

**From “See One” to “Do One”:
Medical Students’ Cognitive Processing of Observed Clinical Encounters**

BY

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THESIS

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This thesis is dedicated to my husband, Craig Poeppelman, who supports all my professional endeavors.

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RSP

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LIST OF ABBREVIATIONS

SP Standardized Patient

PI Primary Investigator

SUMMARY

Context: Medical trainees spend a significant amount of time observing more experienced clinicians, yet our understanding of how learners process these observations remains incomplete. While previous research on this topic focuses primarily on how learners process positive modeled behaviors, this exploratory study aims to investigate how medical students interpret the observation of a more experienced clinician modeling both positive *and* negative behaviors as well as how that interpretation influences their subsequent clinical performance. Methods: The authors conducted a video-based intervention with 11 medical students to investigate the effect of observing a mix of positive and negative modeled behaviors on taking a sexual history from a standardized patient. Using an interview methodology and constructive analytic approach, the authors explore the process of learning from clinical observations. Results: The results were organized in three stages of the observation learning process: 1) learner attention, 2) judgement of observed behavior and 3) learner application. Specifically, students focused their attention on negatively modeled behaviors, challenges specific to the task and how areas of their own personal development were accomplished. Students took a piecemeal approach to classifying behaviors as done well or poorly based on previous instruction, experience or perceived downstream effects. When applying their observations, students choose to copy, adapt or avoid modeled behaviors based on their classification of the behavior. Conclusions: Faculty can apply these findings to optimize learning from observation. Specifically, clinicians may consider identifying task-specific challenges and a student's personal goals, which naturally draw the student's attention, before a planned observation in order to develop a shared mental model. To frame debriefing of encounters, clinicians may consider the natural targets of learner attention, the challenges specific to learning from observation and the factors likely to influence judgement on observed behaviors identified in this work.

I. Introduction

Medical trainees begin learning in the workplace by observing more experienced clinicians modeling their future role, a necessity for practical and patient safety reasons¹. However, descriptions of role modeling in the literature suffer from the lack of a unified definition. Existing definitions can generally be divided into two groups: those which focus on role models as admired, exemplary individuals and those which focus on the process of modeling knowledge, skills and attitudes for learners²⁻⁵. Here we focus on the latter; in other words, on role modeling as the process of teaching and learning by example^{2,6-8}.

Much of the previous research into the process of role modeling builds on Bandura's social learning theory, which consists of four stages. According to Bandura's model, the learner 1) observes what is modelled, 2) creates a mental representation of it, 3) practices what was modelled and 4) is motivated to continue this practice through various forms of reinforcement^{2,9,10}. Learners make conscious decisions about which behaviors to imitate and which behaviors to avoid, taking pieces from different observed encounters^{2-4,6,7,11-15}. They make these decisions based, in part, on the perceived consequences of the modeled behaviors^{2,11}. Role models can influence these decisions as well. As a result, experts have called for models to debrief with learners by reflecting on the observed encounter in order to "make the implicit, explicit" and optimize learning^{2,3,6,11,13,16-20}. Learners also identify new goals and learning needs for themselves by recognizing things the model does particularly well^{4,21}. In contrast to this conscious process of adopting behaviors, trainees also adopt observed behaviors and attitudes in an unconscious manner, a process which has proved challenging to study^{3,12,16,22}. These conclusions have generally been drawn from a summative collection of experiences with multiple varied observations over time. We have not found previous studies that have examined how trainees learn from observing a single, controlled clinical encounter.

Additionally, previous research on the process of role modeling focuses primarily on positive role modeling. Yet the educational value of observing both exemplary and flawed performance has been well described for motor tasks^{18,23} and has also been reported for communication skills¹⁷. Students recognize that exposure to mixed performance is important²⁴ and most day-to-day clinical encounters model both exemplary behaviors and behaviors which could be improved^{7,16,25-33}. Thus, examining how trainees learn from observing a mixture of positive and negative behaviors is important to better approximate the real world.

We build upon existing research through an inductive exploration of trainee cognition and practice after observing a mixture of positive and negative behaviors modeled in a single, controlled encounter. By focusing on a single, controlled encounter, we are able to shift our focus to a deeper examination of the learning *process* rather than the range of knowledge, skills and attitudes modeled in the workplace. In turn, a better understanding of how trainees process an observed mixture of behaviors in a single encounter and how they apply this in practice can help medical educators to optimize learning from observation. Such an understanding could influence the structure or debriefing of observed encounters.

II. Methods

To investigate the effect of observing a mix of positive and negative modeled behaviors, we conducted a video-based intervention with 11 medical students. Students observed a mixed performance before taking a sexual history from a standardized patient. Using semi-structured interviews, we explore trainee cognition proximal to observation of and practice with a standardized clinical encounter. This method contrasts with most previous research, which has relied primarily on trainee or educator recall of remote, diverse experiences with learning from observation. Here, we aimed to capture the range of student reaction to a common experience, to add new insights about learning from observation while at the same time, limiting recall bias and controlling for differences in observed encounters.

1) Participants and Study Setting:

Pre-clinical medical student volunteers from two medical schools (University of Chicago and University of Illinois at Chicago) were asked to participate. The PI (RSP), who did not have a role in student instruction or evaluation, recruited participants over email. Participation was incentivized with a \$10 gift card to Starbucks. The study took place at the standardized patient simulation center at each institution.

2) Data Collection:

Students watched a video of an attending physician (“Dr. Smith”) exhibiting a mixture of positive and negative behaviors while taking a sexual history from a male patient (Appendix A). The attending in the video is a female faculty member at University of Chicago.

Participants were then recorded taking a sexual history from a female standardized patient (Appendix B). After the SP encounter, participants completed a survey. In the survey, participants evaluated the attending’s performance in the video they observed using a global rating scale and checklist of communication behaviors and sexual history tasks, adapted from the Kalamazoo Essential Elements Communication Checklist and clinical guidelines³⁶⁻⁴²(Appendix C). General demographic information was also collected from each participant. The PI (RSP) then interviewed the students about their experiences guided by an interview protocol (Appendix D) and the completed participant survey.

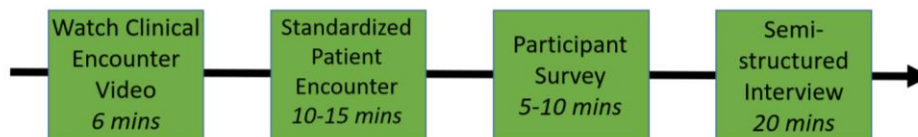


Figure 1. Study Timeline

3) Data Analysis:

We conducted our analysis using a constructivist framework, which posits that there is not one fixed reality but multiple realities constructed from each individual's interpretation of the world, in order to capture the range of student experience³⁴. We used an inductive analytic approach consisting of open-and-focused coding³⁵. Although existing theories were not used to create codes, the data is presented in the context of Bandura's social learning theory to better situate the findings in the existing literature. The PI (RSP), a female graduate-level medical trainee, performed the primary data analysis. The PI began by immersing herself in the data with a comparison of interview recordings to the professional transcription, to ensure accuracy. She coded the first five interviews with an open-coding approach to develop a codebook and summarized findings in an initial memo. She then used a narrower, focused set of codes to analyze the remaining six interviews. She composed an extensive integrative memo, inclusive of all data, to organize the codes around themes and patterns³⁵. Themes and codes from the interview analysis were supplemented by an analysis of the video-taped SP encounters, allowing for triangulation. The SP encounter recordings were analyzed in the context of "Dr. Smith's" videotaped encounter by interpretive content analysis, which assumes that "meaning is not simply 'contained' in the text" and places a greater emphasis on interpreting the data in context.^{34,35} By comparing the SP encounters to the observed clinical example, we were able to assess for similarities in phrasing or movement suggesting the influence of Dr. Smith's performance on the student's performance. All memos were shared with the senior author (LH) throughout this process to ensure trustworthiness.

III. Results

1) Demographics

During the spring of 2017, eleven medical students were interviewed after both observing and practicing a sexual history. Five were first year medical students and six were second year medical students. All students had previous lecture-based instruction on taking a sexual history and had experience taking a sexual history from a standardized patient. Two students had additional experience in a free clinic. Of note, although we intended to recruit both male and female participants, our sample consisted only of women. For our purposes this was likely beneficial, given that students are more likely to view a clinician of the same gender as a model of their future role¹⁴.

Our findings are organized in three stages of the process of learning from observation: 1) learner attention, 2) judgement of observed behavior and 3) learner application. This 3- stage process, which echoes the first 3 stages of Bandura's social learning theory, provides a framework through which we can better understand and describe the process of learning from observation.

2) Learner Attention

The first stage in Bandura's social learning theory is the learner observing a modelled behavior¹⁰. The focus of learner attention in the observed encounter has been identified as an important determinant of learning³⁶. While previous work has identified that learners attend to traits which they value², our data expands on this with four determinants of learner attention in observed encounters. Specifically, the behaviors students attended to in the video in our study included: 1) negatively modeled behaviors, 2) behaviors addressing task-specific challenges, 3) behaviors relevant to personal goals, and 4) task-specific history content. Students describe poorly performed behaviors as sticking in their minds, sometimes to the point of distraction.

"[I remember] Flinching really hard when she asked, 'How many women do you have sex with?' I was like 'No! you can't do that!' That stood out to me pretty aggressively."

Students also focused their attention on tasks they anticipated to be particularly challenging. For example, in taking a sexual history:

"I always want to pay attention to how the doctor asks- you know asking about sexual partner number is difficult... I'm always looking for different examples of how to ask that. [I pay attention to] how the question is phrased because I think that's hardest for me, how to phrase it. "

If a student had a specific personal goal for their standardized patient encounter, their attention was drawn to how the clinician accomplished those goals, either as a template or counterpoint. Students also uniformly reported paying attention to the content of the sexual history in the video, as a review of the kinds of questions they should ask in their history. Notably, a few students reported that their attention to the thoroughness of the history made them nervous about missing pieces of information in their own SP encounter. This contrasts with findings from studies of peer observation, which indicate students derive self-efficacy from observing peers perform well³⁷.

" Usually, I am pretty confident taking a sexual history...But I think [the video] made me second guess some of the information I needed to take down."

Overall, students' attention was drawn to four things in the observed encounter, as summarized above. Often, students saw these attention grabbers as useful, but in some cases they were distracting or decreased a student's self-efficacy.

3) Judgement of Observed Behavior

The next stage in Bandura's social learning theory is the creation of a mental representation of what was modeled, requiring the learner to categorize what was observed and make connections with previous experience. Our findings echo previous descriptions of a piecemeal approach to interpretation of the observed clinician's performance^{6,12-14}. Students valued the individual behaviors independently, rather than applying an overall judgement to the entire encounter.

In our study, a student's approach to determining the merit of an observed behavior varied between a pattern-based categorization and a logic-based approach. When observed behaviors clearly paralleled or contrasted with a student's existing habits, they were automatically classified based on those habits. For

example, several students automatically classified Dr. Smith's assumption of the patient's partner's gender as a negative behavior due to their own practice of asking about gender before using a gendered term.

"Something I noticed from the video that kind of bothered me was the fact that the doctor kind of assumed too much about whether the patient was with a male or female or both. She immediately assumed that he had a female partner. When I ask the questions, I ask, "Have you been with men, with women, with both?" to make sure you're inclusive in that sense, and that has really been emphasized in our class and I think that's really important."

Alternatively, in the logic-based approach to classification, students based their reasoning on previous instruction, experience or a consideration of downstream effects.

"She asked for STIs and HIV separately. I feel like we have been taught to do that just because a lot of time HIV may not be thought of in the same way, and so I made sure to do that separately."

The estimation of downstream effects was often anchored to student's observations of the patient's reaction to the behavior.

"I was honestly surprised that the patient wasn't more taken aback when he was answering that question [about HIV testing]. He seemed pretty much to roll with it, and I was like, 'Well, I guess it's fine.'"

Students were sometimes uncertain how to classify behaviors due to a knowledge deficit, lack of student confidence or observation of an inherently ambiguous behavior.

"[When I said she could have improved her] slang, I guess that one argument is that you shouldn't say 'Getting it up', which is why I put that. That's not my personal feeling, so I don't know, maybe I differ from the correct way. Maybe I should be corrected. I feel like the patient says something and that's what they're comfortable with, to me, it's not a bad thing."

Interestingly, the classification of behaviors was not influenced by a pre-existing relationship with the clinician in the video. All students described her performance as mediocre or good with room for improvement. However, several students acknowledged recognizing that the clinician was "acting", which may have negated the influence of a pre-existing relationship.

Overall, students made decisions about an observed behavior's merit using either pattern-based categorization or a logic-based approach. Notably, these decisions are influenced by previous instruction, experience and perceived downstream effects.

4) Learner Application

According to Bandura, after the learner creates a mental representation of what was observed, they practice what was modeled. In our study, students recognized four ways that watching the video influenced their practice with the standardized patient: 1) copying modeled behaviors, 2) adapting modeled behaviors, 3) avoiding modeled behaviors and 4) as a reminder of salient history content. When copying modeled behaviors, students reported trying to copy both specific phrasing and more general communication behaviors.

"Her being able to say 'I'm really sorry', 'that seems really hard', 'that seems really hard for you'... I took note of that too, and wanted to - I remember mentally noting like if something happens that's good language to use."

Previous research describe students emulating models they see as similar to themselves^{12,14}. Most students saw Dr. Smith as dissimilar to themselves, both because of the negative behaviors modeled and differences in age, experience and demeanor. Despite this, all students described copying some behavior(s) from the video.

Previous work describes adaptation of behaviors as subsequent to copying¹². However, in our study students described adapting observed behaviors that either didn't fit well with their personal communication style or that they thought could be improved upon immediately following observation, instead of copying.

"[I wanted to replicate] the tone of the questions, her overall empathy and building rapport with the patient. Beyond that, I mean you have to add your own character to your interactions. I'm not going to copy her. She's herself."

However, some students reported struggling to either copy or adapt the behaviors they observed in a new context.

"Initially, I was relying on the video as a template and then once I realized I was going to be interviewing a woman I was like, 'Okay, well, this is a little different.' "

Relying on the video as a template also resulted in incomplete histories from a few students who failed to recognize that portions of the sexual history were missing from the video.

"She didn't ask in the video about a history of sexual abuse and I didn't think of that and then I didn't ask about that either...If she had asked about it in the video, I probably – it would've prompted me to be like, 'Ask about that.'"

Lastly, students found the negatively modeled behaviors to be a good reminder of things to avoid in their own encounters.

"I think reacting the way that I did to some of the things that weren't done well made me very aware to not do them in my own encounter."

Overall, students described that the observed encounter was a smaller influence on their performance with the standardized patient than previous experience and instruction. However, in addition to the behaviors students consciously copied, adapted or avoided, students also acknowledged that the video likely had an additional subconscious influence on their performance.

"I think even if it's subconscious, there has to be a little bit of mirroring. Like you just see it. It's one of our preceptors. It's someone that we – or I – feel like I'm supposed to be learning from. I think even consciously and subconsciously I take things that she does."

In summary, students applied what they observed in three ways: by copying observed behaviors, adapting observed behaviors or avoiding observed behaviors. Some of the challenges students found in learning from observation were applying what they learned in a different context and recognizing omitted behaviors.

IV. Discussion

We set out to further explore the process of learning from observing the mixed performance of an experienced clinician in a single encounter. The process described by students in this study echoes and expands on three of the subprocesses outlined by Bandura's theory of social learning: attention, retention and reproduction¹⁰. We observed that learner attention is naturally drawn by negatively modeled behaviors, task-specific challenges and learner goals. In the retention phase, learners make conscious decisions about the value of what was observed using a pattern-based or logic-based approach. Yet learners are sometimes uncertain in these decisions due to a knowledge deficit or lack of confidence. In the reproduction phase, in addition to copying and avoiding behaviors, learners may choose to adapt behaviors they think they can improve upon or which don't fit their communication style.

Raïche et al. described the importance of directing learners' attention in observed encounters³⁶ but not how attention is naturally directed. Horsburgh et al. found that learners paid attention to behaviors that align with traits they value in a doctor². In contrast, we found learners attended to behaviors perceived to be negative, behaviors addressing task-specific challenges, behaviors relevant to learner-specific goals and the overall history content.

Previous works show the interpretation of observed behaviors to be influenced by the observed response of the patient² and have related that to Bandura's vicarious reinforcement¹⁰, but not the learner's approach to this interpretation. Students in our study described two approaches: a pattern-based classification and a logic-based classification. In addition to the observed patient reaction, we also found student's classifications were influenced by previous instruction, existing habits and theorized downstream effects. We also found that there were observed behaviors some trainees had trouble classifying, either due to lack of knowledge or confidence. We know that reflection, a process which enables learning from experience, varies among trainees based on ability, disposition, experience and

environment and that reflection is a skill which can be developed¹⁹. The factors which influence a student's ability to learn from observing another's experience likely parallel these, however that is beyond the scope of this work.

Our findings support previous research demonstrating that trainees take a piecemeal approach to learning from observation by copying behaviors they judge to be positive and avoiding behaviors they judge to be unacceptable^{7,12-14,26}. Despite the previous finding that students emulate models they see as similar to themselves^{12,14}, we found students still copied behaviors from a model they perceived as dissimilar due to age, experience and demeanor. We also found that learners adapted behaviors to improve upon them or to better suit their personal communication style. This differs from previous works which either do not describe adaptation or describe it as occurring after copying¹².

Experts have advocated "making the unconscious conscious" for trainees through debriefing encounters¹⁶. Our findings can help guide clinicians to optimize observed encounters by both shaping this debrief and highlighting the importance of setting up a shared mental model before observation, as summarized in Table 1. Before the observed encounter, the role model should identify learning goals and particular challenges to direct both the trainee's and the role model's attention. A number of frameworks for structuring debriefing have been described in the simulation literature. Many simulation debriefing frameworks begin with a "reactions" phase^{38,39}. Similarly, we suggest role models begin a debrief with asking the learner if anything they observed surprised or puzzled them. This will allow learners to raise instances of uncertainty in the classification of their observations, such as those observed in our study, to the forefront for discussion. In addition to those topics raised by the learner, our data suggest the natural draws on learner attention identified in our study, specific challenges to learning from observation, and factors likely to influence behavior classification, as good topics for debriefing. Role models may also want to acknowledge that some learners will feel intimidated by observation and mitigate this effect with reassurance about the learner's trajectory. The importance of

involving the learner in a discussion, rather than simply articulating teaching points to them should be emphasized. For example, without probing trainees for their interpretation of what was observed or leaving space for questions, learners may have lingering uncertainty or persistent knowledge deficits which could have been addressed in the debrief. The importance of actively involving the learner in a debrief has also been highlighted in the simulation literature³⁸.

Limitations of this study include a small sample size, which limited the ability to draw conclusions about the influence of trainee characteristics on the process of learning from observation. Additionally, although students acknowledged a subconscious influence of observation on their own behavior, our methods limited the ability to further characterize this phenomenon. Lastly, given previous findings that students emulate models they see as similar to themselves^{12,14}, our findings may have differed with a model the students saw as more similar to themselves. This is a potential area of future investigation. Overall, our findings about the process of learning from observing more experienced clinicians can help guide clinicians in making these encounters more productive, specifically in helping trainees focus their attention and structuring a productive debrief after observed encounters.

Table 1: IMPLICATIONS FOR STRUCTURING CLINICAL OBSERVATIONS

Key Take Home Points	Implications
While observing clinical encounters, learners pay attention to: <ul style="list-style-type: none"> - Negatively modeled behaviors - Behaviors relevant to learner-specific goals - Behaviors addressing task-specific challenges - Task-specific history content 	<i>*Before</i> observed encounters, clinicians should identify learner goals and specific challenges anticipated in order to direct trainee & model attention <i>*After</i> observed encounters, focus debrief on behaviors trainees attended to or behaviors relevant to learner goals/task-specific challenges
Learners classify observed behaviors as positive or negative in a piecemeal fashion based on patterns or logic influenced by: <ul style="list-style-type: none"> - Existing habits - Previous instruction - Theorized downstream effects - Observed patient reaction 	<i>*After</i> observed encounters, clinicians can shape the debrief by: <ol style="list-style-type: none"> 1) Probing trainees for relevant previous instruction/habits 2) Highlighting unusual patient reactions to limit their influence 3) Framing behaviors in intended downstream effects

<p>Learners may be uncertain how to classify a behavior due to lack of knowledge or confidence</p>	<p><i>*After</i> observed encounters</p> <ol style="list-style-type: none"> 1) Gather reactions: did anything surprise or puzzle the learner? 2) Ask the learner how any learner goals or specific challenges were accomplished and probe for knowledge deficits 3) Leave time for questions
<p>Challenges for some learners</p> <ul style="list-style-type: none"> - Context specificity - Recognizing omissions - Negative self-efficacy 	<p><i>*After</i> observed encounters, clinicians should highlight generalizable behaviors and omitted behaviors. If appropriate, clinicians may acknowledge that observing can sometimes be intimidating for learners.</p>

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VI. Appendices

Appendix A. "Dr. Smith" video transcript⁴⁰

Background information for patient role (Edward Stone): 35 year-old man who is establishing care with a new primary care physician. Edward is a healthy, well groomed male, wearing office casual clothes. He has a closed posture for the majority of the interview, keeping his hands lightly clasped in his lap for most of the interview. He does use his hands to talk a lot.

He is obviously worried about erectile dysfunction. Embarrassed by his situation, but cooperative and pleasant. There is a sense of sadness or depression in his demeanor. He is restless and withdrawn. When talking about how sexual problems are affecting his relationship, he breaks normal eye contact and looks down, subtly switching the position of his feet/legs to convey discomfort. His voice is soft but clear towards the beginning of the interview and returns to normal loudness as he become more comfortable.

The doctor is seated at a desk in front of a computer, the patient is seated on the exam table in a gown. Both parties are visible in the camera frame.

Doc: As a part of your full physical and as a new patient, I would like to ask you some questions about your sexual history. I ask these of all of my patients and they are important for me to help you stay as healthy as possible. Anything we discuss will of course remain confidential between me and you. Is that ok?

Patient: Yes

Doc: Are you sexually active?

Patient: Yes

Doc: How many women have you been sexually active with in the last 3 months?

Patient: Just my wife

Doc: How long have you and your wife been together?

Patient: 10 years this summer.

Doc: Are you or your wife having any sexual difficulties?

Patient: Well... this is embarrassing (*Shifts his weight, looks down at his hands*) ... lately I haven't been able to ... you know... when we're together.

Doc: Could you be more specific?

Patient: You know... get it up. And when I do, I ... I can't always finish.

Doc: Oh, well is it more of an issue getting it up or keeping it up.

Patient: More-so trouble with keeping it up. I'm a little embarrassed to be talking about this with someone I'm just meeting today. I know that people say it is common but you never think...

Doc: (*interrupts*) When did you first notice this?

Patient: Hmm. Probably around the time I started my new job at Martin & Martin. I was promoted to project manager about 6 months ago- it's a great opportunity for my career but it came with a much bigger workload. I was pretty stressed out with the transition and with our new baby. She really isn't...

Doc: (*interrupts*) New baby? Congratulations! Boy or girl?

Patient: Girl. Her name is Lillian, we adopted her about 8 months ago. We're so happy to have been able to adopt her, but it was a lot of change and added responsibility all at once. Whenever I'm stressed out with work or with the baby, it does seem to make things worse in the bedroom. When all of this started, I blamed it on the Prozac I was taking at the time but I have been off of that for months and the problem has only gotten worse, not better.

Doc: Is there anything that helps?

Patient: It seems like if I've had a few drinks beforehand that I don't have as much trouble getting it up. I think it calms my nerves and I am more able to focus on my wife.

Doc: Other than your job and the new baby, do you have any other new stressors in your life?

Patient: Work is the main thing stressing me out right now. The baby just adds a level of sleep deprivation to the challenges at work. Though I guess all of this hasn't been great for my marriage.

Doc: Has there been any change in your sexual desire with these issues?

Patient: I wouldn't say there has been a change in desire, but I do get nervous about performing. Again, that's why I think the alcohol helps.

Doc: How many times a week do you drink alcohol?

Patient: Maybe once or twice. Like I said, my job and the baby keep me pretty busy.

Doc: On average, how many drinks do you have when you drink?

Patient: Maybe 2.

Doc: Do you use any drugs?

Patient: No of course not. I'm a father.

Doc: What kinds of sexual practices do you and your wife engage in? Vaginal? Oral? Anal?

Patient: Umm, primarily vaginal or oral. She's not really open to anal.

Doc: Do you use contraception or condoms?

Patient: No. We aren't able to conceive, we tried for years so there's really no point in contraception.

Doc: I'm sorry to hear that. That must have been hard for you.

Patient: It was. But now we have Lillian (*smiles warmly*) and I can't imagine things working out any other way.

Doc: I'm so happy for you. How many partners have you had in your lifetime?

Patient: *(looks up as if counting in his head)* Let's see... 5 total.

Doc: Did you ever have trouble with erections with any of those partners?

Patient: No

Doc: Have you or your partner ever been treated for an STI before?

Patient: What is an STI?

Doc: Sexually transmitted infection, like HIV or herpes.

Patient: Oh no, nothing like that.

Doc: Have you and your partner ever been tested for HIV?

Patient: Back when we first started dating. We both got tested and it came back negative so that's when we stopped using condoms.

Doc: Do you have any other concerns that we haven't touched on?

Patient: My main concern is my trouble with erections. I'm worried that my wife is becoming increasingly unhappy with our sex life, which is putting a strain on our marriage. I'm afraid she will leave me if I can't fix this and the more I think about that, the worse the trouble seems to get.

Doc: I'm glad we were able to discuss this today. Now that I have a little more background, let's talk about what we can try to help improve your sexual functioning.

Camera fades to black.

Appendix B. SP encounter⁴⁰

Patient Name: Danni Allen

Chief Concern: To establish care with new Dr. and get Pap Smear

Recruitment Profile: Female, Age Range- 20-30

Case Summary

You are a 24 year-old woman who comes to the clinic today with no chief complaints. You want a refill of birth control and to establish care with a healthcare provider.

Case Setting

You are in the outpatient clinic. This is your first visit to this clinic.

Case Challenge

The challenge for the learner is to practice their sexual history taking skills. The learners will be challenged to engage you in a non-judgmental and open manner.

How to Appear During the Encounter

General appearance/ grooming: You are a healthy young female. Your hair is clean and combed but not styled. You have make-up that is well applied.

Dress: You should be dressed in clean casual clothes.

Description of Affect and Behavior

You are a happy, outgoing young woman. You are cooperative, pleasant, relaxed and self-confident. Your speech is clear and easy to understand. You will maintain normal eye contact, a little less during the sexual history portion of the interview. You will respond to directed questions with information but only information asked. You enjoy your job very much. You do not know what is included in an “annual check-up”.

****When asked about your sexual history**

You will avert your gaze when talking about your sexual history and will become visibly uncomfortable when specifics about the more personal information is asked. If the student does not assure you of confidentiality before asking about your sexual history you should prompt them with a statement like “You aren’t going to talk to anyone about this stuff right?”.

You will answer straightforwardly but will initially not offer any sexual history without being asked.

If asked how many partners you have had in your lifetime, you will have to think a little bit and then state “I think it has been somewhere between 15 – 20.”

If the learner implies that you have been promiscuous, you will get defensive. The number of partners is normal to you since your girlfriends have all had 2-3 boyfriends every year. You have been monogamous with each of your partners. You do not feel that you are engaging in high-risk sexual behavior. If the learner approaches you in an open and accepting manner, you will be receptive to any sort of counseling. If you perceive that the recommendations are condescending or judgmental, you will get defensive and disengage.

If the encounter is drawing to a close and the student has not asked about partners, practices, contraception, pregnancy, previous STIs, STI testing or STI protection you may offer a prompt.

Prompts to use at the end of the encounter:

If the student has not asked about previous STIs, STI testing and/or STI protection:

Admit to the student that you are worried about whether or not you need STI testing but that you feel guilty about your worry because you are in a monogamous relationship and you don’t want it to seem like you don’t trust your boyfriend

If the student does not ask about sexual abuse:

State to the learner when they ask if there is anything else: “I just don’t want you to think I’m uncomfortable talking about this stuff because I’m in a bad relationship. Its just hard to talk about. My relationship is great right now, unlike some other guys I’ve been with”

Present Life

Age:

24

Date of Birth: Use your own birth date, 19__

Level of Education: You have a BS degree in biology.

Occupation: You are an assistant at a realty Company

Marital Status: Single. You have a boyfriend.

Hobbies/Activities: Hanging out with friends, going out to eat, tennis, going to the gym

Life Stressors: Sometimes work can get a little stressful

Reason for Visit (Chief Complaint):

"I need a new doctor and I think I need a Pap Smear."

History of Present Illness

Information relating to you primary complaint: **No Complaint**

Context	You have not seen a primary care provider since you were a kid. You have mostly been going to different free or Planned Parenthood clinics for refills on your birth control and the occasional cold. You just got health insurance through your job and your parents told you that you should see a doctor for regular checkups.
Concerns	You don't have any concerns but wonder what you are supposed to have done as part of a "checkup". **Risk Factors: <ul style="list-style-type: none"> • Multiple sexual partners • Unprotected intercourse • Oral, penile-vaginal, digital-vaginal, and anal-receptive intercourse

Past Medical History

Pt's response to "how is your overall health?"	Your overall health has generally been pretty good.
Obstetrical History	You started your periods when you were 12 years old. You have never been pregnant.
Medications	Birth control pill (generic version of Alesse)
Most recent visit to a health care provider	<i>Primary Care MD:</i> Here to establish with you <i>Most recently:</i> Your last pap test was 1 year ago at Planned Parenthood and it was normal. You have had a few now (about every 2-3 years).

	<p>When you were 14 years old, you started on birth control to help regulate your menses, which were heavy.</p> <p>You have primarily gotten healthcare through Planned Parenthood and other free women’s health clinics over the years.</p>
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Family History

Father	Alive, Age- 50	Hypertension but otherwise healthy
Mother	Alive, Age- 49	Healthy
Siblings (Brother)	Alive, Age- 21	Healthy

Sexual History

Sexual orientation	Heterosexual
Sexually active at present	Yes
Number of current sexual partners	Your boyfriend is your only current partner. You have been dating for the past 3 months. You don’t think that he is with anyone but you. You don’t know his sexual history. Together you practice oral (which you term “giving head”), vaginal and anal receptive intercourse and use condoms intermittently.
Past partners in the past year	You have had 2 other partners in the past year (both male). They were both ex-boyfriends (serial monogamy).
Number of previous sexual partners	<p><i>If the learner specifically asks about gender with this question you should answer with “I’m with a man right now” But if they assume gender do not offer any hints.</i></p> <p><i>Around 15-20 partners</i></p> <ul style="list-style-type: none"> • 3 were women—these were each one time experiments in college. It was mostly kissing, a little fingering (digital-vaginal intercourse), and some head (oral sex). If asked you have ever used dental dams, you state you don’t know what that is. Note: these were separate encounters with 3 different women • 10-15 Male partners—All have been monogamous relationships. There were all boyfriends who you dated, which mostly lasted 3-6 months on average. You used condoms most of the time but not always because you were on birth control pills. You practiced oral, vaginal and anal receptive intercourse.

	<p>If you are asked about the first time you had sex you will answer, 17 yo as that was the first time you had vaginal sex. If you are asked about specific practices or previous partners you will describe the history from 15 y/o on.</p>
Age began to be sexually active	Age- 15- you had a boyfriend when you were 15 but you only "gave him head" so you don't consider that "real sex".
Sexually transmitted infections	Chlamydia- age 17. It was treated with several pills and you have not had any STI's since. You have never been tested for HIV (if asked, you don't think that you should be concerned since you've only dated one person at a time).
Sexual abuse history	<p>If asked you will shyly reveal that when you were a freshman in college, you dated your biology teaching assistant (TA) for a month. You felt pressured to have sex with him even though you didn't want to. You are not sure whether that is considered rape/sexual abuse or not. You are embarrassed that it happened and felt it was your fault because you were flirting with him. You are not supposed to be dating your TA anyway. Since you don't really see the encounter with your TA as sexual abuse:</p> <ul style="list-style-type: none"> • If you are only asked "have you ever been sexually abused?" You will hesitate and state "not really" or "I don't think so". • If you are asked a more inclusive formulation of the question, such as "Have you ever felt pressured to have sex when you didn't want to?" or adds a normalizing statement, etc. you will disclose the information about the TA

Menstrual History:

Menarche	At 13, started birth control at 14 to help with heavy menses.
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Cycle	Regular, every 4 weeks, lasts 5 days
Menstrual symptoms	Some cramping, go through about 3-4 pads a day, not particularly heavy, much better since you have been on birth control

Personal Habits:

Tobacco	Current:	Cigarettes	<i>Quantity:</i> 1-2 cigarettes daily when you go out with friends (you have smoked like this for 2 years). You are a social smoker and have not tried quitting.
Alcohol	Current:	Beer, wine or hard liquor	<i>Quantity:</i> 3-5 drinks per week
Drugs	Past:	Marijuana	<i>Quantity:</i> Occasionally in college
Diet	regular well balanced diet, three meals per day		
Caffeine use	minimal (1-2 cups of coffee/tea or cola per day)		
Exercise	daily exercise. <i>Type of exercise</i> – gym and tennis		

Appendix C. Participant Survey

Rate how well the physician in the video performed on a scale of 1 to 5 in the following areas (1= poor, 3= fair, 5= excellent).

communication skills	1	2	3	4	5
content of sexual history	1	2	3	4	5
professionalism	1	2	3	4	5

Think back to the video you watched. Please rate the physician's performance in the following areas based on your memory of the video-tape.

	Not Done	Needs Improvement	Does Well
Build a Relationship			
Shows interest in patient as a person			
Uses words that show care and concern throughout the interview			
Uses tone, pace, eye contact, and posture that show care and concern			
Open the Discussion			
Asks "Is there anything else?" to elicit full set of concerns			
Gather Information			
Clarifies details as necessary with more specific or "yes/no" questions			
Summarizes and gives patient opportunity to correct or add information			
Transitions effectively to additional questions			
Understand the Patient's Perspective			
Asks about life events, circumstances, other people that might affect health			
Elicits patient's beliefs, concerns, and expectations about illness and treatment			
Responds explicitly to patient statements about ideas, feelings, and values			
Sexual History			
Assures the patient of confidentiality			
Uses a non-judgmental tone (e.g. as if talking about the weather)			
Uses inclusive language (e.g. does not specify gender of partner unless patient does first)			
"Normalizing" questioning technique (e.g. "many of my patients have a history of STI, have you ever been treated for an STI?")			
Uses anatomical/professional terminology, not slang			
Asks about: STI risk factors (Partners, practices, protection)			
Pregnancy ("trying", contraception)			
Sexual Abuse			
Sexual Functioning			

What is your gender?

Male

Female

Transgender

Other: _____

What is your ethnicity? *Mark all that apply.*

Caucasian

Hispanic or Latino

African or African American

Native American

Asian or Pacific Islander

Other: _____

Do you have previous clinical experience taking a sexual history? If yes, please indicate the setting(s) in which this experience took place.

volunteering at a free clinic

previous standardized patient encounter through medical school

Other: _____

Were you born in the United States?

Yes

No

Appendix D. Interview Protocol

I would like to ask you some questions now about your experiences today. This interview will be confidential and your participation is voluntary.

1. How did you approach the standardized patient encounter? What was your plan when you entered the examination room? How did you develop that plan? What pitfalls did you try to avoid? What specific steps or behaviors did you want to make sure you executed?
2. What do you remember from the video? What particular aspects of the attending's performance did you pay attention to?
3. I'd like to talk with you about how you rated the encounter on this checklist. (*Review checklist*)
4. How well did the attending in the video do with taking a sexual history? What are some specific things she did well? What are some specific things she did poorly?

5. How did watching the video before the encounter influence your performance? Were there any specific things you saw the attending do that you wanted to replicate? Were there any specific things the attending did that you wanted to avoid?
6. How much do you relate to or identify with the attending in the video? What specific attributes influence your answer?

Thank you for your participation!

Positive Behaviors Modelled in the Video:

- Patient Confidentiality Assurance
- Good Listening Skills:
 - Seated next to the patient
 - Good eye contact
 - Periodically repeated patient's statements to assure understanding and reassure the patient that they are being heard
- Covered the "5 P's" recommended by the CDC for a sexual history to encompass risk factors for STIs and pregnancy
 - Partners
 - Practices
 - Protection from STIs
 - Past History of STIs
 - Prevention of Pregnancy

Negative Behaviors Modelled in the Video/Areas for improvement:

- Poor listening skills
 - Interruptions
- Use of gender exclusive terms
 - Always start by asking about partners, rather than assuming a specific gender
- Use of slang rather than anatomical/medical terms
 - For example: referring to his problem as "problems with erections" rather than "trouble getting it up"
- Ask more "normalizing" questions
 - preface STI question with "STIs are a common problem I see in my patients..." and rephrase drug question to: "which drugs do you use?" In order to encourage disclosure of things that the patient might be unsure about telling his physician
- No inquiries about abuse/sexual abuse
 - "Has anyone ever forced you into sexual activities when you did not want them?" Or "Have you ever felt unsafe in your relationship?"
- Failure to acknowledge patient's emotions
 - embarrassment at discussing ED, stress over marital strain from ED

VII. Curriculum Vitae

Rachel Stork Poepelman, M.D.

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Education & Training

Pediatric Critical Care Fellowship Nationwide Children's Hospital, Columbus, OH	2017-2020
Master of Health Professions Education University of Illinois at Chicago, Chicago, IL	2014-2020
Pediatric Residency University of Chicago, Comer Children's Hospital, Chicago, IL	2013-2017
Doctor of Medicine (M.D.) University of Chicago, Pritzker School of Medicine, Chicago, IL	2009-2013
Bachelor of Science (B.S.) in Biology (magna cum laude, graduation with honors) The Ohio State University, Columbus, OH	2005-2009

Committee Assignments and Administrative Services

<i>Invited Reviewer</i> , Journal of Graduate Medical Education	2016-present
<i>Graduate Studies Committee</i> , University of Illinois at Chicago MHPE program	2016-2017
<i>Intern Recruitment Committee</i> , University of Chicago Comer Pediatric Residency	2015-2017
<i>Resident Education Committee</i> , University of Chicago Comer Pediatric Residency	2014-2017

Grants and Contract Awards

<i>SDRME Invited Review Grant</i> , Society of Directors of Research in Medical Education PI: Larry Hurtubise	Awarded 2018
<i>Bucksbaum Institute Pilot Grant</i> , Bucksbaum Institute for Clinical Excellence at University of Chicago PIs: Rachel Stork Poepelman and H Barrett Fromme	Awarded 2015

Publications

Peer-Reviewed Articles

- Volerman A, **Poepelman RS**. (2019) A Pilot Study of Team-Based Learning in One-Hour Pediatrics Residency Conferences. *BMC Medical Education*. PMID: 31319836
- Poepelman RS**, Tobias JD. (2018) Patent Ductus Venosus and Congenital Heart Disease: Case Report and Review. *Cardiology Research*. PMID 30344833
- Bline K, Singh D, **Poepelman R**, Lo W, O'Brien N. (2018) Extrapontine Myelinolysis and Microhemorrhages: Rare Finding in Pediatric Diabetic Ketoacidosis. *Pediatric Neurology*. PMID 30396831
- Triemstra J, **Poepelman RS**, Arora V (2018) Correlations Between Hospitals' Social Media Presence and Reputation Score and Ranking: Cross-sectional Analysis. *Journal of Medical Internet Research*. PMID 30409768

Poeppelman RS, Liebert, CA, Vegas DB, Germann C, Volerman A. (2016) A Narrative Review and Novel Framework for Application of Team-Based Learning in Graduate Medical Education. *Journal of Graduate Medical Education*. PMID 27777660

Book Chapter

Poeppelman RS, Lemelman M, Littlejohn E, Duck S, Diabetic Ketoacidosis (DKA) and Hyperglycemic Hyperosmolar Syndrome (HHS), In: *Pediatric Critical Care: A Primer for all Clinicians*, J Kane, R Wolfson, S Berger & J Hageman ed., Nova Publishers, 2019.

Oral Presentations

Invited Presentations

Poeppelman RS, Hirshfield L, Lineberry M, Yudkowsky R, Fromme HB. (*7/31/2020) “*The Effect of Observed Clinical Encounters on Trainee Cognition and Performance*”. Accepted for Plenary/Round-Table Presentation at MHPE Summer Conference, University of Illinois at Chicago; Chicago, IL. *Meeting canceled due to COVID-19 concerns.

Poeppelman RS, Coles M, Heater T, Vohsing L, Lutmer J, Maa T. (11/14/2018) “*Education for Caregivers of Tracheostomy Patients- A Needs Assessment*”. Nationwide Research Institute Retreat, Ohio State University; Columbus, OH

Stork R, Frank J, Kharasch M, Wang E. (11/17/2011) “*The Use of an Educational Simulation to Improve Neurology Resident Knowledge of and Experience with Thrombolytic Therapy*”. The University of Chicago Medical Education Day; Chicago, IL.

Poster Presentations

National/International Meetings

Poeppelman RS, Siems A, Jani P, Mitchell D, Moore-Clingenpeel M, Stewart C. (*3/31/2020) “*PICU Fellow Entrustment: How do faculty make supervision decisions?*”. Accepted for poster presentation at Association of Pediatric Program Directors Annual Spring Meeting, San Diego, CA. *Meeting canceled due to COVID-19 concerns.

Poeppelman RS, Coles M, Heater T, Vohsing L, Lutmer J, Maa T. (2/16/2020) “*Validity Evidence for Tracheostomy Skills Checklists*”. Society for Critical Care Medicine’s Critical Care Congress, Orlando, FL.

Poeppelman RS, Coles M, Heater T, Vohsing L, Lutmer J, Maa T. (2/17/2020) “*ICU Staff Teaching Families Tracheostomy Skills: Room for Improvement*”. Society for Critical Care Medicine’s Critical Care Congress, Orlando, FL.

Poeppelman RS, Siems A, Jani P, Mitchell D, Moore-Clingenpeel M, Stewart C. (2/16/2020) “*PICU Fellow Entrustment: How do faculty make supervision decisions?*”. Society for Critical Care Medicine’s Critical Care Congress, Orlando, FL.

Poeppelman RS, Coles M, Heater T, Vohsing L, Lutmer J, Maa T. (2/19/2019) “*Education for Caregivers of Tracheostomy Patients- A Needs Assessment*”. Society for Critical Care Medicine’s Critical Care Congress, San Diego, CA.

Poeppelman RS, Tobias JD. (2/17/2019) “*Patent Ductus Venosus: An Uncommon Cause of Hepatic Dysfunction in Congenital Heart Disease*”. Society for Critical Care Medicine’s Critical Care Congress, San Diego, CA.

Volerman A, **Poeppelman RS**. (11/10/2015) *Teaching Teamwork: Team-Based Learning in Pediatrics Educational Conferences; An Evaluation of Feasibility, Learner Satisfaction, and Knowledge Acquisition*. AAMC Medical Education Meeting; Baltimore, MD.

Stork R, Frank J, Kharasch M, Wang E. (2/7/2013) *The Use of an Educational Simulation to Improve Neurology Resident Knowledge of and Experience with Thrombolytic Therapy*, International Stroke Conference; Honolulu, HI.

Local/Regional Meetings

Poepelman RS, Coles M, Heater T, Vohsing L, Lutmer J, Maa T. (10/16/2018) "Education for Caregivers of Tracheostomy Patients- A Needs Assessment". 2018 Fall Educational Symposium, Ohio State University; Columbus, OH.

Poepelman RS, Rodriguez V, Jones N, Shalabi A, DeBeritto T, Orlov N. (6/9/2016) *Facing Your Fears: Identifying Factors that Impact Participant Anxiety during Simulation-Based Learning*. Pediatric Research Day, University of Chicago; Chicago, IL.

Stork R, Liebert C, Brandt-Vegas D, Germann C, Volerman A. (11/20/2014) *Team-Based Learning in Graduate Medical Education: A Faculty Development Seminar*. University of Chicago Medical Education Day; Chicago, IL.

Stork R, Bartlett A, Johnson D, Anastasi J, Nash C, Mirza K, Popovich J. (11/2/2012) *I-don't-know-phagia; An unusual cause of painful swallowing*, 2012 ACP Northern Illinois Associate's Day Meeting

On-Going Scholarly Projects

Project: *Ad-hoc Entrustment Decisions in the PICU*

Mentor: Claire Stewart, MD MEd, PI: **Rachel Stork Poepelman**

Description: Multi-institution case-based PCCM faculty survey addressing supervision decisions for PCCM fellows. Aims to characterize the weight and interplay of different traits and circumstances on ad-hoc entrustment decisions.

Project: *Improvement of Education for Caregivers of Tracheostomy Patients*

Mentor: Tensing Maa, MD, PI: **Rachel Stork Poepelman**

Description: Quality improvement initiative targeting tracheostomy caregiver education. A formal needs assessment identified more hands-on practice and improved consistency of bedside instruction by staff as areas for improvement. A task trainer, skills checklists and simulated emergency scenarios were developed for use with both caregivers and staff.

Project: *Influences, Timing and Satisfaction of Career Choice in Medical Education*

PI's: Justin Triemstra and H Barrett Fromme

Description: Focus groups with purposive sample of experienced medical educators to characterize career path, subsequent survey based on results of focus group

Project: *Clinician Educators: What is Known about Multiple Professional Identities Formation?*

PI: Larry Hurtubise

Description: Grant-supported scoping review of the literature about the professional identity of clinician educators and the process of forming multiple professional identities

Educational Activities

National Audience

Workshop Accepted: *Implementing a Bedside Task Training Cart to Prepare Caregivers and Staff to Care for Children with Tracheostomies*

International Pediatric Simulation Symposia and Workshops, St. Petersburg, FL- April 2020. *Meeting canceled due to COVID-19 concerns.

Workshop Accepted: *Captivating Audiences Big and Small: Teaching Strategies and Technological Solutions to Enhance Learning*

Association of Pediatric Program Directors (APPD) Spring Meeting, San Diego, CA- March 2020. *Meeting canceled due to COVID-19 concerns.

Workshop: *Building Bridges: Helping Educators Develop Identity and Connect to Community*

The Generalists in Medical Education Conference- November 7, 2019

Workshop: *Captivating Audiences Big and Small: Teaching Strategies and Technological Solutions to Enhance Learning*

Association of Pediatric Program Directors (APPD) Spring Meeting, Anaheim, CA- April 6, 2017

Local/Regional Audience

Critical Care Resident Lecture Series 2017-present
Nationwide Children's Hospital, Columbus, OH

Division of Critical Care Journal Club and M&M Conference 2017-present
Nationwide Children's Hospital, Columbus, OH

Clinical Performance Experience Faculty Preceptor 2017
University of Chicago Pritzker School of Medicine

Pediatrics Residency Morning Report & Noon Conference 2015-2017
University of Chicago Pediatrics Residency Program

Team-Based Learning for GME; A Faculty Development Seminar 2015
University of Chicago FAME (Faculty Advancing in Medical Education)

Honors and Awards

- *Best Poster*, Ohio State College of Medicine Fall Educational Symposium 2018
- *Best Applied Sciences Presentation*, Senior Scientific, Pritzker School of Medicine 2013
- *Dean's Promise Scholarship*, awarded by Pritzker School of Medicine 2009
- Elected Phi Beta Kappa National Honor Society 2008
- *Phi Beta Kappa Scholarship*, awarded to one Ohio State student annually 2008

Certification and Licensure

American Board of Pediatrics	Certified October 2017
Advanced Cardiovascular Life Support	Expires December 2019
Pediatric Advanced Life Support	Expires April 2021
Advanced Trauma Life Support	Expires August 2022