channels. Suzhou city is a hub
the major cities of Beijing in the north
and provided a multisensory stay for all the
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Guangzhou), Wenfeng Feng (SooChow University, Suzhou) and Zhenzhu Yue (Sun Yat-sen University, Guangzhou).

IMRF 2016 featured an integration of state-of-art research and interesting applications of senses. We witnessed many exciting talks, including a special symposium that revisited the McGurk–MacDonald effect some 40 years after this illusion was first reported in 1976. This symposium has been published in a separate special issue of 0 , edited by Michael Beauchamp (0 . . **31**, 145–344, 2018). The three IMRF 2016 keynote lectures addressed multisensory mechanisms of body self-perception using fMRI and virtual reality techniques (Henrik Ehrsson, Karolinska Institute, Sweden), behavioral and neuronal discoveries of cross-modal memory (Yongdi Zhou, NYU Shanghai, China) and human attention in the multisensory domain (Steve A.Hillyard, UCSD, USA). A special lecture on multisensory control and learning in cognitive robot systems was given by Prof. Jianwei Zhang from University of Hamburg, Germany. The conference was structured with six symposia, eight talk sessions and one poster session to maximally catch the latest developments in multisensory research.

The seven papers that have been collected in the IMRF2016 Multisensory Research special issue represent recent topics in multisensory behavioral and neuronal studies. Some topics represent mainstream, traditional studies, while others show a range of multidisciplinary approaches. We categorize the main topics appearing in this issue under four headings.

1. Multisensory Timing

Multisensory Timing is a vibrant topic throughout nearly all IMRF conferences. Villanueva and Zampini (2018) investigated the mutual interference between audition and touch in the perception of target duration. Their study supported shared links and reciprocal influences when audition and touch interact with each other by pitting simultaneous distractor stimuli (audition or touch) against the target stimuli (touch or audition). They found that the tactile modality enhanced the perception of auditory stimuli in the congruent condition but not the other way around – audition did not facilitate timing performance in the tactile modality.

Recent studies have shown the role of expertise and individual differences in multisensory interaction. Along this line, Landry and Champoux (2018) investigated whether and how musical training influences reaction times (RTs) and accuracy in crossed-arm tactile temporal order judgments (TOJs). Musicians showed significantly faster RTs for all crossed-arm conditions and half of the uncrossed conditions. However, it seemed there existed a trade-off and they made more TOJ errors in the crossed posture. This imbalance in performance and seeming inconsistency in musicians was accounted for by a deficiency in

consolidating conflicting internal and external task-related information when crossing the arms.

2. Cross-Modal Correspondence and Neuronal Signatures

The traditional temporal principle of multisensory integration has focused on cross-modal synchronization on stimuli onsets, mostly with simple artificial beeps and visual stimuli. Timora and Budd (2018) extended the scope to cross-modal synchrony of amplitude-modulation (AM) rate. They examined rate-dependent sensitivity in both psychophysical measurements and EEG steady-state response (SSR) recordings. Their study featured two main findings: firstly, that SSR activity and psychophysical sensitivity to AM stimulation showed a consistent correspondence; and secondly, in a cross-modal context, increased SSR responses and psychophysical sensitivity were found in response to vibrotactile targets but not for auditory probes. The findings were accounted for in the framework of the 'principle of inverse effectiveness'.

With another type of cross-modal correspondence, Kim 0 (2018) investigated whether phonetic properties were associated with colors in a specific manner among the general population, but removed visual and linguistic features of graphemes. Using a cross-modal matching paradigm they found that the association between phonetic features and colors followed a certain pattern and that this synesthesia-like association was shared by non-synesthetic people. This finding implies inherent synesthesia-like cross-modal correspondence among the general population.

3. Coupling of Perception and Action Control

One important aspect of multisensory research concerns the coupling between basic human perception and action control. Studies in this line emphasize the neuronal routes for binding sensory perception, sensory feedback and motor (plan) implementation, the representation of spatio-temporal references and the (re) mapping of those references. In this issue, two studies examine the contributions of visual events and proprioceptive (or action-related) factors to a coherent representation of action and its sensorimotor deployment. Shi 0 (2018) employed the Stroop, Garner and SNARC paradigms. They used graspable 3-D Arabic numerals to examine the two-visual-systems theory (what . how or perception . action). Their underlying logic was that if there remains conflict or interference during a perception task and the potential conflict does not spread over to the processing of action, then the two visual systems framework is supported. The study, however, showed a mixed

picture – an interaction effect between Stroop effect and numeral order but no effect of Stroop and Garner interference.

Goodman 0 (2018) used a novel setup to assess the relative contributions of visual and proprioceptive feedback to the online control of voluntary actions. Specifically, they manipulated the perturbations of both vision (through liquid crystal goggles) and proprioception (with tendon vibrations) during either rapid goal-directed movement or online trajectory amendments. The study weighed the importance of vision over proprioception for online limb-target regulation.

4. Multisensory Segregation and Integration: Revisited

Just as a coin has two sides, multisensory integration requires the opposite – multisensory segregation – in order to render a whole picture for deciphering multisensory percepts. By using the McGurk-effect, Kumar 0 (2018) tried to report in a single study both segregation and integration in cortical information processing underlying cross-modal perception. They examined the neural representation of cross-modal perception at different organizational levels. The combined psychological and EEG evidence they presented indicated a dissociation: segregation of information processing at individual brain locations, and integration of information over large-scale brain networks.

Overall, this special issue serves an open window to view the rich and emergent topics in multisensory research. The multisensory integration principles and other relevant theoretical frameworks (such as two visual systems) have been tested rigorously with some novel experimental paradigms. We believe in the near future, a multidisciplinary approach in basic research, plus an implementation of multisensory studies in realistic scenarios (such as in virtual reality environments) and for translational purposes, will help to deepen the understanding of mechanisms of sensory integration in a multisensory world.

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