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Maturing through awareness: An exploratory study into the development of educational competencies, identity, and mission of medical educators

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ABSTRACT

Purpose: Faculty development in learning-centred medical education aims to help faculty mature into facilitators of student learning, but it is often ineffective. It is unclear how to support educators' maturation sustainably. We explored how and why medical educators working in learning-centred education, more commonly referred to as student-centred education, mature over time.

Methods: We performed a qualitative follow-up study and interviewed 21 senior physician-educators at two times, ten years apart. A hierarchical model, distinguishing four educator phenotypes, was employed to deductively examine educators' awareness of the workplace context, their educational competencies, identity, and 'mission,' i.e. their source of personal inspiration. Those educators who grew in awareness, as measured by advancing in educator phenotype, were re-interviewed to inductively explore factors they perceived to have guided their maturation.

Results: A minority of the medical educators grew in awareness of their educational qualities over the 10-year study period. Regression in awareness did not occur. Maturation as an educator was perceived to be linked to maturation as a physician and to engaging in primarily informal learning opportunities.

Conclusions: Maturation of medical educators can take place, but is not guaranteed, and appears to proceed through a growth in awareness of, successively, educational competencies, identity, and mission. At all stages, maturation is motivated by the task, identity, and mission as a physician.

KEYWORDS

Staff development; medical education research; roles of teacher; change; undergraduate

Introduction

Faculty development aims to help faculty mature into educators and improve their effectiveness as teachers. We use the term 'mature' to emphasise our perspective that faculty development is a holistic and ongoing process that takes place in the everyday work setting (Steinert et al. 2016). The most mature educators focus on facilitating students' learning processes rather than solely imparting factual knowledge (Taylor and Hamdy 2013), particularly in learning-centred education, which has been commonly implemented in most medical schools around the world. We refer to learning-centred education rather than student-centred or learner-centred education since several studies emphasise that the focus in this type of education is primarily on the learning of the learner rather than on the learner themselves (e.g. Calkins et al. 2012).

Faculty development (FD) as conducted at most medical schools, however, is often ineffective at promoting maturation (Cantillon et al. 2019). This may be due to the educational context, e.g. the hidden curriculum which is not supportive of the educators' teaching role (Cantillon et al. 2019). In addition, the content of FD interventions may need to be refocused. The emphasis of FD has primarily been to improve medical educators' pedagogical knowledge and skills (Steinert et al. 2016; 2019). FD may be more effective if it also promotes the development of other

Practice points

- Faculty development, aiming to help medical educators mature into facilitators of student learning, is often ineffective.
- If maturation of medical educators occurs, it appears to follow the developmental stages of awareness of their educational competencies, identity, and mission.
- The maturation of medical educators may be temporarily distorted due to dissatisfaction with adverse professional or private circumstances.
- Medical educators link their maturation as an educator to their maturation as a physician, so involving practicing physicians as faculty developers may be beneficial.
- To support medical educators' maturation, faculty development initiatives need to be varied, extending over a long period of time and embedded in the workplace.

essential qualities, including an educator's educational identity (Steinert et al. 2019; van Lankveld et al. 2021) and 'mission.' The concept of mission refers to the source of personal inspiration that underlies an educator's identity (Ottenhoff-de Jonge et al. 2019).

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However, we still know little about how the development of these qualities can be effectively supported, since there is a paucity of data on the maturation processes of medical faculty (Steinert et al. 2019). Gaining more insight into the maturation processes of medical educators over time may help to advance the field of FD for the benefit of the education of future physicians, consistent with learning-centred educational principles.

One recent study related awareness of educational identity and mission to teaching beliefs that align with the educational principles of learning-centred education (Ottenhoff-de Jonge et al. 2022), which can lead to a change in teaching behaviours (Ericsson et al. 1993). Development of medical educators' awareness of their educational identity has been explored by a limited number of studies, primarily in the context of longitudinal FD interventions (Lieff et al. 2012; Onyura et al. 2017). A few studies have explored the development of medical educators' awareness of their educational identity outside of formal faculty development interventions, focusing on informal learning opportunities in authentic settings which are suggested to be at least as important in FD (Steinert et al. 2016). Browne et al. (2018) and Cantillon et al. (2016) ascertained development of an educational identity awareness in retrospect, as self-identified or self-perceived by their studies' participants. Van Lankveld et al. (2017) explored this development in beginning pre-clinical educators through a follow-up study, thus reducing the risk of recall bias. However, in Van Lankveld's study, the vast majority of educators were not involved in patient care. While not all university educators in pre-clinical medical education are involved in patient care, the vast majority are. Moreover, a recent review (Cantillon et al. 2019) concluded that educators who are involved in patient care 'reconcile' their educational identities with their identities as patient-care providers, thus implying a reciprocal influence of both identities.

With regard to the development of a personal educational mission awareness, the literature is even more limited: we know of no such research within the medical education context. Therefore, this study aims to fill the gap in understanding how educators who have a patient-care role develop an awareness of their educational identity as well as a sense of educational mission over time.

To inform the conceptualisation of this study we have utilised a model which presents four educator 'phenotypes,' categories based on the extent to which medical educators are aware of their educational qualities and the workplace context (Ottenhoff-de Jonge et al. 2019) (see List 1). In this model the structural relationships among the categories are perceived as hierarchically

inclusive, meaning that category B includes category A, category C includes category B, and category D includes category C, but not vice versa (Akerlind 2008). In using the term 'phenotype' for the categories, we aim to emphasise that maturing as an educator depends on both individual qualities and environment.

In the least inclusive phenotype, labelled the 'Critic,' educators focus on adverse contextual aspects. In the next phenotype, the 'Practitioner,' educators are aware of the importance of contextual aspects but in addition demonstrate behaviours and competencies of an educator. In the 'Role model' phenotype, educators extend their awareness to include their educational identity, whereas in the most inclusive 'Inspirer' phenotype, educators demonstrate characteristics present in the other phenotypes and also manifest and share their educational mission. A key difference between the Role model and the Inspirer phenotypes is their focus on the teacher and student respectively. If educators advance towards a more inclusive phenotype over the 10-year study period, we consider this to be maturation.

Our research questions were:

1. To what extent do medical educators mature through a growing awareness of their educational qualities over time?
2. Which factors, as perceived by the medical educators who mature over time, contribute to their maturation?

Methods

Design and procedures

To explore the maturation of educators, we performed a qualitative follow-up study with a baseline period of 2008–2010 (first interview, Phase 1), and a follow-up period in 2018 (second and third interviews, Phases 2 and 3).

In Phase 1, we conducted in-depth, semi-structured interviews with senior educators ($n = 23$) from two medical schools. We used the interview guide as reported by Ottenhoff-de Jonge et al. (2021) (see Addendum 1, Supplementary Material). We started with the primary questions regarding what qualities make a good teacher, and what obstacles there might be to being a good teacher. Due to our selection of exemplary teachers, the participants identified with the notion of 'good teachers' and related these questions to themselves. By asking for examples from their teaching practice, we further ensured that the participants elaborated on their own teaching experiences. We explored the preclinical educational contexts during the interviews because experiences of being an

List 1. Summary of the four educator phenotypes.

<i>Educator phenotype</i>	<i>Category</i>	<i>Awareness of</i>	<i>Focus on</i>
Critic	A		Contextual aspects that constrain being an effective educator, e.g. lack of time
Practitioner	B	Educational context	The practice of education, i.e. behaviours & competencies
Role Model	C	Educational context; Behaviours & competencies	Educational identity
Inspirer	D	Educational context; Behaviours & competencies; Educational identity	Personal educational mission

educator may vary according to the level of teaching (Stenfors-Hayes et al. 2011) and we wanted to avoid participants answering the questions in a clinical context. In the preclinical setting, learning-centred education is more carefully designed and implemented.

To answer our first research question, in Phase 2 we repeated the interviews in 2018 with the same participants who were still available ($n = 21$), to examine whether educators matured through a growing awareness of their educational qualities over a 10-year period. The educator phenotype model provided the framework for data analysis in Phases 1 and 2.

In Phase 3, we conducted a third interview with those educators who showed maturation towards a more inclusive educator phenotype ($n = 6$) to answer our second research question. We prepared a document that included relevant excerpts from these participants' first and second interviews which illustrated their growth in awareness of their educational qualities between the first and second interviews. We added specific questions related to underlying factors that might have contributed to their maturation. The document served as a prompt and was sent prior to the third interview to give the participants ample time and encourage them to reflect on these excerpts. The aim of the third interview was twofold. First, we checked whether the educators agreed with the categorisation of the initial and new phenotypes (member check). Second, we explored which factors they perceived to be instrumental to their maturation as educators.

Prior to the second interview, we discussed with the interviewees any changes in the demographic data that had been collected in 2008–2010, including their weekly workload for educational, patient-care, research, or administrative tasks. All interviews were conducted by the first author, and audiotaped and transcribed. We tested the interview procedures on a bilingual educator not included in the study.

Participants and setting

In Phase 1, we recruited exemplary physician-educators with a variety of educational roles from Stanford University School of Medicine (SUSM), USA, and Leiden University Medical Centre (LUMC), the Netherlands, both with learning-centred curricula. Of the 23 selected participants, five educators were involved in educational administration and were responsible for curriculum innovations. The other 18 participants were selected on the basis of their active educational involvement and excellent teaching, as reflected in student evaluations and receipt of teaching awards. The participants on average had 21 years of teaching experience, and most of them were responsible for preclinical curriculum content. Eight of the participants taught basic science topics; the other ten taught clinical topics in the preclinical curriculum. We chose these selection criteria because we expected that these faculty members would be 'information-rich' and that their experiences would be enlightening (critical case sampling). For each of the interviews, the first author invited the participants, emphasising that participation was voluntary and anonymous. In 2018, 21 of the 23 participants were still available, all of whom were willing to participate in the follow-up interviews for Phase 2. Two participants had left academia; one because of an administrative position elsewhere, and the other because of dissatisfaction with their work.

This study was approved by the Netherlands Association for Medical Education (NVMO) Ethical Review Board (NERB number 834). It was deemed as a protocol not involving human subject research and approved as such by the Stanford Institutional Review Board (IRB).

In the period between the first and second interviews (2008–2018) curriculum reform took place at LUMC. The curriculum maintained its learning-centred approach but placed more explicit emphasis on students' active learning. In addition, an intensive faculty development programme was implemented in which almost all LUMC participants participated. At SUSM, which already had an extensive faculty development programme, no major changes had been made to the preclinical curriculum or to faculty development programmes during this interval.

Data analysis

In Phases 1 and 2, the (first and second) interviews were deductively analysed to explore awareness of the educational environment, behaviours/competencies, identity, and mission, using the codebook as developed by Ottenhoff-de Jonge et al. (2019) (see [Addendum 2, Supplementary Material](#)). Two researchers independently coded the interviews. In addition to the researcher who had conducted both interviews (MO), two different research assistants coded the first and second interviews independently. The assistant who coded the second interviews (IvdH) was blinded to the interviewees' initial categorisation. The codings were discussed jointly to reach consensus. We determined an educator phenotype for each participant holistically, i.e. based on the whole transcript, including all the coded text fragments. A third team member (RvdR) independently analysed half of the first interviews and a selection of the second interviews to further ensure data credibility (Frambach et al. 2013). The first author performed a member check by asking all participants if they agreed with our conclusions on the assigned educator phenotypes. The member check was incorporated into the third interview with those who had matured into a more inclusive phenotype. In Phase 3, we analysed the transcripts of the third interviews. MO and IvdH inductively analysed which factors were perceived by the educators to be instrumental in their maturation during the last decade. This analysis followed an iterative process to promote in-depth understanding of the interviews and the coding. Coding took place independently by MO and IvdH, and discrepancies were discussed until consensus was reached. After further analysis we consolidated the codes into a limited number of categories by discussing the coding of the fragments and categorisation with RvdR and AK. To strengthen the confirmability (Frambach et al. 2013) of our findings, the categorisation and interpretation were discussed with the full research team. The team members come from diverse backgrounds, including from different cultures (USA versus the Netherlands), disciplines (medical versus non-medical), and professional experiences (student versus long-term professional experience). This approach ensured interpersonal reflexivity to identify and address any personal beliefs or biases that may have influenced the research process, and intersubjectivity to reach agreement on the interpretation of the findings through dialogue and

the sharing of meanings. Regarding contextual reflexivity, MO, AK and IvdH are familiar with the educational context of the LUMC, as medical educators and as a medical student respectively, while NG is familiar with the SUSM context as the Senior Associate Dean for Medical Education. In addition, the first author (MO) participated at SUSM as a medical teacher for a short period of time, in order to gain a better understanding of the practice and culture of medical education at SUSM. Conversely, this research also positively impacted the participating educators: participants frequently elaborated on how the interview questions stimulated them to reflect on their perspectives on essential teacher qualities.

Results

After describing relevant changes in the demographic data, we will first consider the results related to research question 1, i.e. the extent to which maturation occurred, as determined by advancing towards a more inclusive educator phenotype. Subsequently we describe the maturation

of the participants for each phenotype, followed by the factors perceived as instrumental to maturation, to answer research question 2.

When asked about any changes in the weekly education workload, two educators who did not mature into a more inclusive phenotype disclosed that they had reduced their educational responsibilities. Despite their passion for education, they had taken on a major administrative role, partly motivated by lack of recognition and status within the educational domain.

Table 1 provides an outline of the participants categorised by educator phenotype in Phase 1; demographic data at the time of Phase 1; occurrence of maturation; educator phenotype in Phase 2.

Extent of maturation

Six of 13 educators with potential to advance in educator phenotype matured over the 10-year study period (Figure 1). Maturation followed the order of the phenotype

Table 1. Participants categorised by educator phenotype in Phase 1; demographic data at the time of Phase 1; occurrence of maturation; educator phenotype in Phase 2.

Educator phenotype in Phase 1	Case number	Faculty	Gender (m/f)	Teaching experience (yrs)	Topic/task	Maturation	Educator phenotype in Phase 2
I. Inspirer	S02	SUSM	m	15	Clinical		=
	S04	SUSM	f	10	Clinical		=
	S05	SUSM	m	#	Administrative		=
	S07	SUSM	m	15	Basic science		=
	S08	SUSM	f	15	Clinical		=
	S10	SUSM	f	19	Administrative		=
	S11	SUSM	m	38	Administrative		=
	S13	SUSM	m	25	Clinical		=
Mean				20			
II. Role model	L01	LUMC	f	#	Administrative		Left academia
	L04	LUMC	m	10	Clinical	+	Inspirer
	L05	LUMC	m	13	Basic science		=
	L06	LUMC	f	5	Clinical		Left academia
	L08	LUMC	m	25	Clinical		=
	L10	LUMC	f	16	Basic science		=
	L12	LUMC	m	25	Basic science		=
	L13	LUMC	m	25	Administrative		=
	S01	SUSM	m	40	Basic science	+	Inspirer
Mean				20			
III. Practitioner	L03	LUMC	m	20	Clinical		=
	L09	LUMC	m	25	Basic science	+	Role model
	S06	SUSM	m	19	Basic science		=
Mean				21			
IV. Critic	L02	LUMC	m	10	Clinical	+	Role model
	S03	SUSM	m	24	Basic science	+	Practitioner
	S12	SUSM	m	32	Clinical	+	Role model
Mean				22			

LUMC = Leiden University Medical Centre, The Netherlands; SUSM = Stanford University School of Medicine, USA; + = maturation occurred between Phase 1 and Phase 2; = = participant kept the same educator phenotype as in Phase 1; # = missing value.

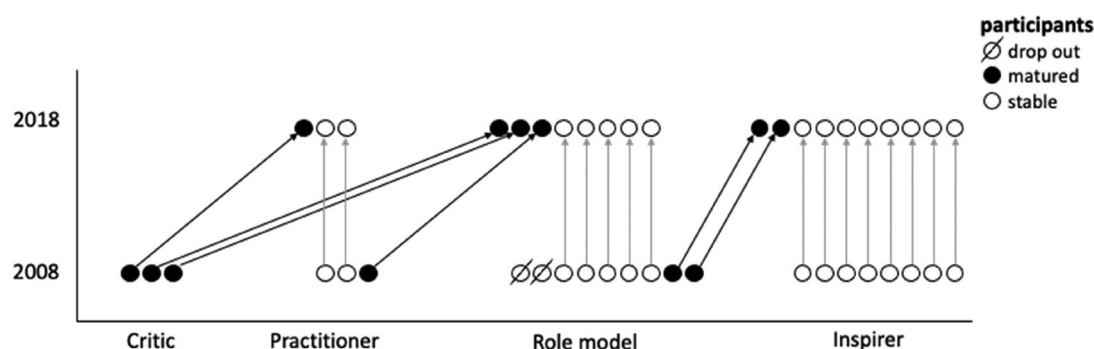


Figure 1. Maturation of medical educators through a growing awareness of their educational qualities over a period of 10 years.

Box 1. Sample

2008 (Phase 1):

Interviewer: *What makes somebody a good teacher?*Participant: *Wanting to learn how to be a good teacher (...). You can't believe how much time I've spent trying to analyse how to be a better teacher. (...) I think it's just really a willingness to make the learning fun.*

2018 (Phase 2):

Interviewer: *What makes somebody a good teacher?*Participant: *Paying attention to the students. (...) to constantly be self-critical and constantly think of ways that you might do better. (...) If the students are enjoying the class, and they share in the excitement of learning new ways of thinking, that definitely influences them. If they feel that you care about their learning, that influences them. (...) I tried to learn their names. It's just a demonstration that I care enough to know at least their first name.*

In both 2008 and 2018 this educator (S01) emphasised certain characteristics of a good teacher, e.g. a willingness to learn how to be a good teacher or to make learning fun. These are examples of his awareness of his educational identity. In 2018, his primary focus is more on the students: his first answer to the question of what makes a good teacher is: paying attention to the students. He emphasises caring for the students and their learning, and sharing with them in the excitement of learning. These are examples of his awareness of his educational mission. Therefore, we categorised him in the Role model phenotype in 2008, and in the Inspirer phenotype in 2018.

categorisation from less to more inclusive; regression toward a less inclusive phenotype did not take place.

The three participants who were initially categorised as focusing on adverse contextual aspects (Critic phenotype) all showed growth to a more inclusive phenotype. Three of the six educators who had been unaware of their educational identity developed this awareness (Role model phenotype). Two educators, initially aware of their educational identity, grew in awareness of their educational mission (Inspire phenotype). In [Box 1](#) we provide an example of the latter to illustrate how we identified maturation.

Factors contributing to maturation

Factors perceived to be instrumental in maturation could be divided into intrapersonal aspects and meaningful experiences. Intrapersonal aspects refer to factors that the participant experiences as part of their 'inner self,' such as personal values, characteristics, or competencies. The relevance of the meaningful experiences was not so much the experience itself, but rather the way the participant attributed meaning to the experience. We chose to link the attributed meaning of an experience to the experience itself and to present it as separate from the intrapersonal aspects, consistent with the way the participants themselves presented these factors.

The three educators who shifted *from* the Critic phenotype shared common factors which they perceived as contributing to their transformation. The educators who matured *toward* a particular phenotype also shared common factors they perceived as contributing to their maturation. Below we describe the maturation of the participants for each phenotype, followed by the factors perceived as instrumental to their maturation (see [Table 2](#)).

Maturation through shifting from focusing on adverse contextual aspects

The three educators who initially fell into the Critic phenotype had focused on contextual aspects that constrained them in their teaching. They indicated that it had been important to learn to come to terms with these adverse circumstances in order to shift focus to other aspects of being an educator. We categorised this under *intrapersonal*

aspects. For example, they described how they had dealt with the lack of rewards for teaching tasks.

Participant: *But if you want to look at things that have changed, nothing has. And I doubt it will. So the way teaching is rewarded here is minimally.*

Interviewer: *And is that the reason why you were more cynical?*

Participant: *I've given up on that. That's not worth my effort to even raise my breath about it. But what that leaves you is your own motivation for teaching, and that I can get rewarded for that in any significant way. And that's when the effects of your teaching on the students become really apparent. (S03)*

In relation to *meaningful experiences*, all three educators acknowledged that a positive change in their professional circumstances had been influential. One educator stated that he no longer had to work under an authoritarian supervisor. Another educator described how, when his educational role had become more clearly defined, he had become more content and less cynical. The third educator referred to the difficult period his department was going through at the time of the first interview; when the department got a new head, he had become more satisfied with his role as educator.

In addition to these changes within the professional domain, educators described positive changes within the private domain. For example, after a 'nasty divorce' at the time of the first interviews, one educator's improved personal life had subsequently influenced his job satisfaction.

Maturation through growing awareness of educational competencies

The educator who became more aware of his educational competencies (Practitioner phenotype) described himself mainly in terms of being more effective.

I'm getting old (...). Maybe more effective. Because I know what works and what doesn't. (S03)

He explained that his task as an educator was motivated by the responsibility he felt as a physician to the students' future patients rather than to the students themselves. This educator gave credit to predominantly *meaningful experiences* which had helped him to develop his competencies as a teacher. Examples of these were activities such as taking on new teaching responsibilities, modelling by observing mentors, and participating in informal exchanges with colleagues.

And, probably involvement with my colleagues. (...) We would sometimes have barbed discussions, but it's good! It's comforting to know you're not alone. (S03)

Table 2. Summary of factors perceived as contributing to educator maturation by phenotype.

Phenotype shifting from: (<i>case number</i>)	Factors perceived as contributing to maturation	
	Intrapersonal aspects:	Meaningful experiences:
Critic (<i>S03, S12, L02</i>)	Learning to accept adverse professional or private circumstances	Positive change in professional or private domains
Phenotype maturing to: (<i>case number</i>)		
Practitioner (<i>S03</i>)	Becoming more effective in teaching	Tasks and activities leading to growth in competencies
Role model (<i>S12, L02, L09</i>)	A willingness to keep growing, both personally and as teacher Being reflective: reflective on the 'self' and on the teacher role Maturing relevant character traits	Tasks, activities and initiatives leading to (self-) reflection and increased self-awareness
Inspirer (<i>S01, L04</i>)	Changing focus from self to other Growing in awareness of the importance of societal (medical) issues for functioning as physician	Meaningful encounters with others Adverse developments in society and the medical profession

Maturation through growing awareness of educational identity

The three educators who became more aware of their educational identities (Role model phenotype) demonstrated more self-awareness. Some of them emphasised that the role of patient-care giver was their primary professional identity. Even though their focus on the relationship with their students increased, their main emphasis was not on students but on their own development. They mainly highlighted that *intrapersonal aspects* were instrumental to their maturation, such as a willingness to evolve, both personally and as teacher.

Obviously, like everything else, you have to want to change. And frankly, sometimes, you have to be in enough pain that you then want to change.(...) Sometimes it's the gun to the head that makes the change. (S12)

Another intrapersonal aspect that these educators emphasised was being reflective: reflective on the 'self' or on the teacher role. For example, one educator pointed out the value of actively soliciting feedback, including from junior colleagues, which helped him to reflect on his teaching.

What has had the most influence on my development as a teacher? The reaction of others to what I do. Yes, to reflect on what the other has to say. (L02)

Finally, the evolution of relevant character traits was highlighted, such as becoming milder and maturing in general, or becoming more patient with students.

So I've become more careful over the years... the impact of what you do on a person... more patient with slow processes. (L09)

The *meaningful experiences* that these educators highlighted included activities that encouraged reflection on the 'self' or on the teacher role, and led to increased self-awareness. Examples of these are: coaching students, receiving feedback from colleagues, and reading self-help literature.

I have done a fair amount of reading in the business and self-help literature, seeking to enhance my effectiveness in promoting desired change in myself. (S12)

Maturation through growing awareness of educational mission

The two educators who became aware of their educational mission (Inspirer phenotype) changed their focus from

themselves to the students and patients. They indicated that they had become more deeply motivated to raise students' awareness of philosophical, spiritual, ethical, or societal medical issues. They linked this maturation to their maturation as a patient-care provider. Topics such as access to healthcare, the professional calling of a patient-care provider, giving the patient a voice, and exploring questions of meaning were emphasised. They attributed both *intrapersonal aspects* and *meaningful experiences* as playing a role in their maturation. One intrapersonal aspect they emphasised was the importance of giving a voice to 'the other,' for example by learning to be silent in order to listen more closely to what a patient or student had to say.

...learning how to be silent. I'm very articulate in certain ways and I can talk a mile. (...) But I am disciplining myself to just listen and be silent. (S01)

Another intrapersonal aspect they expressed was a growing awareness of the importance of societal issues for their functioning as a patient-care provider.

...over the years it's become clear to me that in medicine, access to healthcare turns out to be very important for some people. And if you're taking care of patients, you realise they don't have access, then it brings up all the social and ethical issues. ...I think I was always aware of them, but what I'm more aware of is the paramount importance of them. (S01)

They connected these intrapersonal aspects to two meaningful experiences. First, they emphasised that 'meaningful encounters with others,' such as indigent patients, had helped them to change their focus from themselves to their patients and their students.

...then it comes through the patients, because the patients that come in are poor. There [in patient care] it's more obvious, because it impacts their health. And it impacts their access to care. (S01)

Second, they emphasised that adverse developments in society and the medical profession were influential in their maturation. For example, one of the educators emphasised that changes in his medical discipline had made him more motivated to make students aware that being a doctor is a calling.

...the development of family medicine over the past ten years, more management and fewer home visits. So it has become more of a... no longer a calling but more a trade. (...) and then I wonder how can you still do that... [inspiring the students to consider this calling]. (L04)

Discussion

Based on the findings of this follow-up study we conclude that maturation as a medical educator can occur but is not guaranteed: less than half of the medical educators with the potential to grow in awareness of educational competencies, identity, or mission, showed maturation in our study within the period of a decade. Our finding that none of the interviewed educators reverted to a less inclusive phenotype may imply that medical educators' awareness of their educational qualities, once acquired, will not regress and is deeply integrated into the being of an educator.

A noteworthy finding from our study is that the educators who initially focused on adverse contextual aspects (the Critic phenotype) all matured toward a more inclusive phenotype. Our findings suggest that the Critic phenotype may not be a permanent end-stage phenotype nor a 'starting' phenotype. Educators' awareness of their educational qualities may become temporarily distorted due to dissatisfaction related to adverse professional or private circumstances. Our findings suggest that once educators experience a lack of support from their departments or institutions, they have three options for coping with their dissatisfaction. A first option is to learn to come to terms with an adverse educational context, allowing them to shift focus to their qualities as educator. A second option is to change their academic role from education to more clinical, administrative, or research work. Two of the participating educators who did not grow to a more inclusive phenotype referred to this coping strategy in their second interviews. A third option is to discontinue working in academia (Jauregui et al. 2019), which happened to one of the participants included in the first interviews. Our conclusion regarding the influence of context fits into a '*social-relational*' perspective of how educators mature, which conceptualises maturation as constructed through social interaction in cultural contexts (Cantillon et al. 2019). In future research it may be useful to further explore whether the Critic phenotype differs from the other three phenotypes and presents a more temporary stage.

From an '*individualist*' perspective, which situates maturation within the person (Cantillon et al. 2019), we conclude that maturation as a medical educator appears to occur *via* developmental stages. In the first stage, exemplary educators showed an awareness of important educational competencies, which was then followed by a growing understanding of one's educational identity and subsequently by a deeper understanding of one's educational mission. Interestingly, at all three stages, maturation is generally motivated by the task, identity, or mission as a *physician*. A parallel between the development as an educator and as a physician has been reviewed in two retrospective inquiries into the maturation of exemplary medical educators (MacDougall and Drummond 2005) and mentors (Kvernenes et al. 2021).

Although factors considered influential to maturation varied by developmental stage, our findings across all stages underscore the importance of individual proactivity and motivation (King et al. 2021). They also underscore the importance of the workplace setting, rather than formal faculty development settings, as the main context where maturation occurs, consistent with previous research (Steinert et al.

2016). In addition, we conclude that maturation is a multifactorial process in which intrapersonal aspects and meaningful experiences interact. The extent to which these factors play a role differs per developmental stage. These conclusions imply that, to support the maturation of educators, supervisors in career development should encourage educators to balance their teaching tasks with other academic work. In addition, faculty development initiatives need to be varied, preferably extending over a long period of time and embedded in the workplace such as through communities of practice (de Carvalho-Filho et al. 2020). As Steinert (2020) advised, faculty development should target all of the roles that medical educators play, consistent with our findings that medical educators explicitly link their maturation as an educator to that as a physician. Therefore, we would emphasise the value of involving faculty developers and mentors who are practicing physicians in faculty development. The educator phenotype model could be used as a tool to support FD interventions, in line with the implications suggested in our initial study (Ottenhoff-de Jonge et al. 2019).

The growth in competencies of educators can be supported by offering varied tasks and activities, such as a variety of educational responsibilities, practice and instruction by experienced and well respected faculty developers, and (in)formal discussions with peers about the 'What and how' of an effective educator.

Initiatives that encourage reflection on the 'self' and on the teaching and learning process may help the growth in awareness of one's educational identity. Although the tasks and activities may be similar to those that support growth in competencies, their goal here is to encourage reflection on 'Who' one wants to be as an educator. Reflection has also been promoted as a useful instrument for faculty development with regard to educational identity formation (Lieff et al. 2012; Steinert et al. 2019; van Lankveld et al. 2021).

Finally, encouraging educators to reflect on 'Why' they want to be a medical educator may nurture a deeper awareness of one's educational mission. Discussing one's personal patient-care mission with fellow physician-educators and relating it to one's educational mission may be helpful in maintaining teacher motivation, even when the organisational culture is not supportive of the maturation of educators. Faculty developers who put their own educational mission into practice are helpful as role models. For the growth of an educational mission, meaningful encounters with students, for example mentoring individual students, may help to shift the focus from one's own teaching role to the development of the student.

Strengths, limitations, and future research suggestions

The design of this follow-up study with a 10-year interval between initial and follow-up interviews with dedicated, experienced and exemplary medical educators provides valuable data to gain insight into the long-term maturation of medical educators. Because of our intentional selection of exemplary medical educators, our findings should be interpreted in this light. Medical faculty are primarily trained as physicians; faculty dedicated to providing patient care or research but not to teaching would presumably show different results. Future studies are needed to explore

whether faculty that are less dedicated to teaching revert to less inclusive phenotypes over time. Our selection criteria also resulted in a limited number of educators demonstrating maturation, as some of them already had the most inclusive educator phenotype at the first interview. Thus the factors we identified as contributing to maturation are exploratory in nature. It would be useful to repeat this research with less experienced educators; such a study would be expected to yield more educators with growth potential and could confirm the factors found in our study. Conducting this research with educators involved in educating medical students, but who are not practicing physicians, could provide further insight into the applicability of the educator phenotype for educators from different backgrounds. In addition, it would be interesting to explore what these educators, if they show maturation, indicate as motivating their maturation. We focused interviews on educators involved in the preclinical curriculum. This limits drawing general conclusions for clinical or postgraduate contexts. Nevertheless, because the awareness of certain distinct qualities, once acquired, is deeply integrated into the person of educator, we expect that our results are not limited to a particular educational context. A future study carried out in other educational contexts could provide further insights.

Conclusion

This study provides evidence for the maturation of medical educators. Maturation is influenced by the educational context and appears to proceed through certain developmental stages, from focusing on educational competencies to a growing awareness of educational identity and a deeper understanding of educators' personal educational mission. Maturation is a multifactorial and complex process, which implies that faculty development initiatives need to be varied and differentiated and preferably extend over a long period of time. The interventions can be summarized as supporting the reflection on the 'what and how,' 'who' and 'why' of being an effective educator. Since medical educators indicate that their teacher role is inspired by their patient-care role, we recommend including educators' patient-care role in faculty development initiatives and involving practicing physicians as faculty developers to support the maturation of medical educators.

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Glossary Terms

Mission (educational): Source of personal inspiration which gives meaning to a teacher's professional existence by contributing to others within a larger context.

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