

# Supplemental Material

*CBE—Life Sciences Education*

Schinske *et al.*

**Student Comments Included In the “Positive Stereotype” Category Including Their Frequencies, & Representative Student Quotes. (“Positive Stereotype” refers to a category previously described in Mead and Metraux, 1957. See Introduction and Methods for details.)**

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Curious	Stereotype	Positive Stereotype	42	<p>“I believe people that do science are very curious and they want to understand the questions of the world.”</p> <p>“I think the type of people that do science are ones that enjoy striving for learning the unknown and have a sense of curiosity.”</p> <p>“I think people that do science are very curious about the world.”</p>
Interested in Work	Stereotype	Positive Stereotype	31	<p>“People who are interested in the subject and who enjoy researching new information...”</p> <p>“Scientist do science, or anyone that is interested in learning and gaining knowledge can do science...”</p>
Intelligent	Stereotype	Positive Stereotype	25	<p>“Scientist are very smart people and I think they have high IQs”</p> <p>“[Scientists] are all smart people.”</p>
Works to Make World Better	Stereotype	Positive Stereotype	19	<p>“[Scientists] also usually have a desire to improve the human [and] world conditions to the best of their abilities.”</p> <p>“The types of people that do science want to [...] better the world.”</p>
Passionate	Stereotype	Positive Stereotype	18	<p>“The types of people who do science are those individuals who are passionate about knowing...living things”</p> <p>“Generally people that do science are ones who...have a passion for discovery.”</p> <p>“I find most scientists are also passionate about their work...”</p>
Wish to Discover Something	Stereotype	Positive Stereotype	13	<p>“I see those who ‘do’ science are progressive and forward-thinking. They make new, revolutionary findings.”</p> <p>“There are people who become scientist because they...do it to help discover new things.”</p>
Do Lab Work/Experiments	Stereotype	Positive Stereotype	11	<p>“Scientist are people who really like experiments...”</p> <p>“Experimenting with things allows them to figure stuff out.”</p>
Dedicated	Stereotype	Positive Stereotype	10	<p>“Also, the scientist has...dedication.”</p> <p>“[Darwin] was interested and dedicated to what he was doing.”</p> <p>“People that do science for a living are often dedicated.”</p>

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Patient	Stereotype	Positive Stereotype	9	“The types of people that do science are patient.” “[Scientists] can, however, be anyone that has the patience and temperament for research and documentation.”
Innovative	Stereotype	Positive Stereotype	9	“I see those who ‘do’ science are progressive and forward-thinking. They make new, revolutionary findings that could break away from traditional beliefs.” “The types of people that do science are innovative, observative people.”
Good at Subject	Stereotype	Positive Stereotype	8	“People who are also good at science and excel in math tend to be scientist...” “People that do science are smart people and really into science.”
Creative	Stereotype	Positive Stereotype	5	“They are creative and willing to take a risk and ready for challenges. They are creative critical thinkers.” “These people are “out of the box” thinkers! Creative, yet realistic.”
Study Hard	Stereotype	Positive Stereotype	5	“Types of people who practice science are usually hard working, knowledgeable individuals who have a specific scientific goal.” “Scientists study science-related subjects...love studying their subject matter.”
Investigate Things	Stereotype	Positive Stereotype	4	“Anyone who investigates the natural world, people who want to discover new worlds, people who ask questions: ‘why’ or ‘how’”
Open Minded	Stereotype	Positive Stereotype	4	“People that study and do science are usually open minded, patient and smart.”
Do Scientific Method	Stereotype	Positive Stereotype	4	“The people who do science hypothesis, observe, and test.” There are many different types of scientist. For example, there scientist who study blood...There are also those who do experiments find the cure for diseases.”

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Objective	Stereotype	Positive Stereotype	2	“The types of people that do science are innovative, observative people... Objectivity is key to a properly executed experiment as well.” “Many different people can do science. If one is curious and objective, they can observe certain phenomena and interpret it in a factual, opinionated manner.”
Have Extensive Training	Stereotype	Positive Stereotype	2	“Scientists have PhDs.”
Enjoy Learning	Stereotype	Positive Stereotype	2	“People that do science are people that enjoy learning new things about the world on a regular basis.”
Willing to Make Mistakes	Stereotype	Positive Stereotype	2	“They make mistakes, but a good scientist accepts that and tries to figure out why and how to proceed form there.”
Critical Thinkers	Stereotype	Positive Stereotype	1	“They are creative critical thinkers.”
Focused/Attentive	Stereotype	Positive Stereotype	1	“Like to focus on something.”
Challenge Selves	Stereotype	Positive Stereotype	1	“...willing to take risks and ready for challenges.”
Realistic	Stereotype	Positive Stereotype	1	“Creative yet realistic.”
Reject Ideas	Stereotype	Positive Stereotype	1	“Scientist often have a tendency to reject an idea until it becomes a pattern.”
Strong Conviction	Stereotype	Positive Stereotype	1	“Scientist always share one thing, a deep compassion and strong conviction to what they do.”
Make Leaps in Knowledge	Stereotype	Positive Stereotype	1	“The types of people that do science are curious because they dare to know outcomes. They are those who want to take leaps...They are the ones jumping to be first to research something mysterious...”
Work On Technology	Stereotype	Positive Stereotype	1	“Most scientists conduct research to help improve technology in human health...”
Think Differently	Stereotype	Positive Stereotype	1	“In my opinion, the type of people that do science are always having curiosities about many things and think in different ways compared to the others.”
Wanted to Become a Scientist	Stereotype	Positive Stereotype	1	“The types of people that do science...wanted to become a scientist.”

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Wonder/Think ahead	Stereotype	Positive Stereotype	1	"A scientist needs to wonder, needs to think ahead."

**Student Comments Included In the “Negative Stereotype” Category Including Their Frequencies, & Representative Student Quotes. (“Negative Stereotype” refers to a category previously described in Mead and Metraux, 1957. See Introduction and Methods for details.)**

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Asocial	Stereotype	Negative Stereotype	7	“The types of people that do science are very introverted.” “The types of people that do science are usually nerds.”
Mad/Crazy	Stereotype	Negative Stereotype	5	“The types of people who do science are...the crazy ones, hence the ‘Mad Scientist.’” “I heard that scientists are sometimes abnormal in the way they think...all scientists are extreme.”
Always Reading Books	Stereotype	Negative Stereotype	3	“[Scientists] are always reading.” “The types of people that do science are always reading.”
Always Working In Lab Indoors	Stereotype	Negative Stereotype	3	“[Scientists] are always in their lab and do their experiments and taking notes while they’re doing it.” “People who do science are working in a clean, white, and big building in which there’s gas blowing and wear white clothes.”
Strange/Weird	Stereotype	Negative Stereotype	2	“Sometimes [scientists] can be seen in ‘weird’ people.” “For me, [scientists are] kinda strange.”
Boring	Stereotype	Negative Stereotype	1	“The types of who do science are the the boring ones.”
Overly Involved In Work	Stereotype	Negative Stereotype	1	“The types of people that do science...obsess over their work.”

**Student Comments Included In the “Stereotypical Scientist” Category Including Their Frequencies, & Representative Student Quotes. (“Stereotypical Scientist” refers to scientists described in Dikmenli, 2010. See Introduction and Methods for details.)**

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Albert Einstein	Stereotype	Stereotypical Scientist	23	“For example, Einstein was a very curious person in physics...” “One scientist that comes to my mind is Albert Einstein.” “People who are also good at science and excel in math tend to be scientist, like Albert Einstein.”
Isaac Newton	Stereotype	Stereotypical Scientist	6	“Like Isaac Newton had to be curious so that he can observed gravity from a fallen apple.” “Newton is a good example. He established his three laws and founded calculus. He is the father of calculus.” “I know of Sir Isaac Newton who basically described to us the three laws of motion.”
Charles Darwin	Stereotype	Stereotypical Scientist	4	“Well, I guess the most scientist I’m familiar with is Darwin, and his studies on Natural Selection.” “Some scientist I know of are Charles Darwin...”
Sigmund Freud	Stereotype	Stereotypical Scientist	4	“Sigmund Freud may have not had scientifically correct theories; he got a lot of people interested in the brain.” “A specific scientist is Sigmund Freud. Not all his theories were accepted by society but he enjoys challenging things that he does not understand and see how they come to live.”
Thomas Edison	Stereotype	Stereotypical Scientist	2	“For example, the inventor of [the light bulb] Edison. He failed his experiment over a thousand time but he didn’t give up.” “Einstein, Edison, Tesla, Freud. The types of who do science want to satisfy their curiosity...”
Benjamin Franklin	Stereotype	Stereotypical Scientist	1	“Next to some of the greatest like Benjamin Franklin.”
Leonardo da Vinci	Stereotype	Stereotypical Scientist	1	“Some examples would be Leo Da Vince...”
Galileo Galilei	Stereotype	Stereotypical Scientist	1	“The only scientist I can think of at the moment is Galileo, the man that studied the stars and the Earth by using science and proved the churches wrong.”

Description	Category	Subcategory	n	Representative Student Quote
James Watson	Stereotype	Stereotypical Scientist	1	"James Watson used the scientific method."

**Student Comments Included In the "Nonstereotype Description" Category Including Their Frequencies, & Representative Student Quotes. ("Nonstereotype Description" refers to scientist descriptions observed in the present study, but not in Mead and Metraux, 1957. See Introduction and Methods for details.)**

Description	Category	Subcategory	n	Representative Student Quote
Any Type of Person	Nonstereotype	Nonstereotype Description	9	"Anyone that is interested in learning and gaining knowledge can do science, it's not limited to any types of people." "While I believe anyone with enough hard work and perseverance anyone can be competent in the field of science, I do believe some people are naturally drawn to the subject."
Good Observers	Nonstereotype	Nonstereotype Description	4	"The types of people that do science are innovative, observative people." "[Scientists] are hardworking, because they need to keep a close eye on experiments/observations."
Analytical	Nonstereotype	Nonstereotype Description	3	"[Scientists] are usually very logical thinkers who can figure things out on their own." "[Scientists] are able to focus and think critically for long periods of time."
Detail Oriented	Nonstereotype	Nonstereotype Description	3	"I think the people who do science have to be patient, detail-oriented..." "These people are...very careful, detail-oriented individuals!"
Good Communicators	Nonstereotype	Nonstereotype Description	2	"The people who they do science...can communicate to each other and share."
Fact-Based People	Nonstereotype	Nonstereotype Description	2	"Scientists tend to be more fact based people." "People do science based on facts."
Imaginative	Nonstereotype	Nonstereotype Description	2	"One scientist that comes to mind is Albert Einstein. He was very creative and imaginative."
Knowledgeable of Current Events	Nonstereotype	Nonstereotype Description	2	"[Scientists] typically are up to date w/all the news..." "These individuals have an interest in a field that's constantly changing so they probably are always learning to keep up with new information."



<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Share Ideas	Nonstereotype	Nonstereotype Description	2	"[Scientists] like to share ideas to better understand themselves." "The people who do science, they can communicate to each other and share."
Go Against Stereotypes	Nonstereotype	Nonstereotype Description	2	"I do somehow see a pattern, people expect successful scientist to be male and expect them to have been geniuses since they were in diapers. I, however, have recently notice that a lot of women have been important to science." "[Albert Einstein] shows that you don't need to be a total book worm to make an impact on the world"
Enthusiastic	Nonstereotype	Nonstereotype Description	2	"Bill Nye and Neil Degrasse Tyson are two great examples they are always so excited and enthusiastic about the universe and science as a whole."
Interested In Many Subjects	Nonstereotype	Nonstereotype Description	1	"Albert was a outdoorsy person and showed interest in other subjects rather than science."
Interesting	Nonstereotype	Nonstereotype Description	1	"Science are usually interesting to talk to because they are interested in many things and also know a lot of cool things."
Caring	Nonstereotype	Nonstereotype Description	1	"Mostly all people who like to work with other people or have a caring/motherly characteristic to them."
Compassionate	Nonstereotype	Nonstereotype Description	1	"Scientist always share one thing. A deep compassion..."
Contribute In Many Ways (not just experiments)	Nonstereotype	Nonstereotype Description	1	"The types of scientist show that there are different ways to contribute to science, not just experiment."
Resourceful	Nonstereotype	Nonstereotype Description	1	"They have big resources or knowledge."
Have a Scientific Goal	Nonstereotype	Nonstereotype Description	1	"Types of people who practice science are usually hard working, knowledgeable individuals who have a specific scientific goal."
Have Integrity	Nonstereotype	Nonstereotype Description	1	"Scientist includes life skills such as perseverance, effort, initiative, even sometimes integrity."
Organized	Nonstereotype	Nonstereotype Description	1	"They are able to be confused and think critically for long periods of time, and can keep organized..."
Outdoorsy	Nonstereotype	Nonstereotype Description	1	"Albert was a outdoorsy person..."

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Like To Work With Others	Nonstereotype	Nonstereotype Description	1	"Mostly all people who like to work with people.."
Travel	Nonstereotype	Nonstereotype Description	1	"They read a lot about their subjects, and travel a lot to study it."
Invest Whole Selves/Souls In Work	Nonstereotype	Nonstereotype Description	1	"The types of people that do science is everyone. Since is something done on a daily basis with yourself within your body, mind, and soul."
Risk Takers	Nonstereotype	Nonstereotype Description	1	"...willing to take risk and ready for challenges."

**Student Comments Included In the “Nonstereotypical Scientist” Category Including Their Frequencies, & Representative Student Quotes. (“Nonstereotypical Scientist” refers to specific examples of scientists observed in the present study, but not in Dikmenli, 2010. See Introduction and Methods for details.)**

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Bill Nye	Nonstereotype	Nonstereotypical Scientist	5	“People like Bill Nye the Science Guy [do science].” “Bill Nye and Neil Degrasse Tyson are two great examples.” “I don’t know many scientists but I know Bill Nye...which both seem like they know a lot about things.” “Bill Nye the Science Guy is the only real scientist I know.”
Mention Scientist Family Member or Friend	Nonstereotype	Nonstereotypical Scientist	2	“My ex-girlfriend is a marine biologist, and she would happily recount her day of paperwork testing and more testing. “ “I do not remember any exact names of scientists, but I know one friend who studies to be a doctor.”
Marie Curie	Nonstereotype	Nonstereotypical Scientist	2	“[Scientists] can be women, (Marie Curie) or they can be drop outs (Albert Einstein).” “The specific scientists that I know are Newton and Marie Curry.”
Nikola Tesla	Nonstereotype	Nonstereotypical Scientist	2	“Einstein, Edison, Telsa, Freud.” “Some examples would Leonardo Da-Vinci, Albert Einstein, Nikola Telsa, and Gauss.”
Thomas Armstrong	Nonstereotype	Nonstereotypical Scientist	2	“For example, Einstein...did well doing science and also in fact, Thomas Armstrong.” “Thomas Armstrong talks about how the brain is like an ecosystem not a machine.”
Neil Degrasse Tyson	Nonstereotype	Nonstereotypical Scientist	2	“Neil Degrasse Tyson studies is an astrophysicist that studies the universe.” “Bill Nye and Neil Degrasse Tyson are two great examples because they are always so excited and enthusiastic about the universe and science as a whole.”
Brian Greene	Nonstereotype	Nonstereotypical Scientist	1	“I know Brian Greene, a physicist who rallies for string theory.”
Dana Nakase	Nonstereotype	Nonstereotypical Scientist	1	“I don’t have anyone in mind perhaps Jane Gooddall and Dana Nakase who loves marine biology.”

<b>Description</b>	<b>Category</b>	<b>Subcategory</b>	<b>n</b>	<b>Representative Student Quote</b>
Jane Goodall	Nonstereotype	Nonstereotypical Scientist	1	"I don't have anyone in mind perhaps Jane Goodall and Dana Nakase who loves marine biology."
Mythbusters Scientists	Nonstereotype	Nonstereotypical Scientist	1	"I don't know many scientists but I know Bill Nye and the Mythbusters which both seem like they know a lot about things I am familiar..."
People On TED Talks	Nonstereotype	Nonstereotypical Scientist	1	"I think of this TED talk I watched in which a doctor talked about how 3D printing can be used to create organs and how his drive/passion came from wanting to help people."
People On YouTube	Nonstereotype	Nonstereotypical Scientist	1	"They types of scientist I am most aware of, or stand out the most, that are still alive are generally very enthusiastic and inquisitive people. People like Bill Nye the Science Guy, and YouTubers (such as minuteearth, vsauce, etc.) show a high level of enthusiasm and love for their jobs."
Carl Jung	Nonstereotype	Nonstereotypical Scientist	1	"Psychologist: Freud, Calr Jung, ..."
Carl Gauss	Nonstereotype	Nonstereotypical Scientist	1	"Some examples would be Leornado Da-Vinci, Albert Eistein, Nikola Telsa, and Gauss."
Abraham Maslow	Nonstereotype	Nonstereotypical Scientist	1	"Pychologist: Freud, Carl Jung...Maslow."
Ivan Pavlov	Nonstereotype	Nonstereotypical Scientist	1	"I have learned a bit about Pavlov and his dogs, technically he is a psychologist, but it's basically the same field."
Viktor Frankl	Nonstereotype	Nonstereotypical Scientist	1	"Psychologist: Freud, Carl Jung, Viktor Frank, Maslow."
Zimmerman	Nonstereotype	Nonstereotypical Scientist	1	"I also learned about (I think his name was Zimmerman or something of that sort) and his study of how the clothes you wear and the situation you are put in changes and shapes your actions."

**Student Comments Included In the “Field of Science” Category Including Their Frequencies.**

<b>Description</b>	<b>Category</b>	<b>n</b>
Doctors	Field of Science	17
Biologists	Field of Science	16
Chemists	Field of Science	14
Psychologist	Field of Science	12
Teachers	Field of Science	9
Pharmacists	Field of Science	7
Neurologists	Field of Science	5
Physicists	Field of Science	5
Nutritionists	Field of Science	4
Engineers	Field of Science	3
Marine Biologists	Field of Science	3
Psychiatrists	Field of Science	3
Dentists	Field of Science	3
Social Scientists	Field of Science	3
Anthropologists	Field of Science	2
Astronomers	Field of Science	2
Computer Scientists	Field of Science	2
CSI/Coroners	Field of Science	2
Economists	Field of Science	2
Geologists	Field of Science	2
Nurses	Field of Science	2
Philosophers	Field of Science	2
Physical Therapists	Field of Science	2
Veterinarians	Field of Science	2
Phlebotomists	Field of Science	2
Artists	Field of Science	1
Sociologists	Field of Science	1
Agricultural Scientists	Field of Science	1
Archaeologists	Field of Science	1
Behavioral Scientists	Field of Science	1

Botanists	Field of Science	1
Cardiovascular Scientists	Field of Science	1
Clinical Lab Scientists	Field of Science	1
Coaches	Field of Science	1
Construction Workers	Field of Science	1
Cosmetologists	Field of Science	1
Estheticians	Field of Science	1
Geneticists	Field of Science	1
Graduate Students	Field of Science	1
Organismal Biologists	Field of Science	1
Supplement Makers	Field of Science	1
Massage Therapists	Field of Science	1
Meteorologists	Field of Science	1
Military Scientists	Field of Science	1
Nano Scientists	Field of Science	1
NASA Scientists	Field of Science	1
Nuclear Scientists	Field of Science	1
Pharmacologists	Field of Science	1
Quantum Scientists	Field of Science	1