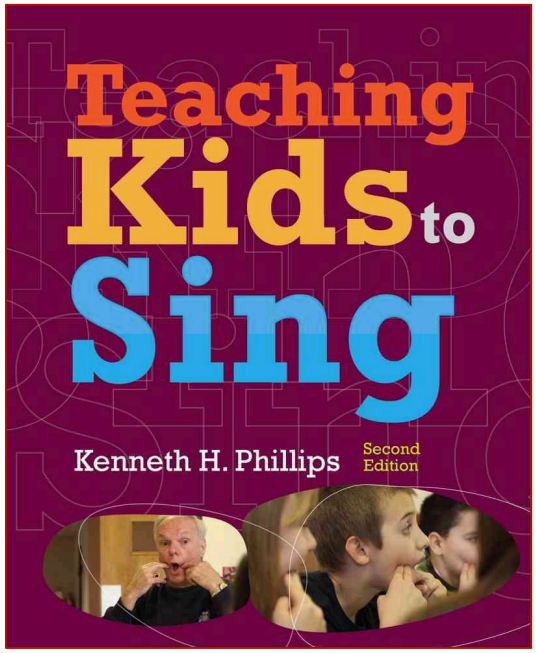
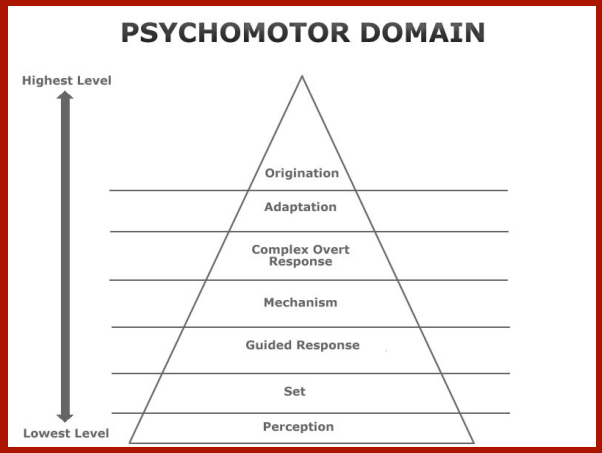


Source: Phillips, *TKTS*, p. 31.



Source: www.WriteOpinion.com/psychomotor-learning

The Art of Choral Techniques

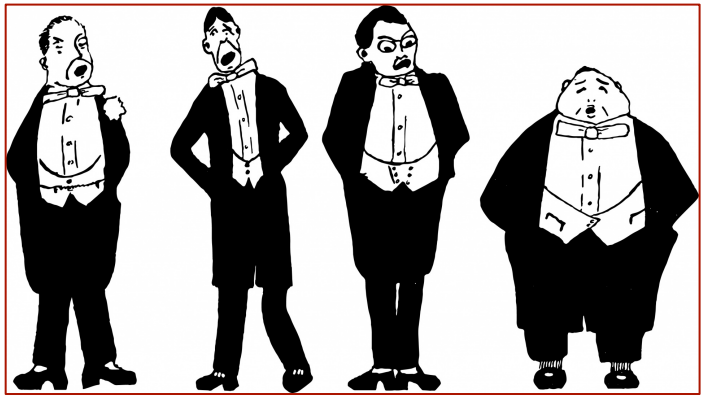
In-class Review of *Teaching Kids to Sing*:
Chapter 2- The Psychomotor Process

Source:

Phillips, Kenneth. *Teaching Kids to Sing* ***(TKTS)***, 2nd ed. U.S.: Schirmer CENGAGE Learning, 2014.

The Voice: A Complex Mechanism

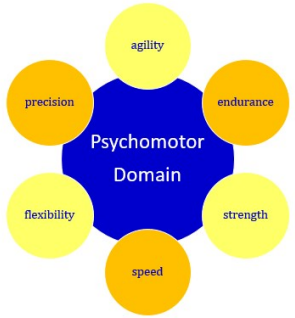
- Singing involves a complex mechanism that combines different properties that are:
  - Psychological
  - Anatomical
  - Acoustical
  - Physiological
- This chapter discusses various aspects of the psychomotor process, including
  - Pitch perception
  - Tonal memory
  - Pitch discrimination
  - Motor coordination



The Psychomotor Domain

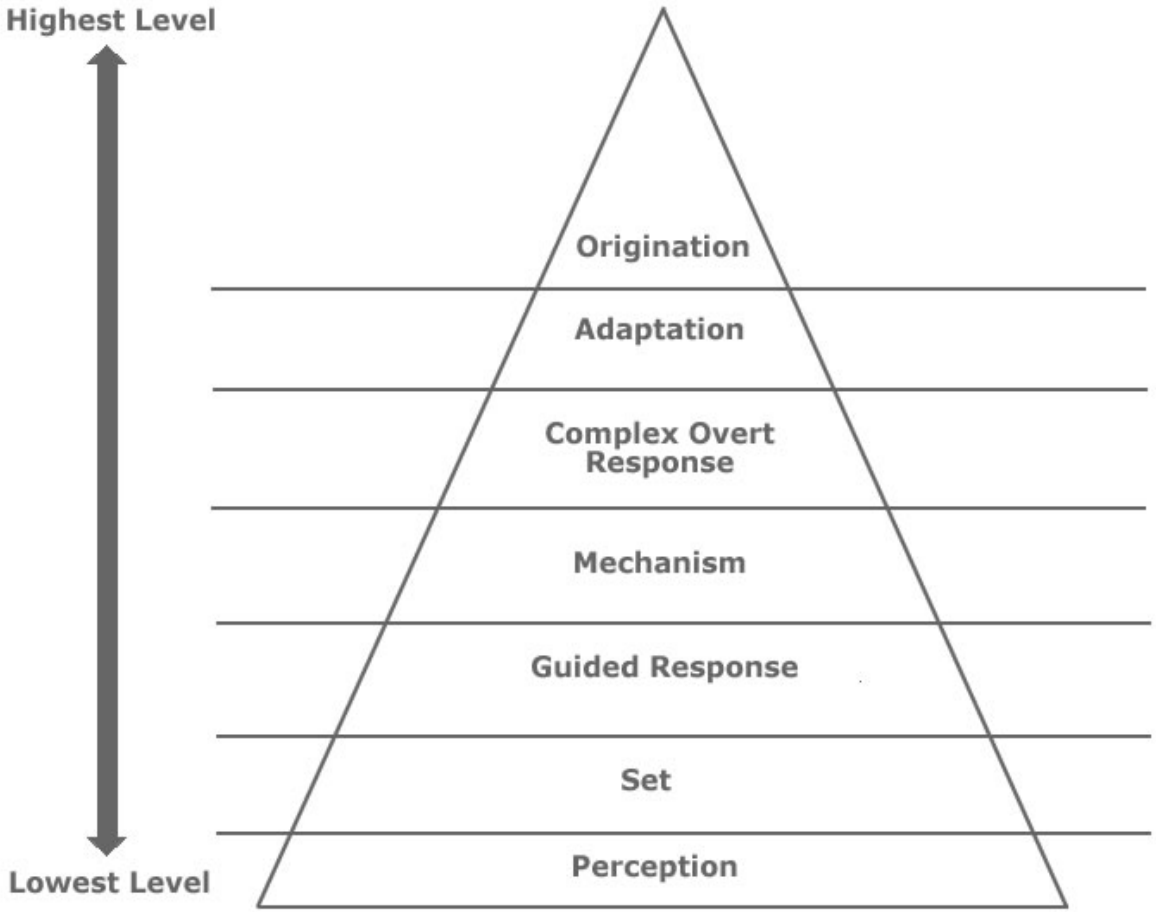
- Learning for skills development
- Motor activity that proceeds directly from mental responses.
- Psychomotor process for teaching can be conceptualized in four steps:
  (1) Teacher provides model or stimulus
  (2) Student perceives and decodes the model
  (3) Student imitates the model
  (4) Student analyzes feedback regarding his/her effort

Seven Levels of Taxonomy (Classification) of Psychomotor Behavior



- **1.0. Perception:** become aware
- **2.0. Set:** preparatory adjustment; become ready
- **3.0. Guided Response:** overt behavior w/guidance
- **4.0. Mechanism:** learned response becomes habitual
- **5.0. Complex Overt Response:** smooth and efficient performance of complex motor act
- **6.0. Adaptation:** ability to change performance for suitability
- **7.0. Origination:** ability to develop new skills

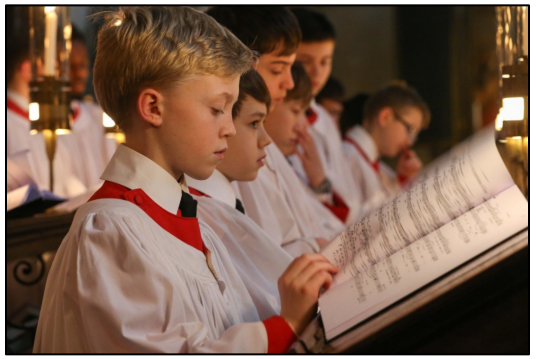
PSYCHOMOTOR DOMAIN



Source:
www.WriteOpinion.com/
psychomotor-learning

Subsets for Level 2.0

- Although a number of levels of the taxonomy have subsets, the ones for set 2.0 are important for singing:
  - **2.1. Mental set:** readiness to perform motor act (cognitive awareness)
  - **2.2. Physical set:** having made the anatomical adjustments necessary for a motor act
  - **2.3. Emotional set:** readiness in terms of favorable attitude
- Practical application: teachers must work to overcome macho attitude for boys who think that singing is not masculine.



Accurate Pitch Production

- Dependent upon both psychological and physiological processes.
- Three **psychological factors** are:
  (1) **pitch perception** (hearing and decoding pitch)
  (2) **tonal memory** (remembering pitch)
  (3) **pitch discrimination** (recognizing difference among pitch patterns and assigning labels using accepted terminology, e.g., major scale, minor scale, ascending, descending, etc.
- Most inaccurate singing is more the result of problems with motor coordination than problems with hearing!

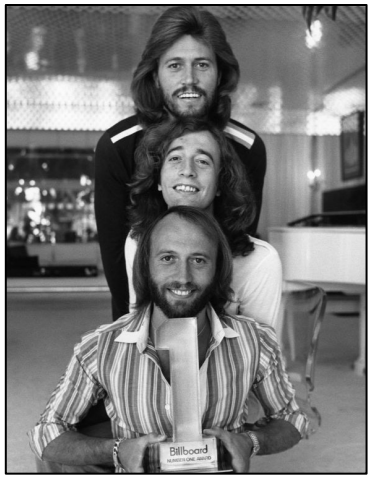
Aural Acuity

- Dictionary definition: "sharpness of hearing"
- **Problems of pitch perception** can stem from numerous factors, including:
  - **Inattention to pitch (lack of focus)**: move them to center of group; free environment of distractions; cup student's face in teacher's hands and sing directly to child
  - **Feedback problems** can lead to inattention and inability to decode pitch: use multi-modal teaching techniques such as aural, visual and kinesthetic forms of feedback; teach students ear cupping and use call-response.
  - **Improper teaching modes** (next slide)

Teaching Mode

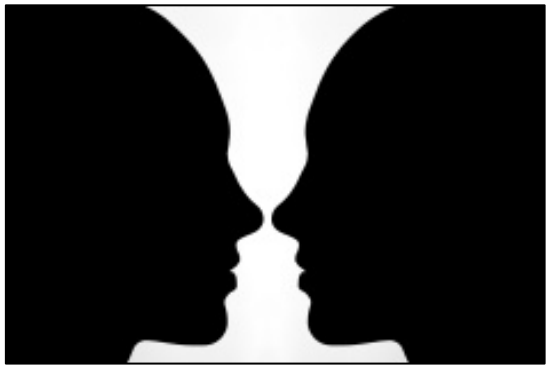
- When teachers are **enthusiastic**, students are more focused.
- Make music learning a **student-centered** process; they'll be more engaged when they make judgments and decisions about the music being studied.
- Three general learning modalities (**visual, auditory, kinesthetic**) and individuals usually learn better in one of these (their **"primary"** one).
- **Mix modalities** in teaching and learning to reach ALL students in the classroom.

Vocal Modeling



- Another important teaching modality.
- Children perceive pitch more accurately if the model they hear is an accurate representation of that they are to produce, and is presented **in their own range**.
- Voice **quality** of model affects accuracy of pitch perception and production.
- The male model presenting in the **"falsetto" (male alto)** is preferred.
- The presence of vibrato in the voice of the teacher should be reserved for solo work; use **"simple tone"** for demonstration and **don't sing along** with your students. *[Think of it like a **conversation**, where you don't want to talk over someone.]*

Tonal Memory



- Students must be able to remember tones they hear.
- Tonal memory affected by students' age and the amount of material to be remembered.
- When learning, children benefit from repetition.
- Most songs are better taught **Whole-Part-Whole**, with multiple repetitions of individual phrases before the whole is mastered. *[We would say: **Experience (Synthesis)—Analysis—Experience (Synthesis)**, which is perfect for Perception X Response, with 2/3 Response!]*

Pitch Discrimination

- Edwin Gordon is widely known in music education as researcher, teacher, author, and lecturer. Best known for devising tests to research how people **think** musically and the nature of developmental and stabilized **music aptitudes**. Two basic categories: discrimination and inference.
- Gordon coined the word **auditation** to represent the psychological process of discriminating among musical stimuli. Five levels of discrimination: (1) aural/oral; (2) verbal association; (3) partial synthesis; (4) symbolic association; and (5) composite association. [See p. 32 for brief descriptions.]
- Children learn to audiate in relation to musical **syntax** or musical **patterns**.

Tin Ear?

- As children mature, so does their ability to hear and audiate. . . the more singing experience, the better the audiation skills.
- Inaccurate singers are not "tone deaf" or lacking in audition skills. The problem is **coordination** of hearing and singing.
- Those that receive motor coordination training significantly improve in vocal range and pitch accuracy.

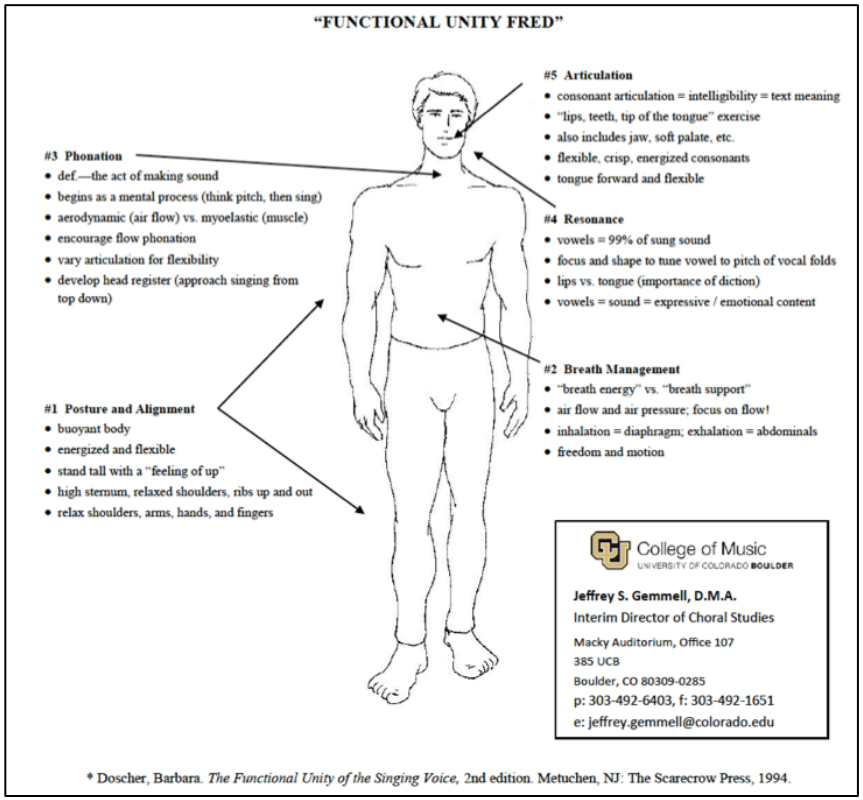
Images:
Examples of "ear horns." Could this be the origin of the term "tin ear?"

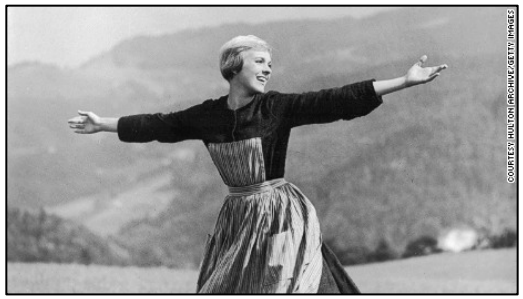
Energize the Ear

- Establishing the concept **"same-different"** is key to Gordon's musical aptitude testing.
- Teach children to sing **"on the inside"** to learn how to **"think pitch"** before producing it themselves. This is not something they will automatically do.
- When beginning a song, start with having them think the pitch first (sounded by the teacher) before it is sung. Likewise, students should practice beginning a song without the first pitch being sounded. Students can be taught to do this easily.
- Gordon's discrimination elements lead to students comprehending the sight of music notation in terms of tonality and meter.

Motor Coordination

- Second part of psychomotor process for singing is **physical**, or **motor coordination**.
- Coordination involves the:
  - **Body** (instrument) *["My body is my instrument!"]*
  - **Breath** (support and control)
  - **Vocal Folds** (pitch and registers)
  - **Resonators** (rich resonance)
  - **Articulators** (clear and precise diction)
- We conceptualize this framework in terms of " **Functional Unity Fred**."

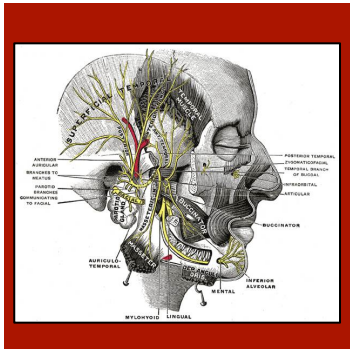




Pitch Production/Problems

- Pitch is the product of two physical or motor actions:
  - Movement (vibration) of the vocal folds ***[Phonation]***
  - Flow of pressurized air column ***[Breath management]***
- If there is a motor coordination problem with either of these areas, accuracy of pitch is affected.
- Most inaccurate singing among children is caused by: **(1)** failure to experience singing in the upper (CT dominant) vocal register [or "head voice"] and/or **(2)** failure to use proper breath management.

Vocal-Fold and Register Adjustments: CT or "Head"



- Vocal fold adjustments are basically **involuntary**; pitch-adjusting muscles respond automatically to the mental perception of pitch and adjust accordingly.
- A child must experience **kinesthetically** and **aurally** a variety of these adjustments to build confidence in automatically producing pitch.
- Singing in upper, or **"head,"** voice requires thinning and lengthening of vocal folds; produced as part of the **CT (*cricothyroid*)** register.
- If child does not experience this sensation, matching pitch on higher notes is difficult.

Vocal-Fold and Register Adjustments: TA or "Chest"

- Children sing more naturally in the lower, **TA (*thyroartytenoid*)**, or **"chest"** register.
- Closer to what they experience in speaking.
- Rather than carry the "chest" voice higher and higher, children are encouraged to **combine (or "mix")** TA and CT production into a balanced middle register between middle C and one octave above.
- *[Women and girls do the same thing: developed the **"mixed middle voice"** to create an even sound throughout their entire range.]*

Breath Management Balancing Act

- The air column has to provide the correct **breath pressure** if accurate pitch is to be produced.
- Learning to **balance** the tension of the vocal folds with the flow of energized air column is a basic requirement.
- Children tend to breathe in the upper chest (**clavicular breathing**) and compensate for lack of breath energy by using too much pressure and tension at the vocal fold level. Such a **"pressed voice"** production results in poor tone quality, lack of vocal freedom and accuracy, and injury to the vocal folds.

Bimodal Breathing

- Breathing process is **bimodal**:
  - Use **intercostal muscles** (between the ribs), which tends to produce a shallow breath, or
  - Use **diaphragm** (major muscle of inspiration), which results in a deeper, fuller breath.
- The first mode, chest or **clavicular** breathing, is used for fast inhalation-exhalation cycle, such as needed for running or other strenuous physical activities.
- The second mode, **abdominal-diaphragmatic-costal** breathing, permits greater control of the process and aids pitch production through activation of energized air column.
- Teach your students about the bimodal nature of breathing!

Inaccurate Singing

- Many terms used to label students who sing off pitch (see p. 35), but the term **inaccurate singer** is most accurate.

- Generally four causes:

  (1) **Environmental**: lack of exposure to music;

  (2) **Organic**: retarded maturation, physical defects, or diseases;

  (3) **Psychological**: poor pitch discrimination, poor tonal memory, lack of confidence;

  (4) **Poor vocal control**: poor breath management, lack of kinesthetic awareness in vocal mechanism, inability to shift to upper register, and straining.

- Influence of **environment** is also a key factor. Strong relationship between singing of prekindergarten children and their home musical environment.

Encourage Singing at Home

- **Significant advantages** in singing accuracy for children from homes where music was emphasized.
- 40% of the variance in musical aptitude attributed to **home musical background**.
- Preschool children from musically disadvantaged home can develop neglected musical skills through **planned instruction** and **intervention**.
- Important period of musical growth for children is between the ages of **18 month**s and **3 years**.

Remediation for Inaccurate Singing

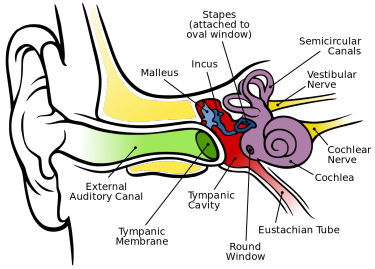
- Singing development is normal feature of children's **musical engagement** with world around them.
- All children have **musical potential**.
- Remedial help for inaccurate singing includes the psychomotor process and falls into 3 categories:

  (1) Pitch **perception** and/or **discrimination**;

  (2) Additional **drills** in singing songs/ exercises; and

  (3) Instruction in **vocal technique**.

Pitch Perception/ Discrimination Activities



- Use **verba**l or **visual** feedback.
- Presentation and order of pitches to be matched influence singing accuracy. **Short, familiar tonal patterns** in variety of keys are better for matching than individual pitches.
- Pitch tonal patterns high enough to **avoid the chest register** to help students find their singing voices. Use pitches between a1 and c2. A simple reminder to **"use your singing voice"** helps children to use upper **"head"** register.
- Remember previous discussion about hearing accurately: **take time for inner hearing** before responding; **sing "inside" before "outside."**
- Also need to develop ability to compare tonal patterns for **"same"** or **"different."** Have students **"cup ears"** (from behind) to hear better [improve **coordination between hearing and producing pitches**].

Student Self-Analyzes *[Internal Looping]*

- Have students **analyze** their **own** responses.
- **Discussion** is central to experience; no right or wrong way to relate **sensation**. Feedback originates with student.
- Teacher can enhance psychological process:
  (1) Provide **stimulus** (tonal pattern) w/i student's range;
  (2) Require time for **"silent singing;"**
  (3) Request response on **neutral syllable**, *[vi], [du], or [lu];*
  (4) Provide **feedback**, first from student, then teacher;
  (5) Discuss physical **sensation of vocal response** w/student.
- In this last step, encourage student to distinguish between CT (head) and TA (chest) production. **Positive reinforcement** is critical to shape student response to desired goal. Provide opportunities for them to **sing alone**, after a good model, to perceive their own voices and discriminate between responses.

Motor Coordination

- Teaching children to **breathe from the diaphragm** has a positive effect on their accuracy.
- Inaccurate singing results from **failure to coordinate** properly the physical pitch-production process. Since breath is the primary activator of the vibratory cycle of the vocal folds (phonation), its use and coordination are basic to accurate singing.
- Lack of breath support produces either of two conditions:
  - (1) **throaty, pressed-voice singing** (laryneal compensation for lack of breath flow/pressure)
  - (2) **diffused, inaccurate singing** (low breath pressure and lack of laryngeal compensation)
- Children who sing with pressed, throaty production **never** sing with a free, beautiful tone.

Teaching Proper Motor Coordination

- Correct **posture** and **breath management** for the foundation for good coordination, but it involves more than just breathing!
- Student must learn to **apply breath to both speaking and singing voices**. Vocal imitations, choric speaking, and chanting texts all help to establish various pitch levels, proper support, and projection.
- **Vocalises** are another important element for coordination of mind and motor skills.
- Program of motor coordination involves areas of **diction** and **expression**, too, with proper use of articulators (lips, jaw, tongue, teeth, etc.) and ease/ flexibility of production.
- Expressive elements (phrasing, range, dynamics, tempo, timbre) are all affected by **quality of coordination** between breath, vocal folds, resonators, and articulators. *[We call this encouraging a **"Functional Unity"** of all of these elements!]*