All individuals vary in how they speak, yet listeners generally understand speech when it’s produced in a shared language. Here we explore attention as a mediator for listeners’ ability to learn an unfamiliar talker’s pronunciation patterns using a novel, dual-talker lexical recognition paradigm. Data from 60 U.S. English monolinguals suggests that the presence of simultaneous verbal streams can inhibit perceptual recalibration regardless of directed attention, though further research is necessary to confirm this finding. Our results have implications for the constraints imposed by different forms of extrinsic cognitive load on speech perception adaptation, as well as how relevance may affect the allocation of cognitive resources.