

# RESEARCH REPORT: THE INITIAL RESULTS OF ADOPTING THE TRANSFORMATIONAL-TRANSACTIONAL LEADERSHIP INVENTORY IN THE ESTONIAN CONTEXT

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The aim of this study was to examine the reliability and validity of the Transformational Leadership Behaviour Inventory (TLBI) (Podsakoff *et al.* 1990) and the Leader Reward and Punishment Questionnaire (LRPQ) (Podsakoff *et al.* 1984) as one transformational-transactional leadership instrument in the Estonian context. The sample group (N=797) consisted of military (N=373) and non-military (N=424) personnel who completed the Estonian versions of the TLBI & LRPQ scales. Both exploratory (EFA) and confirmatory factor (CFA) analyses were used to analyse the data. The results validated the use of the original ten-dimensional structure: Articulating a Vision, Providing an Appropriate Model, Fostering the Acceptance of Group Goals, High Performance Expectations, Individualized Support, Intellectual Stimulation from the transformational leadership side and Contingent Reward behaviour, Contingent Punishment behaviour, Non-Contingent Punishment behaviour, Non-Contingent Reward behaviour from the transactional leadership side. The results gave strong support to the original factor structure of the questionnaires. Additionally, military and non-military samples were also compared. In summary, the Estonian versions of the TLBI & LRPQ scales demonstrated sufficient reliability values from .73 (Higher Performance Expectations) to .94 (Contingent Reward behaviour), with an average of .82. Findings suggested that the Estonian versions of TLBI and LRPQ are valid and reliable instruments for measuring transformational and transactional leadership within the Estonian cultural context, including the military. The reliability of some of the subscales, however, indicated a need for further development. Limitations and further research proposals are addressed in the discussion section.

**Keywords:** *transformational and transactional leadership, validity, reliability, Estonia, Transformational Leadership Behaviour Inventory*

## Introduction

In recent decades one of the most popular leadership approaches has been transformational leadership (Northouse 2013, p. 185). Multiple sources propose several models to describe transformational leadership (Antonakis 2012, p. 269). They include B. Bass's and B. Avolio's Full Range Leadership Model (FRLM), which is perhaps the most popular (Gill 2011, p. 82). In this model, the empirical research of this model is quite dependent upon the Multifactor Leadership Questionnaire (MLQ), which is the most widely used transformational leadership instrument (Haslam *et al.* 2011, p. 39). Despite the popularity of the model and its instrument, there has been some criticism of its construct validity (Northouse 2013, p. 202; Yukl 1999). There is an alternative instrument that measures transformational and transactional leadership, which has also generated remarkable research interest (Anderson and Sun 2015). It was developed by Philip Podsakoff and his associates (Podsakoff *et al.* 1984; Podsakoff *et al.* 1990). It is also important to add that the Transformational Leadership Behaviour Inventory (TLBI) instrument is not propriety (as is the case with the MLQ) (Antonakis 2012, p. 269), and researchers are allowed to use it freely. However, in order to measure transformational and transactional leadership behaviour (Hardy *et al.* 2010; Callow *et al.* 2009), elaborate on the psychometrics, and cope with the copyright problem some studies have combined the MLQ and the TLBI into one research instrument. Previously, there have been some experiments done on leadership measures in the Estonian language (for instance: the MLQ, Fiedler's Leadership Styles, GLOBE<sup>1</sup>) (respectively: Liik and Laud 2002; Altmäe *et al.* 2013; Tuulik and Alas 2009) although, as of yet, suitable analytical approaches, such as confirmatory factor analyses techniques (Meerits *et al.* 2015) have not been used to examine the validity and reliability of the instruments.

Therefore the aim of the current paper is to examine the factor structure of the TLBI and LRPQ using a sample from different Estonian organizations. The sample represented the various sectors, including the private and public sectors. The current paper is important for the following reasons: 1) the results will contribute to transformational leadership research overall as empirical data from an additional cultural context is added; 2) it will adapt a freely available leadership instrument to the Estonian context in order to facilitate research in the area of transformational leadership; 3) the results will help with the need to establish a meaningful basis for leadership development within various organizations, including the Estonian Defence Forces.

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<sup>1</sup> GLOBE – Global Leadership and Organisational Behaviour Effectiveness.

## Theoretical Background

Transformational leaders are able to influence and motivate others to achieve more than initially thought possible. They challenge expectations, and consider their followers' needs, as well as enhance individual development, and ultimately have more satisfied followers who feel empowered by them. Transactional leaders, on the other hand, are more focused on the exchange process that occurs between leaders and followers. It is based on discussions, clarification of what is required, and what the awards might be if those requirements are met (Bass and Riggio 2006, p. 4). Therefore transformational leaders might get more results from followers than expected, while transactional leaders would get results which are expected.

Podsakoff and his colleagues (1984; 1990) have proposed an alternative to the FRLM leadership model that incorporates both transformational and transactional factors. Transformational leadership factors include: 1) identifying and articulating vision; 2) providing an appropriate model; 3) fostering acceptance of group goals; 4) high performance expectations; 5) providing individualized support; 6) intellectual stimulation. Transactional leadership factors, on the other hand, are comprised of the following: 1) contingent reward behaviour; 2) contingent punishment behaviour. Moreover, Podsakoff *et al.* (1984) has proposed two additional subscales that measure a leaders' non-contingent punishment and reward behaviour. These subscales could, however, also be considered as components of transactional leadership behaviour (Podsakoff *et al.* 2006).

The following are descriptions of the transformational factors (Podsakoff *et al.* 1990):

1. Identifying and articulating vision (VIS) – these leaders identify new opportunities for their group, team (etc.) and develop, articulate, and inspire others with their vision of the future;
2. Providing an appropriate model (PAM) – these leaders set an example for employees that is consistent with the values espoused by the leader;
3. Fostering acceptance of group goals (FAG) – these leaders promote cooperation among employees and get them to work together towards a common goal;
4. High performance expectations (HPE) – these leaders demonstrate expectations for excellence, quality, and/or high performance on the part of the followers;
5. Providing individualized support (ISP) – these leaders show that they respect the followers and are concerned about their personal feelings and needs;

6. Intellectual stimulation (IST) – these leaders challenge followers to re-examine some of their assumptions about their work and rethink how it can be performed.

Descriptions of transactional factors (Podsakoff *et al.* 1984):

1. Contingent reward behaviour (CRB) – these leaders administer by establishing a close link between rewards and performance. They give praise, commendation, and acknowledgment to those subordinates who perform at high levels or improve their performance;
2. Contingent punishment behaviour (CPB) – these leaders reprimand their subordinates or show disapproval when subordinates perform poorly. If administered properly it can work in a manner similar to that of contingent reward behaviour.

Descriptions of leaders' non-contingent punishment and reward behaviour (Podsakoff *et al.* 1984):

1. Non-contingent punishment behaviour (NCPB) – these leaders punish their subordinates for no apparent reason at all, and could be termed as dysfunctional;
2. Non-contingent reward behaviour (NCRB) – these leaders extend praise and social approval without regard to the performance of their subordinates. They give it to those who do not deserve it as well as those who do.

According to the meta-analysis conclusions published by Wang, Oh, Courtright and Colbert (2011), transformational leadership has been shown to have a positive correlation with several variables such as performance (including individual, group and organizational) and leaders satisfaction (Bono and Judge 2003). This means that the more the followers perceive their work as meaningful, and the more this is also prioritized by transformational leadership, the more satisfied the followers are with their leader. The correlation between task related performance and contingent reward has been found to be higher compared to the transformational leadership, although the categories of contextual and creative performance showed the opposite results. Therefore, it may be that transformational leadership uses different mechanisms to influence the performance of the followers at different organisational levels. (Wang *et al.* 2011) For instance, at the individual level it may happen vis-à-vis the effect on the followers' motivation and attitudes (Bono and Judge 2003); at the group level, through the cohesion and potency (Bass *et al.* 2003); and overall, by influencing the organizational culture and

strategy (Liao and Chuang 2007). Additionally, a positive relation has been found between transformational leadership and organisational citizenship behaviour (OCB) and trust (Podsakoff *et al.* 1990).

In addition to the relationship between the different job and organisational constructs, the literature also indicates that there is a robust, but small, difference between men's and women's transformational leadership. This means that the leadership style of women tends to be slightly more transformational, and their contingent reward type of behaviour is also higher as compared to that of men (e.g. Eagly *et al.* 2003; Antonakis *et al.* 2003). It has also been suggested that in the private sector, transformational leadership is somehow restricted by various policies, rules and regulations (Gill 2011, p.51). There is a hypothesis that management level is also a significant variable that can influence transformational leadership (Oshagbemi and Gill 2004). However, Krüger *et al.* (2011) found no statistically significant differences between female and male respondents, or between the public and private sector, or between the hierarchical levels of organizations.

The transformational leadership model has been researched in various organizations, including the military. For instance, Bass *et al.* (2003) used the MLQ in order to examine relations between leadership, unit cohesion and potency and performance. Additionally, Hardy *et al.* (2010) combined the MLQ and the TLBI to research relations between leadership and different training outcomes. The Swedish Armed Forces utilize the Developmental Leadership (Larsson 2006) model, which is based on the FRLM and potentializes the use of transformational leadership theory to educate officers. A similar approach, which is called Deep Leadership (Nissinen 2001), has been developed for the Finnish Defence Forces. It can therefore be concluded that transformational leadership is widely used among the different armed forces as a developmental and measurement tool.

### ***Propositions***

Based on the discussion above, the current research suggests the following propositions:

1. The original model of transformational leadership is best compared with the other models that have been tested (P1) (Podsakoff *et al.* 1990);
2. The original model of Reward and Punishment Behaviour of leaders is best compared with the other models tested (P2) (Podsakoff *et al.* 1984);
3. The full model, consisting of transformational leadership factors and contingent reward and punishment subscales, demonstrates the sufficient

- statistical properties to be used as a measurement tool both within and outside of the military context (P3) (Podsakoff *et al.* 1984 and 1990);
4. Transformational leadership is positively related to the performance of followers (P4) (Wang *et al.* 2011);
  5. The satisfaction of followers with their supervisors is (Bono and Judge 2003):
    - a. positively related to transformational leadership beyond the effects of transactional leadership (P5a);
    - b. positively related to leaders' contingent reward behaviour (P5b);
    - c. not related to leaders' contingent punishment behaviour (P5c);
    - d. not related to leaders' non-contingent reward behaviour (P5d);
    - e. negatively related to non-contingent punishment behaviour (P5e).

## Method

### Sample

The data was collected from organizations representing different sectors. The public sector data was collected by one of the authors of this article, and the private sector data was collected by Tallinn University MA students in the winter and spring of 2015. Both paper and pencil and e-platform methods were used to collect the data. The sample consisted of 797 participants, 373 of whom were from the Estonian Defence Forces, and 424 from non-military organizations. The organizations were divided into the public (64) and private sectors (360). Among those who took part in the study, 183 were in managerial positions, and 613 were non-managerial employees. Genderwise, there were 276 females and 514 males. The average age within the sample was 28.50 (SD=10.97), with a minimum age of 18 and a maximum of 75. By educational level, 5% of them had basic, 55% had secondary and 40% had higher education.

### *Instruments*

The Transformational Leadership Behaviour Inventory (TLBI) and The Leader Reward and Punishment Questionnaire (LRPQ) (Podsakoff *et al.* 1984; Podsakoff *et al.* 1990) were used to measure leadership. All together the instrument consisted of 55 items that measured 10 factors. Some of the included items used alternative translations. Two versions of the questionnaires were administered, first a subordinate version (filled out by 614

participants) and then a supervisor version (filled out by 183 participants). The difference between the two was based on variations in item wording: for instance the first version used the wording “My supervisor ...” and the second version used “I am ...” Both of the aforementioned instruments have been quite widely used (for instance: the TLBI: Podsakoff *et al.* 1996a; Krüger *et al.* 2011; Densten and Sarros 2012, and LRPQ: Podsakoff *et al.* 1993; Podsakoff *et al.* 1996b). These instruments appear to have good internal consistency, and a *Cronbach  $\alpha$*  between .70 and .94 per subscale. The TLBI has been previously validated by a German language version (Krüger *et al.* 2011). We used the procedure proposed by DeVellis (2003) to translate the TLBI and the LRPQ items into the Estonian language. All items were translated into Estonian by three separate individuals (two of whom were English philologists). Experts then compared the translations, and a final set of items was selected. As a control mechanism the items were translated back into English and educated native speakers compared the wording with the original item. Corrections were made if deemed necessary. Examples of leadership items in Estonian and their back-translations into English are presented in ANNEX 1.

Supervisor satisfaction was measured using the 10 items subscale form of the Minnesota Satisfaction Questionnaire (MSQ) (Weiss *et al.* 1967). *Cronbach alpha* of scale was .94 ( $M=5.32$ ;  $SD=1.15$ ). Examples of items included: “*Are you satisfied with the way my supervisor and I understand each other*” and “*Are you satisfied with the technical know-how of my supervisor*”.

Nine items were used to measure performance taking example from Unit Leadership Satisfaction and Effectiveness (PULSE) model (Steele *et al.* 2012). Three were related to organisational aspects ( $\alpha=.80$ ;  $M=5.63$ ;  $SD=1.15$ ), three were related to group aspects ( $\alpha=.81$ ;  $M=5.41$ ;  $SD=.98$ ) and three were related performance perceptions at the individual level ( $\alpha=.75$ ;  $M=5.32$ ;  $SD=.99$ ). All items together  $\alpha=.88$ . EFA clearly showed a one-dimension solution, therefore in the following analysis, perceived performance was used as a single performance construct. Examples of items included: “*I normally achieve work deadlines*”; “*My work group tries hard to meet deadlines*” and “*My unit works efficiently*”.

A seven point Likert type scale was used for all of the instruments with responses for the leadership items ranging from Strongly Disagree (1) to Strongly Agree (7); from Not Satisfied at All (1) to Very Satisfied (7) for the satisfaction items, and from Strongly Disagree (1) to Strongly Agree (7) for the perceived performance items.

### *Analysis Strategy*

Both, the exploratory and confirmatory factor analyses were used to examine the data (Noar 2003). EFA and CFA both need a rather large sample size. Tabachnick and Fidel (2007, p. 613) suggested that 300 cases would be sufficient to conduct EFA, and Schreiber *et al.* (2006) indicated that 10 cases per estimated parameter should be enough to get stable results for CFA. We used the maximum of 55 parameters and had a sample size of 797, so the ratio between sample and parameters was 14.5, and was appropriate for EFA and CFA.

For the first step, several exploratory factor analyses (EFA) were conducted in order to propose a suitable structure for confirmatory factor analysis (CFA). This was conducted by using 1) only transformational leadership items; 2) only leaders' reward and punishment behaviour items; 3) transformational and transactional leadership items, and finally; 4) all leadership items that comprise the current study. The second step was confirmatory factor analyses, which followed the same pattern as EFA. The third step was a comparison of the different subsamples using a reliability coefficient (*Cronbach* alpha), together with means and standard deviations: 1) military vs. non-military; 2) management positions vs. non-management positions; 3) female respondents vs. male respondents. The cut-off reliability value was considered to be  $\alpha > .75$ . The fourth step analysed the correlations between the leadership subscales together with the MSQ and perceived performance scales. Moreover, just as Schriesheim *et al.* (1991) did, the EFA, including the leadership items together with the leader satisfaction items (MSQ), was analysed in order to demonstrate the difference between those two constructs.

The following goodness of fit indices were used to conduct CFA: the Chi-Square Test ( $\chi^2$ ), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square of Residual (SRMR). Due to the fact that the  $\chi^2$  test is quite sensitive to sample size, the use of relative goodness-of-fit indices is also strongly recommended in the event of large sample sizes (Bentler and Bonett 1980). We used the following indices: the Comparative Fit Index (CFI) and the Goodness of Fit Index (GFI). The following cut-off points were also used: for the RMSEA  $\leq .08$  (Kelley and Lai, 2011), for the SRMR  $\leq .08$  (Hu and Bentler 1999), for the GFI  $\geq .90$  (Jöreskog and Sorbom 2006) and for the CFI  $\geq .95$  (Schreiber *et al.* 2006). For all of the analyses, robust estimation was used with the method of estimation: Diagonally Weighted Least Squares (Kline 2011, p. 181). All CFA analyses used a sample size of  $N=796$ , and missing values were replaced using expectation maximization.



sation (EM) procedure. To summarize, none of the items were missing more than 3.5% of the values, with an average throughout the items of 2%. List-wise deletion was also considered; however, it reduced the effective sample size to  $N=651$ , which was considered to be high to implement.

The SPSS 17 and LISREL 8.80 were used to analyse the data.

## Results

As there were alternative translations, the first task was to decide which of the items would go into the next analyses. This was done using EFA, Principal Component with Oblimin rotation (communalities and factor loadings) and reliability (if item deleted) analyses.

Using results from previous analyses, the first EFA was conducted using all of the transformational leadership items. Principal Component analysis ( $EIGN \geq 1$ ), with Oblimin rotation, showed a 3 component solution, which explained 55% of the variance of data. All of the VIS, PAM, FAG and IST items were loaded into one single component (loadings between .45 and .84), although the IST (loadings .52 –.84) and HPE (loadings .49 –.78) clearly formed a separate second and third factor. Forcing the number of component up to six (the original component structure) allowed for 62% of the data to be explained. One item from the VIS (VIS\_1), however, was loaded into the four factors with comparable loadings and one item from the PAM (PAM\_1) was loaded into the VIS factor. Excluding the one item (VIS\_1) from the VIS factor (indications showed that it was also the weakest in the reliability analyses) and forcing the number of components to 6, allowed the EFA solution to emerge as the clearest. Now, only one item from the PAM (PAM\_1) had a tendency to load into the VIS factor. By using  $EIGN \geq 1$  criteria, and excluding the problematic item from the VIS, the solution that resulted explained 56% of the variance of the data, and the VIS, PAM, FAG and IST combined into one single “super factor”. To clarify the question regarding the dimensionality of the “super factor” a separate EFA was conducted (both with and without the problematic item from the VIS), the results clearly showed one single factor ( $EIGN \geq 1$ ). The solution also explained 51% of the variance (when the problematic item from the VIS was included) and 54% of the variance (when the problematic item was excluded). Item loadings into the factor were between .54 and .81.

The second application of EFA was limited to an analysis of the transactional items. Principal Axis Factoring (PAF) with Direct Oblimin rota-

tion was used as per the recommendations of Reio and Shuck (2015). Both matrixes were interpreted: the Factor Pattern Matrix (the coefficient representing unique contribution to the component) and the Structure Matrix (representing bivariate correlations between item and latent factor). However, only factor loadings above .3 were incorporated into the interpretation. Analysis revealed a four factor solution explaining 54% of data (respectively: 34%, 11%, 8% and 2%). Both matrixes showed similar results, the CRB (factor 1) formed a clear and single factor as was expected. The NCRB items (factor 3), were about the same, and clearly formed a separate factor. However, the NCPB and the CPB presented a different picture. Two items (4 and 7) formed a separate factor (factor 2), and the other items from the CPB, together with the NCPB items, formed a separate factor (factor 4). However, the CPB items had remarkably high loadings to the factor they were supposed to load (factor 2). Separate analysis revealed that the CPB items formed two separate factors, items 4 and 7 in the first factor, and items 2, 3 and 6 in the second. However, when both the CPB and the NCPB items were subjected to each of the analyses, the result supported a two factor solution, despite there being several cross loadings, especially in regard to the CPB items. In addition to the items from the CPB (4 and 7), item 2 from the NCRB also seemed to be problematic.

The third application of EFA analysed all of the transformational and transactional items. As was the case in previous sets, Principal Axis Factoring (PAF) with Direct Oblimin rotation was used, as per the suggestions of Reio and Shuck (2015). When the CRB was added to the transformational items (excluding the one problematic one from the VIS), a solution of four factors was extracted ( $EIGN \geq 1$ ). This described 59% of the variance. The VIS, PAM, FAG and IST formed a “super factor”, while the HPE and ISP formed a separate factor together with the CRB. Two more problematic items were also identified, both of which had comparable cross loadings to the several factors ( $> .5$ ). They were: the ISP 3, together with the CRB, and the “super factor”, and the IST together with the CRB. When the CRB items were added to the analyses (all other conditions remained the same), 5 separate factors were extracted, which described 57% of the variance of the data. The loadings picture was comparable to the previous one, with the ISP 3 and IST 3 items having the same cross loadings as those explained above.

The fourth application of EFA analyses included all leadership behaviour items in the analyses. Seven factors were extracted ( $EIGN \geq 1$ ) with the 64% variance included in the model. The factor solution still was not clear enough, and the VIS, PAM, FAG formed a “super factor”. However, the IST

items that had previously loaded into this factor were spread out between different factors without any interpretable pattern. Additionally, NCPB items loaded separate factors. As a summary of this set of analyses, the core part of the CRP, NCRB and CPB were extracted, and even though some items loaded into other factors, the HPE, ISP and the “super factor” showed a clear picture.

The next step was to conduct CFA (see the CFA results in Table 1), taking into account the results from the EFA. The first question concerning the alternative translations of CFA generally confirmed the results of EFA. There were, however, no statistical differences in the transactional scale alternative items, so dropping them was simply a decision made by the researcher. Several CFA models were compared, starting with the transformational items (all together 22), which did not show acceptable fit to the data (model M1). All loadings to the factor ( $r$ ) were  $\geq .60$ , except the items KOS\_3 (HPE) and VIS\_1 (VIS), although item KOS\_1 showed a value above the 1.0, which clearly indicated some problems, either with the data or with the model itself. The first step was to drop the items VIS\_1 (the EFA indicated the same conclusion) and KOS\_1. The ensuing model presented nearly acceptable results so the decision was made to consider it as satisfactory (model M2). The last model tested was hierarchical – transformational leadership factors were nested into the one single “super factor” (model M3). As a result the HPE factor made no contribution to the general transformational leadership factor, it was subsequently deleted (model M4).

**Table 1.** Results of confirmatory factor analyses

Model	<i>n</i>	$\chi^2$	<i>df</i>	RMSEA	SRMR	CFI	GFI
M1 6 TLBI factors (22 items)	797	1055.44	194	.105	.072	.85	.98
M2 6 TLBI factors (20 items)	797	650.95	155	.089	.052	.91	.99
M3 Super Factor (20 items)	797	731.35	164	.092	.061	.90	.99
M4 Super Factor (18 items)	797	615.93	130	.097	.050	.91	.99
M5 4 LRPB Factors (23 items)	797	1259.54	224	.101	.105	.84	.96
M6 4 LRPB Factors (20 items)	797	739.49	164	.092	.070	.89	.98
M7 10 Factors (40 items)	797	2290.58	695	.076	.059	.86	.99

Note: TLBI – Transformational Leadership Behaviour Inventory; LRPB – Leaders’ Reward and Punishment Behaviour.

The second set of models analysed the Transactional Leadership items. The first model did not present an acceptable fit (model M5). The CPB factor was identified as having two dimensions according to EFA. Looking more closely at the items, it was found that two of them stated “my supervisor lets me know ... perform poorly” and three of them stated “my supervisor shows displeasure ...”, and this difference created a problem. The NCRB item 2 had  $r=.43$ , which shows that this item had an unacceptable factor loading. After dropping these three items, the model was almost acceptable and was considered to be appropriate for the ensuing analysis (model M6). All loadings to the factors were  $r \geq .72$ , except PT-<sub>1</sub> and PK-<sub>1</sub>, their loadings were .61 and .60 respectively.

The third set of the CFA was administered, using both transformational and transactional leadership items. The model showed nearly acceptable results with  $\chi^2 = 2290.58$ ;  $df = 695$ ;  $RMSEA = .076$ ;  $SRMR = .059$  and CFI and GFI .86 and .99 respectively.

*Cronbach's*  $\alpha$ -s and a descriptive statistics comparison of the TLBI and the LRPQ are presented in Table 2. Almost all of the subscales demonstrated sufficient reliability; however the HPE had only two items with reliability of .73, while the NCRB showed a reliability of .74.

**Table 2.** Comparison of reliability coefficients and descriptive statistics

Scale	Podsakoff <i>et al.</i> (1984/1990)		Current study	
	Mean (SD)	$\alpha$	Mean (SD)	A
VIS (4 items)	4.70 (1.71)	.87	4.93 (1.11)	.89
PAM (3 items)	4.67 (1.88)	.87	5.00 (1.26)	.82
FAG (4 items)	4.98 (1.68)	.87	5.29 (1.12)	.87
HPE (2 items)	5.44 (1.47)	.78	4.61 (1.27)	.73
ISP (4 items)	4.72 (1.84)	.90	4.91 (1.27)	.85
IST (3 items)	4.96 (1.48)	.91	4.59 (1.19)	.76
CRB (10 items)	4.56 (1.49)*	.94	4.78 (1.15)	.94
CPB (3 items)	5.25 (1.18)*	.83	4.47 (1.24)	.80
NCRB (4 items)	2.68 (1.24)*	.70	2.84 (1.12)	.74
NCPB (3 items)	2.48 (1.30)*	.80	2.59 (1.19)	.82

Note: \* – The means, SDs and alphas of these subscales have been averaged over the samples. VIS – vision; PAM – providing an appropriate model; FAG – fostering acceptance of group goals; HPE – high performance expectations; ISP – providing individualized support; IST – intellectual stimulation; CBR – contingent reward behaviour; CPB – contingent punishment behaviour; NCRB – non-contingent reward behaviour; NCPB – non-contingent punishment behaviour.

Table 3 presents the means and *Cronbach* alphas of the subgroups. The High Performance Expectations subscale showed an unacceptable reliability ( $\alpha < .75$ ) in half of the subgroups, indicating that without careful alteration this subscale would not be reliable for use in further studies. Within the civilian subsample the NCRB was slightly below the acceptable coefficient ( $\alpha > .75$ ) as were IST NCRB, NCPB, and IST within the female subsample, thus indicating some problems. The leaders' version of the questionnaire failed to work at all. Several of the factors demonstrated weak (IST, ISP and NCPB:  $\alpha < .70$ ) or very weak (NCRB and PAM:  $\alpha < .55$ ) reliability coefficients.

**Table 3.** Means and *Cronbach* alphas by different subsamples

	Eval vrs Me				MIL vrs CIV				M vrs F			
	Subord	$\alpha$	Ldr	$\alpha$	Mil	$\alpha$	Civil	$\alpha$	Male	$\alpha$	Female	$\alpha$
ISP	4.6	.84	5.8	.66	4.1	.76	5.6	.79	4.5	.83	5.6	.81
IST	4.4	.75	5.3	.60	4.3	.76	4.8	.73	4.5	.77	4.7	.73
FAG	5.2	.87	5.7	.78	5.2	.84	5.4	.88	5.3*	.85	5.4*	.89
HPE	4.6*	.72	4.6*	.76	4.9	.68	4.5	.75	4.7*	.71	4.5*	.76
VIS	4.8	.89	5.4	.79	4.7	.86	5.2	.90	4.9	.88	5.1	.90
PAM	4.9	.86	5.2	.52	4.8	.86	5.2	.78	4.8	.82	5.3	.81
CRB	4.5	.93	5.7	.75	4.2	.91	5.2	.92	4.6	.93	5.2	.93
NCRB	2.8*	.77	2.9*	.53	2.7	.81	2.9	.67	2.8	.77	3.0	.68
CPB	4.5*	.82	4.5*	.71	4.8	.79	4.2	.79	4.7	.78	4.1	.81
NCPB	2.8	.82	1.9	.65	3.2	.79	2.1	.77	2.8	.81	2.1	.68
SwL	5.1	.96	5.7	.79	5.0	.95	5.6	.93	5.2	.95	5.5	.95
Perf_SUM	5.3	.87	5.6	.87	5.2	.87	5.7	.87	5.4	.87	5.8	.89

Note: \* – mean differences which are not statistically significant; VIS – vision; PAM – providing an appropriate model; FAG – fostering acceptance of group goals; HPE – high performance expectations; ISP – providing individualized support; IST – intellectual stimulation; CBR – contingent reward behaviour; CPB – contingent punishment behaviour; NCRB – non-contingent reward behaviour; NCPB – non-contingent punishment behaviour; SwL – Satisfaction with Leader; Perf SUM – Sum of individual, group and organizational perceived performance.

The correlations between leadership factors and outcome variables are presented in Table 4. Surprisingly HPE seemed to be absent from transformational leadership due to the fact that the correlation pattern indicated that this factor should rather belong to the transactional leadership domain. The rest of

the correlations followed the logic of the transformational-transactional leadership theory (Bass and Riggio 2006). Transformational leadership factors were more strongly correlated with outcome variables such as satisfaction with the leader and perceived performance, compared to the transactional leadership items and leaders' reward and punishment behaviour. However, Contingent Reward Behaviour, as it has been found in several studies (for instance Callow *et al.* 2009; Hardy *et al.* 2010), demonstrated a correlation pattern similar to that of the transformational leadership factors.

**Table 4.** Correlations between TLBI and LRPB factors and outcome variables

Factor	IST	FAG	HPE	VIS	PAM	CRB	NCRB	CPB	NCPB	SwL	Perf SUM
ISP	.50	.47	-.18	.57	.55	.71	.27	-.41	-.67	.62	.33
IST	1	.64	-	.64	.62	.62	.23	-.21	-.40	.69	.32
FAG		1		.77	.73	.63	.18	-.10	-.42	.74	.37
HPE			1	-	-	-	-.15	.39	.25	-	.18
VIS				1	.77	.67	.23	-.17	-.46	.77	.43
PAM					1	.64	.30	-.26	-.51	.78	.36
CRB						1	.30	-.24	-.57	.73	.34
NCRB							1	-.34	-	.20	-
CPB								1	.45	-.24	-
NCPB									1	-.63	-.30
SwL										1	.40

Note:  $p < .01$ , correlations that did not meet this criteria are not presented in the table; VIS – vision; PAM – providing an appropriate model; FAG – fostering acceptance of group goals; HPE – high performance expectations; ISP – providing individualized support; IST – intellectual stimulation; CBR – contingent reward behaviour; CPB – contingent punishment behaviour; NCRB – non-contingent reward behaviour; NCPB – non-contingent punishment behaviour; SwL – Satisfaction with Leader; Perf SUM – Sum of individual, group and organizational perceived performance.

## Discussion

The aim of the current study was to examine the factor structure of the TLBI and LRPB in an Estonian context and to additionally assess their suitability of use in the EST Defence Forces. To briefly summarize, both measures demonstrated almost sufficient fit indexes in CFA, although there were indications that some of the subscales needed further development. The reliabilities of the military subsample followed a general pattern and at least showed

acceptable results. However, the military sample was derived mostly from conscripts (N=373), and therefore further research is needed to confirm the results of the current study. All the items that were used in this study, including the translations back into English are available from the author of this article.

The first and the second propositions demonstrated that the original model was the best fit for the data. The results indicated almost satisfactory levels of the fit indexes in all three cases, although in order to attain better results, the instrument must be ameliorated for the next administrators. The third proposition compared the instrument in the military and the civilian contexts. Only the HPE subscale showed a low reliability coefficient ( $\alpha = .68$ ), whereas the rest of the subscales demonstrated at least acceptable (DeVellis 2003, p. 95) coefficients ( $\alpha \geq .75$ ). One possible reason might be due to the number of the items remaining on the subscale (2), which was not entirely acceptable. However, the IST and the NCRB had the lowest reliability in the civilian subsample. All of the arithmetic means, statistically speaking, varied significantly throughout the subscales of the instrument by as much as .05. The civilian subsample reflected more transformational leadership, whereas the military subsample tended more towards the leaders' punishment behaviours. This might be explained by the contextual differences. Conscript service, especially during the first months might be perceived as an unsupportive environment, and all of the factors that comprise transformational leadership were as yet to be experienced. Our questionnaire was administered during basic training, and therefore it could be hypothesized that transformational leadership behaviour would be more apparent during the second half of the soldiers' service. Hardy *et al.* (2010) found the results to be similar especially when the relevance of the CR for the training context was taken into consideration. Higher performance expectations demonstrated opposite correlations with other subscales and outcome variables. For the German version of the TLBI, Krüger *et al.* (2011) analysed the discriminant validity and found that the HPE showed the lowest reliability (.70). It might be explained in part by the respondent perceiving higher performance as being part of transactional rather than transformational leadership behaviour.

Podsakoff *et al.* (1990) found that articulating a vision, providing an appropriate model, and fostering acceptance of group goals formed the so-called "core" of transformational leadership. This means that a leader must, develop a vision, convince employees to accept it, act as a good example of the values and behaviours that are critical to fulfilling the vision, and get employees to place the group interests above their own interests. The current

study supported this conclusion as well, although the model tested did not show the best fit indexes.

The fourth proposition expected a positive correlation between transformational leadership factors and the perceived performance of the followers (Wang *et al.* 2011). As presented in the result section, all of the TLBI factors, including the CRB, had statistically significant correlations with perceived performance. Other transformational factors (CPB and NCRB) did not have significant correlations and the NCPB had a significant, but negative correlation with perceived performance. This pattern of correlations is clearly reflected in the core component of the theoretical model used as a starting point for the TLBI and the LRPB. This means that transformational leadership and contingent reward behaviour have a remarkably positive impact on performance, while the “lower” transactional factors negatively affect it. It was expected that a relationship between satisfaction with supervisor and leadership factors would be seen in the final proposition. As was predicted the results supported this hypothesis. However, there was a small yet positive correlation between both punishment behaviours demonstrated the negative correlations and satisfaction and non-contingent reward behaviour.

There are some limitations to the study that should be mentioned. Firstly the common method bias might be problematic for interpreting the results of the current study (Podsakoff *et al.* 2003). Leadership and outcome variables (satisfaction and performance) were measured using the same source of information and could influence the results. Future studies assessing the validity of the TLBI and the LRPB in an Estonian context should try to use, for instance, supervisor reports concerning performance, or some other organisational performance data to cope with the problem. Additionally, adding the supervisors’ self-reports together with their superiors’ assessment might be considered.

For the future: A more in depth use of norms might be beneficial for research and for providing feedback. This means that in order to use this instrument for 360° feedback, precise norms of all of the subscales must also be tested in certain cultural and linguistic contexts. This includes the norms for different subgroups, such as for leaders, and subordinates, both within and outside of the military. Secondly, it might also be interesting to apply these instruments to different management levels (Krüger *et al.* 2006). It could allow or not allow these instruments to be used at all organisational levels. Thirdly, if the wording of the items of the CR subscale were carefully considered, and the reliability figures taken into consideration, then it would definitely be possible to reduce the number of items from this subscale.



Podsakoff *et al.* (2006) argued that a shorter version of the LRPQ might be used without hampering reliability (from 10 items down to 6 or 5 or 4 items), and this could be one of the future aims to improve the Estonian versions of these scales.

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## ANNEX 1 (full instrument is available from corresponding author)

<b>Items in EST</b>	<b>Original items in ENG</b>	<b>Back-translation from EST into ENG</b>
<b>Visiooni selge väljendamine</b>	<b>Articulating a Vision (VIS)</b>	<b>Clear expression of vision</b>
Otsib alati üksuse/osakonna/organisatsiooni jaoks uusi väljakutseid.	Is always seeking new opportunities for the unit/department/organization.	Always looking for new challenges for the unit/department/organisation.
Visandab meie töörühma jaoks huvitava tulevikupildi.	Paints an interesting picture of the future for our group.	Conceptualises an interesting future vision for our working group.
<b>Sobiva eeskju näitamine</b>	<b>Providing an Appropriate Model (PAM)</b>	<b>Setting appropriate example</b>
Juhib pigem “tegutsedes” kui “käsutades”.	Leads by “doing” rather than simply by “telling.”	Leads by “acting” rather than “commanding”.
Näitab head eeskju, mida järgida.	Provides a good model to follow.	Sets good example to be followed.
<b>Ühiste eesmärkide tähtsustamine</b>	<b>Fostering the Acceptance of Group Goals (FAG)</b>	<b>Emphasising common goals</b>
Edendab töörühmade vahelist koostööd.	Fosters collaboration among work groups.	Promotes cooperation between working groups.
Ergutab töötajaid olema “meeskonnamängijad”.	Encourages employees to be “team players.”	Encourages employees to be “team players”.
<b>Kõrged ootused sooritusele</b>	<b>High Performance Expectations (HPE)</b>	<b>High expectations to performance</b>
Näitab, et tal on töötajate suhtes kõrged ootused.	Shows us that he/she expects a lot from us.	Presents high expectations to employees.
Nõuab ainult parimat sooritust.	Insists on only the best performance.	Demands for only the best performance.
<b>Individualiseeritud toetus</b>	<b>Individualized Support (ISP)</b>	<b>Individualised support</b>
Suhtub lugupidavalt minu isiklikesse tunnetesse.	Shows respect for my personal feelings.	Respects my personal feelings.
Hoolib minu isiklikest vajadustest.	Behaves in a manner that is thoughtful of my personal needs.	Cares about my personal needs.
<b>Intellektuaalne stimuleerimine</b>	<b>Intellectual Stimulation (IST)</b>	<b>Intellectual stimulation</b>
On pannud mind uue pilguga vaatama asju, mis varem tundusid keerulised.	Has provided me with new ways of looking at things which used to be a puzzle for me.	Has made me give a fresh look at things that used to seem complicated.

<b>Items in EST</b>	<b>Original items in ENG</b>	<b>Back-translation from EST into ENG</b>
Tema ideed on mind pannud mõnda oma varasemat tõekspidamist ümber hindama.	Has ideas that have forced me to rethink some of my own ideas I have never questioned before.	His/her ideas have made me reassess some of my earlier beliefs.
<b>Tingimuslik tasustamine</b>	<b>Contingent Reward Behaviour (CRB)</b>	<b>Conditional rewarding</b>
Kui ma teen midagi hästi, annab minu ülemus mulle alati positiivset tagasisidet.	My supervisor always gives me positive feedback when I perform well	In case of good performance, my superior always presents me with positive feedback.
Kui olen tööga eriti hästi toime tulnud, saan ülemuse erilise tunnustuse osaliseks.	My supervisor gives me special recognition when my performance is especially good	If I have performed my work exceptionally well, my superior gives me special recognition.
<b>Tingimuslik karistamine</b>	<b>Contingent Punishment Behaviour (CPB)</b>	<b>Conditional punishment</b>
Kui täidan tööülesandeid alla oma võimete, väljendab juht oma pahameelt.	If I performed at a level below that which I was capable of, my supervisor would indicate his/her disapproval	If I perform tasks below my capability, my superior expresses his/her disapproval.
Kui mu töösooritus ei ole piisavalt hea, näitab mu ülemus välja oma pahameelt.	My supervisor shows his/her displeasure when my work is below acceptable levels	If my work performance is not good enough, my superior shows his/her disapproval.
<b>Tingimusteta karistamine</b>	<b>Non-Contingent Punishment Behaviour (NCPB)</b>	<b>Unconditional punishment</b>
Minu ülemus peab mind sageli vastutavaks asjade eest, mille üle mul puudub kontroll.	My supervisor frequently holds me accountable for things I have no control over	My superior often holds me responsible for things I have no control over.
Ülemus on sageli ilma silmnähtava põhjuseta minu tööga rahulolematu.	My supervisor is often displeased with my work for no apparent reason	Superior is often unsatisfied with my work for no obvious reason.
<b>Tingimusteta tasustamine</b>	<b>Non-Contingent Reward Behaviour (NCRB)</b>	<b>Unconditional rewarding</b>
Isegi, kui mu töösooritus on vilets, saan ma ülemuselt kiita.	Even when I perform poorly, my supervisor often commends me	Even if my work performance is poor, my superior compliments me.
Mu ülemus kiidab mind ühtmoodi nii hea kui ka halva töösoorituse eest.	My supervisor is just as likely to praise me when I do poorly as when I do well	My superior compliments me equally for both good as well as poor work performance.

*Note:* Two items from each subscale are provided.