

Students of psychology shine in Westinghouse competition

A psychology experiment on language wins high school student Ann Kromsky a top Westinghouse prize.

By Both Azar
Monitor staff

It seems natural to Ann Kromsky that she studies how children acquire language. An immigrant from Baku, Azerbaijan, she was fluent in four languages by age 15.

Now she's only 17, but her work on language acquisition has caught people's attention and won her seventh place in the Westinghouse Science Talent Search. Her winning work, designed to prove that children have the cognitive ability to learn language simply based on input from their surroundings, was the result of a project begun in the laboratory of University of California-Riverside psychologist Curt Burgess, PhD.

Another Westinghouse finalist also was rewarded for his psychology-related work. Ameet Talwalker, 17, of Half Hollow Hills High School in Dix Hills, N.Y., won a \$1,000 scholarship for a mathematical model of the integration of visual and auditory information. He began his project last summer at the Summer Odyssey program run by Brandeis University psychologist Robert Sekuler, PhD.

"I'm thrilled that psychology not only made it into the top 40 but the top 10 of the most prestigious high school science award, and I hope to see a lot more in the future," says APA President Martin E.P. Seligman, PhD, who attended the Westinghouse award ceremony. "Psychology has become the most popular major in

colleges and with the large number of high school teachers of psychology, psychology is more represented in high school so it's only natural that the nation's top students will begin to gravitate toward psychology along with physics and the other sciences."

The Westinghouse Science Talent Search is the annual "Nobel Prize" of science research competitions for high school seniors. Funded by Westinghouse and administered by the non-profit organization Science Service since 1942, the program has predicted the success of future scientists, mathematicians, physicians and engineers, including five Nobel Prize winners. (This year Westinghouse decided to sever its ties with the competition, and in March Science Service announced that Intel Corporation will be the new sponsor.)

The competition paid for all 40 finalists to travel to the Science Talent Institute in Washington, D.C., March 4-8, where they exhibited their research at the National Academy of Sciences and competed for their share of \$205,000 in scholarship funds. The top three winners received \$40,000, \$30,000 and \$20,000 scholarships respectively.

Kromsky received a \$10,000 scholarship as one of the top 10 finalists and has already received offers of full scholarships from several major research universities.

A diligent researcher

Kromsky's research and her dedication to learning made her an ideal candidate for the Westinghouse competition, says Burgess. She came to him with an idea for developing a computational model of how children learn language. Burgess had developed a computer model of adult language, but he had never pursued developmental work.

Kromsky took the initiative to do background research on arti-



Seventeen-year-old Ann Kromsky describes her award-winning research on language development to APA President Martin E.P. Seligman.

cial intelligence and language development. She then designed a project for modeling language acquisition using a large corpus of children's utterances obtained from the CHILDES database at Carnegie Mellon University (see article, page 14).

"She behaved much like a junior graduate student," wrote Burgess in his letter of recommendation to the Westinghouse selection committee. "Her ability to master [research methodology] forced me to rethink the standards I have for my undergraduates."

Kromsky developed a computer model of child memory, called HALjr, styled after Burgess' adult language computer model HAL, short for Hyperspace Analogue to Language. The computer takes in words and attempts to learn the basic building blocks of language—semantics, grammatical class, semantic-syntactic relationships.

Kromsky input 1.6

million words from utterances made by 2- to 6-year-old children and found that the computer was able to organize the words into appropriate categories.

"This line of research has been so successful that I now have two graduate students working on this," says Burgess. "Frankly, we wouldn't be pursuing this line of work now if it weren't for Ann."

Although to his mind Kromsky's work was outstanding, he was impressed that she won such a high prize with a psychology experiment against the brightest young minds in the country. Kromsky herself was stunned.

"I was hoping to win some-

thing, but the competition was so rigorous," she says. "I was in disbelief when they called my name."

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*Martin E.P. Seligman
APA President*

Although she's already been offered full tuition and annual research stipends from several schools, including New York University and the State University of New York, Stony Brook, she's still thinking about where to attend college. She'd like to stay on the West Coast, close to her family. That may also allow her to

continue her research in Burgess' lab, she says. Either way, she'd like to pursue her work on language, possibly moving toward research in neuroscience with implications for psychology.

Science Odyssey pays off

Talwalker also plans to pursue a research career, preferably at Harvard University. His Westinghouse project grew out of an ongoing investigation by Sekuler of how the nervous system extracts information from two competing sensory systems. In particular, Sekuler is interested in how the brain integrates sounds and sights to compose a perception of an event.

"Ameet's work added mathematical modeling to our overall project," says Sekuler.

He discovered that the nervous system doesn't just add sensory information from the two systems. Instead, it seems to give extra weight to the stronger of the two inputs. In that way, what you see could affect your perception of what you hear—as with ventriloquism—or what you hear may affect what you think you see.

Although Talwalker didn't win one of the top 10 prizes, he said he was honored to have the chance to be a part of the competition and spend a week in Washington, where he met with many eminent scientists.

He and Kromsky are also eligible for an American Psychological Foundation (APF)/Teachers of Psychology in Secondary Schools (TOPSS) Excellence in High School Student's Research Award. A TOPSS official invites Westinghouse semifinalists whose research projects fall within the domain of psychology to participate in the APF competition. There are four scholarships: \$1,500, \$1,000, \$500 and \$250.

APF will announce the 1998 award winners this summer, and Seligman plans to invite them to join him on stage for APA's 1998 Annual Convention opening ceremonies in San Francisco Aug. 15. Ψ