

Dynamics of students' learning approaches throughout medical training: relationships with students' personal characteristics



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Background

Students' approaches to learning are central to the process of learning. The educational context can influence students' use of learning approaches. Previous research has shown that stimulating deep approaches seemed much more difficult than expected, even in student-activating learning environments. In addition, the educational context might act differently on individual students depending on their initial learning profile.

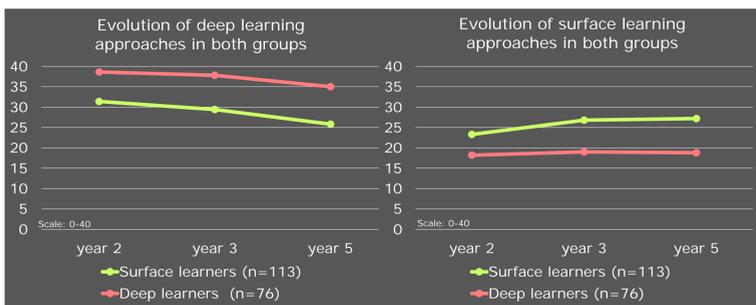
Summary of work

We used growth curve modeling and multi-trajectory analysis to test and trace trajectories of deep (DLA) and surface (SLA) learning approaches over time in a sample of 189 students. Longitudinal measures included learning approaches (Revised-Study-Process Questionnaire), perception of educational environment (Dundee Ready Educational Environment Measure) and level of motivation for studying medicine (administered in year 2, 3, and 5). Cross-sectional measures included Personality (NEO-Inventory administered in year 1).

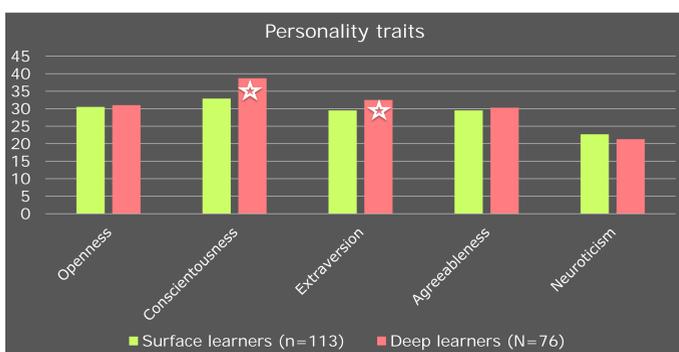
Summary of results

Two longitudinal trajectory groups of learning approaches were found. *Surface learners* (n=113, 60%) and *deep learners* (n=76, 40%) differed by their initial level of DLA and SLA ($p < 0.001$) and by their evolution along the curriculum (decreasing DLA-increasing SLA vs stable DLA-SLA). Both groups showed differences in the personality traits conscientiousness and extraversion ($p < 0.001$). Both groups' level of motivation and perception of educational environment were good but regularly decreased along the curriculum.

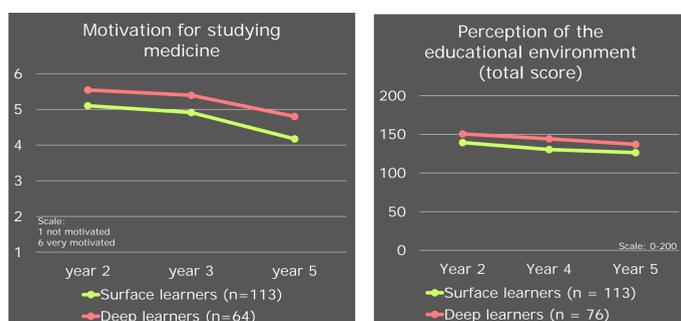
1. Student evolve along two longitudinal trajectory groups of deep and surface learning approaches



2. The two groups show differences in two personality traits



3. Both groups' level of motivation and perception of the educational environment decrease along the 5 year curriculum



Aim of the study

To test and trace the trajectories of deep (DLA) and surface (SLA) learning approaches over time of medical students along a 5-year PBL-based and clinically-oriented curriculum

Descriptive statistics of both longitudinal trajectory groups

Variables	Surface learners (n = 113)	Deep learners (n = 76)	p
Cohort 1 N (%)	40 (45)	36 (47)	.100
Age	20.74 (1.71)	21.18 (2.65)	.175
Females N (%)	55 (49)	28 (37)	.108
Personality			
Neuroticism	22.74 (8.35)	21.32 (8.62)	.262
Extraversion	29.54 (5.08)	32.48 (5.60)	< .001
Openness to experience	30.51 (6.23)	31.01 (6.29)	.589
Agreeableness	29.50 (4.61)	30.31 (4.89)	.254
Conscientiousness	32.88 (6.89)	38.73 (5.16)	< .001
Motivation			
Year 2	5.10 (.78)	5.54 (.76)	< .001
Year 3	4.91 (.89)	5.39 (.71)	< .001
Year 5	4.17 (1.32)	4.80 (1.22)	.003
Deep learning approach			
Year 2	31.40 (4.36)	38.63 (3.46)	< .001
Year 3	29.43 (4.88)	37.80 (4.37)	< .001
Year 5	25.77 (5.61)	34.97 (5.12)	< .001
Surface learning approach			
Year 2	23.33 (4.60)	18.25 (3.96)	< .001
Year 3	26.79 (4.97)	19.02 (4.02)	< .001
Year 5	27.21 (5.42)	18.81 (4.35)	< .001
Perception of learning			
Year 2	31.34 (4.07)	34.87 (5.84)	< .001
Year 3	28.63 (5.31)	32.96 (5.27)	< .001
Year 5	26.90 (6.37)	30.69 (6.41)	< .001
Perception of teachers			
Year 2	32.38 (4.05)	33.44 (4.02)	.102
Year 3	29.88 (4.03)	31.96 (4.57)	.003
Year 5	29.99 (4.57)	32.00 (4.91)	.014
Academic self-perception			
Year 2	21.48 (3.11)	23.35 (4.03)	< .001
Year 3	19.75 (3.41)	22.32 (3.95)	< .001
Year 5	20.46 (3.90)	23.03 (3.88)	< .001
Perception of atmosphere			
Year 2	34.91 (4.11)	37.26 (4.87)	< .001
Year 3	33.26 (5.02)	35.64 (5.24)	.004
Year 5	31.42 (5.36)	34.47 (6.27)	.002
Social self-perception			
Year 2	18.95 (3.04)	20.59 (3.59)	.001
Year 3	17.77 (3.19)	19.86 (3.23)	< .001
Year 5	17.29 (3.57)	18.78 (3.83)	.017

Discussion and conclusion

Our analysis suggests the existence of multiple longitudinal learning profiles among students. This implies that individual students although confronted to the same educational context might or not modulate their learning approaches. More precisely, it suggests that students using preferably SLA tend to reinforce this strategy, whereas those using preferably DLA stay stable. In addition these learning profiles are associated with differences in students' personality, motivation and perception of the educational context.

Influencing students' use of learning approaches is a complex process, depending not only on the educational context, but also on the initial profile of individual students.

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