Sandra Trehub (1938–2023)

E. Glenn Schellenberg
Instituto Universitário de Lisboa (ISCTE-IUL), Lisbon, Portugal

Laurel J. Trainor
McMaster University, Hamilton, Canada

We are greatly saddened by the passing of Sandra Trehub. Born in 1938, she died peacefully at her home on January 20, 2023. Sandra was a trailblazer. Her research focusing on auditory pattern perception in infancy and early childhood single-handedly started developmental research in music perception and cognition. Her experimental studies documented that infants have basic skills that form the building blocks for remembering and responding emotionally to music, including the capability to perceive and categorize auditory sequences on the basis of pitch, upward or downward changes in pitch, and rhythm. Her research also established that singing to infants is a universal behavior, which ultimately facilitates language acquisition and bonding with caregivers. A fellow of the Association for Psychological Science and the British Psychological Society, Sandra was awarded many honors, including a Lifetime Achievement Award from the Society for Music Perception and Cognition and the Kurt Koffka Medal from the University of Giessen in Germany.

After graduating from McGill University in Montreal in the 1970s, Sandra had a long career as Professor of experimental psychology at the University of Toronto (Mississauga campus). She authored hundreds of scientific journal articles and chapters, delivered lectures to audiences in many countries, and mentored many graduate students and post-doctoral fellows who went on to have successful academic careers of their own, including Mayumi Adachi (Hokkaido), Tonya Bergeson (Butler/Indiana), Laura Cirelli (Toronto), Marianne Fallon (Central Connecticut State), Erin Hannon (Nevada Las Vegas), Stuart Kamenetsky (Toronto), Bruce Morton (Western), Barbara Morrongiello (Guelph), Takayuki Nakata (Future Hakodate), Glenn Schellenberg (Toronto, ISCTE-IUL), Laurel Trainor (McMaster), and Tara Vongpaisal (MacEwan); as well as others who opted for careers outside of the academy, including Leigh Thorpe, Tali Shenfield, Michael Weiss, Anna Volkova, and Mathieu Saindon.

In her early research on infants' music perception, much of it conducted with Leigh Thorpe, Sandra documented that infants more readily discriminate tone sequences that differ in contour compared to those that have the same contour (Trehub et al., 1984). A subsequent article published with Laurel Trainor showed that infants' *lack* of knowledge of Western music allows them to detect changes to a melody that adults find difficult to detect, such that 8-month-olds actually perform better than adults on one version of a melody-discrimination task (Trainor & Trehub, 1992). With Glenn Schellenberg, Sandra found that some musical intervals (e.g., perfect fifths) are better perceived and remembered by infants compared to other intervals (e.g., tritones; Schellenberg & Trehub, 1996), and that listeners with no music training remember the key of familiar recordings (Schellenberg & Trehub, 2003). In research conducted with Bruce Morton on the musical aspects of speech (prosody), children were asked how a speaker sounds when she says *all the kids at school make fun of me* in a very happy manner; young children fixated on the words and said "sad" (Morton & Trehub, 2001). In one of many investigations of singing to infants, Tonya Bergeson and Sandra found that musically untrained parents tend to sing the same song repeatedly in the same key and tempo from one day to the next (Bergeson & Trehub, 2002). With Erin Hannon, she documented that infants perceive and remember melodies with culturally familiar (4/4) and unfamiliar (7/8) time signatures equally well, whereas adults perform much better with the familiar 4/4 meter (Hannon & Trehub, 2005). Finally, with Michael Weiss, Sandra identified that melodies that are sung, even without words, are better remembered than the same melodies performed on instruments (Weiss et al., 2012). These examples represent just a small sample of the many findings that came out of Sandra's laboratory, which appeared in top-notch journals with impressive regularity.

Sandra had boundless energy and limitless curiosity. Although she had the bad luck of turning 65 in the last year that mandatory retirement was legal in Ontario—and thus was required to retire—Sandra continued to be productive, writing and participating in conferences

Music Perception, volume 40, issue 4, pp. 347–349, issn 0730-7829, electronic issn 1533-8312. © 2023 by the regents of the university of california all rights reserved. please direct all requests for permission to photocopy or reproduce article content through the university of california press's Reprints and Permissions web page, https://www.ucpress.edu/journals/reprints-permissions. DOI: https://doi.org/10.1525/mp.2023.40.4.347

Downloaded from http://online.ucpress.edu/mp/article-pdf/40/4/347/777347/mp.2023.40.4.347.pdf by University of Toronto user on 02 June 2023

until the end. Indeed, she was Permanent Visiting Professor at BRAMS in Montréal, and she was scheduled to speak at Princeton University on February 8, 2023. Sandra was fearless and tenacious and never gave up on an argument, while at the same time being nurturing and helpful to those she mentored, a group that extended far beyond her own students. She was also a role model for many women in science and, in her later years, became very involved in supporting community music for children, particularly at St. James Town Community Arts in Toronto.

Sandra was adventurous and traveled to many remote areas of the globe with her architect/husband Ron Matthews (died 2007). Her interest in various human musical cultures led her to observe cross-cultural differences in child rearing and musical behavior, which influenced her scientific thinking. In short, Sandra's contribution to the fields of development, education, and music perception and cognition have been inestimable. We stand on her shoulders.

The obituary from her large and beloved family can be found at https://hebrewbasicburial.ca/ServiceDetails.aspx?snum=139049&fg=0

The obituary published in the *New York Times* can be found at

https://www.nytimes.com/2023/02/16/science/sandra-trehub-dead.html

Following are a few brief remembrances from some of her mentees.

Sandra was a force of nature who forcefully and endlessly argued her opinions. Unlike many individuals who think they know everything, Sandra actually knew everything. She taught me how to write ("Imagine that words are very, very expensive and you are very, very broke") and to think critically, and I owe my career to her. When I was writing my dissertation and encountered an unexpected (but in the end, irrelevant) glitch in the data, Sandra told me to "never be afraid of the truth," a lesson that all scientists need to learn. We ultimately co-authored 35 journal articles and chapters. Sandra loved visual art, literature, cinema, architecture, and music, and she appreciated and encouraged my own non-academic endeavors. She was an extraordinary mentor, unflaggingly generous with her time, criticism, and enthusiasm.

—Glenn Schellenberg

Sandra shaped many aspects of my career. She mentored me, despite my background in only physics and music performance. She modelled everything from how to think about questions to how to run a lab and apply for grants. She was extremely generous. Her lab at UTM was hard to access without a car so she offered that I could drive in with her daily. I'll never forget those drives where we discussed all aspects of music and development and many other things. Sandra was fearless and she and her husband would travel to remote areas. We always worried she might not make it back, but when she did she had amazing stories to tell. Sandra gave me freedom to explore my own ideas while providing a critical sounding board, values I try to emulate with my own students.

—Laurel Trainor

Sandra taught me so many things. I deeply respected and admired her as a generous and patient mentor, a wonderful friend, a brave adventurer, and an all around kind and lovely human being. I too enjoyed daily car rides with Sandra to and from campus, when we would talk about science, politics, family, travels, food, life . . . She taught me so much about writing and communicating my work, but she also modelled what a mentor should be. She was the person who taught me how important it is to find true balance, to pursue your professional passion but also live a good life and love your people. She profoundly shaped not just my career but the person I am today and I will forever be grateful to her.

—Erin Hannon

Sandra had the highest expectations for her students but also for herself. I learned so much from Sandra and admire her more every year in my professional career when I realize the enormity of her work and how much she gave back to students and colleagues. Her red pen edits that covered every page of my rough drafts helped shape me into a much better writer and thinker. She taught me academic integrity by example. But she also modeled how to be a good human and world citizen. Sandra brought me to talks by Canadian authors like Carol Shields and Margaret Atwood. We talked about science, art, music, and politics on the car rides from Toronto to Mississauga and back. I didn't believe her when she told me life would get harder after graduate school, but of course she was right. She raised a beautiful family and an even bigger academic family, and I am so grateful that I get to be a part of that family.

—Tonya Bergeson

Downloaded from http://online.ucpress.edu/mp/article-pdf/40/4/347/777347/mp.2023.40.4.347.pdf by University of Toronto user on 02 June 2023

References

Bergeson, T. R., & Trehub, S. E. (2002). Absolute pitch and tempo in mothers' songs to infants. *Psychological Science*, *13*(1), 72–75. https://doi.org/10.1111/1467-9280.00413

Hannon, E. E., & Trehub, S. E. (2005). Metrical categories in infancy and adulthood. *Psychological Science*, *16*(1), 48–55. https://doi.org/10.1111/j.0956-7976.2005.00779.x

Morton, J. B., & Trehub, S. E. (2001). Children's understanding of emotion in speech. *Child Development*, *72*(3), 834-843. https://doi.org/10.1111/1467-8624.00318

Schellenberg, E. G., & Trehub, S. E. (1996). Natural musical intervals: Evidence from infant listeners. *Psychological Science*, *7*(5), 272–277. https://doi.org/10.1111/j.1467-9280.1996.tb00373.x

Schellenberg, E. G., & Trehub, S. E. (2003). Good Pitch Memory Is Widespread. *Psychological Science*, *14*(3), 262–266. https://doi.org/10.1111/1467-9280.03432

Trainor, L. J., & Trehub, S. E. (1992). A comparison of infants' and adults' sensitivity to Western musical structure. *Journal of Experimental Psychology: Human Perception and Performance*, *18*(2), 394–402. https://doi.org/10.1037/0096-1523.18.2.394

Trehub, S. E., Bull, D., & Thorpe, L. A. (1984). Infants' perception of melodies: The role of melodic contour. *Child Development*, *55*(3), 821–830. https://doi.org/10.2307/1130133

Weiss, M. W., Trehub, S. E., & Schellenberg, E. G. (2012). Something in the way she sings: Enhanced memory for vocal melodies. *Psychological Science*, *23*(10), 1074–1078. https://doi.org/10.1177/0956797612442552

Downloaded from http://online.ucpress.edu/mp/article-pdf/40/4/347/777347/mp.2023.40.4.347.pdf by University of Toronto user on 02 June 2023