CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Synaesthesia and Individual Differences

Synaesthesia is a fascinating cognitive phenomenon where one type of stimulation evokes the sensation of another. For example, synaesthetes might perceive colours when listening to music, or tastes in the mouth when reading words. This book provides an insight into the idiosyncratic nature of synaesthesia by exploring its relationships with other dimensions of individual differences. Many characteristics of linguistic-colour synaesthetes are covered including personality, temperament, intelligence, creativity, emotionality, attention, memory, imagination, colour perception, body lateralization, and gender. Aleksandra Rogowska proposes that linguistic-colour synaesthesia can be considered as an abstract form of a continuous variable in the broader context of cross- and intramodal associations. There has been a resurgence of interest in synaesthesia and this book will appeal to students and scientists of psychology, cognitive science, and social science, and to those who are fascinated by unusual states of mind.

Aleksandra Maria Rogowska is an Assistant Professor in the Faculty of Physical Education and Physiotherapy at the Opole University of Technology, Poland. Her research centres on synaesthesia but also includes the psychology of sport, art and addiction. Her work focuses on developmental paths for young adults, in particular undergraduate students.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Synaesthesia and Individual Differences

Aleksandra Maria Rogowska

Opole University of Technology, Poland

CAMBRIDGE UNIVERSITY PRESS

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781107096189

© Aleksandra Maria Rogowska 2015

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2015

Printed in the United Kingdom by Clays, St Ives plc

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data
Rogowska, Aleksandra Maria, 1970–
Synaesthesia and individual differences / Aleksandra Maria Rogowska, Opole University of Technology, Poland.
pages cm
ISBN 978-1-107-09618-9 (hardback)
1. Synesthesia. 2. Individual differences. I. Title.
BF495.R64 2015
152.1′89–dc23

2014042931

ISBN 978-1-107-09618-9 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Contents

List of plates *page* vii
List of figures viii
List of tables x

Introduction: is synaesthesia normal? 1

1 Exploring the structure and distribution of linguistic-colour associations in the concrete–abstract and strong–weak dimensions 9
1.1 Relationship between synaesthesia and common association 9
1.2 Linguistic-colour synaesthesia as a form of linguistic-colour association 12
1.3 Linguistic-colour association assessment 15
1.4 Consistency of colour measurement 18
1.5 Colour consistency and reaction time of linguistic-colour associations 20
1.6 Structural analysis for colour consistency of linguistic-colour associations 21
1.7 Range of linguistic-colour associations 25
1.8 Structural analysis of the range of linguistic-colour associations 27
1.9 The nature of linguistic-colour associations 30

2 Reconciling objective and subjective assessments of linguistic-colour associations: exploring the relationships between linguistic-colour synaesthesia and self-related sensing, body lateralization, and gender 33
2.1 Reconciling objective and subjective methods for synaesthesia examination 33
2.1.1 Linguistic-colour synaesthesia assessment 33
2.1.2 Variability of synaesthetic associations 43
2.2 Relationships between linguistic-colour synaesthesia and self-rated sensing, gender, lateralization, and psychopathology 48
2.2.1 Relationships between self-rated sensing and linguistic-colour synaesthesia 48

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

2.2.2 Relationships between demographic variables and linguistic-colour synaesthesia 50
2.2.3 Synaesthesia and psychopathology 58
2.3 Structural analysis of the data 61

3 Cognitive determinants of linguistic-colour associations 69
3.1 Memory 70
3.2 Imagination 80
3.3 Attention 86
3.4 Relationships between linguistic-colour synaesthesia and cognitive variables 90

4 Relationships between linguistic-colour synaesthesia and individual differences in absorption, creative thinking, types of mind, and intelligence 94
4.1 Examining relationships between linguistic-colour associations and selected aspects of thinking 94
4.1.1 Correlates and predictors of linguistic-colour synaesthesia 97
4.1.2 Differences between synaesthetes and non-synaesthetes 98
4.1.3 Exploring the structure of relationships between variables 99
4.2 Absorption 107
4.3 Creativity 110
4.4 Type of mind 114
4.5 Intelligence 116
4.6 Emotional intelligence 119
4.7 Conclusions 124

5 Exploring the relationships between linguistic-colour associations and self-reported traits of personality and temperament 125
5.1 Personality 125
5.2 Temperament 131
5.3 Interrelationships between personality, temperament, and synaesthesia 138

General conclusions 152

Appendix A Participants 155
Appendix B Tables 157
References 174
Index 198

Colour plate section between pages 68 and 69.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Plates

1 The Linguistic-Colour Association Test (L-CAT).
2a Palette of warm colours used in the computer L-CAT (RGB).
2b Palette of cold colours used in the computer L-CAT (RGB).
3 Excerpts from the L-CAT protocols.
4 Different principles of colour mixing in the structural RYB and spectral RGB colour models.
5 Two-way joining tree clustering for traits of cognitive variables in synaesthetes.
6 Two-way joining tree clustering for traits of cognitive variables in non-synaesthetes.
7 Two-way joining tree clustering for traits of personality and temperament in synaesthetes.
8 Model of PLS regression analysis in the synaesthete sample.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Figures

1.1 Hypothetical model of linguistic-colour associations. *page* 14
1.2 Distribution of standardized mean scores for particular L-CAT scales. 22
1.3 Results of PCA analysis of the consistency of linguistic-colour associations. 24
1.4 Percentage of items associated with colour within each scale of the L-CAT. 25
1.5 Percentage of participants who indicated at least a partial association with colour within the L-CAT scales. 26
1.6 Descriptive statistics for the range of linguistic associations with colour in the L-CAT. 27
1.7 The range of linguistic-colour associations in two clusters. 28
1.8 Distribution probability of two cluster groups. 29
2.1 Changeability of intramodal and cross-modal associations. 37
2.2 Associations between selected categories of linguistic inducers and visual attributes of objects. 38
2.3 Usage of word-colour associations in cognitive activity. 45
2.4 Association between sidedness and gender in synaesthetes and non-synaesthetes. 54
2.5 Frequency of migraine experiences in non-synaesthetes and synaesthetes. 60
2.6 The vertical hierarchical tree plot. 61
2.7 Significance of variables for the PLS regression model. 64
2.8 The PLS regression model. 65
3.1 Differences between non-synaesthetes and synaesthetes in verbal memory. 74
3.2 Differences between non-synaesthetes and synaesthetes in RT in the total L-CAT and VCD. 75
3.3 Interaction between synaesthesia and consistency of colours in the total L-CAT and VCD. 76
3.4 Simple linear regression model estimated for Engagement of Experiences (EE) and the L-CAT. 83

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

3.5 Differences between non-synaesthetes and synaesthetes in imagination. 84
3.6 Differences between non-synaesthetes and synaesthetes in attention scales. 89
3.7 Comparison of four samples derived from cluster analysis in cognitive variables. 92
4.1 Comparison of synaesthetes and non-synaesthetes in all scales. 99
4.2 Comparison of synaesthetes and non-synaesthetes in TMS scales 100
4.3 Dendrogram of hierarchical cluster analysis. 101
4.4 Factor loadings of EFA. 104
4.5 Comparison of two models of hierarchical factor structure from EFA. 106
5.1 Mean sten scores in the NEO-FFI for non-synaesthetes and synaesthetes. 128
5.2 Mean sten scores in the EPQ-R for non-synaesthetes and synaesthetes. 130
5.3 Mean sten scores in the EAS-TS for non-synaesthetes and synaesthetes. 133
5.4 Mean sten scores in the PTS for non-synaesthetes and synaesthetes. 135
5.5 Mean stanine scores in the FCB-TI for non-synaesthetes and synaesthetes. 137
5.6 The vertical hierarchical tree plot for all scales. 139
5.7 Variable importance for the PLS regression model. 143
5.8 Factor loadings of X and contributions to components. 145

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

Tables

1.1 List of items within L-CAT scales *page* 16
1.2 Factor loadings for test–retest consistency of linguistic associations with colours from the L-CAT 23
2.1 Number of self-reported associations between sensory experiences 36
2.2 Comparison of mean scores in particular scales of the L-CAT 39
2.3 Linguistic-colour synaesthetes selected on the basis of the SAQ and L-CAT 40
2.4 Variance of X and Y explained by the latent vectors and Q^2 in total sample 63
4.1 Summary of stepwise regression analysis for variables predicting linguistic-colour associations 98
4.2 Primary factor loadings of higher order for both PAF and ML models of EFA 103
5.1 Variance of X and Y explained by the latent vectors and Q^2 in synaesthetes 142
5.2 Loadings and weights of four upper-level latent variables 144
B1.1 Differences in the colour consistency of linguistic associations 158
B1.2 Descriptive statistics for the colour consistency of linguistic associations 160
B1.3 Descriptive statistics for two clusters extracted with the use of the EM algorithm 161
B2.1 Descriptive statistics in several scales of the SAQ and total L-CAT 162
B3.1 Descriptive statistics in cognitive traits 163
B4.1 Descriptive statistics and intercorrelations between all variables 164
B4.2 Comparison of secondary and primary factor loadings for two models of hierarchical factor analysis 165
B5.1 Descriptive statistics in the NEO-FFI scales 166
B5.2 Descriptive statistics in the EPQ-R scales 167

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-09618-9 - Synaesthesia and Individual Differences
Aleksandra Maria Rogowska
Frontmatter
More information

B5.3 Descriptive statistics in the EAS-TS scales 168
B5.4 Descriptive statistics in the PTS scales 169
B5.5 Descriptive statistics in the FCB-TI scales 170
B5.6 Intercorrelation among all scales in the sample of synaesthetes 171
B5.7 Intercorrelation among all scales in the sample of non-synaesthetes 173

© in this web service Cambridge University Press www.cambridge.org