Note on publication policy

To avoid possible publication conflicts, the TSPC proceedings will conform to the following guidelines.

- Text, figures, and tables previously published in refereed journals by the submitting authors can be recycled only if the source is explicitly cited. New text, figures, and tables that elaborate on previously published material (going beyond mere reproduction) are welcome.

- In accordance with the policy of some (not all) journals, where authors may publish an extended paper, a proceeding will be acceptable also in the absence of the following features: methodological details necessary to ensure replicability of the study; precise quantitative data supporting statements about obtained effects (typically included in figures and tables); values of statistical indices (e.g.; \(F, t, p\)).

- Differently from extended papers on refereed journals, which should support replicability and evaluation of the study in the context of the relevant literature, TSPC proceedings aim at attracting the attention of colleagues on current work conducted by authors. Readers of proceedings are invited to contact the corresponding author for full details of the study.
Preface

This book of proceedings collects the abstracts of talks and posters presented at the Trieste Symposium on Perception and Cognition 2016, organized by the Psychology Unit of the Department of Life Sciences, University of Trieste, and held at campus on the 4th of November.

This year TSPC2016 did also include the 24th annual Kanizsa Lecture, which has been delivered, as a special event fitting into the long tradition of Kanizsa Lectures opened in 1993 by Irvin Rock (see The Kanizsa Lectures list).

The TSPC2016 book of proceedings opens with the abstracts of the 24th Kanizsa Lecture held by the 2016 invited speaker W. Tecumseh Fitch, Department of Cognitive Biology, University of Vienna, Austria.

A second contribution of the TSPC2016 book includes abstracts from the "Roundtable Comparative Perception: A tribute to Professor Mario Zanforlin" (Organizer: Cinzia Chiandetti). The roundtable featured 5 key speakers – Osvaldo Da Pos, Yegor Malashichev, Christian Agrillo, Daniel Osorio, and Meta Virant-Doberlet - in the field of comparative perception and cognition honouring the memory of Professor Mario Zanforlin, who has recently passed away. The invited speakers show that the comparative perspective with which to look at various phenomena that has been Mario’s approach will continue to prompt works in the broad fields of perception and cognition. Osvaldo Da Pos, worked on aggressive behaviour and steroid hormones in human and non-human species but later he focused on perception and specifically on colour perception. His main contribution has been the application of the model of transparency to chromatic colours. Within this roundtable, he witnessed the everlasting bond between Padova and Trieste and discussed about the relationship between Stimuli and Context in perception. Yegor Malashichev, works on lateralization and his contribution follows the guidelines of the true European ethological school: observing an organism in its own environment. From
reptiles to whales, from frogs to kangaroos he showed that humans aren’t all that unique and claimed about Mother-infant lateral biases in humans and wild animals: conservatism of the phenomenon and its benefits for fitness. Christian Agrillo, after studying biological motion in the chicks, has specialized on numerical representation running experiments with different animal species and recently has started to investigate visual illusion in animals. Christian presented his latest studies in monkeys and fish. Daniel Osorio, studies colour vision and object recognition by observing different animal species from butterflies to primates. He has also investigated symmetry perception in the chick with two influential Mario’s students, Lucia Regolin and Giorgio Vallortigara. Daniel is involved in animal welfare and is part of a team writing the guidelines for the use of cephalopods. In his talk, he provides insights on How Cuttlefish see objects. Meta Virant-Doberlet studies vibrational communication in insects. She investigates this intriguing, and unsuspected, signalling trying to respond to all 4 Tinbergen’s questions and has presented "A day in a life of a bug linguist".

The third part of the volume collects abstracts of talks and posters presented at regular oral and poster sessions of TSPC2016.

Each abstract published in the proceedings has been evaluated by an anonymous expert reviewer and by the organizers. The list of anonymous reviewers who supported the editorial process is reported in the next section.

About 54 active participants gathered at TSPC2016, coming from Italy and other European countries (Serbia 7, Germany 2, Greece 1, Slovenia 1, Hungary 1). It featured 9 talks and 45 posters. The book of proceedings includes written reports of all talks, and 40 out of 45 posters. Several areas of cognitive science were covered, including: perception (talks 4, 6, 8; posters 4, 5, 17, 24, 27, 29, 36); mindffulness (talk 1); action and perception (talk 6; posters 4, 19, 22, 30, 34); attention (posters 7, 29); memory (talk 3, 7; posters); learning (poster 17); development (posters 14, 23, 25, 31, 33); language (poster 13, 39); problem solving and reasoning (poster 20); personality (posters 11, 18, 25); decision-
making (poster 20); concepts and categorization (talks 2; poster 4, 16, 33, 38, 39); social cognition (talk 4, 5; posters 6, 9, 40); animal cognition (talk 9; posters 1, 3, 8, 15, 36, 37); neuropsychology (poster 2, 10, 12, 22, 26, 28, 35, 38); rehabilitation (posters 22); developmental disorders (posters 2, 5, 10, 12); applied psychology (poster 7, 21, 28, 30, 32, 34); executive processes: monitoring, inhibitory control (posters 7, 14, 18, 23, 35);

In terms of disciplines, contributions included modelling, behavioral experiments with humans and animals, cognitive neuroscience, linguistics, philosophy, and vision.

We thank all authors who submitted an abstract to be included in the proceedings, and the reviewers who supported the editorial process with their fast and constructive reactions.

Finally, for their institutional and financial support to TSPC2016 we thank the Department of Life Sciences and the PhD program in Neural and Cognitive Sciences of the University of Trieste.

Paolo Bernardis
Carlo Fantoni
Walter Gerbino

organizers and editors

and Cinzia Chiandetti
Acknowledgments

A special thank to all reviewers of the TSPC 2016 abstracts:

Index

The 24th Kanizsa Lecture
W. Tecumseh Fitch
The Biology of Speech - 50 Years of Progress

The Kanizsa Lectures

Comparative Perception roundtable: a tribute to Mario Zanforlin
(presentation order)

R01. Da Pos O
Stimuli and context in perception

R02. Malashichev Y
Mother-infant lateral biases in humans and wild animals: conservatism of the phenomenon and its benefits for fitness

R03. Agrillo C
Optical illusions as a tool to understand visual perception in monkeys and fish

R04. Osorio D
How Cuttlefish see objects

R05. Virant-Doberlet M
A day in a life of a bug linguist

 Talks (presentation order)

T01. Giraldi T
Mindfulness for dummies?

T02. Coricelli C, Toepel U, Bielser ML, Murray MM, Rumiati RI
Distinct brain representations of natural and manufactured foods: a spatio-temporal brain dynamics investigation

T03. Dalmaso M, Castelli L, Scatturin P, Galfano G
Microsaccadic rate is shaped by working memory load

T04. Marković S, Bulut T
Attractiveness of the female body: Preference for average or supernormal?

T05. Shamloo SE, Carnaghi A, Piccoli V, Grassi M, Bianchi M
Look and Imagine Yourself Giving that Same Touch: The Role of Intergroup Vicarious Physical Contact in Racial Prejudice Revision

T06. Stefanović M, Tošković O
Object stability estimation – Effects of aspect ratio and body position

T07. Talamini F, Altoé G, Carretti B, Grassi M
Musicians have a better memory than nonmusicians: a meta-analysis
T08. Todorović D
A distance-dependent size perception paradox

T09. Rose J
Exploring the Cognitive Capacity of birds.

Poster (alphabetical order)

P01. Antoniol A, Caputi A, Chiandetti C
Evidence of population level-lateralization in a non-social crustacean, the crayfish Procambarus clarkii

P02. Athanasakis E, Faletra F, Stefanucci MR, Licastro D, Gerbino W, Lonciari I, Faletra F
Genetic analysis of developmental dyslexia in an Italian cohort: preliminary data

P03. Baiocchi V, Chiandetti C
Chicks run harder toward a consonant over a dissonant clucking hen: Biological roots for the appreciation of consonant sounds

P04. Baldassi G, Prpic V, Goodridge C, Agostini T, Fantoni C and Soranzo A
Does the dimensionality of the perceived size play a role in the SNARC-like effect for visual illusions?

P05. Barbiero C, Burani C, Carrozzi M, Lonciari I, Ronfani L, Gerbino W
Typography and dyslexia: A comparison between adults and children with dyslexia

P06. Bastiani F, Saurel-Cubizolles MJ, Romito P
Help seeking process among women who sought help at an Anti-violence Centre.

P07. Bencich E, Gamboz N, Di Blas L, Brandimonte MA
New insights into the phenomenon of Mind Wandering during everyday driving

P08. Caputi A, Gerbino W, Giulianini PG, Chiandetti C
Habituation of the alertness response in crayfish is modulated by stimuli with socially relevant information

P09. Cmiljanović M, Zdravković S
Social distance as a measure for Uncanny Valley Effect

Cognitive profiles of children with Dyslexia with and without dyscalculia

P11. De Caro EF, Di Blas L
Daily fluctuations in food craving, mood, and body dissatisfaction

P12. De Dea F, Zanus C, Carrozzi M, Accardo A
EEG connectivity in sleep spindles of ADHD children

Inflecting regular and irregular verbs: preliminary neuroimaging data from the three Italian conjugations

ANS acuity, mathematical ability and inhibitory control: A longitudinal perspective from First to Second grades

P15. Dissegna A, Turatto M, Chiandetti C
Context matters: Domestic chicks’ short- and long-term habituation of freezing to a sudden acoustic stimulus

The development of space-time and space-number associations: The role of concrete vs. abstract representations

P17. Galliussi J, Gerbino W, Bernardis P
The modulation of primary task difficulty in a fast-TIPL paradigm
P18. Gorjup R, Bernardis P, Grassi M, Gerbino W
Approaching behavior and state anxiety influence vigilance performance in a high cognitive load task

P19. Horoufchin H, Bzdok D, Buccino G, Borghi AM, Binkofski F
The body of language

When the whole is less than the sum of its parts: Individual idea generation outperforms group brainstorming

Mental health budget as a tool to contrast disease chronicity: Preliminary findings of a longitudinal study on autonomy development

Multisensory Action Observation a promising tool to improve freezing of gait in Parkinson’s disease: preliminary data.

P23. Moretti L, Caiani G, Vallesi A
Processing speed, cognitive reserve and paradigm mediate task switching performance across the life span

P24. Nedimović P, Zdravković S
Effect of largest illumination area on lightness of an object

P25. Pellizzoni S, Suklan S, Passolughi MC
Anxiety and math skills which relations? A longitudinal study in the third year of primary school

P26. Prenassi M, Rossi L, Marceglia S
Assessing the feasibility of using a commercially available bracelet to detect motor symptoms for home telemonitoring in patients with Parkinson’s disease.

P27. Radovic T, Markovic S
Role of emotional and perceptual features in visual search task

SSEP N20 amplitude as an early predictor of neurological outcome in cardiac arrest survivors treated with therapeutic hypothermia

P29. Rossi F, Zuliani E, Montanaro E, Lopiano L, de’Sperati C
Our poor sense of video speed

P30. Sors F, Murgia M, Lath F, Bader A, Agostini T
Listen carefully! The importance of auditory cues in anticipating volleyball serves

P31. Stojković A, Milosavljević N
How children tell a lie: gender and school achievement differences in children’s lie-telling

P32. Struzzo P, Marcatto F, Ferrante D, Allamani A, Scafuri F
Alcohol dependence in the Italian general population: diagnostic criteria according to general practitioners and to the CIDI (Composite International Diagnostic Interview)

P33. Szabó E, Kovács AM
Understanding nonexistential negation in 18 and 24-month-olds

P34. Tamburini L, Fantoni C, Gerbino W
Simulated Driving and the Question-Behavior Effect

Reward sensitivity in impulse control disorders in Parkinson’s disease
P36. Toso A, Fassihi A, Pulecchi F
Unified framework for the perception of stimulus intensity and stimulus duration in humans and rats

P37. Venditti A, Caputi A, Chiandetti C
Mind the obstacle: Lateralization of detour behaviour in two invertebrate species

Brain Signatures of Food Semantic Knowledge

P39. Zarl F, Gerbino W
Membership kind and format modality in schema categorization

Sexual prejudice, inter-group contact and homophobic school climate as determinants of school staff responses to homophobic bullying
Approximate Number System (ANS) acuity, mathematical ability and inhibitory control: A longitudinal perspective from First to Second grades

Chiara De Vita¹, Hiwet Mariam Costa², Maria Chiara Passolunghi¹

¹ Psychology Unit “Gaetano Kanizsa”, Department of Life Sciences, University of Trieste, Italy; ² School of Psychology, Sociology and Criminology, Kingston University, London, UK

Keywords: Approximate Number System, mathematical ability, inhibitory control, non-symbolic comparison task, congruent and incongruent trials

Recent research has turned increasing attention to the cognitive underpinnings of early mathematical competence. The Approximate Number System (ANS) is a non-verbal primitive cognitive system that allows to represent and estimate numerical quantity in an imprecise and intuitive way [1]. It is present at birth, is amodal and it supports basic numerical computations like adding, subtracting and comparing quantities without using counting or numerical symbols [2]. ANS acuity is the degree of precision of the internal quantity representation and there are considerable individual differences in ANS precision [3]. Recent findings demonstrating a relationship between ANS acuity and mathematical ability have suggested that the ANS plays a foundational role on later-learned math skills [3]. However, not all studies have found links between the ANS and mathematical ability in children and the evidence for a relationship in adults is mixed [2]. It is still unclear if the relationship between the ANS and mathematical ability found in some studies could be mediated by other general cognitive abilities [1]. Indeed, recent research findings suggest that this relationship may be the result of inhibition skills, rather than the precision of nonsymbolic representations [4].

The primary purpose of this 2-year longitudinal study was to investigate the relationship between the ANS and mathematical ability, analysing the data separately for congruent and incongruent dot comparison task trials. We measured ANS acuity, verbal intelligence and different aspects of numerical and mathematical competence in 110 children twice, in first and second grade (Time 1 and Time 2), a year apart. ANS acuity was assessed with a computerized non-simbolic numerical comparison task.

At Time 1, correlational analyses indicated that ANS acuity was associated with mathematical ability. This association was significant for both congruent and incongruent trials of the dot comparison task. In particular, it was found that the subgroup of children with higher ANS performance showed better mathematical ability than the subgroup of children with lower ANS performance. Also at Time 2, correlational analyses suggested an association between ANS acuity and mathematical ability and this positive correlation was significant for both congruent and incongruent trials again. These results are in contrast with the hypothesis that the relationship between the ANS and mathematical ability may be an artefact of the inhibitory control demands of incongruent trials in the dot comparison task [4]. This study thereby suggests a tight link between the ANS and mathematical ability.

