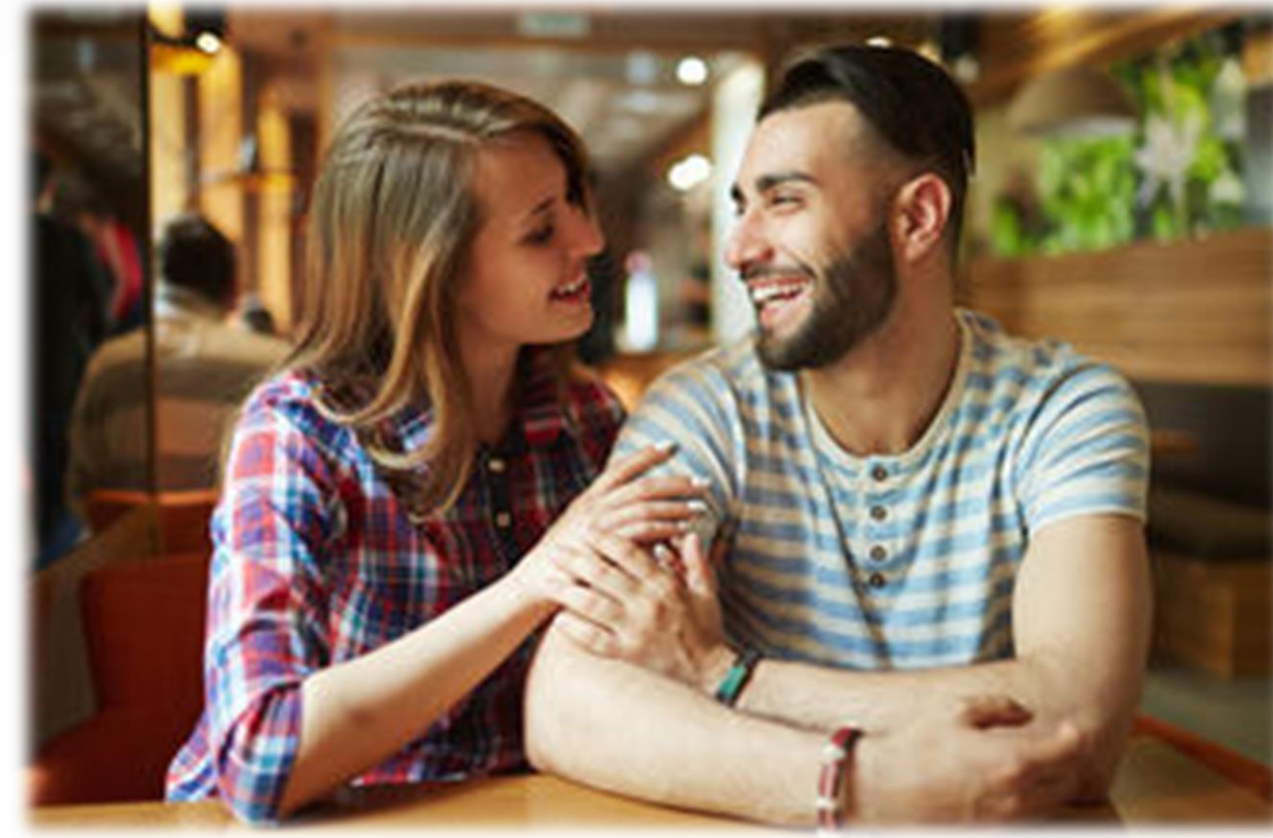


Perceptions on Vocal Stimuli: The Effect of Lateralization

Kelly B. Cembrale & Susan M. Hughes

Psychology Department, Albright College, Reading, PA 19612



Introduction

- ❖ The right hemisphere plays a key role in processing emotions (Demaree, Everhary, Youngstrom, & Harrison, 2005).
- ❖ When processing *vocal* emotional stimuli, individuals are able to determine emotion with greater accuracy in their left ear than their right ear, this implicating right hemisphere dominance (Stirling, Cavill, & Wilkinson, 2000).
- ❖ The content of the vocal information can influence feelings of attraction toward another (Jones, Feinberg, DeBruine, Little & Vukovic, 2008).
- ❖ Jones, Feinberg, DeBruine, Little and Vukovic, (2008) found that when the content of the female voice samples were manipulated to express interest or not by using the phrase (“I really like you” or “I don’t really like you”), men rated the female voices as sounding more attractive when they were using the phrase to express interest than when they were using the disinterested phrase.
- ❖ Vukovic, Feinberg, Jones, DeBruine, Welling, Little and Smith (2008) found that unlike the male raters from the previous study, the vocal content of what was said by the men that either expressed interest or not (i.e., “I really like you” or “I don’t really like you”) seemed to have no impact on women’s attractiveness rating of the male vocal stimuli.
- ❖ Feelings of attraction can be viewed as a type of positive emotion because both feelings of attraction and other positive emotions activate similar neural pathways, especially the dopamine reward system.
- ❖ I predicted that a similar left-ear advantage would apply when making ratings of attractiveness and listeners would rate voices as sounding more attractive when presented in their left ear than right ear.
- ❖ Secondly, I hypothesized that individuals would rate the sound of a speaker’s voice as sounding more attractive when the speaker recited phrases related to interest/attraction (e.g., “I like you.”) than neutral phrases (e.g., “I like studying with you.”) and would prefer those phrases more when presented in their left ear.
- ❖ Lastly, I hypothesized that individuals would recall phrases they heard that reflected romantic interest significantly more than neutral phrases when listening to voice samples, especially when those phrases were presented in their left ear than their right ear.

Methods

Speakers

There were a total of 30 participants (15 women and 15 men) who provided voice samples used as stimuli in the study. Participants were undergraduate students solicited from the Psychology Department Participant Pool at Albright College and were acquaintances of the investigators. The mean age of participants was 19.90 ($SD = 1.18$, range 18-22).

Raters

There were a total of 96 participants (51 women and 45 men) in this study. Participants were undergraduate students solicited from the Psychology Department Participant Pool at Albright College and were acquaintances of the investigators. The mean age of participants was 19.55 ($SD = 1.51$, range = 18-26). Most participants indicated they are right hand dominant (89.1%), with 10.9% being left-hand dominant. Additionally, all non-heterosexual raters were eliminated from analyses ($n = 3$).

Procedure

Speakers were asked to recite a number count from 1-5 using a normal speaking voice. Then, they were asked to recite five phrases indicating attraction (e.g., “I like you”) and 5 neutral phrases (e.g., “I have the same idea as you”). These voice ratings were presented to participants as a laboratory task. Raters were presented with voice samples that included the five phrases related to attraction and the five neutral phrases. Raters were presented with 15 voice samples that were number recitations. The phrases were presented in one ear at a time and voice samples were only of opposite-sex recordings. After each voice sample was played, participants were asked to assess voice attractiveness of the speakers. Finally, participants were presented with a list of 50 written phrases (25 attraction and 25 neutral phrases). The participants were asked to recall whether they had heard each phrase or not when played in the previous task and how confident they were about their decision as to whether they heard each phrases or not using a 5-point scale (1 = not at all confident, 3 = somewhat confident, 5 = very confident).

Results

Ratings about Participants Perceptions

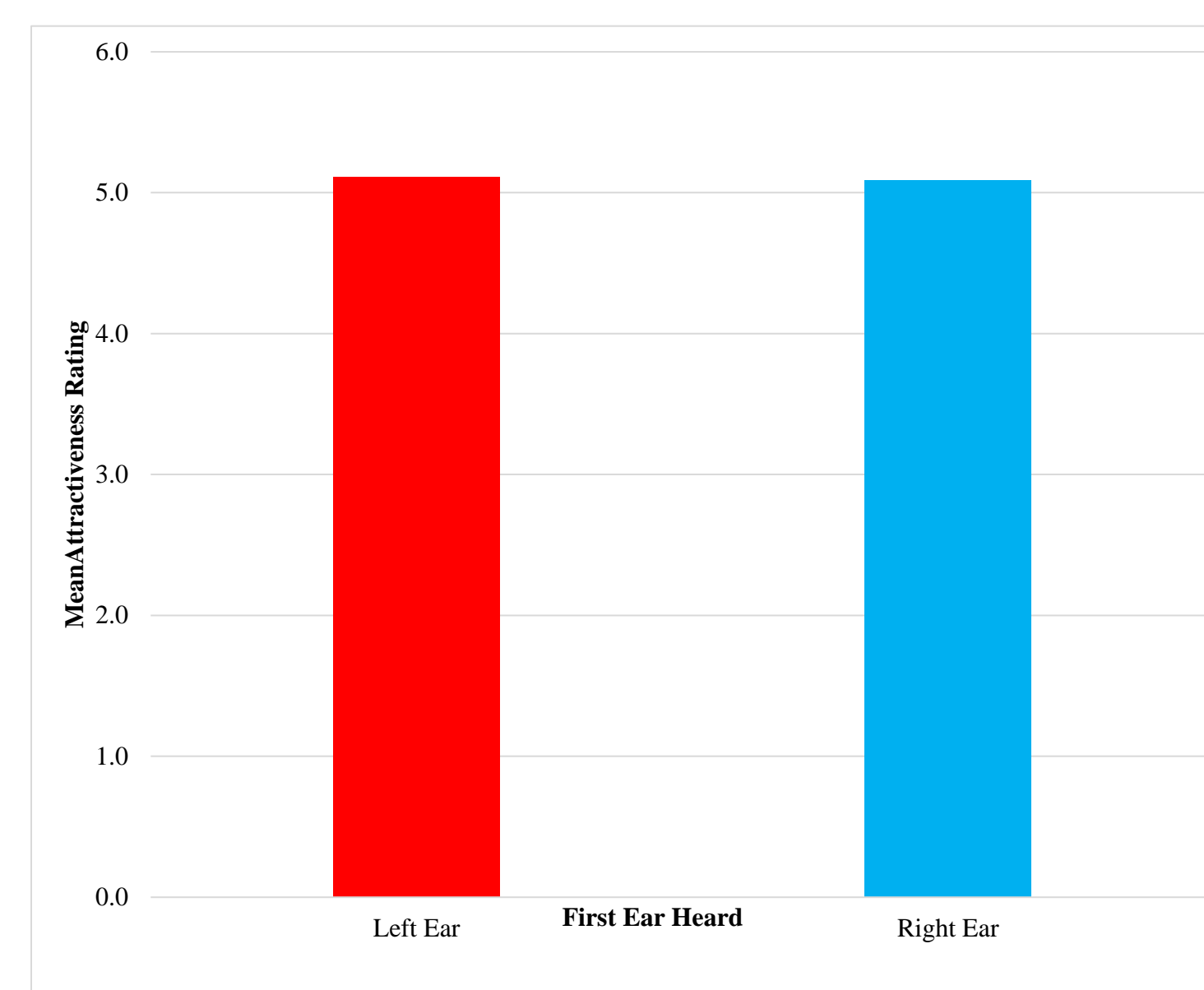


Figure 1. Mean differences of independent ratings (made on a 10-point scale) as a function of which ear the participants heard the phrases in first. Participants who first heard the number count in their left ear first ($M = 5.11$, $SE = 0.11$) rated the voices as sounding more attractive than the participants who heard the number count first in their right ear first ($M = 5.09$, $SE = 0.12$).

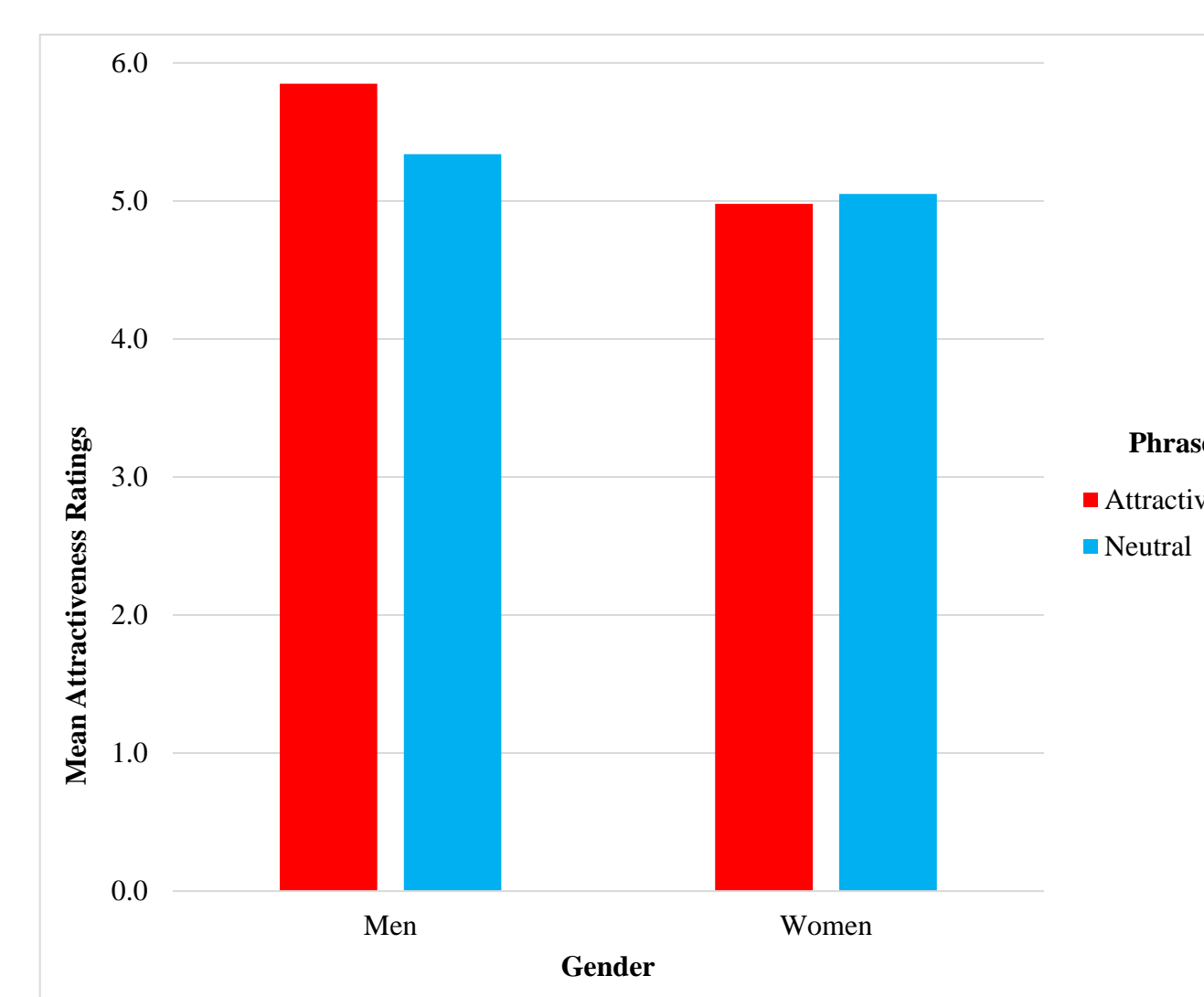


Figure 2. Mean differences of independent ratings (made on a 10-point scale) as a function of gender and phrase content. Men rated voices of those reciting phrases related to attraction ($M = 5.85$, $SE = 1.19$) as sounding significantly more attractive than the neutral phrases ($M = 5.34$, $SE = 1.11$), $t(41) = 4.33$, $p < .001$. However, for women, there was no significant difference between voice attractiveness ratings between men who recited phrases related to attraction ($M = 4.98$, $SD = 1.47$) and neutral phrases ($M = 5.05$, $SD = 1.35$), $t(49) = 0.59$, $p = .561$.

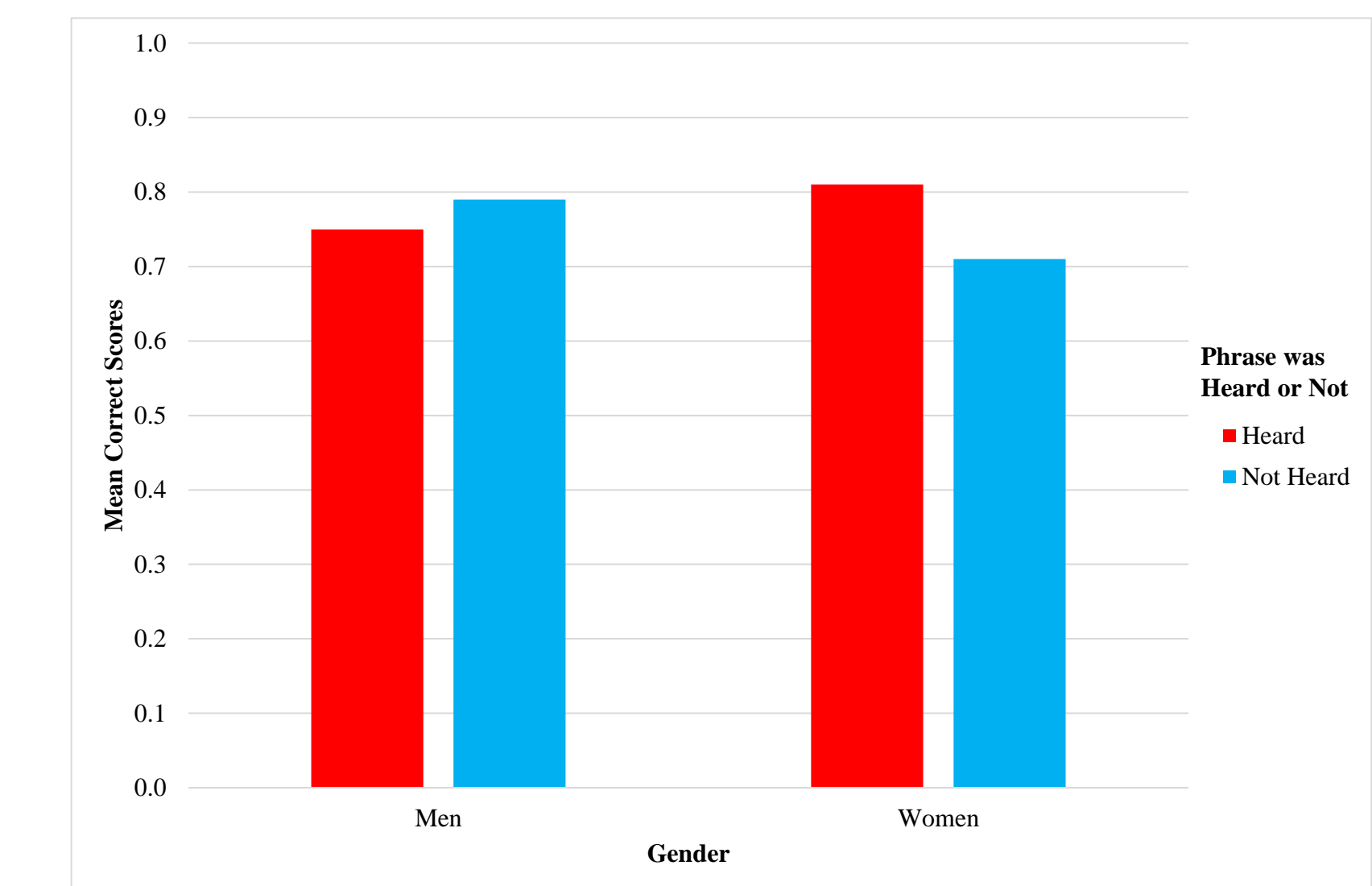
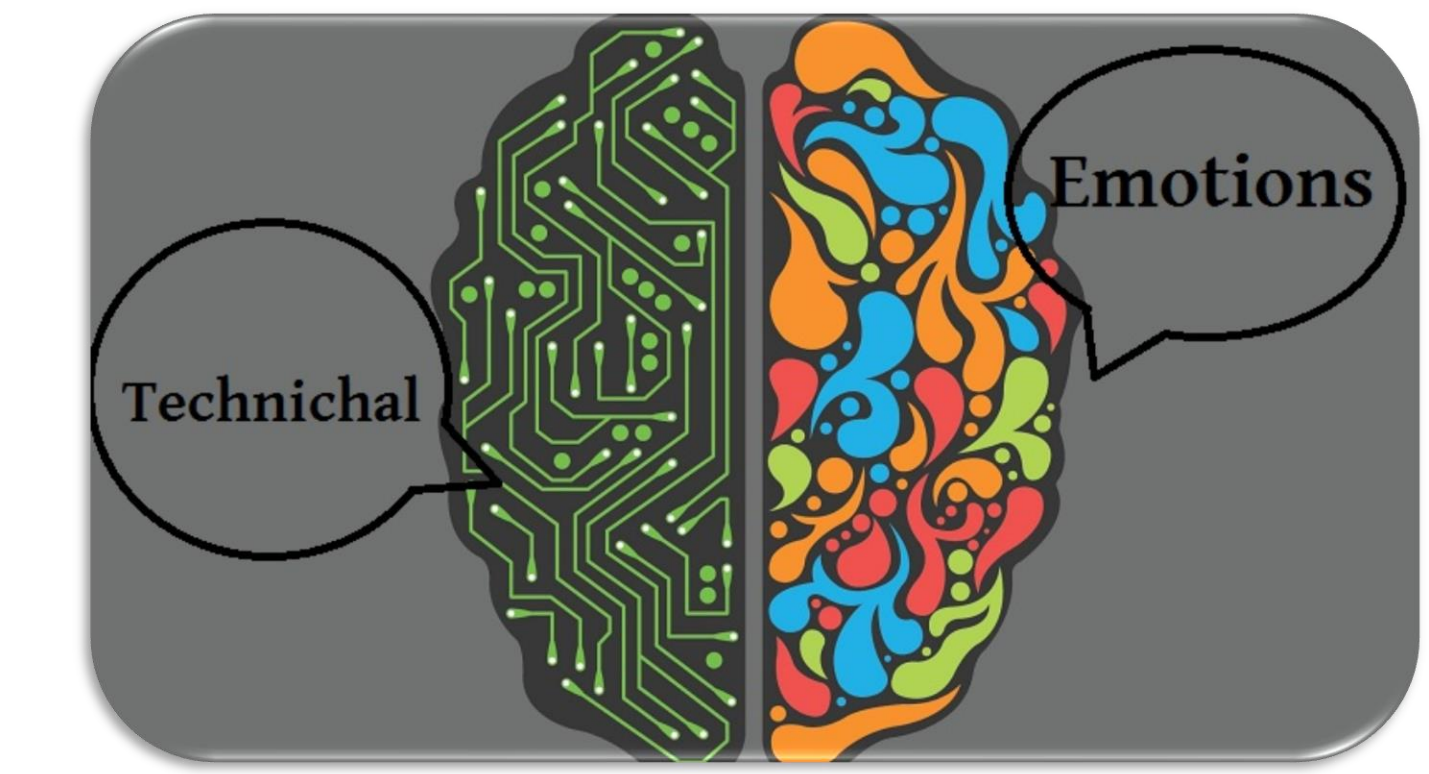


Figure 3. Mean differences of independent ratings (made on a 10-point scale) as a function of gender and whether participants heard the phrases or not. For male listeners, there was no significant difference between correctly recalling phrases that were presented ($M = 0.75$, $SD = 0.19$) from phrases they did not hear ($M = 0.79$, $SD = 0.15$), $t(41) = 1.08$, $p = .288$. However, women correctly recalled the phrases that were presented ($M = 0.81$, $SD = 0.16$) better than the phrases they did not hear ($M = 0.71$, $SD = 0.21$), $t(49) = 2.58$, $p = .013$.

Discussion

- ❖ Although participants did not rate the same voice as sounding more attractive when heard in one ear versus the other, they did tend to rate voices heard in their left ear first as sounding more attractive for the number count stimuli.
- ❖ This finding suggests some further evidence for a left ear advantage which is in line with previous studies (Bryden & MacRae, 1988; Erhan, Borod, Tenke, & Bruder, 1998) and thus, a right hemisphere advantage for processing emotions (Gainotti, 2012; Erhan, Borod, Tenke, & Bruder, 1998).
- ❖ When participants heard the phrases in their right ear first, they rated the phrases as sounding more attractive than the participants who heard the phrases in their left ear first.
- ❖ Men rated the voices of women reciting phrases relating to attraction as sounding more attractive than neutral phrases, whereas women rated the voices of men similarly regardless of content.
- ❖ Since men are opportunistic maters, men prefer when women show direct signs of sexual interest and attraction to them (Buss & Barnes, 1986) so it makes sense that men preferred women’s voices when they recited phrases related to attraction.
- ❖ For phrases related to attraction, participants recalled the phrases that were presented better than the phrases they did not hear. Whereas, for neutral phrases, participants recalled the phrases that were not presented better than the phrases they did hear.
- ❖ Previous studies have shown that emotional, phrases tend to be remembered more than neutral words (Kensinger & Corkin, 2003).

References

- Bryden, M. P., & MacRae, L. (1988). Dichotic laterality effects obtained with emotional words. *Neuropsychiatry, Neuropsychology, & Behavioral Neurology*, 1(3), 171-176.
- Buss, D. M., & Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50(3), 559-570.
- Demaree, H. A., Everhart, D. E., Youngstrom, E. A., & Harrison, D. W. (2005). Brain lateralization of emotional processing: Historical roots and a future incorporating “dominance”. *Behavioral and Cognitive Neuroscience Reviews*, 4(1), 3-20.
- Erhan, H., Borod, J. C., Tenke, C. E., & Bruder, G. E. (1998). Identification of emotion in a dichotic listening task: Event-related brain potential and behavioral findings. *Brain and Cognition*, 37, 286-307.
- Gainotti, G. (2012). Unconscious processing of emotions and the right hemisphere. *Neuropsychologia*, 50, 205-218.
- Jones, B. C., Feinberg, D. R., DeBruine, L. M., Little, A. C., & Vukovic, J. (2008). Integrating cues of social interest and voice pitch in men’s preferences for women’s voices. *Biological Letters*, 4, 192-194.
- Kensinger, E. A., & Corkin, S. (2003). Memory enhancement for emotional words: Are emotional words more vividly remembered than neutral words? *Memory & Cognition*, 31(8), 1169-1180.
- Stirling, J., Cavill, J., & Wilkinson, A. (2000). Dichotically presented emotionally intoned words produce laterality differences as a function of localization task. *Laterality*, 5(4), 363-371.
- Vukovic, J., Feinberg, D. R., Jones, B. C., DeBruine, L. M., Welling, L. L. M., Little, A. C., & Smith, F. G. (2008). Self-rated attractiveness predicts individual differences in women’s preferences for masculine men’s voices. *Personality and Individual Differences*, 45, 451-456.