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**Prediction of Attitudes Towards Narcotics and Prediction of  
Increased Risk for Depression in Recruits with New Psychological  
Tools**

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## **Goals of the project**

**1. Prediction of change in the level of depression during military service and risk for substance abuse in recruits.**

**→ Criteria for selection**

**→ Identification of individuals suitable for prevention programs**

**2. Better understanding of psychological mechanisms that underlie change in the level of depression during military service and risk for substance abuse in recruits.**

**→ Hypotheses for improvement of prevention programs**

## METHOD

### *Participants*

**In August-October 2001 we studied 901 recruits of the Estonian Defence Forces who were in the beginning of their compulsory military service. All participants were 18-19-year-old men.**

**The same recruits were tested second time five to six months later.**

### *Tests*

**1. *Depression.* Estonian version of the Beck Depression Inventory (Beck, 1967).**

**2. *Substance abuse.* Estonian version (Pulver, 2000) of the Alcohol Use Identification Test (AUDIT, Babor et. al., 1989).**

**3. *Collectivism.* Collectivism was measured by original scale (Realo, Allik, & Vadi, 1997), which includes three subscales that characterize relations with family (Familism), peers (Companionship), and society (Patriotism).**

**4. *Behavioral inhibition/ Behavioral activation.* Estonian version (Pulver, 1999a) of the BIS/BAS Scale (Carver & White, 1994).**

**5. *Coping Styles.* Estonian version (Kallasmaa & Pulver, 2000) of the Brief COPE scale (Carver, 1997). The scale measures three broad coping styles: Problem oriented style, Emotional style, and Escape oriented style.**

**6. *Aggression.* Estonian version (Muug, 1997) of the Aggression Questionnaire (Buss & Perry, 1992). The Estonian version differentiates three aspects of aggression: Verbal aggression, Physical aggression, and Anger.**

- 7. *Emotional expressivity.*** Estonian version (Jakobson, 1999), of the Berkely Expressivity Questionnaire (Gross & John, 1995). The questionnaire has three subscales: Positive expressivity, Negative expressivity, and Strength of impulses/emotions.
- 8. *Values.*** Estonian version (Pulver, 1997) of the Value scale (Katz & Hass, 1988). Test differentiates two core value orientations: individualism and communalism.
- 9. *Cognitive abilities.*** Scale of Cognitive Abilities (Pulver, 1999b), which characterizes three aspects of abilities: Verbal abilities, Logical-mathematical abilities, and visual-spatial abilities.
- 10. *Personality.*** Short form (30 items) of the Estonian version (Kallasmaa et. al., 2000) of the NEO-PI-R (Costa & McCrae, 1992). Inventory measures 5 domains of personality: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness.
- 11. *Situational personality.*** Test constructed by Aaro Toomela (University of Tartu, Estonia), Aleksander Pulver (Tallinn Pedagogical University, Estonia), and Jaan Valsiner (Clark University, USA). The test characterizes both five personality domains and variability of the domain expression as related to the situation.
- 12. *Situational attitudes towards substance abuse.*** Test constructed by Aaro Toomela, Aleksander Pulver and Jaan Valsiner. Situations where an attitude toward substance abuse could be expressed were created for each item. Test characterizes both attitudes towards substance abuse and variability of the attitudes as related to the situation.
- 13. *Conceptual (or word meaning) structure.*** Original test that was constructed by Aaro Toomela as suggested by Luria (1979). Definitions of concepts; Similarity of pairs of words; triplets of words. Answers were coded into two categories, “Everyday Concepts” and “Scientific Concepts”

## RESULTS

### *Change in the level of depression*

Depression was measured twice in participants. In the beginning of their service, and about six months later. We were interested in identifying persons whose depression level changes during the service. On the basis of BDI difference score the participants were divided into three groups: with decrease in depression, no significant change, and increase in depression.

1. Forward-stepwise Discriminant Function Analysis. 317 participants with complete data.

**Table 1. Classification Matrix. Results of the Discriminant Function Analysis in Depression Change Groups.**

	Percent Correct	Depression Change Group		
		High Decrease p=.12	No Change p=.80	High Increase p=.08
High Decrease	68.29	28	12	1
No Change	93.53	14	246	3
High Increase	23.07	2	18	6
Total	84.84	44	276	10

**Note:** Rows: Observed classifications, Columns: Predicted classifications

**2. Classification function from the analysis was used for predicting group membership in another group of 552 participants.**

**Table 2. Classification Matrix. Depression Change Group Membership is Predicted With the Classification Function Found in Discriminant Function Analysis of Another Sample.**

	Percent Correct	Depression Change Group			Row Totals
		High Decrease	No Change	High Increase	
High Decrease	59.65	34	22	1	57
No Change	90.18	20	395	23	438
High Increase	12.28	5	45	7	57
All Groups	78.99	59	462	31	552

***Note:* Rows: Observed classifications, Columns: Predicted classifications**

**3. Significant predictors in the classification functions. (Only data from the second group (N = 552)).**

**Table 3. Mean Levels (Standard Deviations in Parentheses) and the P-Level of the Main Group Effect of Psychological Measures that Contributed Significantly to the Prediction of Group Membership According for Each Observed Depression Change Group**

Significant Predictor	Depression Change Group			p-level
	High decrease	No change	High increase	
Depression at Time 1	15.69 (6.92)	4.34 (3.99)	5.19 (5.33)	< .001
Conceptual Structure	5.72 (3.16)	6.87 (3.65)	5.53 (3.56)	< .005
Situational Attitudes Subst. Abuse	13.41 (5.73)	11.76 (4.36)	14.40 (5.55)	< .001
Short-NEO-PI-R, Neuroticism	9.78 (2.93)	7.16 (3.12)	8.25 (3.57)	< .001
Short-NEO-PI-R, Conscientiousness	9.76 (2.79)	11.18 (2.64)	10.56 (2.84)	< .001
Positive Emotional Expressivity	19.93 (4.22)	21.02 (3.84)	21.58 (3.36)	< .06
Escape Oriented Coping Style	12.91 (2.89)	11.59 (2.50)	11.95 (2.89)	< .002
Collectivism: Society (Patriotism)	9.42 (4.94)	10.76 (4.35)	9.53 (5.44)	< .03

*Risk for substance abuse*

On the basis of AUDIT score the participants were divided into three groups: Low risk, Medium risk, and High risk.

1. Forward stepwise Discriminant Function Analysis . 315 participants with complete data.

**Table 4. Classification Matrix. Results of the Discriminant Function Analysis in the Risk for Substance Abuse Groups.**

	Percent	Substance Abuse Risk Group		
		Low Risk	Medium Risk	High Risk
	Correct	p=.21	p=.69	p=.10
Low Risk	20.69	12	46	0
Medium Risk	88.44	10	199	16
High Risk	50.00	0	16	16
Total	72.06	22	261	32

**Note:** Rows: Observed classifications, Columns: Predicted classifications



**2. Classification function from the analysis was used for predicting group membership in another group of 523 participants with complete data.**

**Table 5. Classification Matrix. Depression Change Group Membership is Predicted With the Classification Function Found in Discriminant Function Analysis of Another Sample.**

	Percent Correct	Substance Abuse Risk Group			Row Totals
		Low Risk	Medium Risk	High Risk	
Low Risk	7.84	4	43	4	51
Medium Risk	85.68	14	341	43	398
High Risk	37.84	0	46	28	74
All Groups	71.32	18	430	75	523

***Note:* Rows: Observed classifications, Columns: Predicted classifications**

**3. Significant predictors in the classification functions. (Only data from the second group (N = 523)).**

**Table 6. Mean Levels (Standard Deviations in Parentheses) and the P-Level of the Main Group Effect of Psychological Measures that Contributed Significantly to the Prediction of Group Membership According for Each Observed Substance Abuse Risk Group**

	<b>Substance Abuse Risk Group</b>			<b>p-level</b>
	<b>Low Risk</b>	<b>Medium Risk</b>	<b>High Risk</b>	
<b>Situational Attitudes Subst. Abuse</b>	<b>8.39 (3.46)</b>	<b>11.82 (4.30)</b>	<b>16.19 (4.68)</b>	<b>&lt; .0001</b>
<b>Depression at Time 1</b>	<b>4.98 (5.82)</b>	<b>5.25 (5.21)</b>	<b>8.05 (7.71)</b>	<b>&lt; .0004</b>
<b>Aggression: Physical</b>	<b>11.98 (4.85)</b>	<b>13.35 (4.58)</b>	<b>15.80 (4.08)</b>	<b>&lt; .0001</b>
<b>Conceptual Structure</b>	<b>7.57 (3.53)</b>	<b>6.66 (3.58)</b>	<b>5.92 (3.70)</b>	<b>&lt; .05</b>
<b>Emotional Expressivity: Strength of Impulses</b>	<b>12.33 (3.90)</b>	<b>13.21 (4.39)</b>	<b>14.08 (4.45)</b>	<b>&lt; .09</b>

## **CONCLUSIONS**

- 1. It is possible to predict the development of depression during military service and risk for substance abuse with a relatively short battery of tests.**
- 2. Such battery of tests should cover quite different psychological constructs, including Conceptual structure and effect of environment on the expression of psychological constructs.**
- 3. Potential targets for intervention programs can also be found. The most important target of intervention programs might be Conceptual Structure.**

## **FUTURE**

- 1. Co-operation: Study of cross-cultural validity of tests**
- 2. Co-operation: Organization of preventive programs**
- 3. Co-operation: Study of ways for improvement of intervention programs**