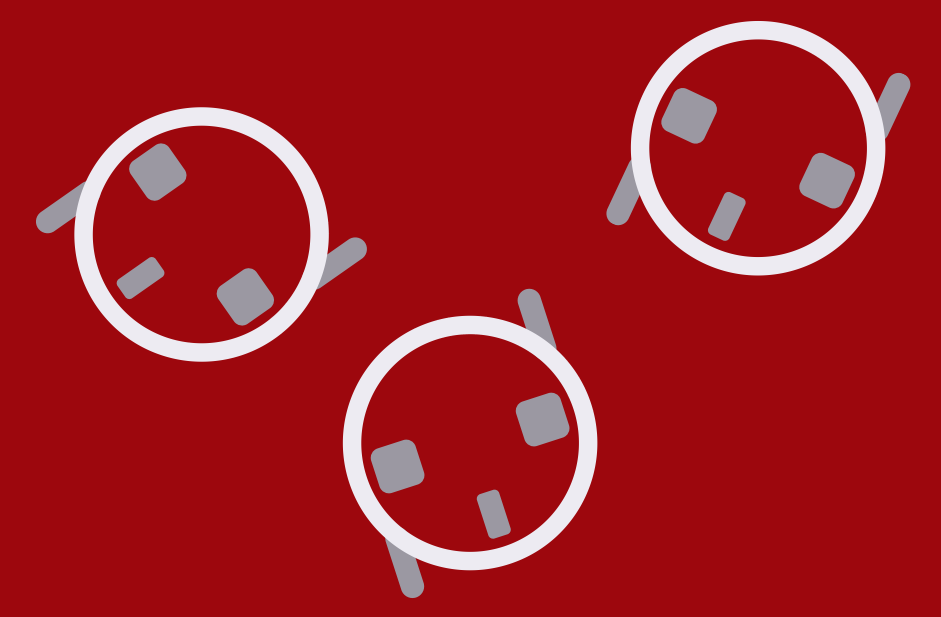
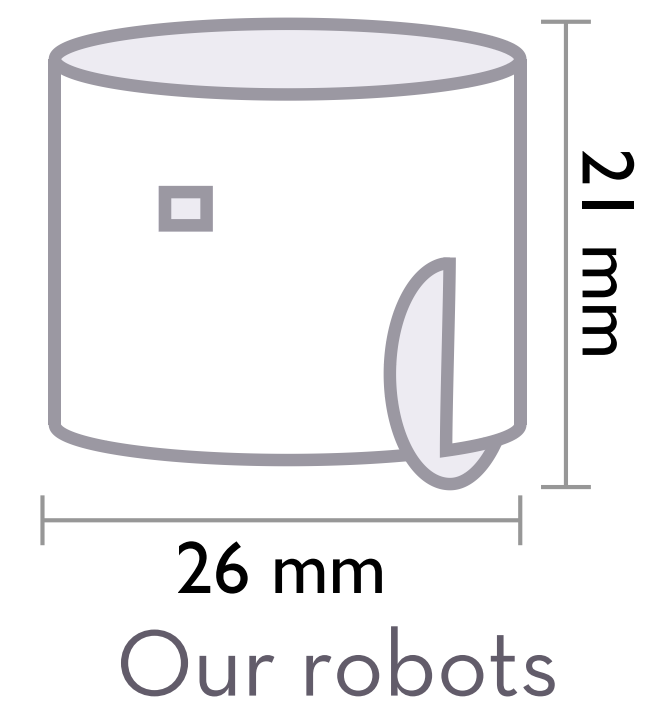


Human Perception of Swarm Robot Motion

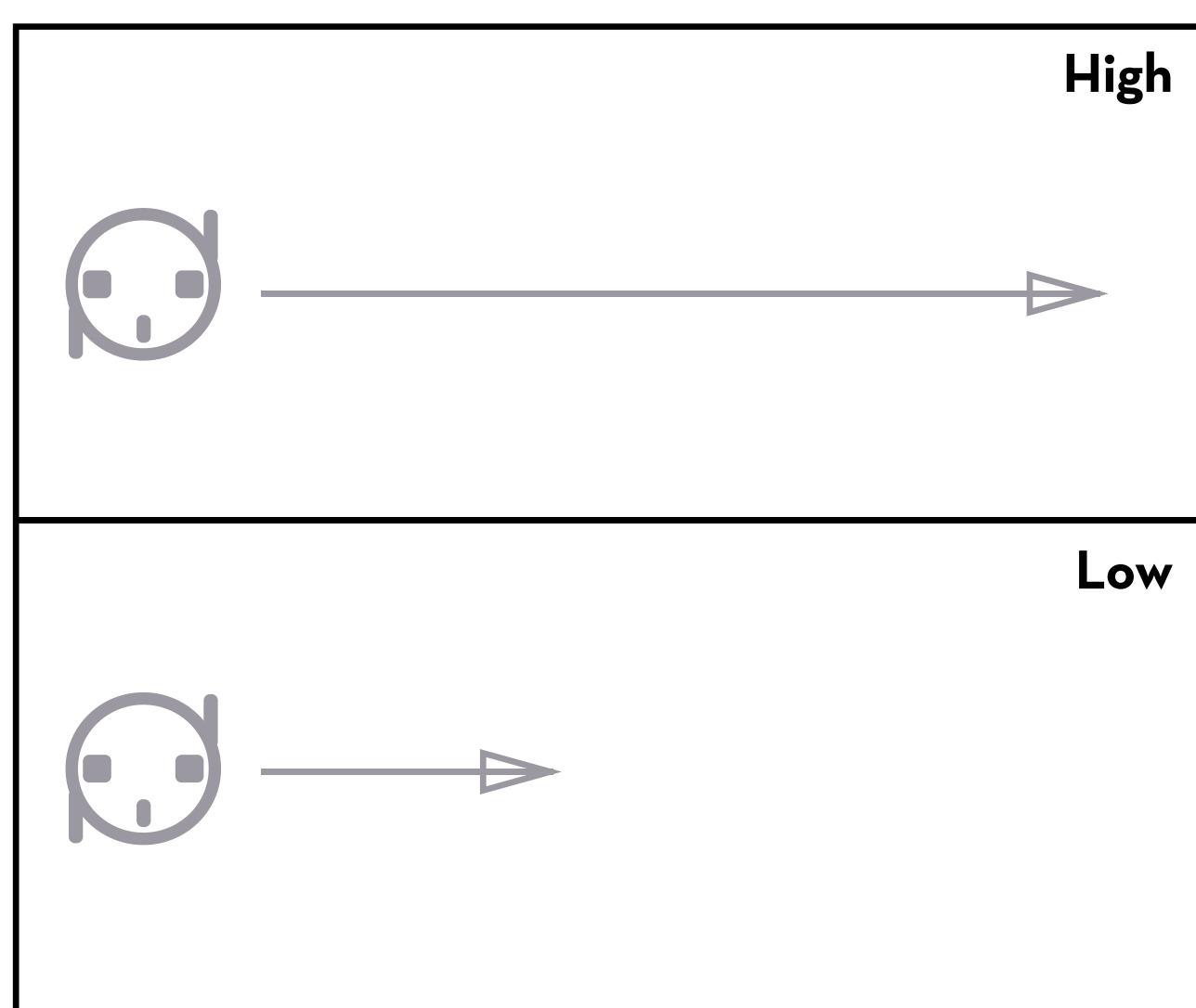


How does varying the **speed**, **smoothness**, and **synchronization** of swarm robot motion change both our perception of the robots' valence, arousal, and dominance and our own emotional response?

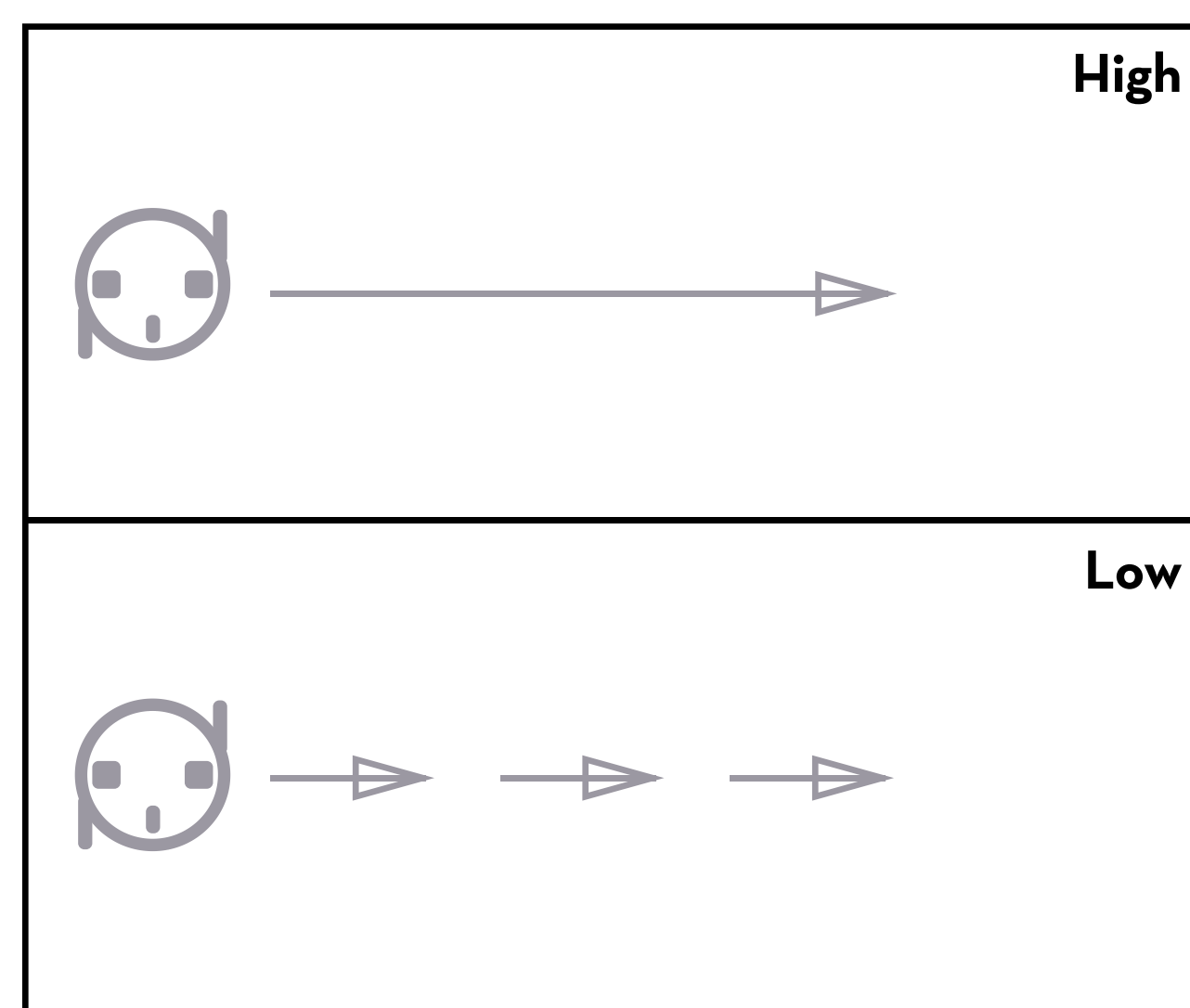


MOTION PATTERNS

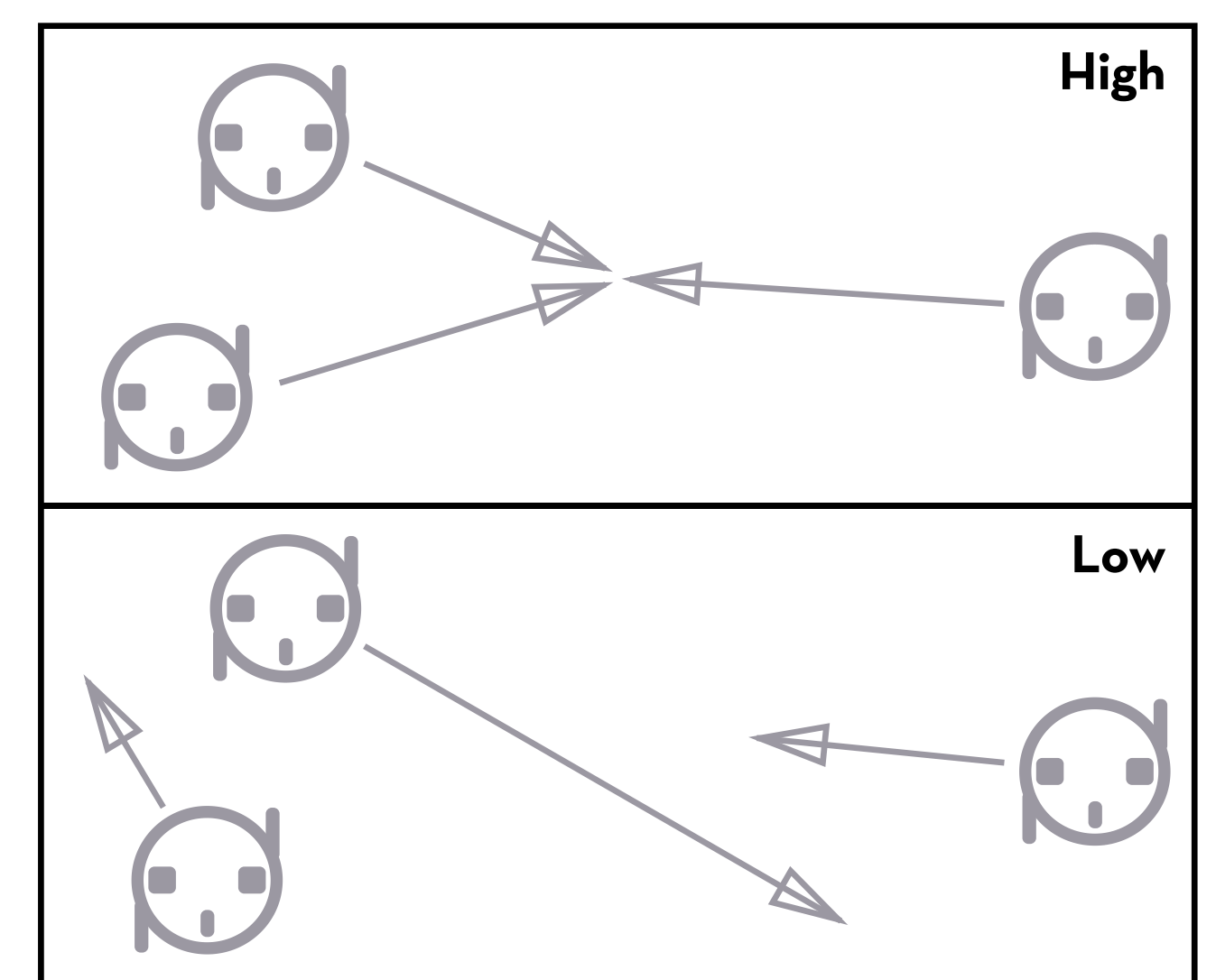
SPEED



SMOOTHNESS



SYNCHRONIZATION



RESULTS

ROBOT EMOTION

Speed and smoothness have significant effects on valence, arousal, and dominance. In all three cases, speed has a stronger effect than smoothness.

PARTICIPANT EMOTION

Speed has a significant effect on participant arousal, and smoothness has a significant effect on participant valence.

DESIGN IMPLICATIONS

- 1) Carefully test the impact of robot speed during the design process.
- 2) Qualitative feedback suggests that participants prefer that swarms of small robots move in a synchronized manner.
- 3) Robots should move smoothly whenever possible.
- 4) When designing for human affect, keep in mind that valence correlates to smoothness and arousal correlates to speed.

