healthier, more cohesive and resilient. However, despite continued efforts to reflect the society it serves, Defence struggles to recruit and retain people from backgrounds not traditionally associated with Defence, such as females and Black, Asian and Minority Ethnic (BAME) personnel.

The MOD commissioned a Whole Force, qualitative study (unprecedented in scope and scale) to better understand the experiences of females and BAME personnel, in comparison with the white male majority. Data were collected from 405 personnel, using a timeline interview approach, to better understand the extent to which gender and ethnicity influence the experiences of MOD personnel and how these experiences can be drawn upon and/or addressed. The study uncovered new insights as well as adding further support to extant research. A list of six focus areas (cultural change; organisational communication; recruitment, selection and induction; leadership and management; policy and practice; and education and training) with suggested options for targeted action and investment were recommended to improve issues relating to Diversity and Inclusion (D&I) within Defence.

ID 49

**Hardiness and Personality among Norwegian Police Students**

Tom H. Skoglund

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*Norwegian Police University College*

While hardiness has been studied quite extensively in the Norwegian Armed Forces (NAF), this promising construct has been more sparsely studied in the Norwegian police force. The same applies for personality, as there are only a few studies using Big Five personality measures in the Norwegian police force, while there have been several conducted in the NAF. Hardiness and personality are highly relevant constructs for both the military and the police, especially when considering the potential stressors affecting the people working in these fields.

This presentation will provide an overview of the results from a recent study where 129 police students completed the 15-item Dispositional Resilience Scale (DRS) questionnaire together with a 20-item Big Five measure. Results demonstrate sound psychometric properties of these instruments, and theoretically meaningful correlations between the DRS and the Big Five measure. Furthermore, the regression analysis demonstrates that the Big Five measure predicts the scores on the DRS beyond age and gender, supporting the viewpoint that hardiness can be seen as a personality dimension.

The study is considered a pilot for an upcoming longitudinal project at the Norwegian Police University College. This project will follow a cohort of police students ( $N \approx 600$ ) with two measures of hardiness and Big Five traits at the start and the end of their 3-year educational period, respectively. Outcome-data will be grades in academics and evaluations in operative disciplines. Research questions and preliminary data from this upcoming project will also be presented, as the initial data was collected in August 2019.

ID 50

**Development of Situation Apperception Test for the Indian Army:  
A Measure of Implicit Motives**

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The Situation Apperception Test (SAT) has recently been developed as a new measure of implicit motives. This paper describes the development of a PSE (Picture Story Exercise)-like Situation Apperception Test (SAT) as an efficient, reliable and valid measure of implicit motives, particularly suitable to measure the needs for achievement, affiliation and power among military aspirants. Based on critical incidents of military aspirants, initial pictures ( $N = 120$ ) were developed and rated by ten subject matter experts (SME) based on the criteria of Cue Strength, Cue Ambiguity and Cue Universality which resulted in 48 pictures. These pictures were administered to military aspirants ( $N = 120$ ) for the purposes of establishing content validity. The content analysis of 360 stories by each SME ( $N = 4$ ) ultimately resulted in 24 high pull pictures. The inter-rater reliability of the test was established through SME rating ( $N=3$ ) on 180 stories. The concurrent validity was established by comparing the responses given to the SAT with those of the TAT (Thematic Apperception Test). In conclusion, the results confirm that the SAT is a valid measure of implicit motives and provides a powerful new tool for researchers interested in exploring the unconscious psychological forces driving human behaviour.

*Keywords:* Situation Apperception Test (SAT), implicit motives, military aspirants

ID 51

**Performance Evaluation Framework:  
Integrating Cadet Selection and Training Processes in the Indian Army**

Dr. Nishi Misra

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Personnel selection in the military entails carefully choosing someone who is the best and most suitable for the post under consideration. It is one of the most critical processes in the military. To have a positive effect on organizational performance, personnel selection should not be conducted in isolation, instead it must be integrated with the subsequent stage of military training. The researchers studied the training process at Pre-Commissioned Training Academies (PCTAs) of the Indian Army in general, focusing on the cadets who are trying to enter the Academy. This study was undertaken with the following objectives (1) to establish linkages between the selection and training processes by identifying corresponding training activities for each personality attribute that forms the basis of a cadet's selection (2) to monitor the cadets' performance at the training academies (3) to integrate the concept of social and emotional competencies with military training. The study utilized the longitudinal prospective panel research design. Data were collected from the cadets and instructors of three training academies of the Indian Army, using the multiple embedded case study method. The data were analysed using mixed methods. In order to form linkages between the processes of cadet selection and their subsequent training, the researchers identified a list of training activities that manifest selection criteria based personality attributes that resulted in Training Rating Proformas. Furthermore, in order to evaluate a cadet's performance from the stage of selection to training, detailed case studies were prepared for all 16 cadets. An attempt has also been made to integrate the concept of social and emotional competencies with military training.

*Keywords:* training, training academies, selection, personality attributes, performance evaluation

ID 52

**Into the Deep End – Evaluating the Criteria for Assessing  
the Psychological Fitness of Divers**

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The armed forces are obligated to ensure the physical and mental well-being of their soldiers, especially when they engage in hazardous activities like flying, para jumping or diving. To fulfill this task, thorough medical examinations are performed on every diver in the German Armed Forces. Next to ensuring their physical fitness, the German Naval Medical Institute conducts psychological assessments of their mental fitness to ensure dive safety. Such assessments must be based on empirically derived task requirements, but there has been very little published data on psychological demands related to diving. Therefore, we conducted a requirements analysis, using the Fleishman Job Analysis Survey to evaluate cognitive, psychomotor as well as social and interpersonal criteria that might be crucial safety factors and therefore need to be identified during the assessment of divers. Our survey sample consists of 22 senior diving experts, such as instructors and technical divers with an average of 13.4 years of active diving experience and 1644 logged dives. They rated 44 ability items on two 7-point scales, one indicating relevance for successful completion of diving training and one from the standpoint of diver safety. The survey results will be presented and conclusions for assessing divers' psychological fitness will be discussed.

ID 53

**Development of Non-Cognitive Screening Test for the Indian Army to Identify Potential Officers**

GopinathThangaraj, Arunima Gupta, Nishi Mishra,  
Suresh Arumugam & Komal Tiwari  
*Defence Institute of Psychological Research, India*

The Indian Army is a manpower intensive voluntary force. Youths from different parts of India apply to join the Indian armed forces to become officers, resulting in large number of candidates reporting for selection at Service Selection Boards (SSB). The SSBs use a two-stage selection process. To qualify for Stage II, a candidate must pass the first stage of screening comprising two tests: Officer Intelligence Rating (OIR) and Picture Perception and Description Test (PP&DT). It is the most time-consuming part of the selection process and it is characterised by a high degree of subjectivity. Taking into consideration that all prospective applicants may not possess the potential required for armed service, the applicants are screened before proceeding to the next stage. With an aim to filter out unsuitable candidates already in the first stage and to minimize the element of subjectivity, this study aims to develop a non-cognitive test that could be used as a pre-screening tool that would facilitate identifying the candidates who have a high probability to pass the first stage of tests. For the purposes of devising the proposed non-cognitive test, 700 items were developed and subjected to rating by subject matter experts (N= 09), yielding 347 items for the final test form. To identify the factor structure, 347 items were administered to 940 candidates. Ultimately, after item and factor analysis there were 174 items left with three extracted factors, namely 'emotional stability', 'extraversion' and 'conscientiousness'. The final version of the non-cognitive test demonstrated very good reliability and validity. The psychometric property of the non-cognitive test indicates that it is a reliable and valid measure.



ID 54

**Validity of Non-Cognitive Assessments  
for Predicting Drill Sergeant Performance**

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This paper examines the validity of the Noncommissioned Officer Special Assignment Battery (NSAB) for predicting success in a sample of Drill Sergeants from the U.S. Army. Although the NSAB has been validated for predicting important outcomes in a broad range of military jobs, more research is needed to understand the utility of this measure for other assignments and for in-service testing in a longitudinal context. To examine the longitudinal validity of the NSAB in this context, this assessment was administered to a sample of 314 U.S. Army Drill Sergeants during their first few weeks at the Drill Sergeant Academy. Next, a number of outcome measures were administered to this same sample of Soldiers after serving approximately 1–2 years as Drill Sergeants. Using these data, correlation and regression analyses were conducted to estimate the predictive relationships between the NSAB and Drill Sergeant performance, job fit, commitment, and satisfaction, among other outcomes. Results demonstrated that several NSAB scales were significantly related to a number of these success criteria. Drill Sergeants scoring higher on composites of NSAB scales were more resilient, satisfied with their jobs, willing to support others in their units, and fit better with their assignments. These results suggest that the NSAB can help to identify high potential Soldiers for Drill Sergeant assignments.

Disclaimer: The views expressed in this submission are solely those of the authors and should not be construed as official policy or position of the U.S. Department of Defense, the U.S. Army, or the U.S. Army Research Institute for the Behavioral and Social Sciences.

ID 55

**Effects of Hardiness and Need Satisfaction  
on Soldiers' Engagement and Health**

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*Lithuanian Armed Forces*

The main goal of this study is to delve deeper into the relationship between psychological hardiness, basic psychological need satisfaction, soldiers' engagement and their general health status. Based on Self-determination theory (SDT), the satisfaction of basic psychological needs for autonomy, belongingness, and competence is essential for people to actualize their potential and be protected from health problems. Personal characteristics might be the tools for satisfying basic psychological needs. Until now, little has been known about the relationship between personal characteristics and basic psychological need satisfaction. In this research, we hypothesize that psychological hardiness might predict better psychological need satisfaction, which in turn results in higher levels of engagement and better general health status among military personnel. Data from a questionnaire survey was collected from 506 (202 professionals, 304 conscripts) soldiers of the Lithuanian Armed Forces. The research sample was analysed using the Hardiness – Resilience Gauge (HRG), the Basic Need Satisfaction at Work Scale (BNS), the Utrecht Work Engagement Scale (UWES – 9) and the General Health Questionnaire (GHQ – 12). To test the hypothesis that basic psychological need satisfaction serves a mediating role within the relationship between hardiness and soldiers' engagement and general health, a bootstrapping approach was applied using the serial mediation model. The results showed that higher levels of psychological need satisfaction mediated the association between psychological hardiness as well as engagement and general health.

*Keywords:* Self-determination, hardiness, need satisfaction, engagement, health, military

ID 56

**Resilience: A Multilevel Construct in the U.S. Army**

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The term ‘resilience’ is used to describe the process of individuals, units, or organizations successfully responding to and recovering from challenges. Existing theories and research typically focus on a single level of analysis, either individual resilience, ignoring contextual influences of the military unit on the individual, or on organizational resilience, ignoring both the individual differences within the unit as well as the units as a whole. A more nascent body of theoretical research posits resilience as a multilevel construct, but it has yet to be examined in a military context. Cato *et al.* (2017) proposed a resilience framework where unit resilience is composed of three distinct dimensions (cognitive, affective, and behavioral), across three phases (prepare, respond, and recover), and two levels (individual and unit). Additionally, key contextual moderators, such as leadership behaviors and unit climate, are thought to influence unit resilience. To advance this framework, a crucial step entails validating resilience as a multilevel construct. To do so, we integrate established construct validation principles with recent advancements in multilevel theory and methodology to propose a five-step framework that empirically establishes resilience as a multilevel construct. Addressing each of these five steps will help further clarify how we define resilience, how to accurately assess resilience at the unit level, and importantly, how it relates to other constructs residing at the same or proximal levels. This benefits the U.S. Army by providing an empirically valid method of assessing factors that influence resilience across multiple levels of analysis (e.g., the individual Soldier and unit).

ID 57

**Leader Development in North American Military Service Academies:  
Comparing Content, Process and Outcomes**

Lt Col Daniel J. Watola, Ph.D.  
*United States Air Force Academy*

The ranks of national militaries are typically populated by young men and women overseen by a cadre of officer and non-commissioned officer professionals who, in addition to leading forces to accomplish missions, must train and develop the next cadre of military professionals. While technical training imparts the job or career knowledge and skills required to accomplish missions, officer candidates generally receive leadership or officership education or training prior to commissioning. This symposium will describe how two North American military service academies develop leaders. Specifically, the faculty of the Department of Behavioral Sciences and Leadership from the United States Air Force Academy, and the faculty of the Department of Military Psychology and Leadership from the Royal Military College of Canada, will describe the leader development content, process, and outcomes of their respective institutions. Given the presentations, the symposium provides the audience with the opportunity to compare and contrast American and Canadian leader development programmes. However, the intent of the symposium is to initiate a broader conversation about leader development content, processes, and outcomes offered by other military academies or commissioning programmes in other countries or regions of the world.

ID 58

**Leader Development at the United States Air Force Academy**

Lt Col Daniel J. Watola, Ph.D.

*United States Air Force Academy*

The mission of the United States Air Force Academy is to educate, train, and inspire men and women to become leaders of character, motivated to lead the United States Air Force in service to the nation. This is accomplished through a 47-month, integrated and immersive academic education, military training, character development, and athletic participation curriculum. This session will describe the content, process, and outcomes used by the Dean of Faculty, Commandant of Cadets, Director of Character and Leadership Development, and Director of Athletics to develop leaders of character for the U.S. Air Force. The intended audience are educators, trainers, and other professionals engaged in leader and team development activities, who are interested in comparing and contrasting the programme of the U.S. Air Force to other programmes in other services, countries, cultures or regions of the world. Audience participation will be encouraged in the form of questions and answers during the session, and presenters will be available for discussions during and after the related presentation offered by the Royal Military College of Canada.

ID 59

**Leader Development at the Royal Military College of Canada**

Dr. Daniel Lagace-Roy and Dr. Allister MacIntyre

*Royal Military College of Canada*

The mission of the Royal Military College of Canada (RMC), as a military university, is to educate, develop, and inspire bilingual, fit, and ethical leaders who serve the Canadian Armed Forces and Canada. The RMC was founded in 1874 as a military college “for the purpose of providing a complete education in all branches of military tactics, fortification, engineering, and general scientific knowledge in subjects connected with and necessary to thorough knowledge of the military profession.” This session will discuss the educational and training elements at the RMC designed to develop the leadership capabilities of the officer cadets who will leave the college as commissioned officers (Army, Navy and Air Force) in the Canadian Armed Forces. The intended audience for this session are educators, trainers, and other professionals engaged in leader and team development activities, who are interested in comparing and contrasting the Canadian Forces’ programme to other programmes in other services, countries, cultures or regions of the world. Audience participation will be encouraged in the form of questions and answers during the session, and presenters will be available for discussions during and after the related presentation offered by presenters from the United States Air Force Academy.

ID 60

**Using Behavioural Insights to Improve Medical Compliance Rates among Pre-Enlistees**

CAPT Aaron Chan

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In Singapore, pre-enlistees are required to undergo a medical screening and psychometric testing prior to entering national military service. However, non-compliance in the form of incomplete documentation on the part of pre-enlistees would result in them having to return for their appointment at a later time, leading to processing delays in the pre-enlistment screening process. Using Behavioural Insights, SMS reminders sent to pre-enlistees were modified with the aim to improve compliance rates. The results showed that, compared to the control condition, compliance rates improved significantly after BI elements (i.e. user-friendliness, social norms, enticements, etc.) were incorporated into the SMS reminders. Potential future applications include the implementation of similar measures to increase effectiveness in communications, and to encourage desired behaviours in a cost-effective manner.

ID 61

**Assessing Mental Health at the Danish Conscription Board**

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Each year, the Danish Conscription Board assesses around 40.000 young Danish men and women for suitability for conscription. Every year, around 4.200 new conscripts are enrolled for service. The Board strives to ensure that only physically and mentally healthy conscripts are enrolled through the assessment conducted at the conscription examination. Individuals with underlying psychiatric disorders may be less able to cope with the circumstances during military training; in fact, their symptoms may even worsen as a result. As part of this examination, the participants are required to fill out a questionnaire about their mental health called Psychological Health Questionnaire (Danish abbreviation: PHS-12). The questionnaire comprises 25 items listing negative symptoms and feelings across a range of symptomatology, and responses are either Yes or No. A systematic review has revealed that there have been only few published studies on mental health screening in the military context, and to this day, there has been only one study published on PHS-12 (Teasdale & Antal, 2016). This paper, drawing on the results of a master thesis, examines how the participants of the conscription examination complete the PHS-12 questionnaire, and how such factors as gender, intelligence and education may influence their responses. The research sample (N = 2026) consisted of 1905 men and 121 women. The findings and implications will be presented and discussed.



ID 62

## Using ‘Digital Footprints’ for Understanding Employee Engagement

Dr. Hannah State-Davey, Dr. Claire Taylor, Stuart Bertram,  
 Claire Hillyer, Adam Wragge, Natalie Fisher,  
 Dr. Andrew Rankin, and Graham Thompson  
*QinetiQ, UK*

Obtaining information about employee attitudes towards their organisation is a key component of UK Ministry of Defence (MOD) Human Resource (HR) processes and is often gathered via an attitude survey. Findings from these surveys provide only a ‘snapshot’ view, suffer from a low response rate and are labour-intensive to analyse. Digital technologies are changing the way social scientists can measure human behaviour, providing the opportunity for passive measurement at any time and at scale. This research tests the feasibility of automatically profiling key drivers of employee engagement from an individual’s ‘digital footprint’<sup>1</sup>. A prototype Digital Footprints Insights Tool (DFIT) was developed to enable automated measurement and visualisation of individual, group and population behavioural profiles for personality, psychological resilience, emotional intelligence, organizational commitment, job satisfaction and satisfaction with life. Following ethical approval, Facebook and Twitter data along with ‘ground truth’ self-report survey responses, was collected from 774 UK participants, who volunteered and gave their informed consent. Language-based features (including text, sentiment, and emoticons) and metadata (including number of Facebook Friends and Twitter followers) were extracted from their social media data. Machine Learning methods were used to develop the automated measures including Support Vector Machines (SVM) and Random Forests. Results indicated that the behaviours could be inferred directly from the social media data with an average accuracy level of 70% (within 20% of survey scores). Further work is required to investigate the use of alternative sources of content data such as work-based email to improve automated measurement accuracy of work-based behaviours.

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<sup>1</sup> A “digital footprint” is the unique set of digital activities, actions and communication that leave a data trace on the internet or on a computer or other digital device (that can be traced back to an individual).

ID 63

**A Generalizability Theory Analysis of  
the New Military Personality Inventory of the Republic of Korea Army**

Prof. Kim Sung Hoon

*Korea National Defense University*

The purpose of this study is to analyse the source of variance in the New-MPI (Military Personality Inventory) developed for the Republic of Korea Army (ROKA) and to determine the optimal number of conditions for the occasion facet in order to attain a satisfactory level of the generalizability coefficient. The generalizability theory is one of the latest measurement theories and a statistical method used for analysing the reliability of test scores. While classical test theory (CTT) views measurement error as a unitary quantity, the generalizability theory differentiates measurement errors by their sources using the logic of analysis of variance (ANOVA; Cronbach, Rajaratnam, & Gleser, 1963). This paper provides a general overview of the generalizability theory and discusses its relevance for research based on the example of the ROKA's New-MPI. A random sample was used to demonstrate the value of G and D studies to identify the number of occasions needed to obtain a stable number of tests. Also provided are G study variance components and the relative error variance components that are needed to compute the G coefficients in a D study for different scenarios when the number of tests vary. The application of generalizability theory in the context of the ROKA's New-MPI is useful in determining how many measurements are needed across different facets of examiners and trials in order to obtain reliable scores.

ID 64

**Self-Regulation of Feelings and Emotions  
for Impulse Control in the Military**

Lt Col Dr. Samir Rawat & Dr. Abhijit Deshpande  
*Military MIND Academy, India*

Contrary to popular belief, soldiers, too, have feelings and emotions. Soldiers may suffer from intrapersonal conflicts or interpersonal conflicts may occur among colleagues and supervisors at work, as well as with friends and family at home, which may impair soldiers' performance as a result of inadequate abilities to deal with one's feelings and emotions. A variety of direct and indirect evidence suggests that stress, anxiety and depression are characterised by reflexive responses to negative feelings and emotions (i.e. sadness, anger, fear, disgust, etc.) that, in turn, make the soldier more vulnerable and impair their functional fitness. This paper focuses on two case studies from India, demonstrating a soldier being enthused to behave in a certain way and at the same time, motivated to restrain himself from performing an undesirable behavioural action.

We discuss impulse control and self-control strategies for soldiers in the light of the two case studies in an effort to establish successful interventions for enhancing self-regulation and self-discipline among soldiers. This paper could also have implications for military leaders dealing with soldiers displaying tendencies of inappropriate military behaviour (e.g. suicidality, fragging, impulsive violence, running amok, substance abuse, high-risk sexual behaviours, as well as being absent without leave (AWOL) or overstaying their leave (OSL). The paper offers suggestions for future research that is already underway at the Military MIND Academy in India.

ID 69

**The United States Department of Defense Modernization Efforts:  
Methods, Challenges, and Success Stories**

Dr. Mary Pommerich and Dr. Shannon Salyer

*Defense Personnel Assessment Center, the U.S. Department of Defense*

Dr. Janet Bayer

*Written, LLC, USA*

The U.S. Department of Defense (DoD) makes ongoing investments in policy, people, and processes. The DoD has been funding modernization efforts and restructuring to meet the needs of the changing world. This symposium will outline some of the modernization efforts of the Defense Personnel Assessment Center, which is responsible for tests used in the selection, classification, and proficiency determination of military jobs. The Armed Service Vocational Aptitude Battery (ASVAB) has been used for selection, classification, and career exploration for many years. Several lines of research including hardware expansion of the computerized test, unproctored assessment, and next generation scales will be discussed.

The ASVAB Career Exploration Program (CEP) is provided to high school and post-secondary students throughout the United States. While students may be able to use their scores to enlist, many students and schools depend on the ASVAB CEP for career exploration. Discussions will center around the modernization of the website which includes score delivery and artifacts of career exploration. The research and analysis used to develop the content for the website will also be discussed, including the crosswalk between military and civilian occupations.

Finally, the presenters will provide an overview of the UNIFORM application, a web-based solution that seamlessly produces a real-time comprehensive representation of military career information across all Services. Job seekers, transitioning service members, researchers, recruiters, educators, and service classifiers have diverse needs when it comes to military data. UNIFORM anticipates those needs in a responsive, flexible approach to military career entry, transfer and transition.

ID 70

**ASVAB Testing Programme Modernization  
and Implications for Standardization**

Mary Pommerich, Ph.D.

*Defense Personnel Assessment Center in the Office of People Analytics,  
the U.S. Department of Defense*

This presenter will discuss several new modernization efforts in the realm of assessment for classification and selection of an all-volunteer military force. The Armed Services Vocational Aptitude Battery (ASVAB) has been used by the United States for the selection and classification for many years. However, with the advancement of technology, issues around controlled test security, and a demand for additional delivery options, the Defense Personnel Assessment Center (DPAC) has been focused on revising the current testing practices. This presentation will outline challenges and successes with: unproctored assessment, device expansion, eliminating the paper and pencil ASVAB, test delivery improvements, and next generation ASVAB.

ID 71

**Modernizing the Collection, Analysis, and Dissemination  
of Military Occupational Data**

Dr. Janet Bayer

*Written, LLC, USA*

The crosswalk between military and civilian occupations is integral to career exploration for ASVAB (Armed Services Vocational Aptitude Battery) Career Exploration Program (CEP) participants, as it shows students all their career options. The legacy crosswalk was limited, so the ASVAB CEP team began a new study to update and expand the crosswalk. The work included a combination of statistical modeling and task analysis approaches. The methodology and results from this study will be discussed.

The UNIFORM application was developed to assist in the collection and analysis of military and civilian occupational information. Each Service has its own system to house occupational information for its respective jobs. Each also has its own process for updating that information and some Services focus on different types of data and the varying requirements. They are all governed by the U.S. Department of Defense (DoD) Instruction (DODI 1312.01) to supply occupational data to the Defense Manpower Data Center (DMDC).

The in-progress UNIFORM application aggregates all data associated with any occupational title, allowing classifiers and recruiting commands to populate the record with richer information. UNIFORM, a web-based solution, seamlessly produces a real-time comprehensive representation of military career information across all Services. Job seekers, transitioning service members, researchers, recruiters, educators, counsellors and service classifiers have diverse needs when it comes to access and use of military occupation information. UNIFORM anticipates those necessities in a responsive, flexible approach. Transitioning Veterans stand to benefit most from UNIFORM adoption as it facilitates team analysis of the military to civilian crosswalk and gives the DoD a platform to unify efforts across departments.

ID 72

**ASVAB Career Exploration Program:  
Modernization and Lessons Learned**

Shannon Salyer, Ph.D., Executive Director

*Armed Service Vocational Aptitude Battery Career Exploration Program  
(ASVAB CEP),  
the U.S. Department of Defense*

The Armed Service Vocational Aptitude Battery, Career Exploration Program (ASVAB CEP) is a comprehensive career guidance system that is available free of charge to participating institutions. The ASVAB Career Exploration Program includes a validated aptitude test and interest assessment. The results are used to guide career exploration using a variety of career planning tools.

The foundation of the ASVAB CEP's occupational taxonomy is the U.S. Department of Labor's warehouse of information, O\*NET. These details are complemented by relevant labor market information provided by the Bureau of Labor Statistics, the National Center for Education Statistics, CareerOneStop, and the Defense Manpower Data Center. An overview of the ASVAB CEP objectives, *components*, and tools, such as the online OCCU-find and portfolio, will demonstrate integrative approaches to career exploration.

The ASVAB CEP is a U.S. Department of Defense sponsored career exploration program with a two-fold mission: to provide quality leads to the military services, and to provide a career exploration program to the public. The ASVAB CEP is delivered nationwide to over 650,000–750,000 students each year and, of those who enlist, approximately 15% use their scores from this programme, which saves the services time and money. In order to stay current and capitalize on the advances made in aptitude assessment, interest assessment and career development research, a team of experts are conducting research studies and evaluations and revising program components. Steps have been taken to revise the FYI assessment, programme websites, and ASVAB administration processes. Updates and lessons learned will be presented.

ID 73

**Usability of Personality Assessment in Military Settings**

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Jeļena Koļesņikova, Ainārs Stepens

*Rīga Stradiņš University, Latvia*

Marina Streļcova

*Latvian National Armed Forces*

Non-cognitive personality assessments have been studied as predictors of job performance and as tools for personnel selection both in civilian and military work settings. The aim of this presentation is to discuss the usability of personality assessment tests in military personnel selection and evaluation based on the example of Latvian Clinical Personality Inventory (LCPI) that was developed in Latvia for personality assessment in general and clinical samples.

In order to explore the feasibility of the LCPI in military settings and to obtain an average soldier personality profile, data from 57 personality profiles ( $N = 57$ , mean age – 34.86) were analysed and standardized median ratings were compared to the LCPI normative sample T-scores and to the evaluation criteria formulated by five psychologists working in the Latvian armed forces. The results showed that on average, soldiers exhibit moderately low ratings in the Neuroticism domain and both its factors (i.e. Negative Emotionality and Dependence) and moderately high ratings in the Antagonism domain (mostly due to the moderately high ratings on the Dominance and Conceit scales) as well as moderately low ratings on the Oddity domain. On the facet-level, soldiers showed moderately high median ratings on the Risk-taking and Restricted Affectivity scale and moderately low ratings on Deceitfulness and Irresponsibility. To a large extent, these results are in line with the psychologists' point of view, that stress resistance, self-control, communication, and team-working skills, as well as adaptability, are important for successful work performance in the armed forces. Finally, the study addresses the main benefits and challenges of personality assessment in the armed forces as well as possible directions for future research.



ID 74

# **Differences in Balanced Leadership Behaviour in the Norwegian Armed Forces**

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**Background:** Extensive research has measured leadership in the context of the overall organizational culture, but some studies indicate that subcultures within an organization may be more important. Research on military leadership in the U.S. supports these findings across the branches of the Army, Navy and Air Force. This study is the first to measure differences in balanced leadership behaviour (BLB) between these branches in the Norwegian Armed Forces (NAF). Method: NAF 2016 employee survey data was used (N = 5523) divided among the Army (n = 2851), the Air Force (n = 511) and the Navy (n = 1170). Perception of BLB was quantified through questionnaire measures including the three subcategories: role model, mission focus and development orientation. The hypotheses were examined through correlation analysis, ANOVAS, post-hoc analysis, and effect sizes.

**Results:** Significant differences emerged between the three branches. Army employees appeared to perceive BLB to the greatest extent, significantly higher than the Air Force, which was the lowest group in terms of perceived BLB. There were no significant differences between the Navy and the Air Force. Army employees perceived significantly more of leadership behaviour in two of the three subcategories, role model and mission focus, while Navy employees perceived most development oriented leadership behaviour. However, the effect sizes were small.

**Conclusions:** The results indicate differences between subcultures in perceived leadership behaviour. This confirms the importance of also measuring different subcultures within an organization. However, the results should be interpreted with caution due to small effect sizes and possible methodological challenges related to the questionnaire.

ID 75

**Continuous Visual/Auditory Attention  
of Counter-Terrorism Intervention Police Officers**

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**Purpose:** In Sweden, in order to be accepted to Counter-Terrorism Intervention Units (CTIU), applicants are exposed to demanding field assessments requiring high physical performance, extensive perseverance and a level of high cognitive ability (Beal, 2010). However, there is a dearth of studies testing the degree of sustained and selective attention (Rosvold, 1956) related to the acceptance to CTIU. Therefore, this study set out to investigate if sustained and selective attention differs between selected and non-selected applicants to the Swedish CTIU. The hypothesis was that selected applicants exhibit a higher degree of sustained and selective attention compared to non-selected applicants.

**Method:** To test the hypothesis, applicants to the Swedish CTIU (N=148) completed a computer-based Integrated Visual and Auditory Continuous Performance Test (IVA-AE2). The test results of the global composite quotient scale; the full scale response control quotient and the full scale attention quotient were compared between the group of the selected (n=9) and non-selected (n=139) applicants.

**Analytic procedures:** The effect size Cohens  $d$  is reported.

**Results:** Preliminary results show non-significant ( $p > .05$ ) differences between the selected and non-selected applicants regarding the global composite quotient scales; the full scale response control quotient (Cohens  $d = .53$ ; 95% CI = -0.231, 1.296), and the full scale attention quotient (Cohens  $d = .19$ ; 95% CI = -0.516, 0.903). However, due to the small sample size, it is not possible to draw definite conclusions. Thus, the hypothesis remains and further investigation is warranted.

ID 79

**The U.S. Army's Experience with 360-Degree Feedback**

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The U.S. Army's experience with 360 degree feedback has a long history characterized by successes, challenges and lessons learned. Acceptance of peer, subordinate, self and superior (360) assessment and feedback initially required a change strategy to obtain Army leader and senior leadership buy-in. Early milestones in 360 implementation included the development and validation of a leadership assessment, proof of concept pilots with Army leaders, and enhancement of feedback and development resources to include coaching, action plan and learning resources. Technology was eventually applied to create a fully automated, online and virtual 360 experience, scaled for Army-wide implementation. The programme evolved to provide customized 360 experiences for senior leaders in Command as well an option for commander implementation across their unit. Assessment and feedback data (with identifying data removed), was also leveraged for leadership research and programme effectiveness purposes. This paper will present highlights and excerpts of research-based findings and lessons learned that guided the U.S. Army's 360-degree feedback development and implementation over a more than 20-year timespan. The purpose of the information presented is to engage IMTA participants in U.S. Army's lessons learned and especially for militaries who may be using or considering 360-degree feedback. Programme lessons learned are also applicable more generally to large scale, long-term leader development initiatives.

ID 80

**Leadership Development: Lessons from Coaching Programmes**

PD Dr. Martin Scherm

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Helmut-Schmidt-University Bundeswehr (Hamburg), Germany*

The paper presents an extended overview of the results of coaching programmes developed for leaders in the the German Armed Forces. These programmes, run by the Bundeswehr's Zentrum Innere Führung, have been designed for both military officers and civilian leaders. This presentation will provide an overview of qualitative and quantitative findings as well as essential lessons learned.

The presentation is based on three hypotheses considering the developmental effectiveness of coaching: 1) voluntariness is crucial for success; 2) development is a complex process characterised by intense efforts to change; 3) coaching interventions lead to a shift in the leaders' self-concept of competencies. In case of the first hypothesis, Blume et al (2010, p. 1079) have found a moderate relationship between training success and voluntary participation. According to that study, participation in coaching programmes is voluntary, thereby creating a safe and self-driven climate for the development of coachees. The second hypothesis stresses the assumption that coaching benefits from repeated sessions, allowing coachees to reformulate goals and activate resources over time (instead of searching for the one 'heureka' moment). We present data considering effectiveness of coaching and comparing the single session approach to the multiple sessions approach. The third hypothesis addresses the expectation that the changes in a coachee's perception of their own capacity and skills will result in changes in overall self-perception as well. Data are presented comparing self-rated 360° feedback from coachees themselves regarding their competence before and after coaching. Finally, we discuss whether coaching can contribute to enhanced organizational effectiveness.

ID 81

# **Development of Work-Life Balance Scale for the Indonesian Army**

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Work-life balance is very important for individual psychological well-being, including for Indonesian soldiers. What is more, balancing these two aspects has a positive effect on psychological well-being. Fisher, Bulger, & Smith (2009) have stated that when work interferes with personal life it can affect work-life balance. As critical to individual psychological well-being as it is, the work-life balance of the Indonesian Army population has not been previously studied. This study aimed to examine the validity and reliability of the work-life balance scale specifically developed for the army population in Indonesia. In particular, this study sought to confirm the underlying dimensions of work-life balance by testing the hypothesised model employing the Confirmatory Factor Analysis (CFA) procedure. The sample of this study comprised 100 Indonesian soldiers. The results indicate that the work-life balance scale (25 items) has high reliability ( $\alpha = 0.889$ ). Further analysis demonstrated that the model was fit to the data ( $\chi^2 = 248.37$ ;  $p = 0.092$ ; RMSEA = 0.035; CFI = 0.98; and SRMR = 0.068). In conclusion, the 4 dimensions derived from Fisher, Bulger and Smith's theory (2009), i.e. Work Interference with Personal Life (WIPL), Personal Life Interference with Work (PLIW), Personal Life Enhancement of Work (PLEW), and Work Enhancement of Personal Life (WEPL) were the four major valid dimensions underlying the work-life balance construct developed for the Indonesian Army. The results of this study indicate that it is warranted testing the model using multigroup samples representing different demographics as well as rank and cultural background.

ID 82

**Perceived Organizational Support Scale Developed for  
the Indonesian Army**

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While the number of retentions in the Indonesian Army remains relatively stable at less than 1% per year, according to Sümer and van de Ven (2007), turnover which is voluntary and dysfunctional, is costly to organizations, especially for the military. Literature suggests that high personnel turnover is related to their commitment to the organization, which, in turn, as suggested by Eisenberger & Huntington (1986), is strongly influenced by organizational support. The purpose of this study was to develop the Perceived Organizational Support (POS) scale and adapt it for the Indonesian Army. The instrument was developed on the basis of Eisenberger's (2002) definition of three dimensions of perceived organizational support, namely 'fairness', 'supervisor support', and 'organizational rewards and job conditions'. The POS scale test was delivered via online platforms to 106 Indonesian Army officers (majors and captains) from 11 different army branches who had attended the Captain's Career Course. With a 100% return rate, the results showed that the Cronbach Alpha for each of the dimensions was 0.890, 0.891 and 0.823 consecutively, indicating that the reliability of the measure was within an acceptable range. The second order confirmatory factor analysis resulted in  $\chi^2 = 122.52$ ;  $P = 0.063$ ; RMSEA = 0.046; SRMR = 0.059 and CFI = 0.98, suggesting that the model is a good fit, thus internally supporting the validity of the instrument for measuring POS. Suggestions for future research include the inclusion of more demographic indicators, such as educational and cultural background, as well as engaging non-commissioned officers and enlisted officers.

ID 83

**Organizational Climate Scale Validation Study  
in the Romanian Armed Forces**

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*Romanian National Military Center for Psychology and Behavioural Health*

Organizational climate assessment represents a useful method for analysing personnel attitudes and opinions regarding organizational procedures and organizational aspects. In total, 2556 military and civilian personnel completed the Organizational Climate Scale in two phases comprised of 14 factors and 8 items each. The first phase was conducted in 2016 on 2120 persons from 19 headquarters and operational units; and the second phase in 2018, on 436 persons from 3 operational units. The first study focused on pre-testing the questionnaire in order to establish standards for organizational climate factors in four different categories: critical, dysfunctional, functional and fit for performance. The data analysis revealed subscales with good internal consistency ( $\alpha > .78$ ). The mean comparisons between different groups did not exhibit significant statistical differences that would warrant imposing specific standards for different military services or levels of hierarchy. The second study intended to validate the organizational climate as a predictor for the performance of military personnel. In this respect, we compared the measures of the Organizational Climate Scale, the Utrecht Work Engagement Scale, the Organizational Commitment Scale, and the Counterproductive Work Behaviour Checklist. The results revealed strong positive correlations between organizational climate and organizational engagement ( $r = .60$ ) and with work engagement ( $r = .62$ ), and a negative correlation between organizational climate and counterproductive work behaviour ( $r = .20$ ). The results of regression analysis emphasize the strength of the relationship between organizational climate and contextual performance, explaining the high prediction percentage for work engagement (34 %) and organizational affective commitment (32%).

ID 85

**Learning Analytics in Military Simulator Training**

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Learning analytics involves collecting, analysing, and interpreting data to improve learning. Learning analytics provides new opportunities to support personalised learning and to evaluate the quality of training. To that end, large amounts of data are usually stored in simulator environments; however, there is a scarcity of practical applications of learning analytics in military simulator training. We present the first results of an experiment in CV90 shooter training using Tactical Indoor Simulation (TACTIS) for 33 trainees. The aim of this experiment was to explore how log data stored in TACTIS can represent a trainee's learning process, for instance, offering diagnostic information about their performance and presenting learning over time by charting learning curves. Taking into consideration that we had thousands of log data per each trainee (incl. errors, actions, messages, scores, duration of lessons, etc.), many programming steps were needed to create a data file for analysis. The individual log data of each trainee was subsequently complemented by their own self-assessments and assessments provided by their instructors as well as questionnaire data (cf. motivational aspects, self-efficacy and mental workload) in order to get a more comprehensive overview of each trainee's learning process. The data was analysed using correlational analysis, cluster analysis and time series. The results, presented in accompanying figures and tables, offer preliminary guidelines on how to develop dashboards for instructors, trainees and training managers in the context of simulator training. The next step is to use learning analytics to establish personalized learning paths, based on trainees' performance both in real-time and over time. What is more, the training quality can also be evaluated on the basis of group data (e.g., difficulty of lessons, depth of training, etc.).



ID 87

**The Role of a Supportive Organizational Climate  
in the Training of Professional Military Instructors  
for the Special Forces Corps of the Indonesian Air Force**

(Descriptive Quantitative Study of the Effect of Supportive Organizational Climate on the Professionalism of Instructors at the *Paskhas* (Air Force Special Forces Corps) Training Centre in Bandung, Indonesia, to Prepare for National Security Challenges in the Globalisation Era)

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The instructors at the Bandung training centre for *Paskhas* (Special Forces Corps of the Indonesian Air Force) are a critical component in the training process of air force special corps because they are in charge of providing knowledge to the students who are in training to become *Pusdiklat Paskhas* (i.e. members of the Air Force Special Forces Corps). The professionalism of instructors is influenced by the overall organizational climate at the *Paskhas* Training Centre. This study aims to determine how the organizational climate influenced the professionalism of instructors who served at the *Pusdiklat Paskhas* Bandung training centre. The number of research subjects was 53 people and we used random sampling technique. For data collection we utilized the Organizational Climate Scale (19 items,  $\alpha = 0.830$ ) and Instructor Professionalism Scale (30 items,  $\alpha = 0.777$ ), using ordinal scale and statistical analysis (SPSS version 19). The data were analysed using simple linear regression analysis to obtain  $r_{xy} = 0.648$   $p = 0.000$  ( $p < 0.05$ ), meaning there is a positive relationship and a significant role between organizational climate and the professionalism of instructors. The positive relationship indicates that the more favourable organisational climate at the *Pusdiklat Paskhas* training centre, the higher the level of professionalism of the instructors. The effect of organizational climate was measured at 42% with regard to the professionalism of the instructors. All of the instructors who work at the *Pusdiklat Paskhas* training centre rated the organizational climate at their workplace as favourable and the level of professionalism is in the professional category.

*Keywords:* Organizational Climate, Professionalism, Instructor

ID 88

**The Changing Quality of the 17-24-Year-Old Population:  
Implications for Recruitment**

Tanja F. Blackstone, Ph.D., Kristen Van Rensselaer, DBA & Joel Haworth  
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The U.S. Navy Recruiting Command (NRC) is called upon to seek out, source, and recruit the best and brightest young men and women to sustain and maintain the cadre of ready personnel necessary for the Navy's mission. The NRC places recruiters in markets where they are estimated to have the greatest success of making mission. Although NRC collects and maintains volumes of recruitment data, existing methods used to estimate the depth of geographic recruit markets are inadequate. Current estimates of the quality factors are not only dated but do not provide NRC with specific market depth information at the lowest possible geographic level. Extending earlier work on recruit quality factors (Blackstone, Myers, Crayton 2017), this effort compares the changes in quality factors of the 17-24-year-old population from 2013 to 2017, updates the simulation model to estimate joint probabilities, and forecasts the changing age distribution. An examination of the quality changes to the 17-24-year-old labor market over time has potential implications as to the depth of a given regional market depth and the allocation of recruiting manpower resources. We focus on varying recruit quality over a 5-year period that includes high school graduate rates and AFQT (Armed Forces Qualification Test) and compare the quality of the 17-24 year-old labor market against recruiting data.

ID 89

**Suicide Rates among 18-34-Year-Old Veterans:  
Socioeconomic Indicators**

Joel Haworth and Tanja F. Blackstone, Ph.D.  
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The United States Department of Veterans Affairs estimates that 30% of active duty and reserve military personnel who served in Iraq and Afghanistan have a mental health condition. Approximately, 50% of veterans seek mental health care post deployment or after separation from active duty. Unfortunately, these mental health conditions and other factors contribute to a higher probability of veteran suicide. In 2016, the Department of Veterans Affairs released data showing that veteran suicide had increased to 1.5 times greater than that of the general population from 2013 to 2016. Factors that point to the startling increase in veteran suicide include frequency of deployments, lack of accessibility to mental health treatment, either due to logistics or negative personal perception with seeking mental health care, and individuals' lack of awareness of mental health problems.

There is a substantial body of research examining the relationship between reported veteran mental health, socioeconomic factors, and individual level characteristics. In general, research in this area uses a combination of public and restricted access institutional data and is sparse on signaling factors at the point of entry, recruiting, that may indicate the likelihood of future mental health conditions. This effort examines data elements drawn from publicly available and institutional recruiting data to identify socioeconomic, regional factors, and recruit characteristics that may be leading indicators of the 18-34-year-old veteran suicide rate.

ID 91

**The Rise of Ineffective Leadership:  
What Role does the Organisation Play?**

Anne Goyne and WGCdr Naomi van der Linden

*Centre for Defence Leadership and Ethics, Australian Defence College*

There has been considerable interest in counterproductive leadership and its effect on employee job satisfaction and wellbeing. Initially researchers focused on active counter-productive leadership behaviours, such as bullying and abuse. However, there is a growing body of research to show that disengaged or even absentee leadership may have a stronger influence on employee wellbeing than any other type of counterproductive leadership behaviour. Goyne, Hurst and Banjavcic-Booker (2019) investigated the hypothesis that ineffective leadership suggesting a lack of care will be a stronger predictor of job satisfaction, psychological distress and perceived unit performance than confidence in leadership for Australian Regular Army personnel. The results showed that ineffective leadership had a significantly stronger direct effect on job satisfaction, and a stronger indirect effect on mental wellbeing, than confidence in leadership. By contrast, confidence in leadership was the strongest predictor of unit performance. While it could be the case that the ineffective leadership discussed in this study was the result of leader disengagement, the authors felt this was unlikely given the population. The purpose of this presentation is to discuss these findings in the context of organisational factors contributing to leadership ineffectiveness and/or disengagement. This includes job design, organisational restructuring, technology and recognition that commanders are sandwiched between 'leadership' and 'management', where failures in management are, arguably, more likely to have negative career ramifications than failures in leadership, especially in a peacetime context.

ID 92

**The Evolution of Ethical Leadership Education in the Australian Defence Force and the 5C Ethical Decision Making Model**

Anne Goyne and WGCDR Naomi van der Linden

*Centre for Defence Leadership and Ethics, Australian Defence College*

The Centre for Defence Leadership and Ethics (CDLE) of the Australian Defence College has been educating military personnel about ethical leadership in the ADF since its formation in 2002. Ethical decision making (EDM) has been central to the applied approach adopted by CDLE. In this presentation, we review the evolution of ethical education at CDLE and briefly discuss how applied military EDM has been conceptualized over time. At the core of CDLE EDM education was a foundational understanding of ethical theory using perspective taking through the lens of case studies. Consequentialism, virtue ethics, deontology and the Doctrine of Double of Effect form the central pillars of discussion. However, other concepts such as moral courage, Just War Theory, the influence of cultural and religious teaching – including Buddhism, Taoism, Confucianism, Christianity, Islam and Judaism, Bandura’s theory of moral disengagement, Gilligan’s philosophy of care and Kahneman’s ‘thinking fast and thinking slow’, have been included in CDLE’s approach to military EDM. The presentation will conclude with an overview of the 5C EDM Model (5CEDM) developed by CDLE in 2016. This model combines key facets of EDM and can be used as a guide for personnel working through an ethical dilemma.

ID 93

**Teaching Military Psychology at a Public University**

Dr. Stephen A. Truhon

*Austin Peay State University, USA*

Frequently, undergraduates at military academies are instructed in material related to military psychology. But few public and private undergraduate institutions offer a course in military psychology. I have taught Military Psychology at Austin Peay State University once a year with satisfactory enrollment since 2009. I want to present the changes and continuities in this course. First, in this presentation there will be a list of the textbooks used each year. Second, there will be a table of the topics covered in military psychology and the year of their coverage. Third, there will a bar graph illustrating the aggregated percentage of students' grades in the course. Last, I will create a word cloud illustrating students' frequency of use of a topic for their term paper for the course. On a few occasions I have taught this course at a graduate level.

ID 96

**Development of Extended Authentic Leadership Questionnaire**

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Authentic leadership (AL) has received increasing attention from management scholars indicating the importance of a leader's self-concept and ethical behaviour. Currently, there is an ongoing debate regarding authentic leadership competencies. While some assert that AL is about intrapersonal competencies that focus on the leader's self-concept, others argue that AL also comprises interpersonal competencies that focus on how leaders interact with their followers. This study builds on previous studies of AL (Walumbwa et al. 2008; Neider & Schriesheim, 2011; Beddoes-Jones & Swailes, 2015) to propose an extended authentic leadership questionnaire. The extended questionnaire covers five AL competencies and captures a leader's intrapersonal as well as interpersonal competencies. Two empirical studies were conducted for the purposes of validating the extended AL questionnaire. The first study was conducted in a military setting with a homogeneous sample (N=1021), while the second was conducted in different civilian organizations with a heterogeneous sample (N=547). Although there are some concerns regarding the results obtained, confirmatory factor analysis demonstrates construct validity or the data fit model. This study contributes to the literature by widening the understanding and the measurement of authentic leadership competencies.

ID 97

**The Role of Moral Efficacy, Co-worker Ethicality, and Ethical Climate in Predicting Ethical Leadership**

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Department of National Defence, Canada*

Significant research attention has been devoted to understanding the ethical behaviour of leaders (i.e., the moral person) and how leaders' expectations influence their followers' ethical behaviour (i.e., the moral manager) (Brown, Trevino, & Harrison, 2005; Trevino, Hartman, & Brown, 2000); however, there is a dearth of research investigating predictors of ethical leadership. Using a matched sample of 167 Canadian Department of National Defence (military and civilian) leaders and followers, this study investigated the link between moral efficacy and ethical leadership and how this link might be influenced by leaders' perceptions of the ethicality of their co-workers, as well as, leaders' perceptions of ethical climate as it relates to caring. Leaders rated themselves on moral efficacy, and assessed the ethicality of their co-workers, as well as, the overall ethical climate as it relates to caring, whereas the followers rated the leaders on ethical leadership. Using Hayes (2013) conditional PROCESS analysis, we found that leaders' moral efficacy predicted ethical leadership as rated by followers, and this relationship was stronger when the leader perceived higher ethical climate as it relates to caring and higher co-worker ethicality. Practical implications of ethical leadership selection and/or training are also discussed.



ID 98

# **Army Selection Interviews: A Pluralistic Integrated Model**

MAJ Mariano Pizzo

*Italian Army*

The aim is to introduce the Pluralistic Integrated Model (PIM) into the Italian Army's selection interviews, originated in military contest, created to be used in the assessment phase of individuals in the Army (i.e. Officers, Non-Commissioned Officers, etc.). It is "*A particular type of psychologically guided interview (semi-structured) in which both the psychologist and the candidate meet in a participating manner (an interview in which two participate).*"

According to the Gestalt Model, the most important stages of the PIM are: pre-contact (review of the candidate's psychological profile, i.e. conducted tests and biographical questionnaire); the interview itself (i.e. identification of capacities, personality structure, etc.) through observation of behaviour (incl. verbal and non-verbal); and post-interview (i.e. compilation of psychological profile with a description and an evaluation of the candidate). The five most important phases are: introductions; identification and analysis of the candidate's motivations; exploration of the characteristics of the candidate's personality, intelligence, and competence; communication (feedback) of the test results to the candidate; and final regards. We use the Rogers's C. R. technique of reformulation (e.g. reflex reformulation, inverting figure-background reformulation, and reformulation-clarification) to analyse and explore the dimensions of One's Self: intelligence, ability, motivation, and competence. The five areas under investigation, according to the Gestalt Model, are: physical, emotional, intellectual, social, and values. For the past two years, the Italian Army has used the PIM for both the evaluation of personality structure and the evaluation of ability in the aptitude branch. Sample group: 7,000 candidates of both sexes; 2,500 of the female sex and 4,500 of male sex; age ranges between 18 and 35 years, all from various regions of Italy. The results confirm that the PIM is a very flexible instrument, with a solid scientific foundation. It also serves as a natural evolution of the Anthropological Model of the selection interview by Agostino Gemelli and Leonardo Ancona (1956). In conclusion, continued research in this field is warranted for the purposes of providing an instrument for selection interviews to the scientific community and also in order to create a constructive method that psychologists can share and use in many different contexts.

ID 99

**Leadership Styles in the Indonesian Army:  
Transformational Leadership in the Making**

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Research has shown that modern militaries are best served with transformational leaders (Hamad, 2015). Owing to that, the need for transformational leaders in the Indonesian Army has never been more critical, especially considering the updated military doctrine focused on becoming a world class army. This preliminary study, conducted in the Infantry Battalion of the Indonesian Army, was intended to explore whether battalion commanders possess the required qualities for transformational leadership. A Multilevel Leadership Inventory Short Form 5X was used to determine the leadership style (i.e. Transformational, Transactional, and *Laissez-Faire*) of Indonesian battalion commanders. A proportional stratified random sampling method with 302 samples was used, with subordinates asked to rate their battalion commanders. Transformational, transactional and *laissez-faire* leadership styles were identified by 91%, 7%, and 2% of the participants, respectively. Further analysis was conducted using One-Way ANOVA, comparing each leadership style with army ranks, with the results indicating that there are significant differences between officers and soldiers, with officers having a higher mean than soldiers in terms of transformational leadership rating. In addition, an analysis regarding the dimension of transformational leadership found that there is a significant difference between idealized influence behaviour, intellectual stimulation and individual consideration. With regard to subsequent research, the authors recommend elaborating on the three dimensions to find the reasons behind the differences among officers and soldiers. The findings of this study can also be further developed to identify the intervention needed to enhance transformational leadership qualities among leaders within the Indonesian Army.

ID 100

**What is FamCAS?****Discussing the Importance of the Survey and How We Can Adapt It**

Emma Fairclough and Dr. Nicola Elliott-Mabey

*RAF Ministry of Defence, UK*

The Families Continuous Attitude Survey (FamCAS) is a Tri-Service annual survey of the spouses/civil partners of Regular Trained Service Personnel. This survey is one of the main ways that the UK Ministry of Defence (MoD) gathers information on the attitudes and experiences of Service families. The FamCAS is a hugely important survey, which informs the MoD and the wider Government about how families view being the partner of someone in the military and the impact it has on numerous aspects of their life, including their satisfaction and wellbeing levels. The survey is the main source the MoD has to understand what families really think and has helped to inform numerous policies (i.e. partner employment opportunities, cohabitation rules, stress programmes for families and support for service children through school).

Such surveys are continually under review; it is important to improve and adapt evidence collection in a manner that is effective in gaining the views of families in the most accurate way. It is also vital to efficiently reach families in order to gather their attitudes and demonstrate that because they are a key part of the national military service by providing the main level of support to the serving person.

The MoD is currently faced with several issues regarding distribution, methodology and analysis of the Families Survey. Therefore, this paper invites the reader to consider these issues. The discussion will present potential new ideas and ways to overcome issues which are currently faced.

*Keywords:* Service Families, service life, personnel policy, attitude surveys, continuous improvement, evidence-based management

ID 101

**Taking AIM at Training to Improve Learning, Transfer, and Impact**

Dr. Eric A. Surface

*ALPS Insights*

Dr. Kurt Kraiger

*University of Memphis, USA*

Military organizations use training to develop and maintain individual and team capabilities needed for their missions. Training evaluation is used to monitor and improve the effectiveness of the training process and its outcomes. For years, “levels” (e.g., Kirkpatrick) have guided training evaluation practice. Unfortunately, level-based approaches have failed to deliver on the promise of using data to optimize the learning process and improving training outcomes—learning, transfer, and mission impact.

The Alignment and Impact Model (AIM) offers an alternative to level-based approaches. AIM acknowledges that learning is a process within the broader organizational context and system. AIM focuses on meeting the information needs of learning and development of stakeholders (e.g., learner, trainer, program manager, unit leaders, etc.) given their role in the learning process. Focusing on different stakeholder roles affords different opportunities to impact learning processes and outcomes. Stakeholders require role and time appropriate insights to inform their decisions and actions related to learning, transfer, and impact. By helping stakeholders answer effectiveness and improvement questions related to their roles and objectives, AIM provides actionable insights during training/transfer processes to maximize training outcomes.

Our presentation will introduce the AIM, discuss its benefits, provide a connection to existing evaluation frameworks, discuss how technology facilitates implementing AIM, and provide examples of how the AIM can guide evaluation practice in the military, including an example from Special Operations Forces language training recently highlighted in Training Industry Magazine.

ID 102

**Social Perspective Taking Instrument Developed  
for the Indonesian Navy**

Capt. Dr. D. Handayani (M.Sc, Psychology)

*Indonesian Navy*

This research was about the Social Perspective Taking (SPT) instrument which was adapted from the instrument developed by Diazgranados (2016) based on the SPT theory from Selman and adjusted for the Indonesian Navy. In order to adapt the SPT measurement tool, we used a procedure with several stages of cross-cultural adaptation, starting from the process of translation from original language (English) to the target language (Indonesian) (Beaton, Bombardier, Guillemin, & Ferraz, 2000). The subjects of this study were 120 Lieutenant Commanders of the Indonesian Navy who were transitioning from early adulthood to middle adulthood. Simple random sampling techniques and statistical tests were used for SEM analysis. The results showed that all items were valid (loading factor > 0.5) and all indicators were reliable. The goodness of fit model is acceptable, and therefore we hope that this instrument will help identify the best officer candidates, enabling them to grow into leaders who are able to make decisions not only based on knowledge acquired during their military training, but also based on insights about the mindset, feelings and behaviour of other people. The main weakness of this test is the use of open questions, requiring more time and effort compared to similar multiple choice test.

ID 103

**Measuring Individual Differences in Multitasking Ability:  
An Eye-Tracking Study**

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Multitasking is an essential ability in many military working environments where one has to perform several subtasks at the same time. However, if several subtasks occupy the same sensory channel simultaneously (e.g. displays placed at different points in the field of view), the operators of the systems must constantly switch and choose which subtask to monitor and pay closer attention to. That is, in practice, the operators must perform subtask prioritization by allocating their attention to the most important task at the right time at the cost of all the other but comparatively less important tasks. This study explores multitasking and subtask prioritization in a novel demanding experimental multitasking environment or test. The task consists of 4 subtasks (e.g. dynamic meters) requiring continuous visual attention. What is more, the subtasks were assigned distinct event rates defining their priority status. As a result, we found statistically significant individual differences and biases in subtask prioritization based on eye-movements.

ID 104

**How Leadership Styles Affect Militarily Relevant Objectives**

COL Dr. Hubert Annen

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(ETH Zurich)*

When talking about military leadership, the stereotype of an authoritarian leadership style depicted in Hollywood movies, characterized above all by a dominant appearance and an even louder voice, seems to be widespread among the larger public. Military life is undoubtedly challenging, but in order to enable a professional army to recruit sufficient personnel and for an army with compulsory conscription to minimize attrition (e.g. into civilian service) it must not be perceived as a parallel world separate from the rest of civil society.

Therefore, in the process of training of future military leaders, it is of critical importance to counterbalance the prevailing unrealistic images of simplistic and flashy role models. An in-depth and differentiated examination of the advantages and disadvantages of various leadership styles is an essential part of this effort. However, we must also beware of turning it into a never-ending exchange of opinions and subjective experiences. Therefore, empirical evidence is indispensable.

Against this background, this paper describes various studies that provide scientific evidence about how specific leadership styles affect militarily relevant objectives. Although the results come from the specific context of the Swiss Armed Forces, they are also likely to be of general validity.

ID 105

**Increasing Reliability of Forced-Choice Tests Using Augmented Scores**Stephen Stark, *University of South Florida, USA*Bo Zhang, Fritz Drasgow, *University of Illinois at Urbana-Champaign, USA*Christopher D. Nye, *Michigan State University, USA*Oleksandr S. Chernyshenko, *Nanyang Technological University, Singapore*Leonard A. White, *U.S. Army Research Institute*

A growing body of research has demonstrated the validity of forced-choice personality tests for predicting work and academic outcomes. Recent research also suggests that different patterns of scores across job families can be used to develop composites that may improve classification as well as selection. Although computerized adaptive testing (CAT) is helpful for measuring many constructs with shorter seat times than non-adaptive tests, even CATs may fail to meet conventional reliability goals when tests are short, dimensionality is high, and there is some careless or intentionally distorted responding.

Over the last 20 years, we have conducted research to develop forced-choice models that provide normative scores; examine the benefits of uni-dimensional and multidimensional forced-choice CATs; detect aberrant responding in high-stakes applications; and explore the validity and utility of narrow-factor personality composites for selection and classification into military jobs.

This year, we will present recently initiated research to explore the benefits of empirical Bayes rescoring of forced-choice tests. We will describe a method to compute “augmented scores,” which have higher reliability because they leverage the information in the observed intercorrelations. Using data from a large sample of MTurk participants, similar to military applicants, we will illustrate improvements in marginal reliability, test-retest correlations, and criterion-related validities relative to unadjusted scores. We will conclude with some suggestions for further research and potential implications for military testing.

Disclaimer: The views expressed in this submission are solely those of the authors and should not be construed as official policy or position of the U.S. Department of Defense, the U.S. Army, or the U.S. Army Research Institute for the Behavioral and Social Sciences.



ID 106

**Selecting Cadets for Leadership Positions  
in the Armed Forces of the Netherlands**

Eva Hol Horeman, MSc, and Drs. Marjolein Verboom

*Armed Forces of the Netherlands*

In the current military selection process used in the Dutch armed forces, we are limited to the principle of ‘selecting out’ due to many vacancies for military positions. Negative behaviours are the main predictors assessed in psychological interviews conducted with cadet candidates (e.g. psychological instability or poor communication skills, etc.). The applicants who don’t measure up to the requirements, are filtered out, whereas the rest will proceed to the next stage of the selection process, either a medical test or a field selection.

However, in the process of selection for leadership positions, the currently used “selecting out” principle poses some serious problems. For example, discriminative traits for leadership potential are positive traits (e.g. influence on others, integrity and initiative). Therefore, the evaluation of leadership potential among cadets warrants a selection process that is based on the “selecting in” principle instead. Our data shows that when leadership potential is tested using the “selecting out” principle, the discriminative value is low. A possible explanation for this could be the small number of negative predictors used to assess leadership potential when using the “selecting out” principle (e.g. high levels of insecurity or poor communication skills) that are already covered in the overall psychological assessment.

In addition to the psychological assessment interview, we also use field selection to evaluate leadership potential of officers and those tests have a much stronger focus on positive predictors for leadership potential. This approach has yielded great results and serves as another example that “selecting in” is a better-suited approach for assessing leadership potential. This presentation discusses the possibilities with regard to assessing leadership potential among cadets using “selecting in” based principles.

ID 107

**The Next Generation in Charge:  
Role Perceptions and Professional Identity of Military Leaders**

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Tiia-Triin Truusa

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Dr. Ülle Säälük

*Estonian Military Academy*

The manner in which military leaders perceive themselves and their professional roles has an effect on their work performance, the quality of their relationships with subordinates as well as the conscientiousness and behavioural health of their subordinates, and ultimately, the work satisfaction of both parties (e.g. Bleda, 1977; Karakowsky *et al.*, 2012; Mallick *et al.*, 2016). Therefore, it is highly relevant to observe and shape the future leaders' understanding of themselves in leadership roles (i.e. their personal identity), the expected characteristics (based on the notion of the ideal identity of a military leader) and their personal views regarding their future role in terms of competencies and duties.

Thus far, the topic of professional identity has been relatively unresearched in the Estonian Defence Forces (EDF). In order to fill this knowledge gap, 351 conscripts of the EDF, who attended the reserve officer training course for platoon leaders at the Estonian Military Academy (EMA), were studied from 2016 to 2019. Utilising the format of action research, the students were asked to compose schemes outlining their individual interpretations of who constitutes a leader, what is the role of a leader, and what does leadership mean to them personally. Their input was analysed using qualitative content analysis.

Preliminary results demonstrate the dominance of activity/duty-based understanding of the leader's role (i.e. the role is described through its main tasks and expected professional competencies), with some indication that participants perceived themselves to be more than mere dutiful performers of assigned tasks. This indicates that the development of characteristics typically associated with military leaders (i.e. high discipline or conscientiousness) were not prominent in the findings and has implications for the training programmes of platoon leaders.

ID 108

# **Development of an Intrapreneurship Programme for Future Officers**

Prof. Dr. Rafaela Kraus & Prof. Dr. Steffi Rudel

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Digital transformation and disruptive changes triggered by new technologies are forcing armies to undergo a transformation as well. Complex processes of change require interdisciplinary and agile teams with a wide range of skills and competencies, operating on the principle of self-organisation and possessing a pronounced drive for innovation. An intrapreneur is a member of an organisation who is not averse to taking risks and seeks to actively improve organizational performance by generating ideas and introducing innovation.

We are developing approaches for a targeted identification, encouragement and activation of intrapreneurs within the Bundeswehr. In addition, we want to find approaches to screen individuals for intrapreneurial capital and to diagnose intrapreneurial qualities among students. In order to develop and promote intrapreneurs in a systematic manner, we are planning to set up a modular intrapreneurship programme for student officers at the Bundeswehr University München, adapting it to the central educational goals of the target group. The aim of this intrapreneurship programme is to equip the participants to think and act intrapreneurially in their future role as officers. The participants are expected to acquire a holistic qualification through the acquisition of entrepreneurial skills at all competence levels (i.e. personal competence, activity and action competence, technical and methodological competence, social-communicative competence, etc.). The promotion and support for the development of intrapreneurial skills among students will, in turn, strengthen the future viability and the innovation management of the Bundeswehr.

This research and development project is intended to contribute to several aspects related to the promotion of intrapreneurship among soldiers. Our presentation will focus on the current state of the intrapreneurship programme developed at the Bundeswehr University München and will provide an overview of the accompanying academic research.

ID 109

**Psychometric Instruments Developed for Personnel Selection and Assessment in the Estonian Defence Forces**

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LTC Antek Kasemaa

*Estonian Military Academy*

This paper is part of a project to develop psychometric instruments for personnel selection and assessment in the Estonian Defence Forces (EDF).

A few years ago, the EDF began to develop psychometric instruments in order to improve its personnel assessment and selection practices. The custom-developed test battery comprises five tests: cognitive ability test, personality test (Big Five), situational judgement test, vocational interests and self-efficacy tests (Konstabel & Kolnes, 2017). The parameters were developed for six personnel categories (i.e. officer leader, officer expert, NCO leader, NCO expert, soldier battle and soldier support) based on the EDF's active service member groups (e.g. officers and NCOs).

The first presentation delivered at this symposium will provide an overview of the theoretical background and methodological approach used for developing the EDF's customised test battery. In addition, we will present the results of the pilot study that focused on the preliminary testing of the initial versions of these tests. The second presentation will focus on the validation research, examining how well the EDF's psychometric test battery predicts the selection of candidates for leadership positions in the course of compulsory conscription service. The third presentation concentrates on the differences between different personnel groups within the EDF. As hypothesised, the test battery should differentiate between various personnel categories within the EDF, and therefore, the study compared the groups of conscripts, military academy cadets, and active service members. The fourth presentation will give an overview of the relationships between the test battery and overall personnel performance.

As the final part of symposium, there will also be a discussion regarding the implications and recommendations for the subsequent development of the EDF's personnel selection and instruments.

ID 110

**Pilot Study to Develop Personnel Assessment and  
Selection Instruments for the Estonian Defence Forces**

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LTC Antek Kasemaa

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This paper is part of a project to develop psychometric instruments for personnel selection and assessment in the Estonian Defence Forces (EDF).

A few years ago, the EDF began to develop psychometric instruments for personnel assessment and selection. The custom-developed test battery comprises five psychometric tests: cognitive ability test, personality test (Big Five), situational judgement test, vocational interests and self-efficacy tests. The first two are based on well-established concepts of cognitive ability and personality, predicting performance in different work situations (Evers et al., 2005). The parameters have been developed based on different EDF service member groups (e.g. officers and NCOs). The three other tests in the battery are original instruments, developed specifically for the EDF and based on the assumption that vocational interests are good predictors of contextual performance (Defranc & Lescrave, 2005), while situational judgement demonstrates practical application of knowledge on the field (Evers, et al., 2005), whereas self-efficacy is grounded in the belief that the task will be accomplished (Bandura, 1997). The aim of this presentation is to provide an overview of the theoretical and methodological background for the EDF's newly developed psychometric instruments. Furthermore, we will present the results of the pilot study conducted among EDF's conscripts (N = 359) to demonstrate the different parameters developed for different personnel groups, i.e. officer leader, officer expert, NCO leader, NCO expert, soldier battle and soldier support.

ID 111

**Using Psychometric Tests to Select Candidates  
for the Leadership Path in the Estonian Defence Forces**

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This paper is part of a project to develop psychometric instruments for personnel selection and assessment in the Estonian Defence Forces (EDF).

The EDF relies on compulsory conscription service as its primary source to staff and train the national defence units standing ready to respond to crisis situations. In Estonia, the duration of the compulsory service is either eight or eleven months, with two career trajectories offered to those serving for a longer term. One is the specialist path (e.g. signallers, drivers, etc.) and the other is the leadership path (mostly NCOs and reserve officers). The decisions regarding the selection of candidates for these two different career trajectories have thus far been mainly based on indirect indicators, mostly leaning on the experience of the decision-maker/selection committee. A few years ago, the EDF began developing psychometric instruments for the purposes of building an evidence-based foundation for these types of decisions in the future. The EDF's comprehensive psychometric test battery comprises five tests: cognitive ability test, personality test (Big Five), situational judgement test, vocational interests and self-efficacy test. This paper contributes to the validity research of these recently developed psychometric instruments, examining how well they are able to predict the choices of decision-makers who select candidates for the leadership positions from among the conscripts. N = 370 EDF conscripts took part in this study, and the sample was further divided into two groups: 1) selected for leadership positions and; 2) selected for specialists positions. The results indicate that the first group demonstrated higher values with regard to indicators that were statistically significantly closer to the test norms developed by the researchers and predicting the candidates' suitability for a career in a leadership position.

ID 112

**Group Differences in Self-Efficacy, Situational Judgement,  
Vocational Interests, Cognitive Ability and Personality Traits**

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This paper is part of a project to develop psychometric instruments for personnel selection and assessment in the Estonian Defence Forces (EDF).

The comprehensive psychometric test battery developed for the EDF comprises five individual tests: cognitive ability test, personality test (Big Five), situational judgement test, vocational interests test and self-efficacy test. Considering that the self-efficacy and vocational interests questionnaires and the situational judgement test are customised questionnaires that have been developed relatively recently, it warrants empirical examination whether the different tests can predict a candidate's suitability for different positions with sufficient accuracy. Therefore, the aim of this paper is to examine the differences between the cognitive ability, personality traits, situational judgement, self-efficacy and vocational interests of cadets, reserve officer candidates and conscripts. A sample of 1370 EDF service members from various personnel groups took part in this study. The results of comparing different personnel categories provided an indication of the predictive validity of the developed psychometric instruments and demonstrated statistically significant differences between cadets and conscripts as well as between reserve officer candidates and conscripts, while showing no differences between cadets and reserve officer candidates. The paper concludes with a discussion of implications and recommendations for EDF personnel selection and the subsequent development of psychometric instruments.

ID 113

**Relationships between Cognitive Ability, Personality, Situational Judgements, Vocational Interests, Self-Efficacy and Performance**

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This paper is part of a project to develop psychometric instruments for personnel selection and assessment in the Estonian Defence Forces (EDF).

The comprehensive psychometric test battery developed for the EDF comprises five individual tests: cognitive ability test, personality test (Big Five), situational judgement test, vocational interests test and self-efficacy test (Konstabel & Kolnes, 2017). Considering that the self-efficacy and vocational interests questionnaires and the situational judgement test have been custom-developed relatively recently, it warrants empirical examination to evaluate how well those instruments predict performance in various contexts. Therefore, the aim of this paper is to examine the predictive validity of these newly developed instruments. N=1370 EDF service members from different personnel categories took part in this study and their performance was evaluated on the basis of three indicators: 1) academic grade point averages; 2) final exam results; 3) annual review conducted by supervisor. Regression analysis was conducted using group specific performance indicators (e.g. academic grade point averages for cadets, the final exam results for conscripts, and annual review conducted by supervisor in case of active duty NCOs and officers). The results indicated that in general, cognitive ability and personality serve as good predictors of performance; however, the predictive power of vocational interests, situational judgement and self-efficacy remain debatable. This paper concludes with a discussion of implications and recommendations for EDF personnel selection and for the subsequent development of psychometric instruments.



ID 114

**Leadership Testing in a Nutshell**

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A comprehensive literature review of the numerous leadership studies ever conducted would require an inordinate amount of time. The list of meta-analyses of leadership research alone is formidable. A review of 13 meta-analyses of leadership studies reveals conflicting findings with regard to several scrutinized leadership characteristics and determinants. For example, in many of those studies, high intelligence is tacitly assumed as a prerequisite for leadership. However, studies that specifically include intelligence as a variable, have frequently found that it is not a major determinant. Such findings seem to be due to data selection bias or inadequate compensation for the restriction of range, considering that leaders tend to be highly intelligent and when there is little variance, little correlation can be found. The analysis of an opportunity sample of people who qualified for Mensa membership based on Raven's Progressive Matrices Test administered in Estonia in 1995, confirmed the findings of the longitudinal study of 1500 children with IQs of 140 and above, conducted by Lewis M. Terman in 1921, not to mention numerous other studies of gifted people. In conclusion, while situational factors have been shown to play a major role in achieving leadership positions; intelligence, as measured by standard intelligence tests, military aptitude tests (such as the U.S. Armed Forces Qualification Test (AFQT)) or school grade proxies, seems to be the most important determinant of leadership.

ID 115

**Suicidality among Estonian Veterans: Protective and Risk Factors**

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This study set out to explore the prevalence of suicidality as well as the corresponding protective and risk factors among veterans of the Estonian Defence Forces (EDF). The data were collected in May 2018 via a structured online questionnaire. In total, 722 male veterans answered the questionnaire (i.e. 26.9% of the total male veteran population in Estonia). The data was analysed using logistic regression analysis and the OR-s with 95% CI were calculated.

Among the studied sample, the life-time prevalence of suicide attempts was 2.3%, while the life-time prevalence of suicide plans was 9.7%; and the life-time prevalence of suicidal thoughts/ideation was 14.5%. Using the Paykel Hierarchical Suicidal Ladder (PHSL), the researchers screened out veterans who expressed suicidality on at least the minimal level during the preceding two weeks. In total, 122 veterans (18.4%) were categorized as currently suicidal according to the PSS (Paykel Suicide Scale) criteria. In addition, the analysis indicated the following factors as having a protective effect on current suicidality: older age group; higher education; higher military rank; relatively good economic situation; high resilience, and receiving additional psycho-social support. The research also highlighted the following risk factors: marital status: single; living alone or with parents; relatively poor economic situation; frequent binge drinking; suicide of a fellow service member or a close person; chronic health problem; injured in military service; hospitalisation for psychiatric problems; low subjective well-being; depressiveness; low resilience; low self-compassion; PTSD, and insufficient psycho-social support.

The decision to take one's life and going through with committing suicide is a process. Milder forms of suicidality are more prevalent among veterans as compared to more severe forms. Depending on the time period examined (longer vs shorter periods), this process is influenced by complex co- and counter-interactions among different protective and risk factors. Some of these factors can be modified relatively easily, while others are more difficult to implement. However, understanding these factors enables to identify risk groups for suicidality and to target preventive work more specifically.

ID 116

**Supporting the Autonomy of Conscripts and its Effect on Self-Efficacy, Appreciation for Learning and Intentions to Quit Compulsory Military Service**

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This report is based on surveys conducted among the conscripts of the Estonian Defence Forces (EDF) from July to August 2019 during their basic training at the Kuperjanov Infantry Battalion, part of the 2nd Infantry Brigade of the EDF.

The aim of this study was to investigate how support for the conscripts' autonomy affected their self-efficacy, appreciation for learning and their intentions to quit compulsory military service. The focus was on the interlinkages and the changes over time during their basic training. The conscripts were asked to complete the survey twice. First, after three weeks of training, and second, at the end of the course. In total, the research sample includes data from 327 conscripts (N=327).

The survey results confirmed that support for the conscripts' autonomy positively predicted self-efficacy and appreciation for learning, while predicting negatively their intentions to quit compulsory service. What is more, the interlinkages between support for autonomy and self-efficacy ( $z = -2,973$ ;  $p < 0,001$ ); support for autonomy and appreciation for learning ( $z = -3,387$ ;  $p < 0,001$ ); self-efficacy and appreciation for learning ( $z = -1,708$ ;  $p < 0,05$ ) became significantly stronger over time.

Based on the results of this study, we can say that increased appreciation for learning during basic training has a positive effect on reducing the intentions to quit compulsory military service, and it seems to grow over time as well. The lower perceived level of support for autonomy at the start basic training may indicate that the instructors might need to exercise greater control over conscripts in their new operating environment. At the end of basic training, the confidence of instructors will have increased and as a result, external control can be reduced.

ID 117

**Hazardous Attitudes and Risk Perception among  
Indonesian Pilots**

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This research focused primarily on exploring the relationship between the hazardous attitude dimensions of pilots and their risk perception. Likert-type questionnaires were distributed among 537 active Indonesian male pilots both within the military and also in civilian aviation. Participants were chosen using probability sampling. The data was analysed employing Structural Equation modelling (SEM) procedures as well as other procedures such as t-test, one-way ANOVA and bivariate correlations. The results indicate that worry is negatively correlated with risk perception. Significant variations in risk perception were found when analysed using demographic data.

ID 118

**Using Information Technology in Decision-Making Processes**

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Nowadays, no one can imagine life without information technology (IT) and modern communication systems. IT is a useful tool that can be used to support commanding officers in planning, reporting and information exchange by providing reliable and accurate information when required.

Even though IT systems are designed to serve humans, the attitude towards using these instruments varies greatly, depending on the needs and the IT proficiency of individual commanding officers. Furthermore, although IT can facilitate decision-making processes to a considerable degree, working with new technologies and personal data can bring about serious security and privacy issues.

In this paper, we present an overview of the IT system used in the Slovenian Armed Forces for various types of research and we will also discuss prevailing attitudes towards using IT. In addition, we will present a case study on the use of the IT system to support Slovenian commanding officers in decision-making processes, with a focus on planning, situation awareness and analytics as well as the management of human resources and equipment.

