

Structured Mentoring in Undergraduate Medical Education and Pediatric Residency Training

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Best Mentor? What made him/ her exceptional?

“Mentoring is widely advocated in medical education, yet in most programs it remains ad hoc, luck-dependent, and unmeasured.”

Nuis, Segers & Beusaert, 2023



Was the guidance/
mentoring provided
consistently by
design, or only by
chance?

Objectives



Define mentoring and distinguish it from coaching, advising, and supervision

Contrast structured (formal) and unstructured (informal) mentoring

Articulate its evidence-based benefits for 21st-century medical learners

Identify the five (5) core characteristics of structured mentoring in medical education

Apply a step-by-step framework to design a structured mentoring program



What is Mentoring?

- Formalized process
- Developmental relationship
- Between 2 persons where one person is more experienced (mentor) than the other (mentee)
- **Goal: Promote and facilitate student success, competence development, and career development**

Multiple types of support

Mentor provides career, emotional, psychosocial, psychological, and academic support

Deliberately designed

Relationship is vehicle of growth





Theoretical Roots of Mentoring

Facilitative Learning Theory (Rogers, 1983)

Student-centered, safe learning climate,
personal relationship between facilitator and
learner

Experiential Learning Theory (Kolb, 1984)

Cyclical learning through experience,
reflection, conceptualization, and
experimentation



The way learners
interpret & reinterpret
their experience is
central to creating
meaning, & thus,
learning

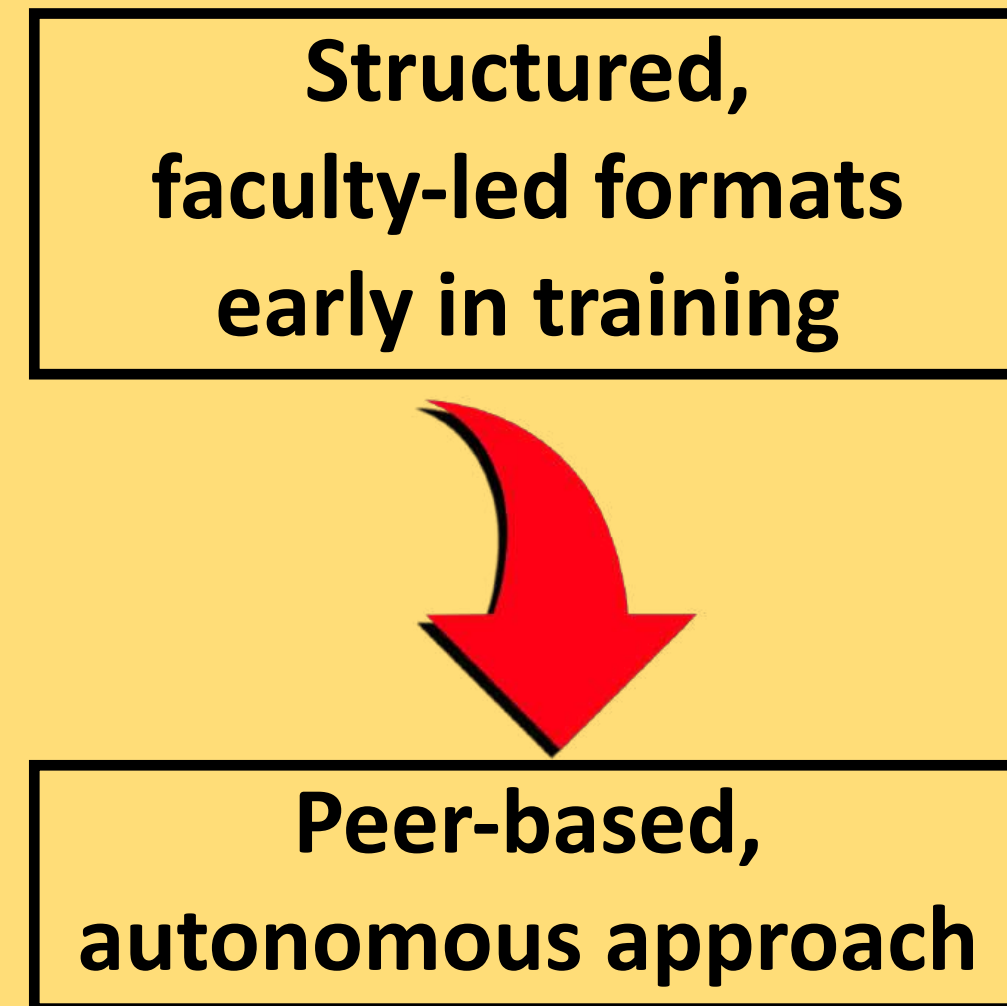
Transformative Learning Theory (Mezirow 1991, Cranton 1994)

Learners make sense of experiences and shift
behaviors, beliefs, and professional identity

Schools are essential for imprinting shared culture & values into children for social solidarity	Critique traditional norms, emphasize human experience, individual freedom & purposeful action
Senior mentor instructs, guides, and transfers knowledge	Collaborative, horizontal relationship between co-equals
Hierarchical, power-dependent relationship	Mentor and mentee co-create new knowledge
Mentor as expert; mentee as recipient	Expert and learner labels become arbitrary
Purpose: advance the mentee's career	Purpose: mutual learning and growth



Two philosophical perspectives shape how programs are designed (Darwin, 2000)



Mentoring vs. Adjacent Concepts

Concept	Description
Mentoring	Broad, long-term developmental relationship; career + psychosocial + academic support
Coaching	Task-oriented, time-limited; focused on specific performance improvement
Advising	Information-giving and guidance on decisions (academic, career pathways)
Supervision	Oversight of clinical practice; primarily evaluative; hierarchical





Structured vs Unstructured Mentoring

Structured (Formal) Mentoring	Unstructured (Informal) Mentoring
Formal / Official mentoring	Informal / Unofficial mentoring
Structured programs that <i>deliberately link mentors with mentees</i>	<i>Case-by-case guidance</i> Connections made outside formal structures
<i>Defined curriculum, objectives, & meeting schedules</i>	Organic, flexible, driven by individual initiative
Institutional oversight and accountability	Lacks institutional accountability
Ex: Assigned student advisors, Clerk2Clerk programs, residency mentor-mentee matching programs	Ex: One-off meetings with a PI, career advice from an attending, OSCE prep with a senior clerk

IDEAL MODEL:
Strong, structured program provides foundation early in training

As trainee advances, develop individualized, informal mentoring relationships layered on top



Advantages and Drawbacks

STRUCTURED MENTORING Advantages	UNSTRUCTURED MENTORING Advantages
Reduces systemic barriers Increases equity and access	Highly personalized to individual interests and goals
Demystifies the process Creates a safe space for questions	Flexible; less regimented scheduling
Ensures every trainee has at least one mentor	Fosters authentic, organic mentoring connections
Enables formalized feedback & program improvement	Can evolve naturally into long-term relationships
Supports trainees from underrepresented backgrounds	



Advantages and Drawbacks

STRUCTURED MENTORING Drawbacks	UNSTRUCTURED MENTORING Drawbacks
More time-consuming Greater administrative coordination	Luck-dependent: requires mentee to find the right person
Can feel less personalized May include redundant content	Requires greater mentee initiative
Perceived lack of authentic connection if poorly matched	Perpetuates inequity: socially connected trainees benefit more
	No accountability Quality is unverifiable

* Evidence-Based Benefits

FOR MENTORS

- Honing of communication & leadership skills
- Personal satisfaction & sense of professional contribution
- Increased academic productivity & institutional recognition
- Improved teaching methodology & pedagogical reflection



FOR MENTEES

- Career development
- Academic productivity
- Clinical competency
- Professional identity formation
- Well-being
- Leadership skills

Students without mentors report worse overall well-being, reduced research productivity, and poorer application success

(Wu & Olagunju, 2024)

Why It Mentoring Especially Critical for 21st-Century Medical Education Learners

- Greater learner diversity
- Competence-based medical education (CBME)
- Lifelong learning expectation
- Digital and information overload



Why It Mentoring Especially Critical for 21st-Century Medical Education Learners

- Mental health and burnout crisis
- Short rotation cycles in modern curricula
- Post-pandemic adaptations



6 The Anatomy of Structured Mentoring 3

5 Core Characteristics that define mentoring in higher education:

1. Purpose

a. **Student / Trainee Success** — retention, progression through training, transition support

b. **Competence Development** — knowledge, skills, and professional competencies including leadership, research, and clinical reasoning

c. **Career Development** — specialty selection, academic trajectory, professional networking



The Anatomy of Structured Mentoring

2. The Actor (Who is the Mentor?)

Actor Type	Best Suited For
Peer Mentor (fellow student or co-resident)	Student success, transition, emotional support
Faculty Mentor (attending, program director)	Career development, research, academic advancement
Near-peer Mentor (senior resident mentoring junior)	Clinical skill translation, workplace navigation, psychological safety

TIERED MODEL:

PGY 1- Near peer mentors

Research and career development- Faculty mentors

Shared professional identity formation- Group mentoring



The Anatomy of Structured Mentoring

3. Formalized Process

Formalization is what distinguishes structured mentoring from informal connection:

- a. **Mentor Training** — initial training before mentoring begins, plus ongoing support
- b. **Mentor Compensation** — recognition, academic promotion, financial, teaching time allocation



* ☪ The Anatomy of Structured Mentoring ☪ *

4. Developmental Relationship

- a. **Format:** individual one-on-one meetings vs. group-based mentoring
- b. **Matching:** random assignment, interest-based, or preference-based
- c. **Emerging innovative formats:**
 - speed-dating-style matching (Caine et al., 2017)
 - mentor-mentee family lines across cohorts (Cheng et al., 2022)
 - gender-concordant peer circles for underrepresented groups (Lukela et al., 2023)



The Anatomy of Structured Mentoring

5. Functions and Behaviors of the Mentor: Support trainee

Delivered through specific behaviors:

Career — enhancing career advancement, providing career-related assistance

Emotional — empathetic listening, encouragement, creating a psychologically safe space

Psychosocial — addressing identity, belonging, self-confidence

Psychological — navigating stress, burnout, and emotional demands of training

Academic — assisting with knowledge acquisition, research, presentations, publications



The Anatomy of Structured Mentoring

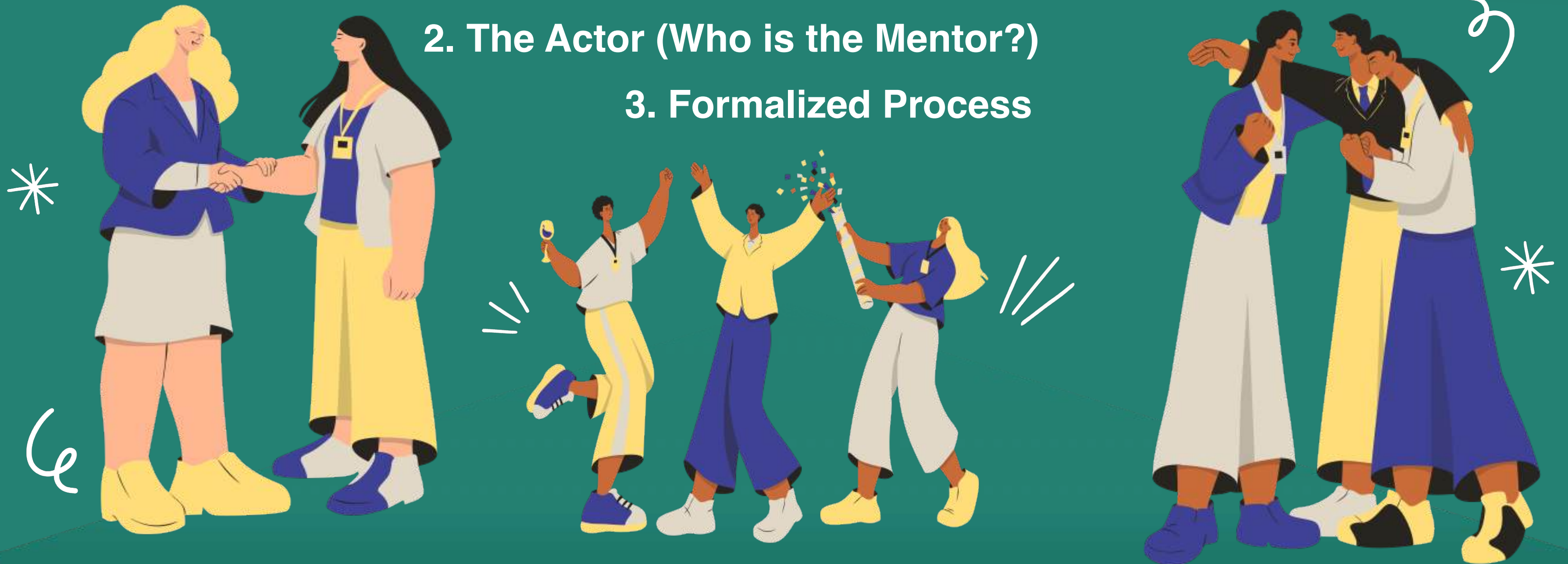
1. Purpose

4. Developmental Relationship

2. The Actor (Who is the Mentor?)

3. Formalized Process

5. Functions and Behaviors of the Mentor: Support trainee



* The Anatomy of Structured Mentoring *

Key mentor behaviors:

- Role modeling Professional values and behaviors
- Providing information and resources Knowledge, connections, materials
- Providing feedback Specific, constructive, timely
- Encouraging reflection Self-assessment & growth mindset
- Assisting with goal setting Co-creating learning & career goals
- Challenging the mentee Set appropriately high expectations
- Motivating and building the relationship Genuine investment in mentee's success



Designing Your Own Mentoring Program

Step 1

**Decide on our
theoretical
perspective**



Step 2

**Define the
program
outcomes**



Step 3

**Select and
prepare your
mentors**

Designing Your Own Mentoring Program

Step 1

Early residency (PGY 1-2):
PSYCHOLOGY- DRIVEN,
structured, functionalist format
for technical skills acquisition

Senior residents & fellows:
SOCIOLOGY- DRIVEN,
autonomous, relational format
to emphasize identity
formation, leadership, non-
technical skills



Step 2

Specific outcomes?
SMART objectives
Align objectives with
institutional goals and
accreditation requirements
(PPS-HAB)



Step 3

Who will mentor?
Design and deliver mentor
training
(Mentor Competency
Assessment Tool)
Plan for ongoing support
Offer formal recognition

Designing Your Own Mentoring Program

Step 4

**Design the
matching
process**



Step 5

**Design the
Mentoring
Curriculum
and Schedule**



Step 6

**Establish an
Evaluation
Framework**



Designing Your Own Mentoring Program

Step 4

Preference-based and interest-aligned matching produce stronger relationships

Consider mentee choice

Limit mentor load

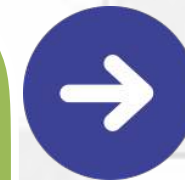


Step 5

Define meeting frequency
MONTHLY- for 1-to-1
QUARTERLY- formal review

Structured agendas
(opening, goal review, skills discussion, reflection, planning)

Mix of formats
Build in milestones



Step 6

Mentor competency:
Mentor Effectiveness Scale
Mentor Behavior Scale

Mentee outcome:
College Student Mentoring Scale (Crisp 2009)

Program quality:
CIPP model

Parameter	Details
Program Name	Pediatric Residency Structured Mentoring Program
Target Population	PGY-1 to PGY-3 Pediatric Residents
Duration	3-year longitudinal program (aligned with residency training)
Theoretical Basis	Hybrid: psychology-driven (junior years) transitioning to sociology-driven (senior year)
Core Purpose	Support trainee success, competence development, professional identity formation, and career planning

* Sample Structured Mentoring in Pediatric Residency Training





Program Objectives



At the end of the 3-year program, residents will be able to:

- 1. Navigate the pediatric residency curriculum with confidence and a clear developmental roadmap**
- 2. Identify personal learning needs and set SMART goals aligned with PPS competencies**
- 3. Demonstrate growth in the different training outcomes through mentor-supported activities**
- 4. Produce at least one scholarly output**
- 5. Articulate a clear post-residency career plan supported by mentor guidance**
- 6. Demonstrate reflective practice skills and professional identity as a pediatrician**

Phased Instructional Design

Period	Mentoring Focus	Format	Mentor Type	Evaluation
PGY-1 Phase 1 (Months 1–6)	Orientation & Transition: navigating rotations, understanding expectations, stress management, study skills	Monthly 1:1 with near- peer mentor Quarterly group session with faculty mentor	Near-peer (PGY-3) as primary Faculty advisor as secondary	Monthly reflection log Mid-year goal review meeting
PGY-1 Phase 2 (Months 7–12)	Competence Foundations: clinical reasoning, professional behaviors, first scholarly project identified	Bi-monthly 1:1 with faculty mentor Monthly peer mentoring circle (4–6 residents)	Faculty Mentor (assigned based on interest preference)	End-of-year portfolio review Mentor-rated competency checklist

Phased Instructional Design

Period	Mentoring Focus	Format	Mentor Type	Evaluation
PGY-2 Phase 3	Academic & Research Development: scholarly productivity, research design, abstract submission, teaching skills	1:1 with research faculty mentor every 1-3 months Bi-monthly group journal club mentoring	Research-active Faculty Mentor Optional near-peer for peer coaching	Research output tracking Self-efficacy scale Presentation in grand rounds

Phased Instructional Design

Period	Mentoring Focus	Format	Mentor Type	Evaluation
PGY-3 Phase 4	Leadership, Identity & Career Planning: specialty selection, leadership roles, advocacy, mentorship of junior peers	Quarterly 1:1 with faculty career mentor Self-directed informal mentoring encouraged	Career mentor (specialty-aligned) Senior resident begins serving as near-peer mentor to PGY-1s	360-degree feedback Career plan document Mentor Effectiveness Scale rating

* Mentor Training Program



Training Content	Recognition & Compensation
Pre-program workshop: roles of a mentor, active listening, giving feedback, setting boundaries, cultural responsiveness	Academic promotion credit for participation
Mentor Competency Assessment (MCA) at baseline and end of year	Certificate of completion per year
Monthly mentor peer group: shared cases, challenges, strategies	Recognition in program annual report
Mid-year reflective practice session facilitated by program director	Option to contribute to mentoring research and publication

* **PGY-1 residents** complete an **intake survey**: career interests, research areas, communication style preferences, and demographic considerations

* A program coordinator uses **preference-based matching**: residents rank 3 preferred faculty mentors; faculty confirm capacity (max 2 mentees each)

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Matching Strategy



- * **Near-peer matches** are assigned by the coordinator based on **shared rotation experiences and availability**
- * **A match revision window (2 weeks)** is available after the first meeting if the pairing is not working
- * **Gender-concordant and culturally responsive pairing** is prioritized for underrepresented trainees

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Matching Strategy



Evaluation Domain	Tool / Method
WHAT is evaluated	HOW it is evaluated
Mentee outcomes (career direction, research output, well-being, milestone achievement)	College Student Mentoring Scale (CSMS; Nora & Crisp, 2007) validated tool
Mentor competency (communication, feedback quality, engagement)	Mentorship Effectiveness Scale (MES; Berk et al, 2005)
Program quality (design, implementation, impact)	CIPP Model evaluation at program level Qualitative interviews at Year 1 & 3



Evaluation Framework



Mentorship Effectiveness Scale (Berk, et al, 2005)

Your name: _____

Directions: The purpose of this scale is to evaluate the mentoring characteristics of _____, who has identified you as an individual with whom he/she has had a professional, mentor/mentee relationship. Indicate the extent to which you agree or disagree with each statement listed below. Circle the number that corresponds to your response. Your responses will be kept confidential.

- 0 = Strongly Disagree (SD)
- 1 = Disagree (D)
- 2 = Slightly Disagree (SID)
- 3 = Slightly Agree (SIA)
- 4 = Agree (A)
- 5 = Strongly Agree (SA)
- 6 = Not Applicable (NA)

SAMPLE: My mentor was hilarious.	0	1	2	3	4	5	⑥
	SD	D	SID	SIA	A	SA	NA
1. My mentor was accessible.	0	1	2	3	4	5	6
2. My mentor demonstrated professional integrity.	0	1	2	3	4	5	6
3. My mentor demonstrated content expertise in my area of need.	0	1	2	3	4	5	6
4. My mentor was approachable.	0	1	2	3	4	5	6
5. My mentor was supportive and encouraging.	0	1	2	3	4	5	6
6. My mentor provided constructive and useful critiques of my work.	0	1	2	3	4	5	6
7. My mentor motivated me to improve my work product.	0	1	2	3	4	5	6
8. My mentor was helpful in providing direction and guidance on professional issues (e.g., networking).	0	1	2	3	4	5	6
9. My mentor answered my questions satisfactorily (e.g., timely response, clear, comprehensive).	0	1	2	3	4	5	6
10. My mentor acknowledged my contributions appropriately (e.g., committee contributions, awards).	0	1	2	3	4	5	6
11. My mentor suggested appropriate resources (e.g., experts, electronic contacts, source materials).	0	1	2	3	4	5	6
12. My mentor challenged me to extend my abilities (e.g., risk taking, try a new professional activity, draft a section of an article).	0	1	2	3	4	5	6



Evaluation Tools

COLLEGE STUDENT MENTORING SCALE (CSMS)

Instructions: The information (Nora and Crisp, 2007) to help colleges improve practice and policies for students. Participants may choose to not participate without penalty. If you have completed this scale before, during or after the college experience, please indicate so by marking the appropriate box. Circle the number that best represents your response and darken the oval.

- Academic subject knowledge support
- Degree and career support
- Psychological and emotional support
- Existence of a role model

ATTITUDES AND PERCEPTIONS OF MENTORING

While in college I have had someone in my life who ...

1. I look up to regarding college-related issues
2. Helps me work toward achieving my academic aspirations
3. Helps me realistically examine my degree or certificate options
4. I can talk with openly about social issues related to being in college

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I look up to regarding college-related issues	⓪	⓪	⓪	⓪	⓪
2. Helps me work toward achieving my academic aspirations	⓪	⓪	⓪	⓪	⓪
3. Helps me realistically examine my degree or certificate options	⓪	⓪	⓪	⓪	⓪
4. I can talk with openly about social issues related to being in college	⓪	⓪	⓪	⓪	⓪

Summary



Mentoring without structure is mentoring by chance — our trainees deserve better!

*The best programs are tiered:
formal and structured early;
more autonomous & peer-based later*

*Match mentor type to program purpose:
near-peers for transitions,
faculty for career & research*

*Invest in mentor training and recognition —
this is what sustains programs over time :)*

*Evaluate rigorously using validated tools —
effectiveness must be demonstrated, not assumed*

THANK YOU

