Distributed Leadership and Alignment Optimization: A comparative, cross-cultural perspective across 40 countries.

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Overview

- Background & motivation for the study
- Key concepts: *Distributed Leadership*, Alignment Optimization
- Research questions
- Methodology: *Research Design, Data collection & Analysis*
- Findings
- Conclusions

Background of this study

- Distributed leadership (DL) has increased in popularity worldwide (see, for example, Gumus *et al.,* 2018; Harris & Spillane, 2008; Mifsud, 2017).

- Distributed leadership and its association with quality of education (Liu, 2016), teacher job satisfaction (Sun & Xia, 2018; Liu *et al*., 2020), organizational commitment (Hulpia *et al.,* 2009; Liu & Werblow, 2019; Liu & Watson, 2020), organizational change (Harris *et al.,* 2007), and school climate (Bellibas & Liu, 2018), across diverse countries.

- Cultural differences in leadership processes.

Background of this study

- International large-scale assessments (ILSAs)- TALIS

- Alignment Optimisation

- In the literature, relatively few studies employ alignment optimisation in the context of International Large-Scale Assessments (ILSAs) (Glassow et al., 2021; Marsh et al., 2018; Munck et al., 2018; Zakariya et al., 2020).

- There are relatively few studies on the comparability of the distributed leadership concept across countries.

- The scope of this study is the examination of principals´ perceived distributed leadership styles differ across countries. In this study, in our conceptualization of distributed leadership, we address the subordinates' roles from the perspective of principals. We conceive countries as a unit of analysis, in the sense that scores may differ between schooling systems and cultural contexts (Chhokar *et al.,* 2007; Hallinger *et al.,* 1996; House *et al.,* 2004). Therefore, in this study, we aim to test the cross-cultural comparability of principals' perceived distributed leadership.

Methodology

- TALIS 2018 (every 5 years)
- Sample: 48 countries (9247 principals)

  "ISCED level 2" (i.e., lower secondary school)
- Sampling technique: 200 schools in each country and 20 teachers within each school. Schools were chosen using probability proportional to size (PPS) (OECD, 2019a) sampling.

- Making it representative (using weights)

Variables

- Methodology

This scale has been used by previous studies to operationalise principals' perspective of distributed leadership (see, for example, Liu, et al., 2018, Bellibas, et al., 2021, Bellibas & Liu, 2018 and Liu et al., 2021).

Table 1. Descriptive Statistics of the T3PLEADP scale.

Item	Item wording	Valid cases	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
TC3G26A	This school provides staff with opportunities to actively participate in school decisions	8802	1	4	3.35	0.545	-0.223	0.331
TC3G26B	This school provides parents or guardians with opportunities to actively participate in school decisions	8795	1	4	3.01	0.619	-0.340	0.708
TC3G26C	This school provides students with opportunities to actively participate in school decisions	8791	1	4	2.95	0.622	-0.358	0.712
TC3G26D	This school has a culture of shared responsibility for school issues	8790	1	4	3.12	0.605	-0.31	0.668
TC3G26F	There is a collaborative school culture which is characterised by mutual support	8785	1	4	3.26	0.565	-0.219	0.495

Analytical Strategy

- **Internal consistency (reliability)**
- **Single Country Analysis (CFA)**
- **Multi-Group Confirmatory Factor Analysis (MG-CFA)**

CFI > .90; TLI > .90; RMSEA < 0.08; SRMR < .08

Hu and Bentler (1999) and Rutkowski and Svetina (2014)

to test whether it is comparable across countries

metric invariance (around -0.020 for ΔCFI and 0.030 for ΔRMSEA)

scalar invaraince (-0.010 for ΔCFI and ΔRMSEA 0.010)

- **Alignment Optimisation**

. All analyses were conducted using Mplus 8.4

The results of Confirmatory Factor Analysis (CFA) and Measurement Invariance

Table 2a. Multiple group configural, metric and scalar invariance of the T3PLEADP scale

Model	χ^2	df	CFI	TLI	RMSEA
Configural	355.716	160	0.968	0.92	0.081
Metric	678.605	316	0.941	0.925	0.078
Scalar	1767.641	472	0.789	0.821	0.121

Table 2b. Multiple group configural, metric and scalar invariance of the T3PLEADP scale (Model comparison)

SRMR	Model comparison	ΔCFI	Δχ2	Δdf	P
0.04	Metric against Configural		323.429	156	0.000
0.15	Scalar against Configural	-0.02	1400.276	312	0.000
0.206	Scalar against Metric	-0.16	1074.273	156	0.000

The results of Alignment Method

Table 3. Results of non-invariance of factor loadings and intercepts of each item of the T3PLEADP scale across 40 countries and economies.

Loadings	**Country codes**
TC3G26A	40 56 76 100 152 158 170 191 196 233 246 250 268 348 376 392 398 410 428 440 470 528 554 578 620 643 682 704 705 710 724 752 784 792 840 926 9134 9642 32001 156001
TC3G26B	40 56 76 100 152 158 170 191 196 233 246 250 268 348 376 392 398 410 428 440 470 528 554 578 620 643 682 704 705 710 724 752 784 792 840 926 9134 9642 32001 156001
TC3G26C	40 56 76 100 152 158 170 191 196 233 246 250 268 348 376 392 398 410 428 440 470 528 554 578 620 643 682 704 705 710 724 752 784 792 840 926 9134 9642 32001 156001
TC3G26D	40 56 76 100 152 158 170 191 196 233 246 250 268 348 376 392 398 410 428 440 470 528 554 578 620 643 682 704 705 710 724 752 784 792 840 926 9134 9642 32001 **(156001)**
TC3G26F	40 56 76 100 152 158 170 191 196 233 246 250 268 348 376 392 398 **(410)** 428 440 470 528 **(554)** 578 620 643 682 704 705 710 724 752 784 792 840 **(926)** **(9134)** 9642 32001 **(156001)**
Intercepts	
TC3G26A	**(40)** 56 76 100 152 158 170 191 196 233 246 250 268 **(348)** 376 392 398 410 428 440 470 528 554 **(578)** 620 643 682 **(704)** 705 710 724 752 **(784)** 792 840 926 9134 9642 32001 156001
TC3G26B	40 56 76 100 152 158 170 191 196 233 **(246)** 250 268 348 **(376)** 392 398 410 428 440 470 528 554 578 620 643 682 704 705 710 724 **(752)** 784 792 840 926 9134 9642 32001 156001
TC3G26C	40 56 76 100 152 **(158)** 170 191 196 233 246 250 268 **(348)** 376 392 398 410 428 440 470 528 554 578 620 643 682 **(704)** 705 710 724 752 784 792 840 926 9134 **(9642)** 32001 156001
TC3G26D	40 56 76 **(100)** 152 158 **(170)** **(191)** 196 **(233)** 246 **(250)** 268 348 376 392 398 410 **(428)** 440 470 528 554 578 620 643 682 704 705 710 **(724)** 752 **(784)** 792 840 926 9134 9642 32001 156001
TC3G26F	40 **(56)** **(76)** 100 152 158 **(170)** 191 196 233 246 **(250)** 268 348 376 392 398 410 428 440 470 **(528)** 554 578 620 643 682 704 705 **(710)** **(724)** 752 **(784)** 792 840 926 9134 **(9642)** 32001 156001

Table 4. Alignment Fit Statistics

Items	Intercepts		Factor Loadings	
	Fit Function Contribution	R^2	Fit Function Contribution	R^2
TC3G26A	-406.118	0.664	-324.788	0.709
TC3G26B	-389.346	0.795	-337.982	0.321
TC3G26C	-378.951	0.797	-325.748	0.464
TC3G26D	-538.715	0.242	-409.759	0.329
TC3G26F	-625.203	0.029	-542.507	0.149

Rank	Country	Country Code	Mean	Countries and economies with significantly (p<0.05) smaller factor mean
1	Korea	410	0.634	643 233 9642 9134 428 40 710 792 705 784 348 398 724 76 620 470 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
2	Colombia	170	0.474	348 398 724 76 620 470 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
3	Shanghai(China)	156001	0.444	710 792 705 784 348 398 724 76 620 470 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
4	Lithuania	440	0.403	784 348 398 724 76 620 470 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
5	Georgia	268	0.366	784 348 398 724 76 620 470 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
6	Russia Federation	643	0.308	784 348 398 724 76 620 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
7	Estonia	233	0.301	348 398 724 76 620 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 28 56 32001 392
8	Romania	9642	0.254	724 76 620 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
9	Alberta(Canada)	9134	0.253	76 620 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
10	Latvia	428	0.227	724 76 620 191 100 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392
11	Austria	40	0.196	246 578 554 752 158 196 704 840 250 152 376 682 528 56 32001 392
12	South Africa	710	0.158	191 246 578 554 752 926 158 196 704 840 250 152 376 682 528 56 32001 392

13	Turkey	792	0.135	246 578 554 752 158 704 840 250 152 376 682 528 56 32001 392
14	Slovenia	705	0.124	246 578 554 752 158 704 840 250 152 376 682 528 56 32001 392
15	U.A.E.	784	0.088	246 578 554 752 158 704 840 250 152 376 682 528 56 32001 392
16	Hungary	348	0.049	578 554 752 158 704 840 250 152 376 682 528 56 32001 392
17	Kazakhstan	398	0.000	158 704 840 250 152 376 682 528 56 32001 392
18	Spain	724	-0.024	158 704 840 250 152 376 682 528 56 32001 392
19	Brazil	76	-0.069	840 250 152 376 682 528 56 32001 392
20	Portugal	620	-0.081	840 250 152 376 682 528 56 32001 392
21	Malta	470	-0.131	32001 392
22	Croatia	191	-0.136	376 682 528 56 32001 392
23	Bulgaria	100	-0.136	376 682 528 56 32001 392
24	Finland	246	-0.226	528 56 32001 392
25	Norway	578	-0.233	528 56 32001 392
26	New Zealand	554	-0.237	528 56 32001 392
27	Sweden	752	-0.265	528 56 32001 392
28	England	926	-0.269	32001 392
29	Chinese Taipei	158	-0.302	528 56 32001 392
30	Cyprus	196	-0.302	32001 392
31	Vietnam	704	-0.328	32001 392
32	The USA	840	-0.358	32001 392
33	France	250	-0.375	32001 392
34	Chile	152	-0.385	32001 392
35	Israel	376	-0.450	32001 392
36	Saudi Arabia	682	-0.470	32001 392
37	Netherlands	528	-0.577	32001 392
38	Belgium	56	-0.605	32001 392
39	Argentina	32001	-1.217	
40	Japan	392	-1.388	

Note: 40=Austria, 56=Belgium, 76=Brazil, 100=Bulgaria, 152=Chile, 158=Chinese Taipei, 170=Colombia, 191=Croatia, 196=Cyprus, 233=Estonia, 246=Finland, 250=France, 268=Georgia, 348=Hungary, 376=Israel, 392=Japan, 398=Kazakhstan, 410=Korea, 428=Latvia, 440=Lithuania, 470=Malta, 528=Netherlands, 554=New Zealand, 578=Norway, 620=Portugal, 643=Russia Federation, 682=Saudi Arabia, 704=Vietnam, 705=Slovenia, 710=South Africa, 724=Spain, 752=Sweden, 784=United Arab Emirates, 792=Turkey, 840=United States, 926=England, 9134=Alberta (Canada), 9642=Romania, 32001=Argentina, 156001=Shanghai (China).

Findings

- The results verify that we can validly and reliably compare levels of distributed leadership, as perceived by principals, between countries. In the traditional measurement invariance approach (MGCFA), the principal perceived distributed leadership construct only met metric level invariance, which means that the score means cannot be reliably compared across countries.

- Our findings corroborate those of Printy & Liu (2020)'s study, to some extent. They found that Korea, Serbia, Bulgaria, Denmark and Latvia have the highest levels of collaboration between teachers and principals in the organizational decision-making process (see page 310) using TALIS 2013 data.

- Similar to Printy and Liu (2020), we find that Japan, Israel, and the Netherlands have the lowest mean scores for distributed leadership. Schools in these countries tend to have a traditional authority structure where principals take on most of the decision making responsibility

- The unique contribution of our study is to precisely rank countries according to their mean distributed leadership scores for school decision-making exercises.

- The findings of this study provide a framework for comparing one country with another based on the average principal distributed leadership.

Strengths and Limitations of the study

- Enables us to compare the means of principal perceived distributed leadership scale across 40 countries and economies.

- Principals' self-reported data

- Only one component of distributed leadership: organisational decision making.

Conclusion

- The investigation of non-invariance across countries and cultures may aid the development of future background questionnaires in improving cross-cultural comparability.

- We made our scale scores publicly available through a data repository (DOI: 10.17632/s5hrms2y52.1).

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THANK YOU VERY MUCH...

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