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Losing Control, Gaining Engagement:
Tips and Techniques Inspired by Science for Improving Motivation and Performance in Large Ensembles

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Overview

Music making is a complex human activity. It is hard to separate the effects of one's underlying physiology and psychology from the impact of the social environment and the music itself. Increasing our knowledge and understanding in all of these areas can be used to create a more effective and engaging music making experience. We will introduce a number of rehearsal strategies that are inspired by current research from the fields of neuroscience, psychology, biology, and social dynamics and have the potential to positively affect large ensemble rehearsals. In addition, we hope you take away the following thoughts:

- Paradoxically, over control from the podium diminishes performance potential. By maintaining too much control over the rehearsal, teacher-conductors can limit the space needed for the development of creativity and discovery, individual expression, intrinsic motivation, and social cohesion.
- Mistakes are golden! Students need room to discover and correct their individual mistakes.
- Put more of the responsibility on the students to engage in the rehearsal process and challenge them to make musical decisions, both individually and as an ensemble.
- These rehearsal strategies are designed to go beyond improvements in musical performance, yielding a more engaged, motivated, and socially connected ensemble.

Rehearsal Activities

Mirror Me

Science: Mirror neurons are involved in both specific actions and the perception of those actions, aiding our ability to imitate, empathize, and infer intent. This involuntary and automatic mirror neuron system allows people to quickly understand movements by *feeling* rather *thinking* about what they are seeing.

Instructions: Using any notes, scales, syllables, chorales, etudes, or pieces ask students to "Perform what you see."

Objective: Enhance ensemble sensitivity to elements of musical performance as communicated through gestures, expressions, postures, and movements.

Room Full of Mirrors

Science: Performing movements that reflect certain sounds strengthen mirror neuron responses to observed actions. Additionally, observation of students' movements to music can provide the teacher with valuable information about each student's musical comprehension and priorities.

Instructions: Using any note, scales, syllables, chorales, etudes, or pieces ask students to learn to conduct a passage of music with apt vocabulary.

Objective: Enhance ensemble sensitivity to *feel* the music and associate the music with bodily actions. Observation of student gestures reveals student understanding and perception of musical elements.

Synchronicity

Science: Rhythmic entrainment is a "hard-wired" human ability comprising: internalization of pulse; a high level of connectivity between the auditory and motor systems in the brain; and our brain's innate ability to predict patterns.

Instructions: Using any piece ask students to "Listen to maintain ensemble pulse and perform what you see." The conductor either does not move or shows no pulse and only accentuates other musical elements through gestures (as in 'Mirror, Mirror').

Objective: Encourages rhythmic entrainment within the ensemble while increasing ensemble sensitivity to other musical elements.

Change it Up

Science: Creating a novel situation produces a heightened state of arousal that encourages focus and memory consolidation. Additionally, encouraging varied social interactions aids in expanding a group's social networks, potentially yielding a higher level of social cohesion, trust, and improved flow of information.

Instructions: Change the ensemble set-up by creating a new configuration of seats and/or seating.

Objective: Enhance listening by adjusting to an altered aural perception of the music at hand. This activity also provides additional opportunities for social interactions with new or less familiar people in the ensemble.

Doped Up

Science: Dopamine is a neurotransmitter – meaning it helps control communication in the brain – that modulates brain signals including those associated with reward and pleasure. While influential in multiple areas of the brain, its effect on the mesolimbic pathway (reward and emotion) and mesocortival pathway (planning and motivation) is most involved in music making. Dopamine can be released not only when something is rewarding, but is also released at the anticipation of something rewarding.

Instructions: Allow students to complete musical thoughts before stopping for verbal instruction. Create anticipation and goal-oriented activity that is context appropriate: e.g., motivational rehearsals should be fast paced, while the teaching of new material should be slower paced.

Objective: Get them "naturally" high! Rehearsal pacing is crucial in promoting optimal dopamine release, along with other neurochemicals involved with reward and social interaction. E.g., increased dopamine and oxytocin levels can improve learning, motivation, retention, and the lubrication of social connections. Additionally, students need opportunities to make mistakes and learn from them before being corrected from the podium.

Story Time

Science: The "social encoding advantage" suggests that for some information, people can understand and remember particulars more easily if they are presented in a way that leverages our natural social tendencies, rather than as straight memorization tasks.

Instructions: Give verbal instructions that tie a composition's musical elements to social concepts or a storyline, rather than a technical "to-do" list.

Objective: Encourage the students to understand the big picture and make decisions on how their part fits in the musical narrative. The story helps to answer the 'why' and lets the students discover the 'how' and 'what' in order to achieve that sound.

Penny for your Thoughts

Science: Perceptions of autonomy – personal choice and the ability to have influence – is an integral part of facilitating the development of intrinsic motivation. Additionally, biochemicals such as dopamine, serotonin, oxytocin, vasopressin, and cortisol are modulated by experiences of social reward, importance, and cohesion.

Instructions: Provide moments when students are asked to give feedback to ensemble or section members. This can also be done via non-verbal student modeling of musical changes.

Objective: Encourage the creation of social connections and feelings of autonomy through music making that creates a stronger social network and supports intrinsic motivation to participate in musical activities.

Making Music

Science: Combines the power of mirror neurons, biochemical modulation, novelty and an experience that facilitates perceptions of autonomy and relatedness.

Instructions: The teacher-conductor improvises a completely non-verbal rehearsal segment, utilizing context-appropriate aspects of the previous or similar strategies.

Objective: This type of rehearsal brings together objectives contained in many of the previously suggested strategies, increasing ensemble sensitivity to non-verbal communication, encouraging focus, developing listening and entrainment, and fostering social connections.

Additional Recommendations for Productive Rehearsals

1. **Set Large AND Associated Small Goals:** Dopamine is released in the anticipation and accomplishment of goals.

2. **Speed-Accuracy Tradeoff:** The attempt to perform something too quickly may result in more errors! Adjust speed (i.e., tempo) until accuracy can be attained and practiced.

3. **Social Time:** Music is inherently a social activity and social networks constitute one of the most important motivators for participation in musical activities. Taking time to foster social connections within the musical experience can yield positive results in biochemical modulation, motivation and cohesion.

4. **Have Fun!** Your enjoyment, or lack thereof, for what you are doing acts as a social contagion and is readily understood by all involved, courtesy of the mirror neuron system!

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