Role modeling in clinical practice: A whirlpool around master and apprentice in lifestyle interventions for obesity in general practice
van der Leeuw, Ria

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Chapter 3

The Attributes of the Clinical Trainer as a Role Model: A Systematic Review

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Nynke van Dijk
Faridi S. van Etten-Jamaludin
Margreet Wieringa-de Waard

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Abstract

Purpose Medical trainees (interns and residents) and their clinical trainers need to be aware of the differences between positive and negative role modeling to ensure that trainees imitate and that trainers demonstrate the professional behavior required to provide high-quality patient care. The authors systematically reviewed the medical and medical education literature to identify the attributes characterizing clinical trainers as positive and negative role models for trainees.

Method The authors searched the MEDLINE, EMBASE, ERIC, and PsycINFO databases from their earliest dates until May 2011. They included quantitative and qualitative original studies, published in any language, on role modeling by clinical trainers for trainees in graduate medical education. They assessed the methodological quality of and extracted data from the included studies, using predefined forms.

Results Seventeen articles met inclusion criteria. The authors divided attributes of role models into three categories: patient care qualities, teaching qualities, and personal qualities. Positive role models were frequently described as excellent clinicians who were invested in the doctor-patient relationship. They inspired and taught trainees while carrying out other tasks, were patient, and had integrity. These findings confirm the implicit nature of role modeling. Positive role models’ appearance and scientific achievements were among their least important attributes. Negative role models were described as uncaring toward patients, unsupportive of trainees, cynical, and impatient.

Conclusions The identified attributes may help trainees to recognize which aspects of the clinical trainer’s professional behavior to imitate, by adding the important step of apperception to the process of learning professional competencies through observation.
Introduction

Being a competent, professional doctor is a prerequisite for providing high-quality care to patients.1,2 Medical educators, especially those involved in the clinical training of interns and residents (hereafter called trainees), therefore need to prepare trainees to meet this requirement. According to Bandura’s3 social learning theory, trainees learn essential professional competencies by observing a role model—defined in the medical literature as a person considered to demonstrate a standard of excellence to be imitated.4-8 Bandura3 also indicates that attention, retention, reproduction, and motivation are necessary for effective observational learning; this process is reciprocally influenced by environmental, behavioral, and personal factors (Figure 1). Thus, role modeling is a powerful strategy by which to instill professional behavior in young doctors through learning by observation.6,8-11

In graduate medical education, the clinical trainer—that is, any physician who supervises the trainee in clinical practice—serves as the role model for the trainee. Consequently, the clinical trainer’s display of professional behavior may positively affect the trainee, whereas the trainer’s display of unprofessional behavior may have a negative effect.5,12-15 To help ensure that trainees imitate the behavior that is appropriate for their future role,9 trainees, trainers, and medical educators need to be aware of the key attributes of role models. Such awareness makes it possible to distinguish by apperception between positive and negative role modeling.16

![Figure 1. Model of the observational process of learning as applied to role modeling by the clinical trainer, based on the social learning theory according to Bandura,3 progressing from observation through reinforcement to imitation. Using the attributes of role models identified by the authors from their review of the literature, the trainee can add the important step of apperception.](image)

Multiple instruments have been developed to assess clinical trainers and provide feedback on their clinical teaching.17-19 Some tools20-22 address whether the clinical trainer should be considered a role model but do not discriminate between
positive and negative role modeling or identify the specific aspects of the clinical trainer's performance that represent the correct professional behavior to imitate. We believe these instruments need to be extended to include items on specific aspects of role modeling to reduce the risk that trainees will imitate unprofessional clinical behavior and to improve the quality of trainers' role modeling.

In response to this need, we conducted a systematic review of the medical and medical education literature to identify the attributes that characterize positive and negative role models in clinical practice. Our research question was, which attributes characterize the clinical trainer as a positive and negative role model for the trainee?

**Method**

*Literature search*

Using a search strategy developed by a clinical librarian (F.S.v.E.-J.), we systematically searched the MEDLINE, EMBASE, ERIC, and PsycINFO databases via Ovid for articles published in any language, from each database's earliest available date through the day of the search, May 5, 2011. Search terms included combinations and alternatives of the following key terms: *graduate medical education, residency, clinical trainer or teacher or medical teacher, clinical and family or general practice, role model or modeling, and preceptor and professional role* (for the complete search strategy, see Supplemental Digital Appendix 1, http://links.lww.com/ACADMED/A111). We performed additional manual searches by reviewing the references of retrieved articles as well as the content of four medical education journals (*Academic Medicine, Journal of Postgraduate Medicine, Medical Education, Medical Teacher*) published within the year prior to the search. We also reviewed titles and abstracts of articles cited in the reference lists of papers presented on March 22, 2011, at a meeting in Utrecht on the topic of our review that was attended by national experts in the field and organized by the Netherlands Association for Medical Education (NVMO).

We included original studies, both qualitative and quantitative, that described attributes of the clinical trainer as a role model for the trainee in graduate medical education, in the hospital or in primary care. We excluded duplicates, articles that
The attributes of the clinical trainer

did not report original studies, and studies describing medical students, medical education before medical school graduation, specialty choice, or the role of the clinical trainer as a teacher or mentor rather than as a role model.

Selection process
We conducted the selection process during May to September 2011 (Figure 2). Two of us (H.J.-v.d.L., N.v.D.) independently reviewed the titles and abstracts of all unique articles identified in the search. We were able to eliminate many articles after screening their titles and abstracts because our search strategy was broad and identified articles with wide-ranging descriptions of role modeling. We resolved any disagreements through discussion until we reached consensus.

After the initial screening, we retrieved the full text of the publications we considered to be potentially relevant. We (H.J.-v.d.L., N.v.D.) read each of these articles independently and used a form that we had pilot-tested to assess whether they met inclusion criteria. One publication was not available, so we obtained it from its author. We discussed any doubts about particular studies until we reached consensus.

Quality assessment and data extraction
Two of us (H.J.-v.d.L., N.v.D.) used the validated Medical Education Research Study Quality Instrument (MERSQI)\textsuperscript{24} to independently assess the methodological quality of each of the studies selected for inclusion. We reached agreement on scores through discussion. The possible MERSQI score for quantitative studies ranges between 5 and 18, with higher scores indicating higher quality. However, some MERSQI items are not valid for qualitative studies, so we omitted them when assessing such studies. This resulted in a maximum possible score of 15 for qualitative studies.

We (H.J.-v.d.L., N.v.D.) independently abstracted data from each included study using the Best Evidence Medical Education (BEME) Collaboration systematic review data extraction form,\textsuperscript{25} which we modified to also fit qualitative research by adding tables to record reported attributes. Any disagreements were discussed until consensus was reached. For each included study, we extracted the following information: study design; country of origin; types and numbers of participants; specialty; most important and least important attributes of positive role models;
and attributes of negative role models. We determined an attribute’s importance by the number of studies in which it was mentioned, combined (if available) with its relative importance as reported by the trainees participating in that study.

**Results**

*Study selection*

Our literature search yielded 4,955 unique articles (Figure 2). After screening all titles and abstracts, we excluded 4,882 articles. We retrieved the full text of 73 studies and reviewed them against our inclusion and exclusion criteria. Of these articles, 17 met our inclusion criteria.

**Figure 2.** Screening process and results of the literature search on the attributes of the clinical trainer as a role model for trainees, indicating the number of articles remaining after each stage of screening. The articles found by manual searches are not included in this figure as they did not meet inclusion criteria or were duplicates.

*Characteristics and quality of included studies*

Table 1 presents the characteristics of and results of the quality assessment of the 17 studies included in this systematic review. The mean MERSQI score for the 10 quantitative-design studies (59%) was 9.7 (range: 7.5–11; maximum possible score = 18). For the 7 (41%) qualitative-design studies, the mean MERSQI score was 8.1 (range: 6–11; maximum possible score = 15).
Table 1
Characteristics of the 17 Studies Included in a Systematic Review of the Literature (1948-May 2011) on the Attributes of Clinical Trainers as Role Models in Graduate Medical Education

<table>
<thead>
<tr>
<th>Study and publication date</th>
<th>Country of origin</th>
<th>Study design</th>
<th>Type of participants†</th>
<th>Specialty</th>
<th>Number of participants‡</th>
<th>MERSQI score*</th>
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<td>Quantitative study (max. 18)</td>
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<td>Fromme et al, 2010**</td>
<td>United States</td>
<td>Interviews, focus groups</td>
<td>Hospitals, residents, students</td>
<td>Pediatrics</td>
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<td>Focus groups: 30</td>
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<td>SARRAD: 30†</td>
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<td>Junior/senior residents: 33/32</td>
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<td>Park et al, 2010**</td>
<td>Canada</td>
<td>Semi-structured interviews</td>
<td>Residents, faculty</td>
<td>Surgery</td>
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<td>United States</td>
<td>Focus groups</td>
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<td>Residents: 39</td>
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<td>Faculty role models: 44</td>
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<td>United States</td>
<td>Observations, post-encounter interviews</td>
<td>Residents, students, faculty, patients</td>
<td>Medicine</td>
<td>Faculty observations: 12</td>
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<td>Residents: 39</td>
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<td>Faculty role models: 44</td>
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<td>Maker et al, 2004 (Part 1)</td>
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<td>United States</td>
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<td>Role models†</td>
<td>Internal medicine</td>
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* MERSQI score: 0-10
† Includes role models
‡ Includes faculty
Table 1 continued

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<tr>
<th>Study and publication date</th>
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<th>Study design</th>
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<th>Specialty</th>
<th>Number of participants</th>
<th>MERSQI score*</th>
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<td>Quantitative study (max. 18)</td>
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<td>Sinai et al, 2001‡</td>
<td>Ontario, Canada</td>
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<td>Residents, clinical supervisors</td>
<td>Psychiatry</td>
<td>Residents: 13, Supervisors: 13</td>
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<td>Elzubeir and Rizk, 2001‡</td>
<td>United Arab Emirates</td>
<td>Questionnaires (similar to Wright 1996*)</td>
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<td>Medicine</td>
<td>Students: 66, Interns/residents: 30</td>
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<td>Hojat et al, 1999‡</td>
<td>United States</td>
<td>NEO PI-R§</td>
<td>Residents, role models; compared with general population of adults</td>
<td>Internal medicine</td>
<td>Residents: 104, Positive role models‡: 188</td>
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<td>United States</td>
<td>Questionnaires</td>
<td>Physicians</td>
<td>Medicine</td>
<td>Positive role models‡: 188</td>
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<td>United States</td>
<td>Case control comparative trial questionnaires</td>
<td>Role models, attending physicians</td>
<td>Internal medicine</td>
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<td>Côté et al, 1997‡</td>
<td>Quebec, Canada</td>
<td>Questionnaires</td>
<td>Residents</td>
<td>Family medicine, medical specialties, surgery</td>
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<td>Wright, 1996‡</td>
<td>United States</td>
<td>Questionnaires</td>
<td>Residents</td>
<td>Various specialty programs</td>
<td>Residents: 195</td>
<td>9</td>
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</table>

*The authors used the validated Medical Education Research Study Quality Instrument (MERSQI)‡ to assess the quality of the studies included in this review. They modified the MERSQI when evaluating qualitative studies by omitting items that were not valid for such studies. This resulted in a maximum (max.) possible score of 15 for qualitative studies.

‡GPs indicates general practitioners; PGYs, post-graduate years; SARRED, Siemens AUR Radiology Resident Academic Development Program.

§Neuroticism Extraversion Openness Personality Inventory–Revised.

¶Physicians nominated as role models by chief executive officers.

#Attending physicians as controls, not identified by any house officer as excellent role model.
Most important attributes of positive role models

We determined that the attributes of positive role models (Table 2) can be divided into three main categories: patient care qualities, teaching qualities, and personal qualities. This is the same classification Wright\textsuperscript{8} found in 1996.

Patient care qualities. First, a positive role model is a competent specialist\textsuperscript{6} with up-to-date knowledge.\textsuperscript{26,30,34} He or she is an experienced\textsuperscript{34,37} and strong clinician\textsuperscript{5} with a commitment to excellence and growth,\textsuperscript{5} effective diagnostic\textsuperscript{6,8} and therapeutic skills,\textsuperscript{30,33} and sound clinical reasoning.\textsuperscript{6,30} Furthermore, a positive role model is compassionate,\textsuperscript{6,29} caring, engaging,\textsuperscript{29} and empathic to patients,\textsuperscript{6,31} and is able to build a personal connection with them.\textsuperscript{7,28,29,31} He or she is dedicated to the quality of patient care\textsuperscript{5,6} and centers the care he or she provides on the patient rather than the illness.\textsuperscript{37} A positive role model communicates well with patients and their relatives,\textsuperscript{6,8,26,31} shows respect to patients,\textsuperscript{31} has a humanistic attitude toward patients,\textsuperscript{26,30,37} and educates and fully informs patients.\textsuperscript{6} In addition, he or she has respect for and gives recognition to others,\textsuperscript{6} resulting in positive interactions with other health care workers.\textsuperscript{5,8,30,37}

Moreover, a positive role model displays a high degree of professionalism,\textsuperscript{26,27} assumes responsibility in difficult clinical situations,\textsuperscript{5} and is able to cope with adversity.\textsuperscript{35,36} In daily life, he or she demonstrates enthusiasm for his or her work,\textsuperscript{3,8,29} enjoys the job,\textsuperscript{28,29} and displays satisfaction with his or her chosen specialty.\textsuperscript{7,29}

Teaching qualities. As a clinical educator, a positive role model employs a humanistic style of teaching,\textsuperscript{26} establishes rapport with learners,\textsuperscript{5} tailors his or her teaching to learners’ needs,\textsuperscript{7} creates a safe learning environment,\textsuperscript{28} and gives learners the autonomy to make independent decisions.\textsuperscript{32,33} Moreover, a positive role model teaches trainees about the psychological aspects of medicine and the importance of the doctor–patient relationship.\textsuperscript{7} At the same time, he or she adopts a positive attitude toward trainees,\textsuperscript{4,6} shows enthusiasm for teaching,\textsuperscript{6} and makes himself or herself available for trainees\textsuperscript{4,7} and accessible for questions.\textsuperscript{29} He or she stimulates critical thinking,\textsuperscript{32,33} makes learning exciting,\textsuperscript{8} and is inspirational.\textsuperscript{28} Finally, a positive role model is aware of the importance of his or her role model status for medical education\textsuperscript{5,7,31} and therefore acts as a dedicated and active role model,\textsuperscript{34} encouraging the trainee to adopt similar behavior.\textsuperscript{27}
Personal qualities. A positive role model is patient, has self-confidence and self-esteem, and displays honesty and integrity. He or she is easy to work with and co-operative, shows humility and humanism, and has leadership ability.

Least important attributes of positive role models

Seven (41%) studies reported attributes considered the least important in identifying a clinical trainer as a positive role model (Table 2). These include stimulating the trainee's interest in research or assisting the trainee with finding and completing research, being the author of numerous publications, having a national or international reputation, or having received honors and awards. Whether the clinical trainer has management or presentation skills also has little importance. The clinical trainer's general physical appearance is reported as having little influence, as are the trainer's sharing of interests with the trainee outside medicine, spending time with trainees and learning about their personal lives, or participating in community affairs.

Attributes of negative role models

Six (35%) of the 17 studies reported attributes of negative role models (Table 2). These characteristics can also be divided into the categories of patient care qualities, teaching qualities, and personal qualities.

Patient care qualities. A negative role model is uncaring toward and communicates poorly with patients, adopts an uncooperative attitude toward health care workers, and displays unprofessional attitudes and unethical behavior. In addition, if the trainer's knowledge of the field is not up to date, the trainee may feel more knowledgeable than the trainer.

Teaching qualities. A negative role model teaches the trainee the wrong thing to do and the wrong way to behave, gives poor support to learners, and rarely provides feedback to trainees. He or she practices a sink-or-swim approach from the outset. Furthermore, he or she is disinterested and has difficulty remembering names and faces.
The attributes of the clinical trainer

Personal qualities. A negative role model is cynical,\textsuperscript{28,29} has a sexist attitude,\textsuperscript{34} and is impatient, inflexible, and overopinionated.\textsuperscript{5} He or she may nitpick and be harsh, unfair, or self-serving.\textsuperscript{24} Finally, a negative role model may lack self-confidence\textsuperscript{30} or leadership skills\textsuperscript{30}; he or she may be quiet and reserved\textsuperscript{4} or overextended.\textsuperscript{5}

Table 2
The Attributes of Positive and Negative Role Models, Reported in 17 Studies Included in a Systematic Review of the Literature on Role Modeling by Clinical Trainers in Graduate Medical Education

<table>
<thead>
<tr>
<th>Study and publication date</th>
<th>Attributes of positive role models</th>
<th>Attributes of negative role models</th>
</tr>
</thead>
</table>
| Fromme et al, 2010\textsuperscript{16} | • Displays professional behaviors with patients and family  
• Demonstrates knowledge acquisition and clinical thought processes  
• Models professional behaviors  
• Demonstrates humility and humanism  
• Uses humanistic style of teaching as an educator | • Is the chief  
• Has received honors/awards  
• Has a national/international reputation  
• Has numerous publications  
• Has an (un)attractive general physical appearance |
| Agarwal et al, 2010\textsuperscript{4} | • Has availability  
• Demonstrates enthusiasm for work  
• Has a positive attitude toward residents  
• Demonstrates honesty/integrity | • Is the chief  
• Has received honors/awards  
• Has a national/international reputation  
• Has numerous publications  
• Has an (un)attractive general physical appearance |
| Park et al, 2010\textsuperscript{27} | • Displays high degree of professionalism  
• Encourages similar behavior | • Teaches what not to do and how not to behave  
• Exhibits unprofessional attitude |
| Wear and Skillcorn, 2009\textsuperscript{28} | • Is very inspirational  
• Does the job with pleasure  
• Tries to put a human face on patients  
• Exhibits vulnerability, frustrations, uncertainty  
• Creates safe environment | • Rarely gives feedback  
• Puts sink-or-swim scenarios in place from the first minute of the first day  
• Is cynical |
### Table 2 continued

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<tr>
<th>Study and publication date</th>
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</table>
| Wyber and Egan, 2007<sup>29</sup> | • Is supportive, nice, generous with time  
• Is patient and accessible for questions  
• Is easy to work with and enjoys the job  
• Demonstrates good relationships with patients  
• Is compassionate, caring, engaging  
• Maintains interests outside medicine  
• Displays enthusiasm for medicine  
• Demonstrates relationship with his/her specialty | • Offers poor support  
• Communicates poorly  
• Has poor relationships with patients  
• Is uncaring  
• Is disinterested  
• Is bitter, cynical |
| Yazigi et al, 2006<sup>30</sup> | • Possesses relevant medical knowledge, sound clinical reasoning  
• Has effective therapeutic skills  
• Displays humanistic attitude with patients  
• Interacts collaboratively with health care workers  
• Has mastered technical abilities  
• Has self-confidence, leadership ability | • Conducts research  
• Has management skills  
• Has a professional reputation  
• Has an adequate external appearance  
| Weissmann et al, 2006<sup>31</sup> | • Demonstrates personal interest, empathy  
• Demonstrates appropriate nonverbal communication with patients and family members  
• Shows respect toward patients, builds personal connections  
• Is self-aware of teaching/role modeling | • Has inadequate relations with patients  
• Is uncooperative in interactions with health care workers  
• Lacks self confidence  
• Lacks leadership ability  
• Has an inadequate external appearance  |
| Maker et al, 2004<sup>32,33</sup> | • Stimulates critical thinking with use of literature  
• Demonstrates skills and decision making with confidence and virtuosity  
• Provides feedback to trainees  
• Allows trainees autonomy to make independent decisions | • Assists trainees with finding and completing research for publication  
• Conducts teaching rounds  
• Attends didactic teaching  
• Allows procedures to be carried out according to ability  
• Offers/provides didactic teaching |
### The attributes of the clinical trainer

**Table 2 continued**

<table>
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<tbody>
<tr>
<td></td>
<td>Most important attributes</td>
<td>Least important attributes</td>
</tr>
</tbody>
</table>
| Wright and Carrese, 2002   | • Has interpersonal skills, positive outlook  
• Is committed to excellence and growth  
• Has integrity,  
• Establishes rapport with learners  
• Develops specific teaching philosophies and methods  
• Is committed to the growth of learners  
• Is a strong clinician, provides high-quality, compassionate care  
• Assumes responsibility in difficult clinical situations  
• Goes the extra mile  
• Is the patient’s advocate  
• Has leadership ability  
• Is aware of role model status | • Is impatient, overly opinionated, inflexible  
• Is quiet, reserved  
• Is overextended  
• Has difficulty remembering names and faces |
| Sinai et al, 2001          | • Is comfortable with own strengths and weaknesses  
• Is knowledgeable  
• Has clinical experience  
• Is up to date in the field  
• Has good clinical skills  
• Is a dedicated and active role model | • Is self-serving  
• Places undue emphasis on billing or length of hospital stay  
• Demonstrates unethical behavior, sexist attitudes, nitpicking  
• Is harsh, unfair  
• Has a one-dimensional view of the patient  
• Leaves residents feeling more knowledgeable than the supervisor |
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| Elzubeir and Rizk, 2001⁴ | • Is dedicated to quality patient care  
• Demonstrates honesty/integrity  
• Has a positive attitude toward learners  
• Is patient  
• Makes learning exciting/stimulating  
• Understands learners’ needs  
• Educates and fully informs patients  
• Respects and recognizes others  
• Is committed to acting for patients’ good  
• Possesses excellent clinical reasoning skills  
• Communicates effectively with students  
• Is an excellent diagnostician and professionally competent  
• Interacts positively with other health care workers  
• Has the ability to explain difficult subjects  
• Expresses enthusiasm for teaching  
• Conveys empathy for patients  
• Can teach various levels of students  
• Communicates well with patients and their relatives | • Has interests outside medicine similar to the trainees’  
• Has numerous publications  
• Has an (un)attractive general physical appearance  
• Participates in community affairs  
• Attends conferences  
• Has the ability to promote interest in research  
• Has presentation skills |
| Hojat et al, 1999⁵; Magee and Hojat, 1998⁶ | • Is co-operative and eager to face challenges  
• Contributes to solving problems  
• Is not cynical  
• Has high self-esteem; is dominant and forceful  
• Exerts much energy  
• Does not anger quickly  
• Is not a sensation seeker  
• Is able to control impulses and cope with adversity  
| • Is conscientious  
• Is extraverted  
• Demonstrates openness |
| Wright et al, 1998⁷ | • Spends > 25% of his or her time teaching  
• Spends ≥ 25 hours per week teaching and conducting rounds when attending on the wards  
• Has served as chief resident  
• Stresses the importance of the doctor–patient relationship in his or her teaching  
• Teaches the psychosocial aspects of medicine  
• Directs his or her teaching to the learners’ needs  
• Perceives role modeling as important to the process of medical education  
• Is satisfied with his or her current position  
| • Spends >6 hours with house staff when not acting as their attending  
• Has any formal training in teaching  
• Enjoys teaching house staff  
• Learns about the life of house staff  
• Spends > 15% of his or her time on administrative work  
• Offers a high degree of perceived total support |
The attributes of the clinical trainer

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Côté et al, 1997
- Has clinical experience
- Is humane to patients
- Shows simplicity and warmth
- Is a good teacher
- Centers care around the patient instead of the illness
- Collaborates with other health care workers
- Pays attention to the quality of life of patients
- Is concerned about the prevention of illness and the promotion of health
- Is a competent researcher
- Pays attention to the cost of the health care system

Wright, 1996
- Displays positive attitudes toward residents
- Is enthusiastic about his or her work
- Has the ability to explain difficult subjects
- Has patience
- Is proficient as a diagnostician
- Possesses communication skills
- Shows compassion for patients and their families
- Interacts well with other health care workers
- Makes learning exciting and stimulating
- Interacts well with patients and their families
- Can teach various levels of trainees
- Possesses presentation skills
- Promotes interest in research

- Has a certain number of publications
- Has publications in certain journals
- Has an (un)attractive general appearance
- Shares similar interests outside medicine with trainee
- Has the ability to perform various procedures

* The results from articles based on the same data written by the same authors are presented together, resulting in fifteen sets of items.
Discussion and Conclusions

Through our systematic review of the medical and medical education literature on the clinical trainer as a role model for trainees (interns and residents), we have identified extensive lists of attributes that describe positive role models and negative role models. These attributes can be divided into three categories—namely, patient care qualities, teaching qualities, and personal qualities.

Although the differences among teaching, mentoring and role modeling are often thought to be unclear due to overlap in daily practice, role modeling is the most implicit (i.e., also occurs when the clinical trainer’s focus is on other, not trainee-related, tasks). Our findings illustrate this implicit aspect of role modeling: Positive role models were most commonly described as being excellent, experienced clinicians who had empathy for patients and positive interactions with patients, patients’ families, and other health care workers. Positive role models were also frequently described as displaying teaching qualities, including commitment to the growth of learners and a humanistic style of teaching, as well as personal qualities such as enthusiasm. Thus, the literature describes the clinical trainer who is a positive role model as someone who is admired for being, or acting as, a professional, or as someone who inspires and teaches while carrying out other tasks.

A good clinical trainer should be aware of his or her role model status because heightened awareness of role modeling may lead the trainer to seek the opportunity to demonstrate behavior, to comment on what was done, and to explain what was done. Some authors stressed that the clinical trainer should make his or her implicit behavior as a role model explicit to the trainee. This would help the trainee pay attention, retain what the trainer is modeling, become motivated, and use the modeled behavior as a guide for the trainee’s own actions.

In addition to describing the most important attributes of positive role models, almost half of the studies reviewed reported those attributes considered least important. These included whether the clinical trainer was active in research, published articles, played a management role, had achieved an international or national reputation, or had received awards. Furthermore, the clinical trainer’s general physical appearance was not considered to have much influence.
on her or her performance as a role model.\textsuperscript{4,6,8,30} This is in contrast with Gurung and Vespia's\textsuperscript{38} earlier finding that the teacher’s attractiveness was positively correlated with the student’s perceived learning. The authors of that study\textsuperscript{38}, however, interpreted “attractiveness” more as “liking” the teacher than as related to the teacher’s physical appearance. Another study that examined the influence of the trainer’s appearance on students’ evaluations of teaching showed that attractiveness had no effect.\textsuperscript{39} Thus, it seems that the clinical trainer’s behavior—as demonstrated through patient care, personal, and teaching qualities—is more important than the trainer’s appearance or scientific achievements.

The characteristics of negative role models, as reported in the studies reviewed, included being uncaring toward patients as well as having poor relationships with patients and other health care workers. Additionally, negative role models were described as being unsupportive and disinterested toward learners, being cynical and impatient, or having a sexist attitude. These attributes of negative role modeling are in marked contrast to the qualities of positive role modeling described above, and, thereby, confirm how important attributes are for characterizing role model behavior. Janssen et al\textsuperscript{40} similarly described the importance of the attributes of positive role models; they considered positive role modeling a prerequisite for stimulating trainees to provide patients with high-quality care. Kenny\textsuperscript{23} argued that the impact of negative role modeling may adversely affect the trainee’s establishment of a professional identity, and suggested there is a need for trainees to be able to discriminate between good and poor role modeling.

\textit{Limitations}

This review has a number of limitations. First, although much has been written about the importance of role modeling in medical education, we only found 17 articles based on original studies that met our inclusion criteria. Furthermore, these studies used different methods, techniques, and wording, which prevented us from performing a meta-analysis. Nonetheless, we were able to identify congruent qualities, and three distinguishing categories emerged from our analysis of these data. Second, the 17 studies were conducted in a range of countries and specialties, in different sociocultural and ethnic circumstances, which may have influenced the generalizability of the results. However, we believe that the similarity of the data from these diverse settings suggests that the identified attributes are transferable to other settings.
Implications for medical education and future research

The literature shows that efforts have been made to improve clinical role modeling. For example, Maker et al.\(^\text{33}\) used identified role model criteria as a tool to evaluate and provide feedback to clinical trainers. With these criteria, they could confirm a trainer’s improvement with regard to role modeling after the intervention. Cruess et al.\(^\text{16}\) described additional strategies to improve role modeling using a number of characteristics identified in their review, such as raising the trainer’s awareness of serving as a role model and facilitating reflection on the behaviors that had been modeled.

Such strategies are in line with the recommendations made by Wright and colleagues,\(^\text{5,7}\) who concluded that the identified attributes of positive role models can be acquired through training, particularly by making clinical trainers aware of their role model function. Such continuous awareness of the role model task is, as Wright and Carrese\(^\text{5}\) stated, an important attribute of an excellent role model. Thus, we suggest that the most important attributes of positive role models identified in our review could form the foundation of a training course for clinical trainers. They could also be used to develop an instrument for enhancing clinical trainers’ awareness of being a role model and to give trainers feedback on their role-modeling behaviors.

As trainees learn through observation and imitation,\(^\text{3}\) it is important that they learn to distinguish between positive and negative role modeling to prevent them from unwittingly imitating a trainer’s less desirable behavior.\(^\text{40}\) Given that the characteristics identified in this review were drawn from studies in clinical settings where multiple clinical trainers were observed and compared, the question arises as to whether trainees in a small hospital or primary care setting with only one or two clinical trainers would be able to distinguish between positive and negative role modeling. This is particularly relevant in situations in which it is not possible to compare the modeled behavior with that of another trainer who may be more professionally competent.\(^\text{40}\) However, if trainees were to have an objective instrument that they could use to evaluate their clinical trainers, they could identify negative role modeling. Therefore, we recommend incorporating the attributes we identified in this review into a tool to help trainees determine, through apperception, whether to imitate a trainer’s role-modeled behavior. Such
a tool would help ensure trainees learn the professional competencies that will enable them to become doctors capable of providing high-quality patient care.

Further research is necessary, however, to transform the attributes we identified in this review into a validated instrument to assess the clinical trainer as a role model. In addition, such a tool could be used in studying the effect of training courses for clinical trainers to improve role modeling.
References

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37. Côté L, Maheux B, Beaudoin C. Role models of residents graduating in family medicine and in different specialties in Quebec. [In French.] Can Fam Physician. 1997;43:907-913.

