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Host Andy Davis: In our next segment, we have Sarah MacNamara, who just participated in the world memory championships here in New York City. Something we would all like to have is a better memory, and my hope is that Sarah is here to share some of her memory secrets with us.

Guest Sara MacNamara: Thank you. I think that the first thing I'd like to say though is that I don't believe there are secrets. There are, however, memory techniques, and like all techniques, they must be practiced.

Host: So you're saying that anyone can have a good memory with practice?

Guest: Yes, I really believe that's the case. Let me tell you about one technique I've used, but first, I'd like to say that most people have the wrong idea about remembering information.

Host: You mean, they take the wrong approach to remembering information.

Guest: Exactly, yes. Many people think remembering things is uninteresting, just robotic repetition. This is not only wrong, but it's also going to get bad results. If you take the right approach, you'll find that remembering information can be creative, highly personal, and effective.

Host: Fascinating. So what is this technique?

Guest: I call it *enhanced storytelling*. *Storytelling* means what it sounds like. We make a story about the information we want to learn. *Enhanced* means that we involve as many of our senses as possible when we make the story.

Host: OK, enhanced storytelling ... How does it work? How do you do it?

Guest: Well, we first see what we want to remember, we hear it, and we even try to feel it. By involving many senses, we create a richer representation in our mind of what we wish to remember. We create more pathways to the information, and we also create connections among different pieces of information in the story.

Host: OK, I see what you mean. This is completely different from rote memorization, isn't it?

Guest: Yes, because when we make the story, it's a creative act on our part. It's also very personal because the story comes from our own mind. Making the story can even be fun and interesting ...

Host: ... if you're a good storyteller!

Guest: True. But the story can be—and probably will be—fictional, so in most cases, I think that will help make it interesting.

Host: So let's try this technique. I've prepared a list of the names of 12 people ...

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Speaker: Some people who study or work hard, drink coffee or tea because these drinks contain caffeine, and caffeine causes them to feel more energetic. And, as you would imagine, more energy allows them to study or work longer. However, did you know that caffeine may also affect memory? Researchers have found that one interesting effect of caffeine is to cause new brain cells to grow. The idea, of course, is that more brain cells might result in better memory. Actually, most researchers think that the main reason that caffeine may have a positive effect on memory is the first idea I mentioned—that caffeine gives us more energy. And more energy makes us more alert. And being more alert causes us to notice and remember more information. That seems reasonable, right?

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Professor Brian Murphy: E01 As part of our study of the brain's various functions, we're going to look at the topic of memory. This is a fascinating topic really. Now who remembers what they ate for lunch last Monday? I remember having pizza. That's memory at work. A simple definition of memory is the ability to store, retain, and recall the information. **E02** Now it sounds simple, but if you think about it, in many ways, we are our memories. When we think about who we are, we probably think about the events we've experienced, the people we've known, as well as the opinions and the feelings we have about a great many things. All of this information is stored in a variety of brain systems that handle the different types of memory. **(COACHING TIP 1)** So first, let's look at three types of memory that have been identified by psychologists. Then I'll talk about how we can improve our memories. **E03** The first type of memory is sensory memory. Sensory memory is extremely short, generally lasts about 100 to 500 milliseconds. Now as the name suggests, sensory memory concerns the initial moment that we perceive something with our senses. Now, for instance, consider tactile sensory memory. If you touch a piece of silk, the memory of the smoothness of the silk will continue after you take your hand away. That's sensory memory at work. Now it's important for learning and remembering because using more senses means we've recorded the experience in more ways in our brain. **(COACHING TIP 2)** **E04** The next type of memory is working memory, which is extremely important in everyday life. Working memory is a system where we temporarily hold and manipulate information. You think of it as a temporary workspace in your mind. For instance, if your friend tells you a phone number and you don't have a pen, you'll probably

repeat the number several times in your mind so that you remember it. In that case, you're using working memory. Now it's absolutely crucial for performing common mental operations like adding numbers, following directions and understanding logical relationships between ideas. **E05** And finally, there's what's called long-term memory, which is memory that's stored for as little as 30 seconds to as long as your entire lifetime. Now, psychologists believe that most long-term memories are information and experiences that were initially processed in working memory in meaningful and perhaps in emotional ways. For instance, I clearly remember the first time I saw the Grand Canyon. I was only 15 years old, but the size just amazed and impressed me so much that even decades later, it's still very clear in my mind. **E6** Now, there are two subtypes of long-term memory. There's declarative memory and procedural memory. **(COACHING TIP 3)** Declarative memory is all of the facts, and ideas, and names that are consciously available to you. All of your experiences and conscious memories fall into this category. Procedural memory concerns your knowledge of moving your body—like when you ride a bicycle or you play a musical instrument. Most of our procedural memories are implicit and unconscious. **E07** OK, now I'm going to test your memory with this question: Does anyone remember what I said I'd talk about next? How to improve your memory, right? When we think about improving our memory, we're generally talking about improving our declarative memory—the one that stores the facts, and the names, and so on. This type of memory can be improved if we use certain strategies, so I want to talk about two types of memory strategies that are useful in school: cognitive strategies and affective strategies. **E08** Now, cognitive strategies tell us how to approach tasks and which methods to use to complete them. So basically, they're concerned with thinking in more effective ways. OK, let's take a quick look at one cognitive strategy—this one's called verbal elaboration. Verbal elaboration occurs when we talk in a meaningful way about information that we are trying to remember. And that means that as you study, you should think about and verbalize information critically. You can use this strategy by agreeing or disagreeing with the information, or by comparing and contrasting the information to ideas you already know, or by discussing relationships between ideas. When we make meaningful relationships between what we already know and what we are trying to learn, we'll remember more and we'll remember it longer. **E09** Now, for the other approach: affective strategies. Affective strategies help us control our emotional responses so that we remember better. But what do emotions have to do with memories? Well, emotions cause the release of brain chemicals that play a direct role in memory formation. And part of the emotion system in the brain, called "the limbic system," helps

transfer information into long-term memory. In other words, how you feel about something affects how well you remember it. **E10** So, what affective strategies can you use to create positive emotional responses while studying? First, study with one or two friends from class. This can make any study session more interesting and more enjoyable. Second, use interesting study tasks, like taking turns making short presentations on the topic that you're studying. Or come up with questions to test each other on the information. See, the point of trying the affective strategy is that it will increase not only your memory, but also your sense of fun, and challenge, and interest. And you can do this for any subject. **(COACHING TIP 4)** Now, are there any questions?

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- 2 Now it sounds simple, but if you think about it, in many ways, we are our memories.
- 3 All of this information is stored in a variety of brain systems that handle the different types of memory.
- 4 So first, let's look at three types of memory that have been identified by psychologists.
- 5 And finally, there's what's called long-term memory, which is memory that's stored for as little as 30 seconds to as long as your entire lifetime.
- 6 Now, there are two subtypes of long-term memory. There's declarative memory and procedural memory.
- 7 All of your experiences and conscious memories fall into this category.
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Rob: So why don't we start by going over some of the memorization strategies.

Alana: Uh-huh.

Rob: So guys, does anyone think that any of these memorization strategies actually work? Like, do any of you actually practice any of them?

Alana: Yeah, I do.

Rob: You do?

Alana: I use the cognitive one. What did he call it? Verbal something?

Molly: Oh, I have it here. Verbal elaboration.

Alana: That's it. I have used it in my art history class. After class, I have a little conversation with myself, think about what I like and don't like and why. It's really helped me feel more familiar with the material.

Molly: Well, isn't that kind of common sense? I mean, duh, think about what you've read and heard; don't just memorize it.

Alana: Yeah.

Ayman: Well, it's kind of different for me. I grew up learning everything via memorization. Just memorizing it. Which is a good approach with some things.

Rob: What about the affective strategy that he mentioned? Like, do any of you think that you can actually change your feelings about a subject?

Ayman: That's a tough one. Like, I'm taking this philosophy class now. I just can't get into it. The professor is so dry.

Molly: This might help: Last semester, this guy I sat next to in statistics. We started meeting every Sunday at Café Roma to study, and we'd have questions prepared for each other and stuff. And it totally helped me survive that class.

Ayman: Oh. So you're saying it's smart to first think about who you're going to sit by in class.

Molly: No!

Rob: Exactly!

Molly: OK, that is inferring something.

Rob: Ah-ha! Now we see the truth!