An Aptitude for Attitude

Neural Bases of Multisensory Perception Correlate to Variations in Human Personality Type

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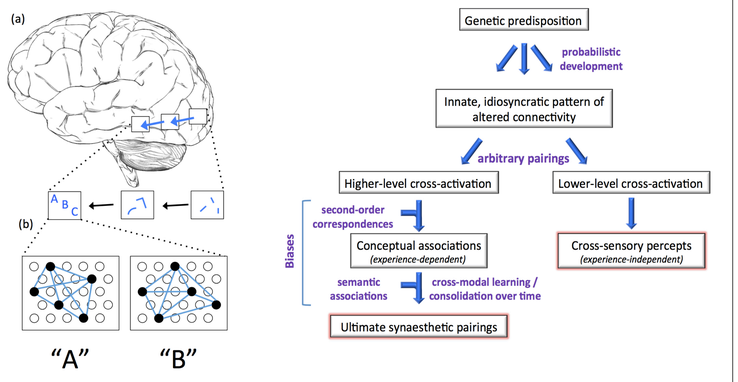
Abstract

A synesthetic experience is characterized by the automatic stimulation of several divisions of cognitive processing by an inducer, followed by unique cognizance of an imagined object that incorporates multiple qualities. This study included participants who self-identified as synesthetes as well as those who did not report any subtype of synesthetic experience. Survey research included the Bergen questionnaire, and further identified personality traits using the Big Five Personality Inventory, Creative Experience evaluation, and Conscientiousness subscale. In order to conduct a comparative examination of self-reported personality qualities and synesthestisia type, Pearson's correlation and hierarchical regression analyses were utilized in multilevel liner analysis. Statistical comparisons revealed that Openness, and Industriousness are the strongest predictors of time-space synesthesia. Consistently frequent reporting of openness and industriousness by number-space synesthetes point to several advantages of multisensory perception. In view of the correlations between synesthesia and personality, there are implications for synesthesia research in monitoring neuropsychological health throughout human development.

Introduction

Figure 1. Hierarchy of specialization in grapheme recognition. Synesthetic experiences are considered to be a product of both genetic differences and experiential biases.



Newell, F., & Mitchell, K. (n.d.). Multisensory integration and cross-modallearning in synaesthesia: A unifying model.

Research Question and Hypothesis

Are there differences in personality predictors of various synesthesia subtypes?

If grapheme-color synesthetes are identified using the Bergen questionnaire, then the personality predictors that will be exhibited most often by these participants are extraversion and fantasy proneness whereas industriousness, and task planning will be the strongest personality predictors of time-space synesthesia. There will be a strong correlation between openness and both of these synesthesia subtypes.

Methods and Materials

Survey research included the Bergen questionnaire, and further identified personality traits using the Big Five Personality Inventory, Creative Experience evaluation, and Conscientiousness subscale. This 139 question, twenty-minute survey, was administered through the online survey platform, *Qualtrics*

Results

Table 1 Mean scores standard deviation and inter-correlations between variables.

(N=318)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Grapheme-color	20.04	8.59	-												
2 Time-space	24.56	8.78	X	-											
3 Number-space	24.72	8.5	X	-											
4 Extraversion	24.4	6.31	-.08	.02	-										
5 Agreeableness	32.92	5.46	.05	.02	.02	-									
6 Conscientiousness	32.38	6.06	-.04	.09	-.01	.05	-								
7 Neuroticism	24.58	6.11	.09	-.10	-.02	-.31**	-.32**	-							
8 Openness	39.99	5.78	.21**	.19**	.20**	.11*	.12*	.05	-						
9 Industriousness	38.24	7.79	-.07	.14*	-.04	.12*	.26**	.63**	-.10	.131	-				
10 Control	28.21	7.77	-.03	-.13	-.01	-.13*	.21*	.32**	-.20	-.09	.35**	-			
11 Tidiness	29.72	8.38	.01	-.00	.00	-.01	.13*	.48**	-.03	-.02	.22**	.35**	-		
12 Task Planning	31.28	9.63	-.10	.10	-.12*	-.03	.09	.50**	-.02	-.05	.67**	-.15**	.17**	-	
13 CEQ	10.46	4.89	.21**	.09	.12*	-.04	-.07	-.10	.25**	.33**	-.00	-.31**	-.02	-.04	-

*p <.05 (2 tailed); **p<.01 (2 tailed)

Figure 2. Positive correlation between number-space synesthesia and openness

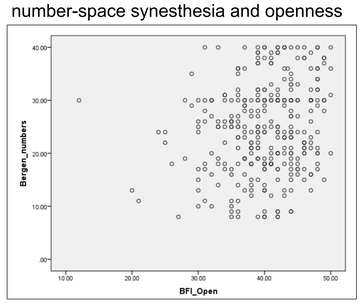


Figure 3. Positive correlation between grahpeme-color synesthesia and fantasy proneness

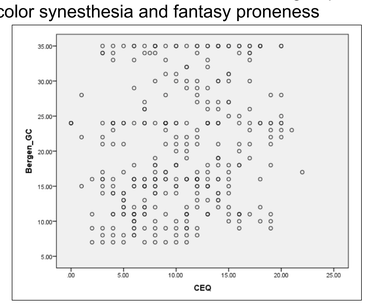


Table 1 Regression of number-space synaesthesia and openness, task planning, and creative experience (fantasy proneness)

Model		B	SE(B)	Beta	t	p	VIF
1	Openness	.25	.09	.17	2.93	.03	1.13
	Task planning	-.10	.05	-.11	-2.06	.01	1.00
	CEQ	.11	.10	.06	1.09	.00	1.12

Model 1 R^2=.06; F(3, 314)=6.156, p<.001

Table 2

Table 3 Regression of grapheme-color synaesthesia and openness, creative experience (fantasy proneness), and agreeableness

Model		B	SE(B)	Beta	t	p	VIF
1	Openness	.23	.09	.15	2.61	.02	1.15
	CEQ	.28	.10	.16	2.78	.02	1.14
	Agreeableness	.06	.09	.04	.732	.00	1.03

Model 1 R^2=.07; F(3,314)=7.625, p<.001

A significantly positive correlation between number-space synesthesia and openness (r=.20, p<0.01) clearly point to a tendency for number space synesthetes to exhibit transparency and amiability in establishing new interpersonal relationships

Results (continued)

- Openness (r=.17 p<.002), and Industriousness (r=0.14 p<0.02) are the strongest personality predictors of time-space synesthesia
- Task Planning (r=-.12 p<.03) is negatively correlated to number-space synesthesia
- Frequent reporting of industriousness by number and time-space synesthetes

Conclusions and Future Considerations

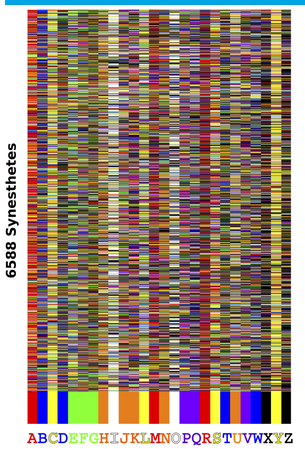


Image retrieved from: http://courses.evanbradley.net/wiki/doku.php?id=synaesthesia

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Many different forms of synesthesia have been discovered, and many are yet to be identified. There also exists a wide range of variability within synesthesia subtypes.

Future Considerations: In an analysis of personality characteristics that are predictive of specific synesthesia subtypes, future implications for these findings include longitudinal studies of syntesthetes' patterns of behavior in social spaces including higher education and competitive work environments.

Clinical Implications: An understanding of multisensory perception is important to the development of social services in the area of mental healthcare and medicine because health services ought to consider the unique needs and experiences of those who are receiving care.

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