Supporting Information

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SI Text

A conservative test is one that is less likely to find statistical significance. Given the counterintuitive findings in this work, it was important that findings are well-replicated, effects are robust, and conservative tests be used, so that we might conclude that the results are due to real effects. The use of the domain of music thus offers a conservative test of the impact of visual information on judgment, given that it is the domain in which auditory information should be much more important than visual information.

First, experiment 1 tested our core beliefs about the importance of auditory versus visual output for the judgment of performance. Then, experiments 2–5 explored the relative impact of the two modalities on our judgment. Participants ranged from those with little or no music training (experiments 2 and 3) to professional musicians (experiments 4 and 5). To compare the relative influence of visual versus auditory information, the same participants were presented with both video-only and sound-only recordings in a within-subjects design in experiments 2 and 4 whereas different sets of participants were given video-only, sound-only, or video-plus-sound recordings in a between-subjects design in experiments 3 and 5. Finally, experiments 6 and 7 examined the mechanisms underlying the impact of visual information on judgment.

SI Results

Experiments 2–5. International classical music competitions do not publicize details about individual voting. Given that data regarding confidential procedures are not made public, interviews were conducted with established authorities (judges and competition directors) to gain a better understanding about the competition judging conditions and criteria. As quantitative and empirical data were not available from the international competitions themselves, the rate of interrater agreement was based on an average of estimates provided by expert sources. Further investigation with the organization that oversees these competitions reveals a similar lack of unanimity regarding the choice of the winner.

Robustness. Although it could be argued that visual versus audio stimuli convey different amounts of information in the same brief moments, in this set of experiments, the audio excerpts and video excerpts represent identical musical content and the identical measures of musical compositions. In addition, although the physical movement of the performer and thus the visual content can vary a great deal across a short performance, that same physicality is the means through which the range of audio content is produced and, thus, also perceptible.

Alternative explanations. Decisions based on sound alone were not randomly distributed (all Ps < 0.05, one-sample t tests of rates at which actual winners were chosen, as listed in Table S1)—that is, there is variance in auditory information, and the quality of the music performances was distinguishable and not acoustically equivalent. Sound did allow for differentiation among performers, yet people still surprisingly relied primarily on visual information in their judgment.

Participants who were randomly assigned to receive sound-only recordings were able to choose one performer over the other two performers in each trial. Additional analyses of these decisions indicate that they were significantly different from at-chance choices (all Ps < 0.05, χ^2 tests of frequencies of each of three performers per trial being chosen by participants), which would have resulted had the acoustic quality of the music performances been indistinguishable. However, the winners as chosen by participants who received sound-only recordings were frequently not the actual winners of the live round competitions, as those choices had been impacted more by visual information. This observation points to intriguing future research directions regarding the external validity and predictive power of a visual dominance, such as whether expert judges' visually based evaluations are predictive of short-term and/or long-term success.

Finally, an additional study was conducted with a separate population of 90 expert participants, which further demonstrates that not only is there enough variance in auditory information to allow participants to select one individual over the others at rates over chance, but also that the degree of variance perceived through sound-only excerpts is similar to the degree of variance perceived through video-only excerpts.

In this study, participants were randomly assigned to receive either the sound-only, video-only, or video-plus-sound recordings used in experiments 2–5. They were then asked to evaluate on a 0–100 scale the quality of the performance in each excerpt. Within each trial/competition of three featured performers, the SD in evaluations of quality of performance as assessed through sound was not significantly different from the SD in evaluations of quality of performance as assessed through visuals (all Ps > 0.05). The lack of significance was not due to floor or ceiling effects.

At-chance rates with video-plus-sound recordings. In contrast to how participants performed at rates significantly below chance with sound-only recordings, and how participants performed at rates significantly above chance with video-only recordings, both novices (experiment 3) and experts (experiment 5) were similarly at chance in identifying the actual winners when they were randomly assigned to the video-plus-sound condition.

Although it may have been expected that more information in the form of video-plus-sound recordings would have led to higher rates of winner identification, such recordings instead led to an identification rate between those of the two conditions that included only one modality. Given that participants report the belief that acoustic information is more important in their judgment of music performance, it was likely that, when sound was made available in the video-plus-sound condition, participants relied primarily on sound. Indeed, participants did not perform at rates significantly different from those of participants who received sound-only stimuli.

This nuanced interpretation of the findings suggests that not only does visual information impact our perception of music, but also that it can dominate our perception such that it interferes with auditory information. This explanation may help account for why it appears that experts receiving video-plus-sound excerpts in the current experiments have decreased rates of identifying the winners.

This area needs further investigation in future work, but preliminary data appear to support the interpretation offered above. Data from ongoing research indicate that, when placed under cognitive load, participants in the video-plus-sound condition—for the first time—identify the winners at rates significantly above chance. In natural evaluation settings such as music competitions, perhaps a visual primacy emerges as our attention is exhausted and we become less able to focus on using sound as the primary information. The ongoing research suggests that we may revert to a dependence on visual information when overwhelmed with information.

On the other hand, our conscious recognition of the importance of sound may guide our attention toward sound when we

face more manageable sets of information. In the video-plus-sound condition in experiments 3 and 5, it may be that the limited evaluation setting allowed people to focus on sound. However, this condition ironically led to decreased rates of identifying the winner, perhaps because the availability of sound led people away from the original (visually based) decisions.

Experiment 5. These findings are in line with other work on rating behavior that showed a strong relative similarity in response behavior between experts and novices (1). Building on the earlier work, the current manuscript offers a more detailed scope of inquiry by assessing whether expertise affects the likelihood that judgments are impacted by each modality.

Experiments 6 and 7. With silent videos, participants cited the following main visual cues that led them to their choices: movement, energy, passion, coordination, intensity, effort, skill, technique, difficulty of repertoire, posture, presence, involvement, rhythm, style, precision, confidence, enjoyment, control, and consistency.

Future research will expand upon the current work and will include coders blind to the outcomes who evaluate the performances and content analyses of evaluations made of the winning versus nonwinning performances. Ongoing research also targets visual attention and processing, using eye-tracking and facial expression recognition technology to delve further into the mechanisms underlying the dominance of visual cues in judgment.

SI Results: Supplementary Experiments

Experiments S1–S3. These studies supplement the main experiments and use youth competitions that allowed for greater ease of choice. Originally the first exploratory tests of the impact of visual and auditory information, the findings motivated more rigorous examinations with multiple trials and item analyses for robustness of effect.

Experiment S1 offered a test of the speed of judgment in the domain of music, examining whether costly and time-intensive screenings are necessary. Participants with little to no experience with classical music were given video excerpts from two live music competitions featuring precollege musicians. In the first trial, 53.6% of participants identified the actual winner chosen out of six candidates by a panel of expert judges, a proportion significantly higher than predicted by chance, $\chi^2(1, n = 56) = 10.32$, $P = 0.001$. Similarly, in the second competition, 66.1% of participants identified the winner out of eight candidates at rates better than chance, $\chi^2(1, n = 56) = 146.94$, $P < 0.001$. Novices were able to approximate the original expert judgment with just 6 s of the performances. These findings suggest that lengthy professional investment in screening may not be warranted, given the quickness with which even novices approximated expert decisions made after much longer performances.

Experiments S2 and S3 used the stimuli from experiment S1 to provide tests of how visual cues affect judgment in the domain of music. Experiment S2 provided video recordings without sound. Here, 63.9% of novice participants identified the winner in the first competition, a proportion significantly higher than chance, $\chi^2(1, n = 36) = 15.13$, $P < 0.001$. Similarly, 44.4% of participants were able to identify the winner in the second competition, again performing significantly better than chance, $\chi^2(1, n = 36) = 33.59$, $P < 0.001$. Novices were able to approximate the original expert judgments of music competitions when presented with 6-s excerpts of performances that had been stripped of their sound.

Experiment S3 offered a direct comparison of judgment between two types of stimuli: (*i*) video only without sound and (*ii*) sound only without video. In the first competition, novice participants performed significantly above chance with both sound-only (68.7%) and video-only (69.7%) recordings, $\chi^2(1, n = 99) = 55.68$, $P < 0.001$; $\chi^2(1, n = 99) = 58.91$, $P < 0.001$, respectively. Similar patterns emerged for the second competition with both sound-only (53.0%) and video-only (56.0%) recordings, where participants were again significantly above chance, $\chi^2(1, n = 100) = 149.97$, $P < 0.001$; $\chi^2(1, n = 100) = 173.00$, $P < 0.001$.

In the judgments of youth competitions, differences in performance quality were easily perceptible through either modality. Differences in the relative degree to which judgments were influenced by visual versus auditory cues may be less likely to surface, as the choice of the winner was far more obvious. Assuming that there is some correlation between visual and acoustic information, and also some nonoverlapping information between the two modalities, high variance trials would allow multiple pathways for participants to arrive at the same conclusion regarding which musician was clearly performing at a higher level than the rest. In support of this hypothesis, the rates of identifying the actual winner were relatively high in either condition.

Experiments S4 and S5. Experiment S4 and S5 examined potential effects of static visual information. Although the outline videos presented coarse visual information, demographic cues such as race and sex may still be available. However, when participants were presented with still photographs of the contestants, they were not able to select the actual winners at rates significantly above chance (36.8%), $\chi^2(1, n = 48) = 2.75$, P = n.s. By extrapolation, visible but static demographic cues did not significantly impact professional judgment in the actual competitions.

Experiment S5 examined the effects of physical attractiveness on the expert judgment of quality of musicians. In this experiment, novice and expert participants were asked to identify the most physically attractive contestant upon viewing silent videos of their performances. Their choices were at chance (32.1%) in comparison with the actual winners of the competitions, $\chi^2(1, n = 38) = 0.26$, P = n.s. If the original expert judges had been influenced by physical attractiveness, these evaluations would have been significantly above chance.

SI Materials and Methods

Experiment 1. When no tax was placed on the video-plus-sound option, the vast majority of participants would choose to receive this option to maximize their likelihood of selecting the actual winners of the competitions. As the original conditions of the live competitions included both visuals and sound, the video-plus-sound recordings offered both more information and a better approximation of the original conditions under which the decisions were made. As obtaining more information was costless under these conditions, participants were far more likely to choose the video-plus-sound recordings.

The tax on the video-plus-sound recordings, the option with most information, thus offers a strong test of beliefs about the judgment of performance. Given that most participants wish to maximize their study earnings, the tax forced them to consider how much additional information was worth, in allowing them to increase their likelihood of choosing the actual winners.

Most participants did not appear to believe that having visual information was worth the small tax on potential bonus earnings. The data suggest that significantly more participants believe that sound is more relevant than visuals to the judgment of music; the incentives built into this experiment suggest that these behavioral choices are truer indicators of beliefs about the importance of sound in this domain, and not simply self-reported beliefs that may be more subject to social norms, impression management, etc.

Experiment 2. Stimuli were excerpted from publicly available recordings from these international competitions: the Van Cliburn International Piano Competition, the International Tchaikovsky Competition, the Queen Elisabeth International Music Competition of Belgium, the International Franz Liszt Piano Competition, the Cleveland International Piano Competition, the Hannover In-

ternational Violin Competition, and the San Marino International Piano Competition.

Excerpts. The length of 6 s was chosen based on the previous literature using thin slices (2). The excerpts were selected based on several criteria: (*i*) if the finalists performed the same composition during the last round of competition, identical excerpts were selected from each contestant; (*ii*) if the finalists performed different compositions, excerpts were selected such that the excerpts showcased approximately equal technical difficulty and musical intensity.

The excerpts selected and used controlled for the position from which the footage was recorded. Within each competition set, the contestants were captured on film from comparable distances and positions. The excerpts were selected such that the winners were not particularly favored or featured through close-ups that would have revealed facial expressions at rates higher than for the nonwinners.

All excerpts were pretested on a separate sample of 29 professional musicians with an average of 16.48 y of formal training; repeated-measures ANOVAs with post hoc pairwise comparisons suggested that, among each competition trial, there were no singular excerpts that were significantly distinguishable from the others on the dimensions listed above (Ps > 0.05). Throughout all experiments, stimuli were presented in random order: (*i*) randomization among sets of competitions, and (*ii*) randomization in performer excerpts within competitions. Participants were not able to match the silent video-only versions of the recordings with the sound-only versions of the same recordings.

The item analysis conducted involves a trials testing model to assess whether effects are driven primarily by certain specific trials. This technique is often used in test construction to examine whether test items are comparable in characteristics such as content and form. To demonstrate in more detail, in the initial tests, the analyses by participants average across trials and compare the participant average across all trials in condition A against the participant average across all trials in condition B. The item analysis supplements the previous analyses, averaging across participants and comparing the item average across all participants in condition A against the item average across all participants in condition B.

Explicit beliefs. The order varied regarding at which point explicit beliefs were elicited about the importance of acoustic versus visual information. In experiment 1, along with several dozen surveys not included in the current manuscript due to space constraints, these choices were made before the receipt of any recordings.

In other experiments, these questions were included along with basic demographic items at the end of the studies. If the explicit beliefs reported had been (temporarily) affected by the process of receiving the excerpts, these responses would have differed depending on the condition to which participants had been randomly assigned. Supplementary analyses using χ^2 tests suggest that this alternative explanation did not account for the findings, $\chi^2(4) = 0.899$, $P = 0.925$. There is no statistically significant association between condition and which modality was chosen as most important in judgment. Regardless of condition, participants were much more likely to have selected acoustic information as more important in the judgment of music performance.

Experiment 3. The apparent dissociations between what is reported as valued and what is actually used is not due to cynical attributions about the original judges' objectivity, motivation, or abilities. In a supplemental experiment, using the same recordings and between-subjects design, 69 participants were asked, "Who do you think should win the competitions?" instead of "Who won the competitions?" The results replicated the patterns from the previous studies, and participants' own choices approached the actual outcomes solely in the silent video-only condition, with 44.2% selecting the actual winners, significantly above chance, $t(21) = 2.19$, $P = 0.040$. They were below chance (23.5%) with sound-only recordings, $t(24) = -3.54$, $P = 0.002$, and at chance (29.3%) with recordings with both video and sound.

Experiment 4. To control for expert recognition of specific musicians, data from participants who recognized any musicians through the video-only recordings were discarded.

Experiment 5. To control for recognition of musicians, data from participants who recognized any musicians through the video-only and video-plus-sound recordings were discarded. A test of proportions found that in terms of sex and ethnic breakdowns, the ratios of performers selected as winners to all finalist performers was not significantly different from what would be expected from the population of finalists. Furthermore, there were no significant differences due to the age, sex, or ethnicity of the participants. No main effect of age, sex, or ethnicity on ability to identify the actual winners emerged, and there were no significant interactions between the demographic variables and the assigned conditions. There were also no significant dyadic effects, such as from homophily between participant and performer. For example, female participants were not more likely to prefer female musicians over male ones, and Asian participants were not more likely to choose Asian musicians as the winners.

Experiment 6. The first experiments on the phenomenon in which visual information is privileged above auditory information in the judgment of music motivated an investigation of mechanisms. As gestures, movement, and expression were cited in free-response data provided by participants when they described the type of information they relied on when making their decisions, experiment 6 explored whether impressions made based on gestures alone would approximate the decisions made by the original judges under live-round competition conditions.

The literature on music communication models (3) provides rich areas of discussion, highlighting the ways in which meaningful communication in performance often includes highly expressive movements. This work has investigated how body movements and facial actions contribute to the production of expressive performance, are used for purposes of expressive effects, and relate to and communicate with coperformers and audience members. Each aspect of this literature holds important relevance for the continued exploration of how and why visual information appears to have so significantly influenced professional judgment.

SI Materials and Methods: Supplementary Experiments

Experiment S1. Fifty-six participants ($M_{age} = 22.09$, SD = 2.16; 57.1% male) with little to no experience in classical music volunteered.* Participants received excerpts with both sound and video from two competitions held at a mid-Atlantic conservatory. They were presented with the first 6 s of the performances and were asked to identify the winners.

All contestants had performed for 10–15 min during the original live performance competitions, which included both sound and video for the actual expert judging panel. All contestants performed on the piano in a public venue. The original judging panel consisted of conservatory faculty and other internationally noted musicians. Within each competition, the excerpts were presented in random order.

In each trial or set of competition stimuli, external constraints due to competition rules and regulations provided some level of control. For example, in the youth competitions, all contestants had similar levels of formal expertise, being required to be no older than the age of 12. Their level of performance experience would have

*Participants were recruited from a community sample in the northeastern United States and were paid $5 for their participation.

also been similar, as the competitions were based in a conservatory precollege program that required entrance auditions.

Two stimuli sets were used, and the main difference was the number of pianists who chose to participate in each competition. For these initial exploratory tests, because the variance in level of performance was expected to be higher given that youth musicians were featured, all available target performers (controlling for instrument) were included in the stimuli sets.

Experiment S2. Thirty-six participants (45.2% male) with little to no experience in classical music volunteered.* Participants received silent video versions of the experiment S1 stimuli. They were then asked to identify which performers won the competitions. Within each competition, the excerpts were presented in random order.

Experiment S3. One hundred participants (M_{age} = 23.59, SD = 2.82; 42.7% male[†]) with little to no experience in classical music volunteered.[‡] Through a within-subjects design, each participant received both the video-only set and the sound-only set of the same performances. Using the experiment S1 and S2 stimuli, the two versions of recordings featured the same 6 s of performance for each musician, ensuring identical performance content and quality.

For example, a participant might see silent video-only recordings of eight contestants in one competition and be asked to identify the winner; later, the same participant would hear sound-only recordings of the same eight contestants and be asked to identify the winner. Participants were not able to match the silent video-only versions of the recordings with the sound-only versions of the same recordings. Any potential influence of one version on a subsequent version should not have significantly impacted the overall effects, given that the order of presentation of the two different conditions was counterbalanced. Within each competition, excerpts were presented in random order.

Experiment S4. Forty-eight participants (M_{age} = 26.58, SD = 9.37; 41.7% male) volunteered.[‡] Participants received still photographs of the musicians from the experiment 2–5 stimuli and were then asked to identify the winners of each competition.

The use of still photographs in this study for assessments of physical attractiveness is similar to that used in recent work (4). Although the earlier research suggests that physical attractiveness may mediate the relationship between pop music performers and participant aesthetic responses, physical attractiveness is less explicitly accepted as legitimately contributing to judgments about classical music. For example, there may be more variance considered acceptable within the pop genre in terms of performance attire whereas strong norms remain regarding adherence to traditional concert dress in the classical genre. In addition, the earlier work investigated adolescent subjects whereas the current research focuses on the expert judgments of professional musicians, whose training and experience may render them less subject to the influence of physical attractiveness.

Experiment S5. Thirty-eight participants (M_{age} = 21.92, SD = 4.21; 41.7% male[†]) volunteered.[‡] Participants received the video-only versions of the experiment 2–5 stimuli and were asked to identify the most physically attractive contestants.

[†]Participants who did not report their sex were not included in the calculation.

[‡]Participants were recruited from a community sample in the northeastern United States and were paid $20 for their participation in an hour-long set of unrelated studies that included the current experiment.

1. Thompson S (2006) Audience responses to a live orchestral concert. *Music Sci* 10(2): 215–244.
2. Ambady N, Rosenthal R (1993) Half a minute: Predicting teacher evaluations from thin slices of nonverbal behavior and physical attractiveness. *J Pers Soc Psychol* 64(3): 431–441.
3. Davidson JW, Malloch S (2009) *Communicative Musicality: Exploring the Basis of Human Companionship*, eds Malloch S, Trevarthen C (Oxford Univ Press, New York), pp 565–583.
4. North AC, Hargreaves DJ (1997) The effect of physical attractiveness on responses to pop music performers and their music. *Empir Stud Arts* 15(1):75–89.

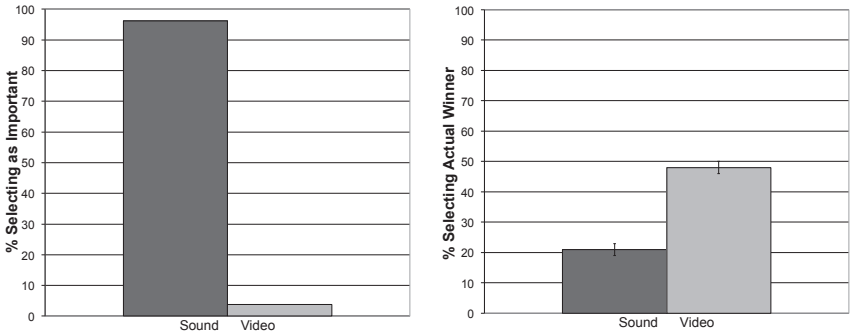

Fig. S1. A comparison of the reported importance of sound versus visuals for evaluation (*Left*), with the % identifying actual outcomes when given sound-only versus video-only stimuli (*Right*), in experiment 4 ($n = 35$). Using a within-subjects design, this study tested the impact of visual information on professional musicians.

Fig. S2. Sample outline figure used in experiment 6, isolating visual information to basic motion alone. The outlines are the detected regions/silhouettes of movement. After receiving silent performance excerpts of the musicians as rendered in the above example, participants were asked to identify the winners of each competition.

Table S1. Summary of experiments

Exp.	*N*	Participant type	Stimulus type	Versus at chance	Against other conditions
1	106	All	Choice of recording	V: 14.2% A: 58.5% V/A: 27.4% $\chi^2(2, n = 106) = 32.96$, $P < 0.001$, $\omega = 0.558$	V vs. A: $\chi^2(1, n = 77) = 28.89$, $P < 0.001$, $\omega = 0.613$ V/A vs. V: $\chi^2(1, n = 44) = 4.46$, $P = 0.035$, $\omega = 0.318$
2	106	Novice	Professional competition	V: 52.5%, $t(105) = 10.90$, $P < 0.001$ A: 25.5%, $t(105) = -5.23$, $P < 0.001$	V vs. A: $t(105) = 12.07$, $P < 0.001$; Cohen's $d = 1.66$, 95% CI [1.63, 1.69]
3	185	Novice	Professional competition	V: 46.4%, $t(49) = 4.04$, $P < 0.001$ A: 28.8%, $t(66) = -2.09$, $P = 0.040$ V/A: 35.4%, $t(67) = 0.94$, P = n.s.	V vs. A: $t(115) = 4.68$, $P < 0.001$; Cohen's $d = 0.88$, 95% CI [0.82, 0.93] V vs. V/A: $t(116) = 2.93$, $P = 0.004$ A vs. V/A: $t(133) = -2.14$, $P = 0.034$ [adjusted $\alpha = 0.017$]
4	35	Expert	Professional competition	V: 46.6%, $t(34) = 4.05$, $P < 0.001$ A: 20.5%, $t(34) = -6.11$, $P < 0.001$	V vs. A: $t(34) = 5.89$, $P < 0.001$; Cohen's $d = 1.42$, 95% CI [1.36, 1.46]
5	103	Expert	Professional competition	V: 47.0%, $t(32) = 3.40$, $P = 0.002$ A: 25.7%, $t(29) = -3.34$, $P = 0.002$ V/A: 29.5%, $t(39) = -1.43$, P = n.s.	V vs. A: $t(61) = 4.48$, $P < 0.001$; Cohen's $d = 1.09$, 95% CI [1.01, 1.14] V vs. V/A: $t(71) = 3.72$, $P < 0.001$ A vs. V/A: $t(68) = -1.00$, P = n.s. [adjusted $\alpha = 0.017$]
6	89	All	Professional competition	48.8%, $t(88) = 6.49$, $P < 0.001$	N/A
7	262	All	Professional competition	V_{Conf}: 37.4%, A_{Conf}: 39.5% V_{Crea}: 44.6%, A_{Crea}: 26.1% V_{Inv}: 53.1%, A_{Inv}: 34.2% V_{Mot}: 52.8%, A_{Mot}: 35.6% V_{Pass}: 59.6%, A_{Pass}: 38.7% V_{Uni}: 43.6%, A_{Uni}: 26.3%	$t(193) = -0.68$, P = n.s. $t(260) = 9.00$, $P < 0.001$ $t(260) = 9.60$, $P < 0.001$ $t(260) = 7.91$, $P < 0.001$ $t(196) = 7.01$, $P < 0.001$ $t(192) = 6.22$, $P < 0.001$ [adjusted $\alpha = 0.010$]
S1	56	Novice	Youth competition	V/A[1]: 53.6%, $\chi^2(1, n = 56) = 10.32$, $P = 0.001$, $\omega = 0.429$ V/A[2]: 66.1%, $\chi^2(1, n = 56) = 146.94$, $P < 0.001$, $\omega = 1.620$	N/A
S2	36	Novice	Youth competition	V[1]: 63.9%, $\chi^2(1, n = 36) = 15.13$, $P < 0.001$, $\omega = 0.648$ V[2]: 44.4%, $\chi^2(1, n = 36) = 33.59$, $P < 0.001$, $\omega = 0.966$	N/A
S3	100	Novice	Youth competition	V[1]: 69.7%, $\chi^2(1, n = 99) = 58.91$, $P < 0.001$, $\omega = 0.771$ A[1]: 68.7%, $\chi^2(1, n = 99) = 55.68$, $P < 0.001$, $\omega = 0.750$ V[2]: 56.0%, $\chi^2(1, n = 100) = 173.00$, $P < 0.001$, $\omega = 1.315$ A[2]: 53.0%, $\chi^2(1, n = 100) = 149.97$, $P < 0.001$, $\omega = 1.225$	Individual trials
S4	48	All	Professional competition	36.8%, $\chi^2(1, n = 48) = 2.75$, P = n.s.	N/A
S5	38	All	Professional competition	32.1%, $\chi^2(1, n = 38) = 0.26$, P = n.s.	N/A

Several SI experiments included χ^2-based significance testing because analyses were conducted on individual trials (two trials or competitions were tested in the earlier studies). As the initial exploratory studies, analyses were conducted on each separate trial, resulting in nominal data of whether or not the actual winner was selected by participants. The main experiments included *t* tests because analyses were conducted on average identification rates (%) across 10 trials per participant. A, sound only; V, video only; V/A, video plus sound; N/A, not applicable.