

# Kognitivní psychologie 4

## *Infant-directed speech,*

### předverbální komunikace mezi matkou dítětem

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- Infant-directed speech
- Child-directed speech, motherese, baby-talk, **matkovština.**

**Infant-directed speech (IDS) dle  
Mithen (2007) ad.**

# Infant-directed speech (IDS), motherese = mamkovština

- IDS is the very distinctive way we talk to infants: exaggeration of melodic and rhythmic features of spoken language (**prosody**): a **higher overall pitch**, a **wider range of pitch**, **longer 'hyperarticulated' vowels** and **pauses**, **shorter phrases**, **greater repetition** and **greater variation in volume**.
- Even very young children (three-year-olds) use IDS!

# Similarities and differences in IDS

- **Fathers** appear not to expand their pitch range as widely as mothers.
- Those who are new to conversing with babies do it with the same degree of exaggerated prosody as experienced mothers – and the babies enjoy it.
- **Children much prefer listening to IDS** than to normal speech! (Fernald, 1991)
- They are **far more responsive to intonation of voice** than to facial expression!
- This applies equally to premature infants, who are more frequently calmed by the use of IDS than by other techniques such as stroking!

# The universality of IDS

Fernald et al. (1989) cross-linguistic research of IDS in speakers of **French, Italian, German, Japanese, British and American English.**

Conclusion: She found **the same degrees of heightened pitch, hyperarticulation, repetition** and so forth in all languages.

**Japanese**-speakers employ a generally lower level of emotional expression in comparison with other language speakers.

Speakers of **American English** had the most exaggerated levels of prosody.

Whatever country we come from and whatever language we speak, **we alter our speech patterns in essentially the same way** when talking to infants. (Fernald et al., 1989).

# The universality of IDS

**Tonal languages**, as Chinese, Xhosa, Athabaskan (Dené) languages, **use the pitch for changing the meaning of words**, not only of the importance of the same words.

Mothers speaking in tonal languages surprisingly **use the same patterns of pitch and intonation** in their IDS.

That the same patterns are used both in Indo-European and also in other languages strengthens the argument that **the mental machinery of IDS belongs originally to a specific (musical?) ability concerned with regulating social relationships and emotional states.**

- Does the lack of pitch in the Japanese language affect development in infants? (perhaps pitch detection)

# Four stages of IDS (Fernald et al. 1989)

1. IDS serves to engage and maintain the child's **attention**.
2. IDS starts to **modulate the arousal and emotion** (soothing, engaging attention, maintaining child's gaze). From 4 months.
3. IDS **starts to communicate the speaker's feelings and intentions** (as an approval, prohibition, attention-bidding and comfort). From 7 to 8 months.
4. The pauses and specific patterns of intonation **facilitate the acquisition of language**.

# The universality of IDS

The universality of IDS was demonstrated by the infants responded in the appropriate manner to the type of phrase they were hearing, frowning at the phrases expressing prohibition and smiling at those expressing approval, whatever language was spoken and even when nonsense words were used.

- **With one exception:** the infants made no response when the phrases were spoken in **Japanese**.
- Why is that?

**It means that in IDS the melody itself is the information.**

# Pet-directed speech (PDS)

There are similarities between IDS and PDS.

- Question: I wonder why we use PDS when talking to animals if we know they won't ever acquire language abilities?
- Question: How does music affect pets' ability to learn or interact with humans?

# Problems of the perfect pitch

When we enter the world, we have perfect pitch but this ability is replaced by a relative pitch as we grow older.

Why?

Because the perfect pitch **prevents generalizations.**

Question: Is it possible to relearn perfect pitch for those who lose it?

- What connection is between IDS and music?

# Prosody and Singing

Trehub & Schellenberg (1995) found cross-cultural similarities in **lullabies** (melodies, rhythms and tempos). Trehub et al. (1997) found that babies will spend significantly longer periods attending to audiovisual recordings of their mothers when they are **singing** rather than speaking.

Most strikingly (Standley, 1999), the singing of lullabies by a female vocalist significantly improved the development of sucking abilities in premature infants, and this resulted in measurable **weight gain**. Premature infants subjected to a combination of music and massage were discharged an average of **eleven days** earlier than a control group of infants!

Question: Why is maternal singing linked to so many positive effects in infants but not paternal singing?

- The observation that everyone learns to talk, whereas musical talent is rare, **is true only for music in modern societies**. In small-scale societies people sing and dance as readily and competently as they converse." (Dissanayake, 2005)
- Question: What is the importance of laughter in infant development?
- Question: If women laugh more than men, why do both men and women laugh more when listening to a male?

# Music and sexual selection

Geoffrey Miller (1965), U. of New Mexico



**Runaway sexual selection** comes if a heritable mate preference – for example, the preference for a larger than average tail – becomes genetically correlated with the heritable trait itself – in this case the larger tail – then a positive feedback loop will arise so that tails will eventually become far longer than would otherwise have been expected.

For Miller, 'music is what happens when a smart, group living, anthropoid ape stumbles into the evolutionary wonderland of **runaway sexual selection** of complex acoustic display'.

He believes that singing and dancing constituted a package of indicator traits for those choosing mates, predominantly by females: dancing and singing revealing fitness, coordination, strength and health; voice control revealing self-confidence.

Mithen approves his hypothesis by evidence from fossil records.

Mithen (2005) adds that there are two main types of sexual selection pressures:

1. **Male competing with other males** results in selection of traits such as large male body size and large canines, and perhaps aggressive personalities.
2. **Females can choose their mating partners**, leading to the selection of the indicator and/or aesthetic traits that make males attractive to females (tails, jewels, i.e. aesthetic objects).

Question: What biological factor do you find most important in mate selection?

Question: How important were personality traits when females chose a male mate, and did it depend on time periods and types of society?

Mithen (2007) proposes a completely original hypothesis of the existence of a proto-music/language among Neanderthals: “the ‘**Hmmmmm**’ communication system” (p. 172).

‘Hmmmmm’ was:

- *holistic* (not composed of segmented elements),
- *manipulative* (influencing emotional states and hence behavior of oneself and others; not for gossiping),
- *multimodal* (using both sound and movement),
- *musical* (temporally controlled, rhythmic, and melodic),
- *mimetic* (utilizing sound symbolism and gesture).

In *The Prehistory of the Mind* (1996) Mithen argued that pre-sapiens hominids like Neanderthals lacked “cognitive fluidity” or metaphorical thought—the ability to hold concurrently in mind information from several different cognitive domains.

Additionally, the absence of symbolic artifacts in their dwelling sites implies absence of symbolic thought and hence of symbolic utterance—i.e., of spoken language (p. 228).

Yet the challenging lives of Neanderthals—with their physically difficult environment, large body size, and large but dependent infants—required complex emotional communication and intergroup cooperation.

They developed a “music-like communication system that was more complex and more sophisticated than that found in any of the previous species of Homo” (p. 234), one that included iconic gestures, dance, onomatopoeia, vocal imitation and sound synaesthesia.

# Birdsongs and bird dances

Birds of paradise :

<https://www.youtube.com/watch?v=nWfyw51DQfU>

Bowerbirds:

<https://www.youtube.com/watch?v=1XkPeN3AWIE>

Vogelkop Bowerbird:

<https://www.youtube.com/watch?v=RXwJ3QFIOkg>

<https://www.youtube.com/watch?v=o8xZeU6Aksc>

Lyrebird:

<https://www.youtube.com/watch?v=WAotP-p7m4o>

There is correlation between a sexual dimorphism (especially in terms of body size) and polygynous mating system. So, when male to female body size ratio shifted from australopithecine's 1.4:1 to modern humans' 1.2:1 when *Homo ergaster* appeared, it suggests the shift from polygynous to monogamous mating system.

Who supported ever raising demands on energy for babies with ever larger brain capacity?

Males? Maybe, but if it was then as it is now, then men didn't provide enough energy by hunting. More probable source of additional energy was from female-female coalitions.