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«About some aspects of professional reliability of locomotive drivers»

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INTRODUCTION

The problem of professional reliability of locomotive drivers concerns complex problems. The organization of researches in this area is extremely difficult, but it is represented absolutely necessary as professional reliability in many respects is a guarantee of successful activity of locomotive drivers.

On possibility of diagnostics, formation, perfection, correction professional reliability (as integrated professionally significant quality) the locomotive driver specified by following positions:

- PSQ is a cash level's possibility of display's function (mental and psychomotor processes), necessary for efficiency of professional work;
- PSQ – the merge of congenital and acquired;
- PSQ are a part of structure of the person and the general macrostructure of the person;
- Abilities in development and specialization in activity are realized in PSQ;
- Neurodynamic basis of PSQ are typological qualities of nervous system.

THE WORK'S PURPOSE

formation of professional reliability of locomotive drivers

Research methods

- Technique of an estimation of level of vigilance (Readiness for emergency action) in the conditions of monotonously operating factors (REA).
- Technique of speed's definition of switching attention (SA).
- Technique of definition of emotional stability (ES).
- Technique of an estimation of time sense (TS).
- Technique of an estimation of reaction to moving object (RMO).
- Technique of an estimation of time of simple visually - impellent reaction (SIR).
- Technique of an estimation difficult visually - impellent reaction (DIR).
- Technique of an estimation of volume of attention (Va).
- Technique of definition of individual psychomotor rate – tepping-test (TEPP).

Indicators PSQ

REA – *readiness for emergency action in the conditions of monotonously operating factors*

1. **Prea** – difference between reactions to signals with the prevention and without the prevention
2. **Nrea** – number of admissions of signals

SA – *speed of switching the attention*

3. **SAt** – time of performance of the mixed search of black and red numbers
4. **Tsa** – time of switching attention
5. SAer – quantity of errors during performance of the mixed search of black and red numbers

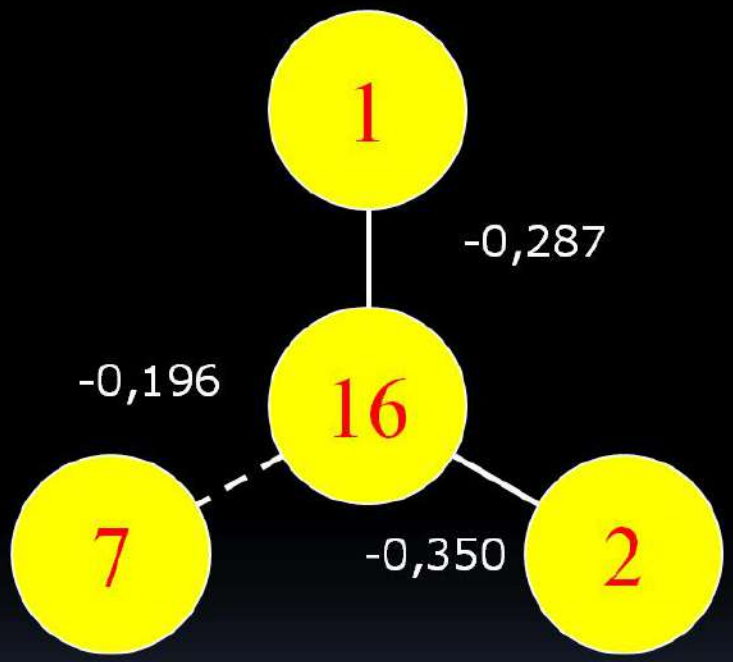
ES - *emotional stability*

6. ESt - time of performance of the mixed search of black and red numbers at active hindrances
7. **Tes** - a difference in time of performance of the mixed search of black and red numbers with hindrances and without hindrances
8. **ESer** – a difference in time of performance of the mixed search of black and red numbers with hindrances and without hindrances

DIR - *difficult visually-impellent reaction*

9. **T dir** - Time of performance of difficult impellent reaction
10. **Ndir** - quantity of incorrect pressing
11. **SIR** – *time of performance of simple impellent reaction*
12. **TS** - *time sense*
13. **RMO** - *time of reaction for moving object*
14. **Va** – *attention volume* ; **15.** TEPP – the *tepping-test* ; **16.** EE – an *expert estimation* .

Fig. 1. The Basis of a correlation galaxy round an indicator of an expert estimation of professional reliability of locomotive drivers



1. The difference between average arithmetic time of reaction for emergency signals and average arithmetic time of reaction for signals with the prevention (Prea);
2. Quantity of admissions of signals (Nrea);
7. The difference in time of performance of the mixed search of black and red numbers with hindrances and without hindrances (Tes);
16. The expert estimation of professional reliability (EE);

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_____ – **p<0,01 at r=0,258**

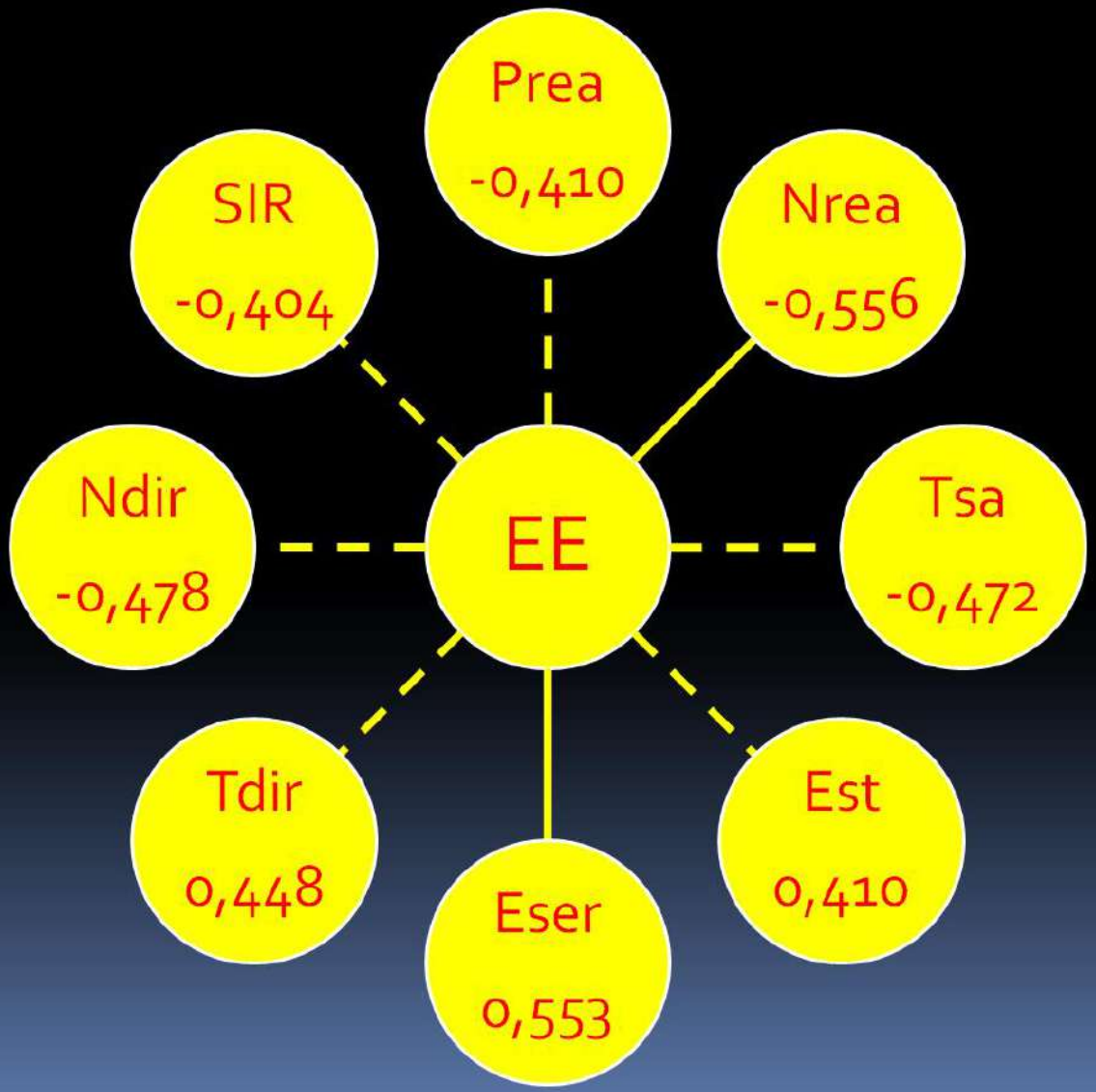
Indicators of testing of some PSQ locomotive drivers with various level of professional reliability

Tab. 1

Indicators		Groups of locomotive drivers by results of expert estimations				
		The high level (n=14)	The average level (n=81)	The low level (n=5)	U (high - low)	p (high - low)
REA	Prea	0,133±0,0166	0,145±0,015	0,194±0,029	17	>0,05
	Nrea	0,714±0,305	1,37±0,141	2,17±0,548	11	<0,05
ES	ESt	245±10,68	239,4±6,44	292±56,07	25	>0,05
	Tes	26,43±7,16	38,63±3,17	85,4±23,79	11	<0,05
	ESer	8,86±3,61	11,51±1,33	21,2±5,79	16	<0,05

Fig. 2 - Structure of technology of formation of professional reliability of locomotive drivers

Fig. 3. The Basis of a correlation galaxy round an indicator of an expert estimation of professional reliability of locomotive drivers



– p<0,05 at r=0,396

– p<0,01 at r=0,505

On the basis of results of the spent pedagogical experiment it is possible to take for granted that the technology of formation of locomotive drivers' professional reliability is effective enough. Positive changes after the end of pedagogical forming experiment at locomotive drivers of experimental group (n=25) are observed on indicators of performance of techniques: readiness for emergency action in the conditions of monotonously operating factors (REA), attention switching (SA), emotional stability (ES), simple impellent reaction (SIR), difficult impellent reaction (DIR), attention volume (Va) ($p<0,05$-$0,01$). In control group (n=25) the quantity of errors has significantly decreased ($p<0,01$) during performance of test DIR, on other indicators of significant distinctions is not revealed.

CONCLUSIONS

- Professional reliability of the locomotive drivers is provided with complex PSQ: readiness for emergency action in the conditions of monotonously operating factors, emotional stability, in the speed of switching attention, stability the intellectual functions, self-checking and the self-control, shown in the conditions of mental pressure, monotony and exhaustions.
- Working out the technology of formation of the locomotive drivers' professional reliability is caused by necessity of minimization of failure of activity on the basis of revealed PSQ.
- Purposeful development of PSQ promotes additional growth of professional reliability of the locomotive drivers.


THANKS FOR ATTENTION!