Relationships between beginning teachers' motivational profiles and effective teaching behaviour over the first two career years

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Abstract (Word count: 294)

Acknowledging the significant effect of teachers' intrinsic orientations, Feng et al (2021) proposed a generic compound trait — teachers' intrinsic orientation for the profession (TIOP). TIOP is conceptualized as a relatively stable disposition that reflects the positive affect and high meaningfulness teachers attach to the teaching profession. Past variable-centered studies suggested that TIOP may directly benefit teachers' subjective well-being, but not teaching behaviour, which prompts further inquiries about the complex mechanisms underlying the transformation of teachers' motivational disposition into teaching behaviour. Applying a person-centered approach, the present study aims to explore the heterogeneous subgroups of teachers with homogeneous motivational-affective disposition profiles. TIOP and self-efficacy were selected as the main variables. Particularly, the relationship between memberships and the levels and development of effective teaching behaviour over the first two career years was investigated. 274 Dutch beginning teachers in secondary schools responded to questionnaires and were observed in classrooms at three waves, with one year intervals. Latent profile analysis identified two static profiles, which were only related to the levels of *stimulating teaching, instructional clarity, activating teaching, differentiated instruction, and teaching learning strategies* at the end of the second teaching year. Latent transition analysis identified eight dynamic profiles, which can be categorized into *Progressive, Regressive, and Capricious profiles*. The first two categories were found to predict the changes in stimulating teaching, instructional clarity, activating teaching, and differentiated teaching after teachers accumulate at least two years of teaching experience. Findings suggest that future research on theorizing and measuring teaching behaviour should apply a holistic and dynamic approach. The combination of pedagogical and motivational-affective components of teaching behaviour, which are generally assumed to relate much closely to teachers' motivational-affective disposition, allows the assessment and tracking of such disposition transforming into effective pedagogical behaviour.

Extended summary (Word count: 981 excluded references)

1. Research rationale

Compared to the large body of research on single intrinsic orientations (e.g., *autonomous motivation*, *achievement goal orientation*, *expectancy-value*, *interest*, *enthusiasm*, *self-efficacy*), little has been done to examine the interplay of these constructs as an integral aspect of teacher competence. Acknowledging the conceptual overlap among intrinsic orientations, Feng et al (2021) proposed a generic compound trait — teacher's intrinsic orientation for the profession (TIOP) and developed a measure to empirically test its factorial structure and consistency over time. They conceptualize TIOP as a relatively stable teacher trait that reflects the *positive affect* and *high meaningfulness* teachers derive from their professional experience, that is, teachers' general *love* for the profession. Empirical evidence supports the hypothesized characteristics of TIOP, which strongly predict teacher well-being but not effective teaching behaviour (Feng et al., 2021, 2022) (see Figure 1). These findings prompt further inquiries about the complex mechanisms underlying the transformation of this teacher attribute to teaching behaviour.

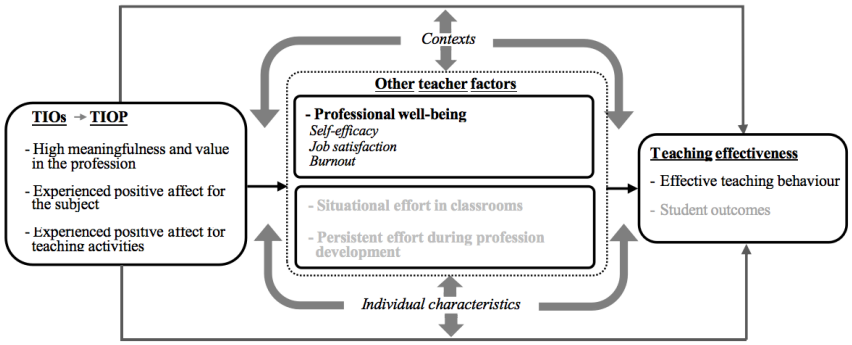

Figure 1. A model of the relationship between TIOP and effective teaching adapted from Kunter and Holzberger (2014)'s theory

2. Research objectives

The present study extends the knowledge base beyond the investigation of inter-individual differences of TIOP and its linear links with teaching behaviour to include intra-indivdual variations and non-linear relationships. In view of the multiple profiles of teacher motivation and emotions identified in the existing research (e.g., Thommen et al., 2021), it is hypothesized that there exist subgroups of teachers with qualitatively and/or quantitatively distinct motivational-affective profiles (i.e., TIOP and self-efficacy), which can be linked to the levels and changes of effective teaching behaviour differently.

3. Methods

A total of 274 beginning teachers in northern secondary schools of the Netherlands were recruited in a three-year induction program (N_{female} = 164, M_{age} = 28.87, SD_{age} = 7.74). Questionnaires of TIOP (Feng et al., 2021) and self-efficacy (Tschannen-Moran & Hoy, 2001) were delivered to these teachers at the outset (T1) and at the end (T2) of teachers' first career year as well as at the end of the second year (T3). In addition to self-reports, teachers were observed and rated by well-trained observers on six teaching behavior domains (i.e., stimulating

teaching, classroom management, instructional clarity, activating teaching, differentiated instruction, and teaching learning strategies) using the International Comparative Analysis of Learning and Teaching (ICALT) instrument (Maulana et al., 2017; Van de Grift *et al.*, 2014).

Confirmatory factor analysis and measurement invariance tests were conducted to examine the measurement validity. Factor scores were estimated in scalar invariant models, with which latent profile analysis (LPA) was performed for each data wave. Kruskal-Wallis tests with Bonferroni post hoc comparisons were conducted to test the differences of TIOP and self-efficacy between the identified profiles. After the selection of static profiles at each wave, latent transition analysis (LTA) was used to examine the consistency of static profiles over three waves. Lastly, one-way ANOVA tests were performed to investigate differences in teaching behaviour levels between profiles, followed by the path analyses which examined the statistical effects of profile memberships on the changes of teaching behaviour. Baseline (T1) teaching behaviour levels and teacher background characteristics (i.e., gender, age, qualification) were included as control variables.

4. Results and discussion

Based on the comprehensive comparison of statistical criteria and profile interpretations, two-profile solutions were chosen for each wave (see Table 1). Grounded on the LPA findings, we conducted LTA with the invariant two-model solution set at all waves (see Table 2 and Figure 2). Comparing two profiles, experienced enthusiasm and self-efficacy for classroom management show the greatest difference. In general, eight consequential transition patterns were identified and labeled as: (1) *Low dynamic Profile*, (2) *Progressing Profile*, (3) *Unstable Low Profile*, (4) *Adaptive Profile*, (5) *Maladaptive Profile*, (6) *Unstable High Profile*, (7) *Regressing Profile*, and (8) *High Dynamic Profile* (see Figure 3). Considering the transition paths, profiles 1, 5, and 7 can be generally labeled as *Regressive*, profiles 2, 4, and 8 as *Progressive*, and profiles 3 and 6 as *Capricious*.

N. Profiles	Log-likelihood	AIC	BIC	SABIC	LMR (*p*)	Adjusted LRT (*p*)	Entropy	Proportions of membership
Time 1								
2	**-2505.776**	**5049.553**	**5118.202**	**5057.958**	**0.000**	**0.000**	**0.846**	**0.58; 0.42**
3	**-2445.069**	**4942.138**	**5036.079**	**4953.639**	**0.042**	**0.045**	**0.871**	**0.11; 0.54; 0.35**
4	-2372.945	4811.890	4931.123	4826.487	0.023	0.025	0.904	0.14; 0.32; 0.53; 0.02
5	-2319.863	4719.726	4864.251	4737.420	0.061	0.065	0.865	0.13; 0.32; 0.20; 0.32; 0.02
Time 2								
2	**-2398.557**	**4835.115**	**4903.764**	**4843.519**	**0.000**	**0.000**	**0.834**	**0.57; 0.43**
3	-2322.303	4696.605	4790.547	4708.106	0.147	0.154	0.840	0.19; 0.54; 0.28
4	-2264.421	4594.842	4714.075	4609.439	0.111	0.116	0.828	0.18; 0.39; 0.22; 0.22
5	-2220.281	4520.562	4665.087	4538.256	0.241	0.250	0.849	0.05; 0.22; 0.14; 0.37; 0.22
Time 3								
2	**-2497.612**	**5033.224**	**5101.873**	**5041.628**	**0.001**	**0.001**	**0.858**	**0.54; 0.46**
3	-2386.552	4825.104	4919.045	4836.605	0.432	0.438	0.867	0.19; 0.52; 0.29
4	-2290.955	4647.910	4767.143	4662.508	0.125	0.129	0.896	0.08; 0.38; 0.18; 0.36
5	-2237.161	4554.321	4698.847	4572.015	0.327	0.333	0.877	0.08; 0.30; 0.18; 0.27; 0.17

Table 1. Fit indices and model comparisons for estimated latent profile analysis models.

	T1-T3	Model label / interpretation
Profile 1		*Low profile*
Enthusiasm for teaching	-1.238	Very low
Enthusiasm for subject	-1.706	Very low
Autonomous motivation	-0.374	Slightly low
Self-efficacy for instruction	-0.238	Slightly low
Self-efficacy for classroom management	-0.575	Low
Self-efficacy for student engagement	-0.421	Slightly low
Profile 2		*High profile*
Enthusiasm for teaching	1.571	Very high
Enthusiasm for subject	2.238	Very high
Autonomous motivation	0.464	Slightly high
Self-efficacy for instruction	0.538	Slightly high
Self-efficacy for classroom management	1.351	High
Self-efficacy for student engagement	0.525	Slightly high

Table 2. Proportions of profile membership and transition between profiles over three waves

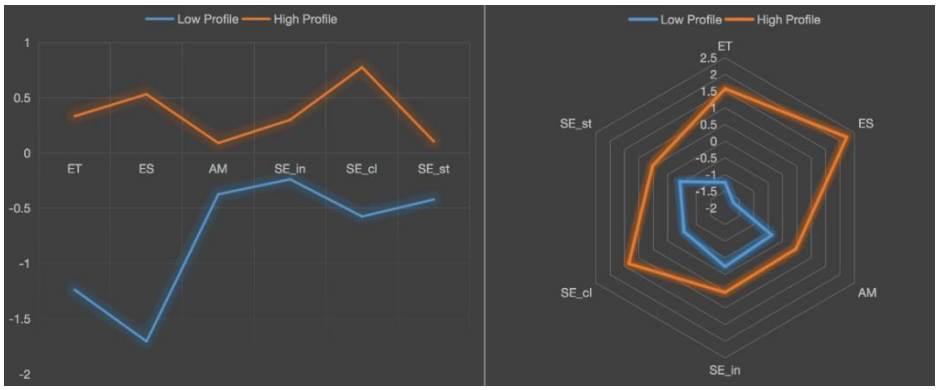

Figure 2. Plots of means of TIOP-related factors and teaching behaviour

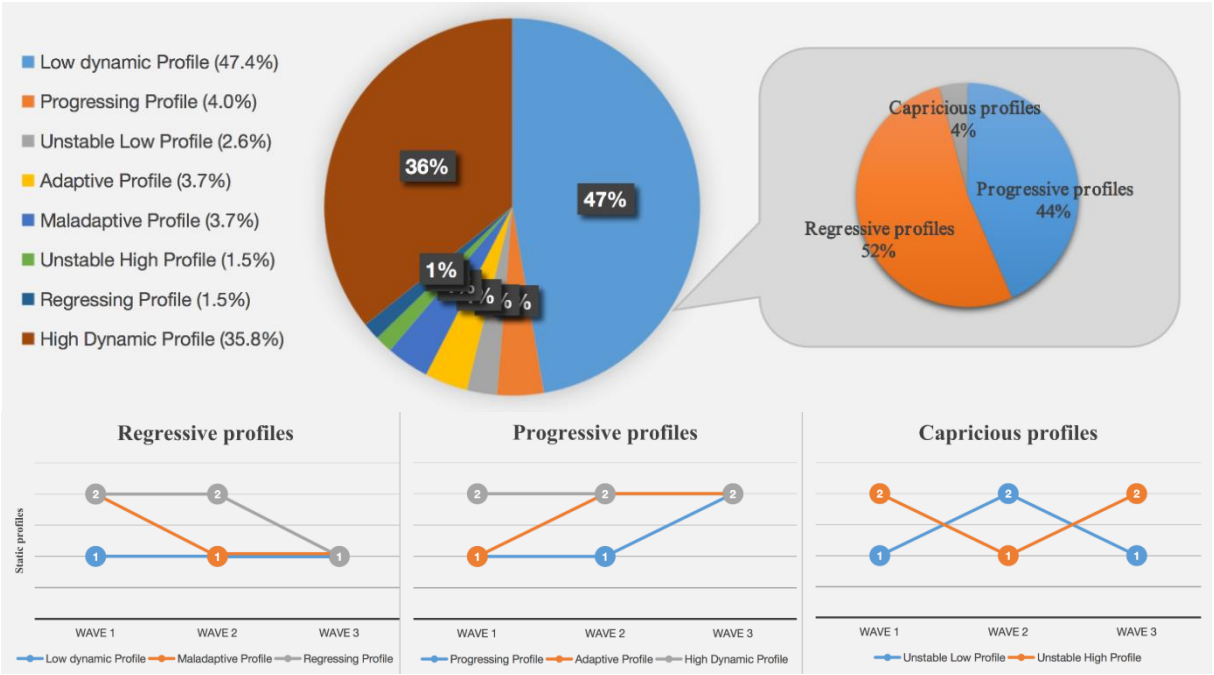

Figure 3. Transition paths and prevalence of eight dynamic profiles

The results of ANOVA tests yield non-significant differences in teaching behaviour between two static profiles except for three domains at Wave 3. Teachers in the *High Profile* demonstrated significantly higher levels of stimulating teaching, instructional clarity, activating teaching, differentiated instruction, and teaching learning strategies than those in *Low Profile*. The results of path analyses show that Progressive and Regressive profiles predict the changes in stimulating teaching, instructional clarity, activating teaching, and differentiated teaching after two years of teaching experience. These findings suggest that the motivational-affective disposition may only transform into (the development of) the frequently measured teaching behaviour after (two) years' teaching. In addition, the most frequently measured behavioural domains are not able to well capture the motivational-affective qualities of teaching behaviour, especially during the initial career years. These qualities (e.g., enthusiasm expressiveness, attention and concentration during teaching, efforts and consistency of teaching activities outside classrooms and after lessons) are assumed to bear much closer links with teachers' motivational-affective disposition.

5. Significance and Relevance to the QUINT

Past research has proven the importance of teachers' motivational-affective characteristics to teaching quality through emotional contagion as well as the amount and endurance of efforts teachers invest in- and outside classrooms. Therefore, the necessity to theorize and measure teacher behaviour, as a component of teaching quality, in a holistic and dynamic approach is warranted. It is suggested that motivational-affective components be added to the measures of teaching behaviour, especially for beginning teachers, with a view to assess and track the transformation of teachers' psychological functioning into displayed teaching behaviour. Additionally, the measurement of teaching behaviour should be designed and administered in a long-term basis and scaffolding structure with stepwise standards.

8. Key references

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