



An Experimental Approach to Multimodality

Investigating the Interactions between Musical
and Architectural Styles in Aesthetic Perception

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Overview

1. Results of a study series on intermodal interactions between styles
2. Relevance for multimodality research
3. Style in multimodal artefacts

Cross-modal interactions

- IUAV Venice (arts and design university)
- Cognitive psychology group
- Experimental aesthetics
- Part of a larger project on the Experimental aesthetics of style

Experimental approach to style

Assumptions

- Style: exists in various areas of culture and society
- Style as binding link between modes in multimodal texts

Operationalization

- Style perception can be measured via ratings on semantic scales
- Perceptual dimensions of style can be experimentally manipulated

Current limitations

- Not multimodal texts, but combinations of stimuli in different modes
- BUT: Connection between modes was given via stylistic properties

Study I: Online study

- Subjects were shown a short video (25 sec.) and asked for ratings on semantic scales.
- On the next page, they were asked if they heard the music. Those who answered „No“ were excluded
- 4 conditions / videos
- n = 626 (501 valid answers)

Study I

- Four videos:
 - Baroque architecture with baroque music
 - Baroque architecture with modern music
 - Modern architecture with baroque music
 - Modern architecture with modern music

Study I

- Four videos:
 - Baroque architecture with baroque music
 - Baroque architecture with modern music
 - Modern architecture with baroque music
 - Modern architecture with modern music



= intermodally congruent



= intermodally incongruent

Study I: Online study






Ratings of the architecture were elicited; music was not mentioned.

“Do you like the style of the buildings in the video?”

not at all – *very much*

“Please judge the style of the buildings on the following dimensions:”

<i>introverted</i>	–	<i>extraverted</i>
<i>unbalanced</i>	–	<i>balanced</i>
<i>bright</i>	–	<i>dark</i>
<i>incoherent</i>	–	<i>coherent</i>
<i>grave</i>	–	<i>agitated</i>
<i>modest</i>	–	<i>bold</i>
<i>reason</i>	–	<i>feeling</i>
<i>complete</i>	–	<i>incomplete</i>

STYLE	STIMULUS	BUILDING, ARCHITECT	IMAGE URL, COPYRIGHT HOLDER, LICENSE, LICENSE URL
BAROQUE	A1	 San Carlo alle Quattro Fontane, Rome, Italy <i>Francesco Borromini</i>	http://commons.wikimedia.org/wiki/File:SCarloQuattroFontaneRome2.jpg © Welleschik Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	A2	 Einsiedeln Abbey, Einsiedeln, Switzerland <i>Caspar Moosbrugger</i>	http://commons.wikimedia.org/wiki/File:Kloster_Einsiedeln_Frontansicht.jpg © Hofec Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	A3	 Palais du Luxembourg, Paris, France <i>Salomon de Brosse, Alphonse de Gisors, et al.</i>	http://commons.wikimedia.org/wiki/File:Palais_Luxembourg_Sunset_Edit.JPG © Benh Lieu Song, modified by Sanchezn Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	A4	 Theatinerkirche, Munich, Germany <i>Agostino Barelli, Enrico Zuccalli</i>	http://commons.wikimedia.org/wiki/File:MünchenTheatinerkirche_a.jpg © Uwe Barghaan Creative Commons CC BY-SA 2.5 http://creativecommons.org/licenses/by/3.0/
	A5	 Stift Melk, Melk, Austria <i>Jakob Prandtauer</i>	http://de.wikipedia.org/wiki/Datei:Stift_Melk_001.jpg © User:Fb78 (commons.wikimedia.org) Creative Commons CC BY-SA 2.0 DE http://creativecommons.org/licenses/by-nc-nd/2.0
	M1	<i>Georg Philipp Telemann, Concerto grosso in D major, TWV 54:D3 (1716)</i>	1. Intrada – Grave <i>Trevor Pinnock / The English Concert</i> (0:00 to 1:12)

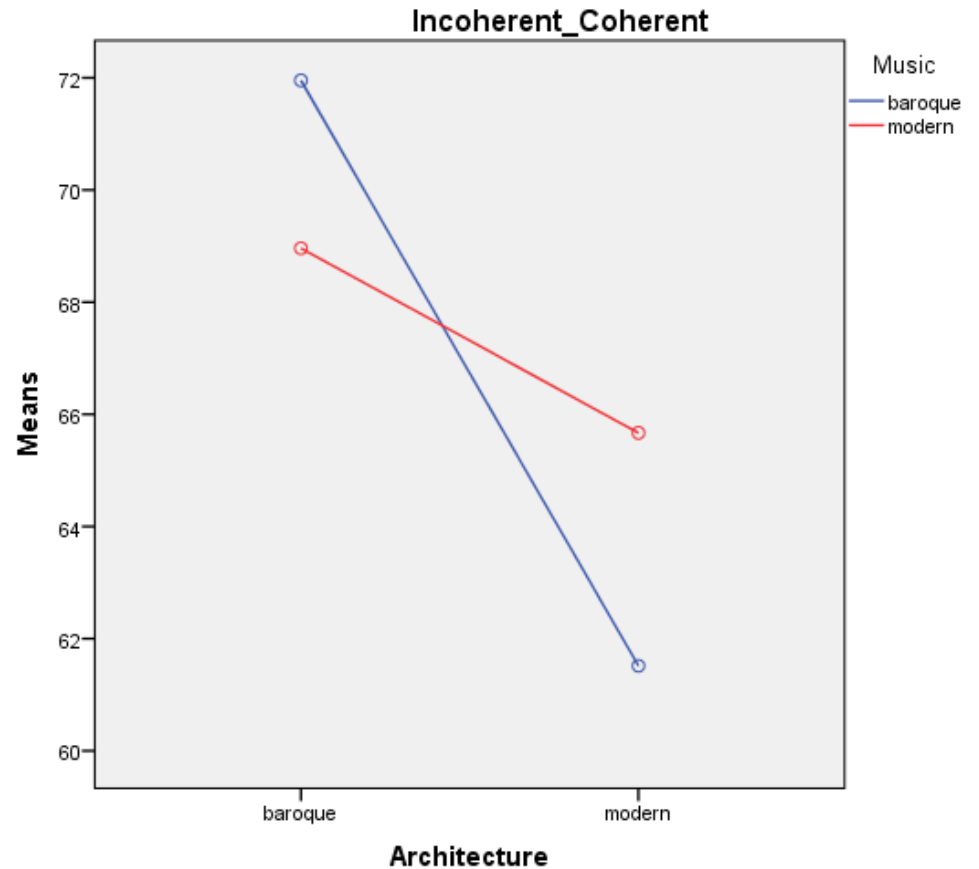
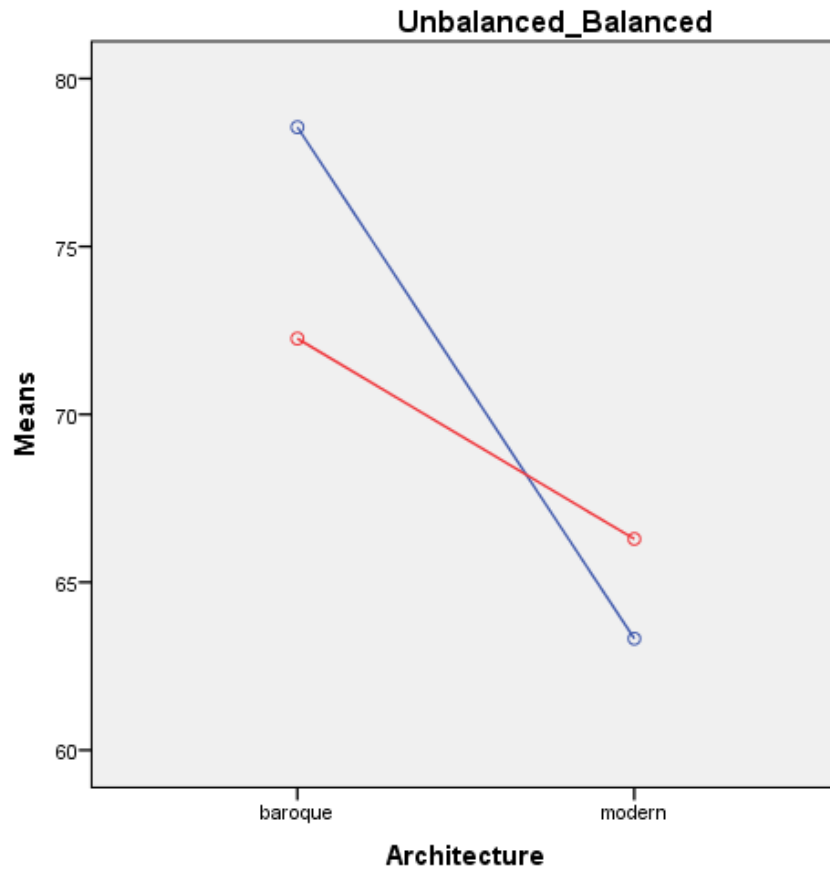
MODERN	A6		SAS Royal Hotel, Copenhagen, Denmark <i>Arne Jacobsen</i>	http://commons.wikimedia.org/wiki/File:SAS_Royal_Hotel,_Copenhagen,_1955-1960.jpg © seier+seier Creative Commons CC BY 2.0 http://creativecommons.org/licenses/by/2.0/
	A7		Aalto-Hochhaus, Bremen, Germany <i>Alvar Aalto</i>	http://commons.wikimedia.org/wiki/File:AaltoVahr-01.jpg © Jürgen Howaldt Creative Commons CC BY-SA 2.0 DE http://creativecommons.org/licenses/by-sa/2.0/de/
	A8		Wohnstadt Carl Legien, Berlin, Germany <i>Bruno Taut</i>	http://commons.wikimedia.org/wiki/File:Berlin_C_Legien_Trachtenbrodtstr_26.jpg © Doris Antony Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	A9		Georgia Pacific Building, Atlanta, Georgia, USA <i>Skidmore, Owings & Merrill</i>	http://commons.wikimedia.org/wiki/File:Georgia_pacific_building_atlanta_01.jpg © Ashley Moore Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	A10		Neue Nationalgalerie, Berlin, Germany <i>Ludwig Mies van der Rohe</i>	http://commons.wikimedia.org/wiki/File:Neue_Nationalgalerie_Berlin.jpg © Manfred Brückels Creative Commons CC BY-SA 3.0 http://creativecommons.org/licenses/by-sa/3.0/
	M2	Soundtrack to the film <i>Koyaanisqatsi</i>	03. Cloudscape <i>Philip Glass</i> (0:00 to 1:12)	http://www.youtube.com/watch?v=5SUpWrSValg © Philip Glass. All rights reserved

Stylistic interactions

- Sliders movable by mouse (values from 0 to 101; preset to 50)
- For 8 from 9 scales: effect for “architecture”
 - > the arch. styles were differently evaluated on all scales (except “grave – agitated”)
- No main effect for “music”
 - > music did not influence the ratings (which were, after all, given for the architecture)
- BUT: two of the nine scales showed interaction effects

Study I: 2×2 ANOVA (architecture × music)

baroque music: blue, modern music: red



Study II

- Participants: 75 students from a design and arts faculty in Italy
- Same stimuli
- Same scales (with added Italian translations)
- Each participant judged both architectural styles (in randomized order)
 - “architecture” within-subjects factor
 - statistical advantages (individual differences factored out) but: carry-over effects (from first to second video) possible

Study II

“Do you like the style of the buildings in the video?”

not at all – *very much*

“Please judge the style on the following dimensions:”

introverted – *extraverted*

unbalanced – *balanced*

bright – *dark*

incoherent – *coherent*

grave – *agitated*

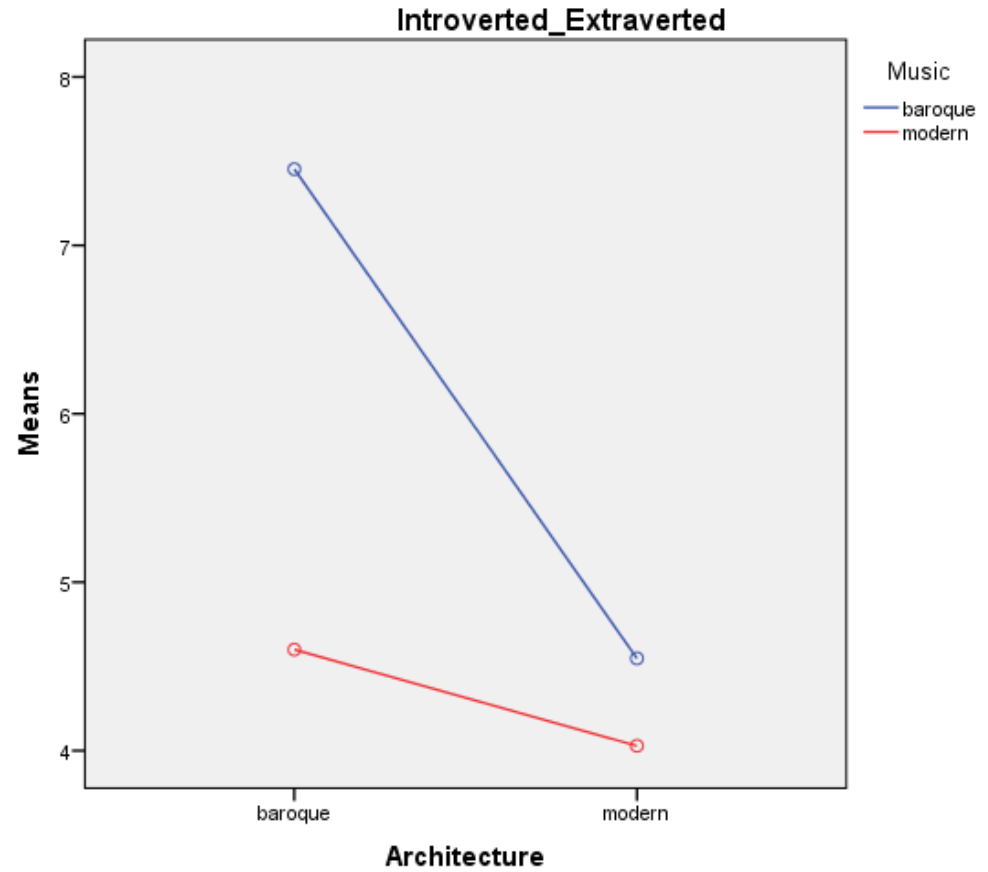
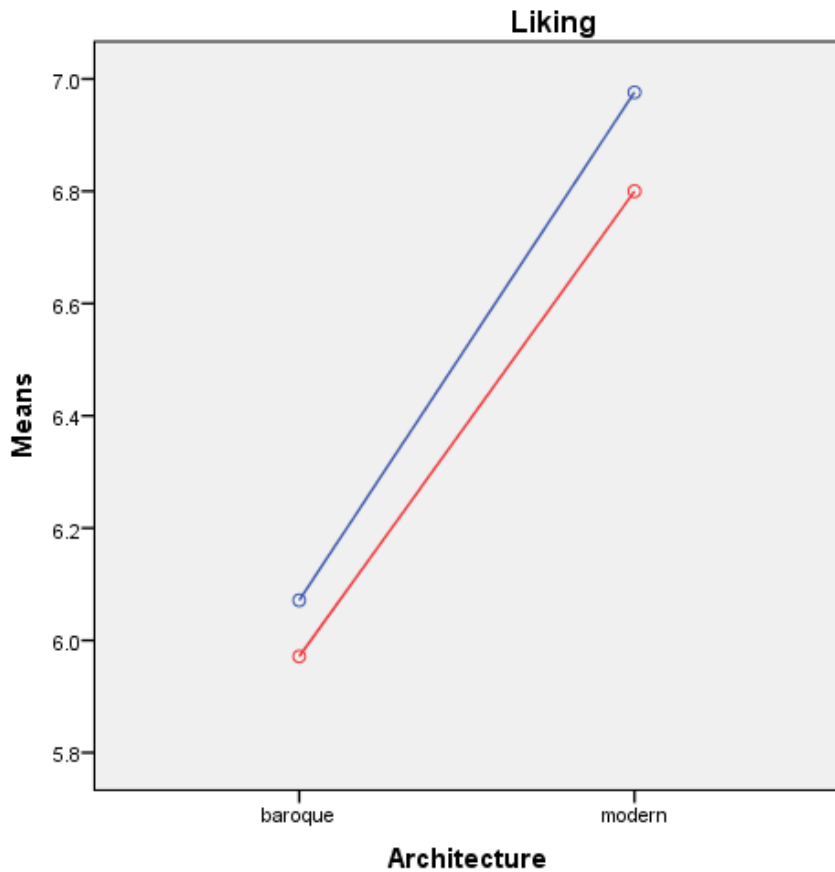
modest – *bold*

reason – *feeling*

complete – *incomplete*

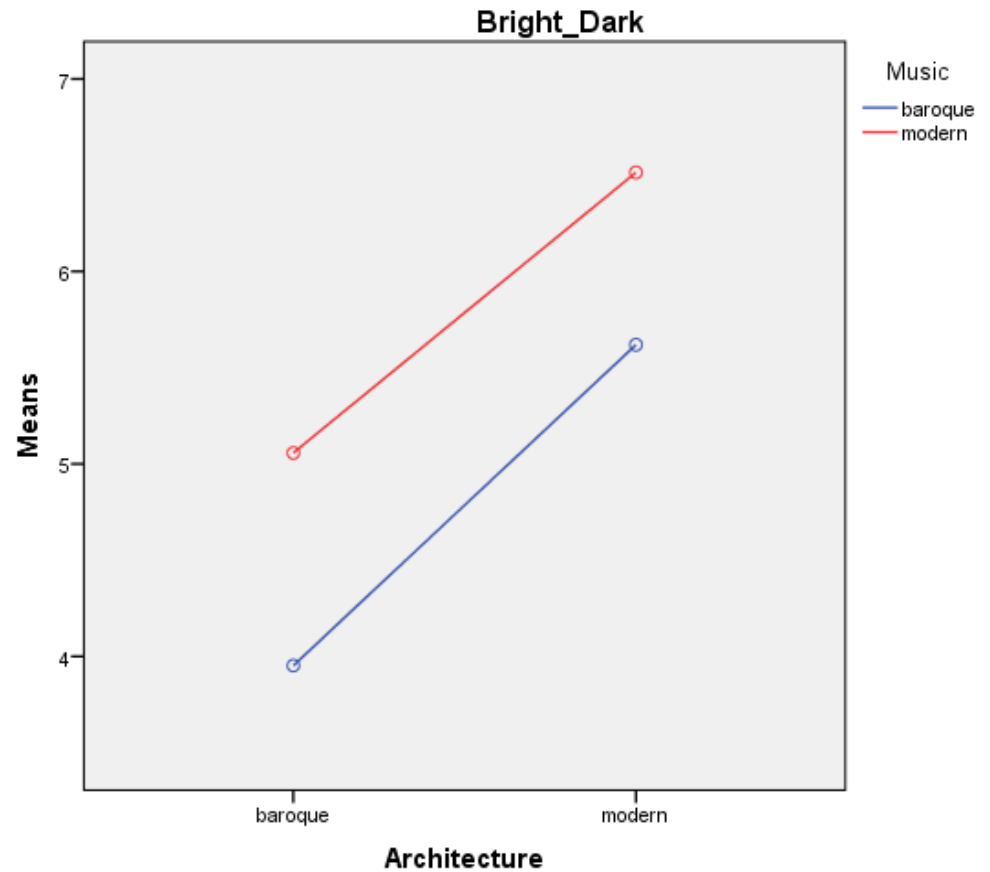
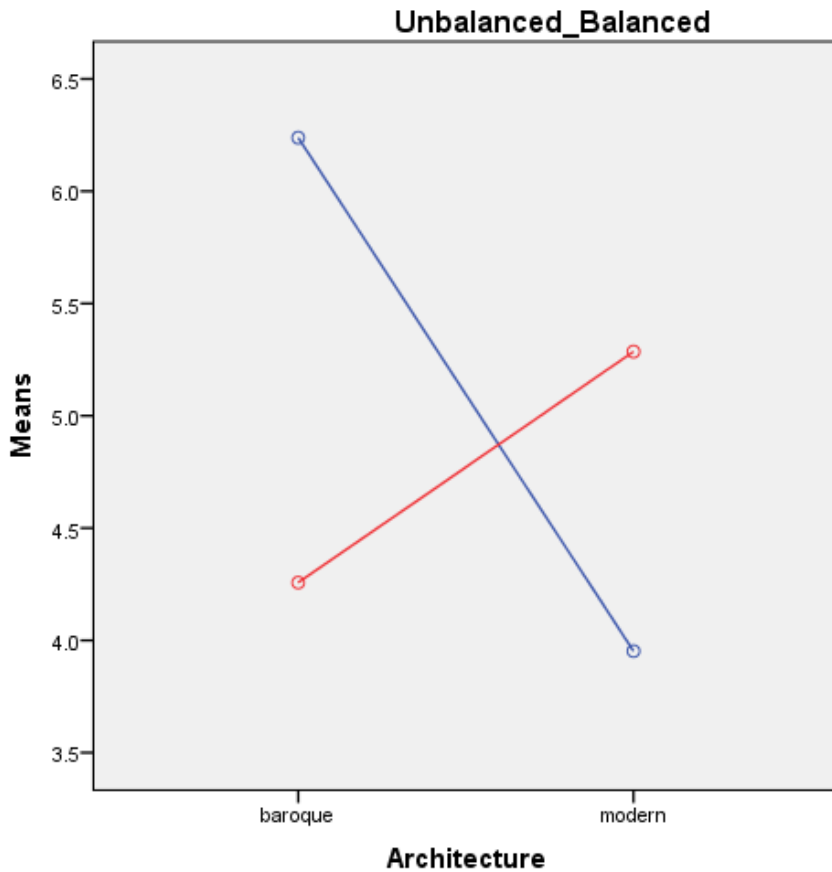
Study II: 2×2 ANOVA (architecture × music)

baroque music: blue, modern music: red



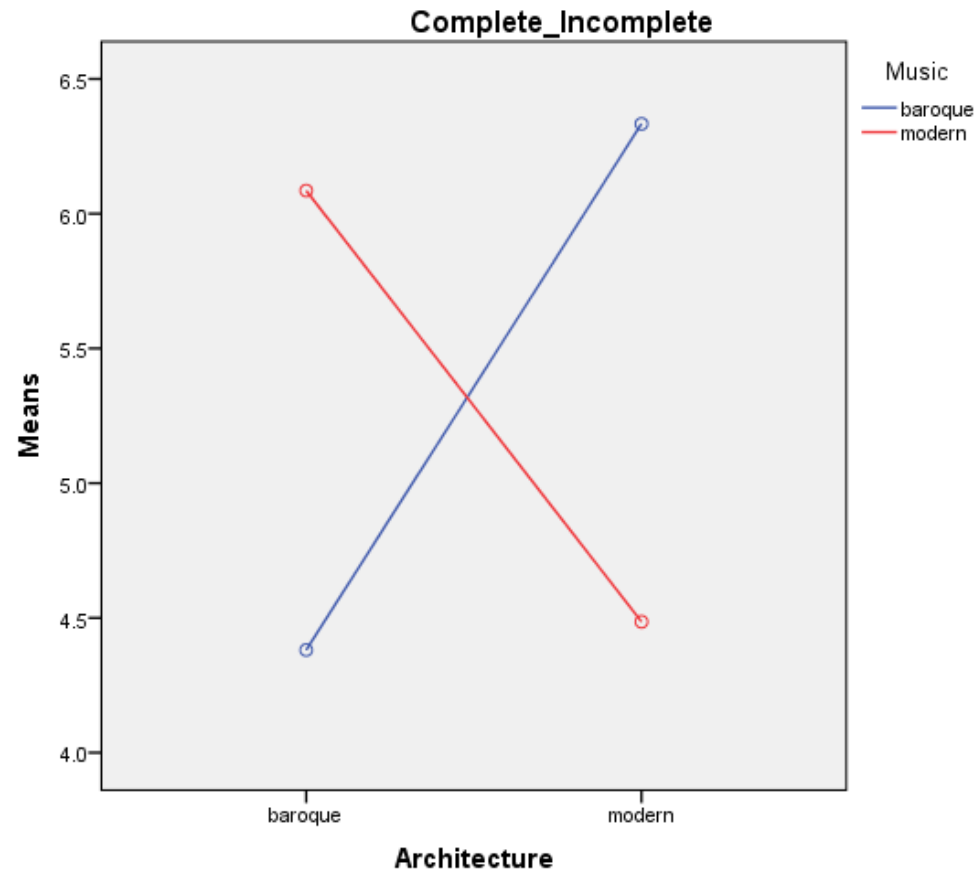
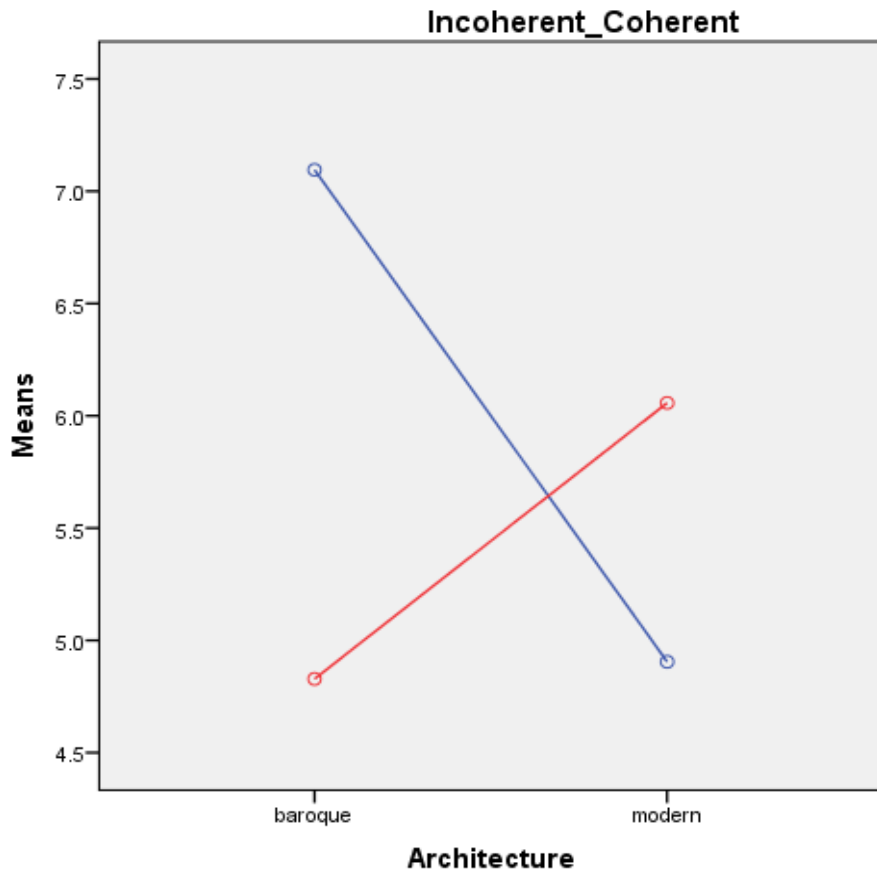
Study II: 2×2 ANOVA (architecture × music)

baroque music: blue, modern music: red



Study II: 2×2 ANOVA (architecture × music)

baroque music: blue, modern music: red



Study I

	Architecture	Music	Architecture × Music
aesthetic preference / liking	baroque: preferred		
<i>introverted – extraverted</i>	baroque: <i>extraverted</i>		
<i>unbalanced – balanced</i>	baroque: <i>balanced</i>		intermodally congruent: <i>balanced</i>
<i>bright – dark</i>	modern: <i>dark</i>		
<i>incoherent – coherent</i>	baroque: <i>coherent</i>		Intermodally congruent: <i>coherent</i>
<i>grave – agitated</i>			
<i>modest – bold</i>	baroque: <i>bold</i>		
<i>reason – feeling</i>	baroque: <i>feeling</i>		
<i>complete – incomplete</i>	modern: <i>incomplete</i>		

Study II

	Architecture	Music	Architecture × Music
aesthetic preference / liking	modern: preferred		
<i>introverted – extraverted</i>	baroque: <i>extraverted</i>	baroque: <i>extraverted</i>	intermodally congruent: <i>extraverted</i>
<i>unbalanced – balanced</i>			intermodally congruent: <i>balanced</i>
<i>bright – dark</i>	modern: <i>dark</i>	modern: <i>dark</i>	
<i>incoherent – coherent</i>			intermodally congruent: <i>coherent</i>
<i>grave – agitated</i>			intermodally congruent: <i>agitated</i>
<i>modest – bold</i>	baroque: <i>bold</i>		intermodally congruent: <i>bold</i>
<i>reason – feeling</i>	baroque: <i>feeling</i>		
<i>complete – incomplete</i>			intermodal congruence: <i>complete</i>

Study I + II

	Architecture	Music	Architecture × Music
aesthetic preference / liking			
<i>introverted – extraverted</i>	baroque: <i>extraverted</i>		
<i>unbalanced – balanced</i>			intermodally congruent: <i>balanced</i>
<i>bright – dark</i>	modern: <i>dark</i>		
<i>incoherent – coherent</i>			intermodally congruent: <i>coherent</i>
<i>grave – agitated</i>			
<i>modest – bold</i>	baroque: <i>bold</i>		
<i>reason – feeling</i>	baroque: <i>feeling</i>		
<i>complete – incomplete</i>			(?)

Results for style research

- Some scales are reliably connected with styles
- Proves the existence of relations between styles similarly categorized across modalities
- Intermodal categorization terms such as “baroque” and “modern” seem not to be arbitrary

Results for Multimodality Research

- Stylistic influences across perceptual and semiotic modalities proven
- Cognitive aspects: perception and judgment of style does not function separately in mode combinations
- We expected an influence of the music for scales which are easily applied to music
 - > Results are ambiguous
- However, some scales are unconsciously used to evaluate the relation between modalities (contrary to the task setting)
- In conventional experiment setting, as well as in (uncontrolled) online study
 - > Probably automatic and unconscious task

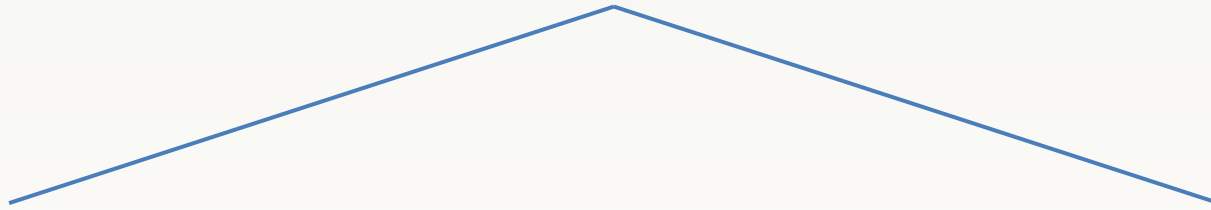
Limitations

- Results only for a carry-over task
- Interactions between other layers
(form, content, discourse)

Location in multimodality research

(tentative)

Sign processes combining modes



Multimodal
text

Non-textual
combinations

Textual layer model

(simplified ...)

Textual layers

```
graph TD; TL[Textual layers] --- F[Form]; TL --- C[Content]; TL --- D[Discourse]; TL --- S[Style];
```

Form

- Segmentability
- Spatial relations
- Time relations
- Combination rules

Content

- Discourse referents
- Propositions
- Inferences

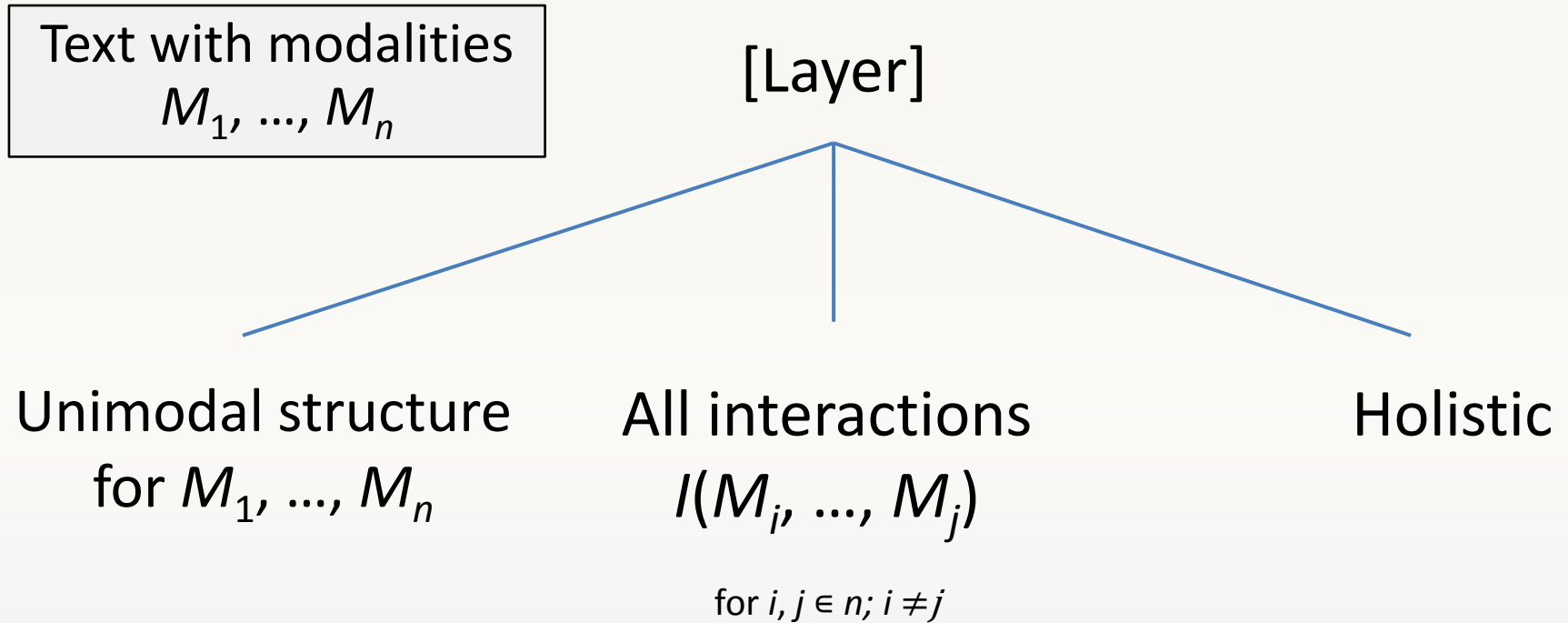
Discourse

- Rhetorical structure
- Narrativity
- Intertextuality
- Context and function

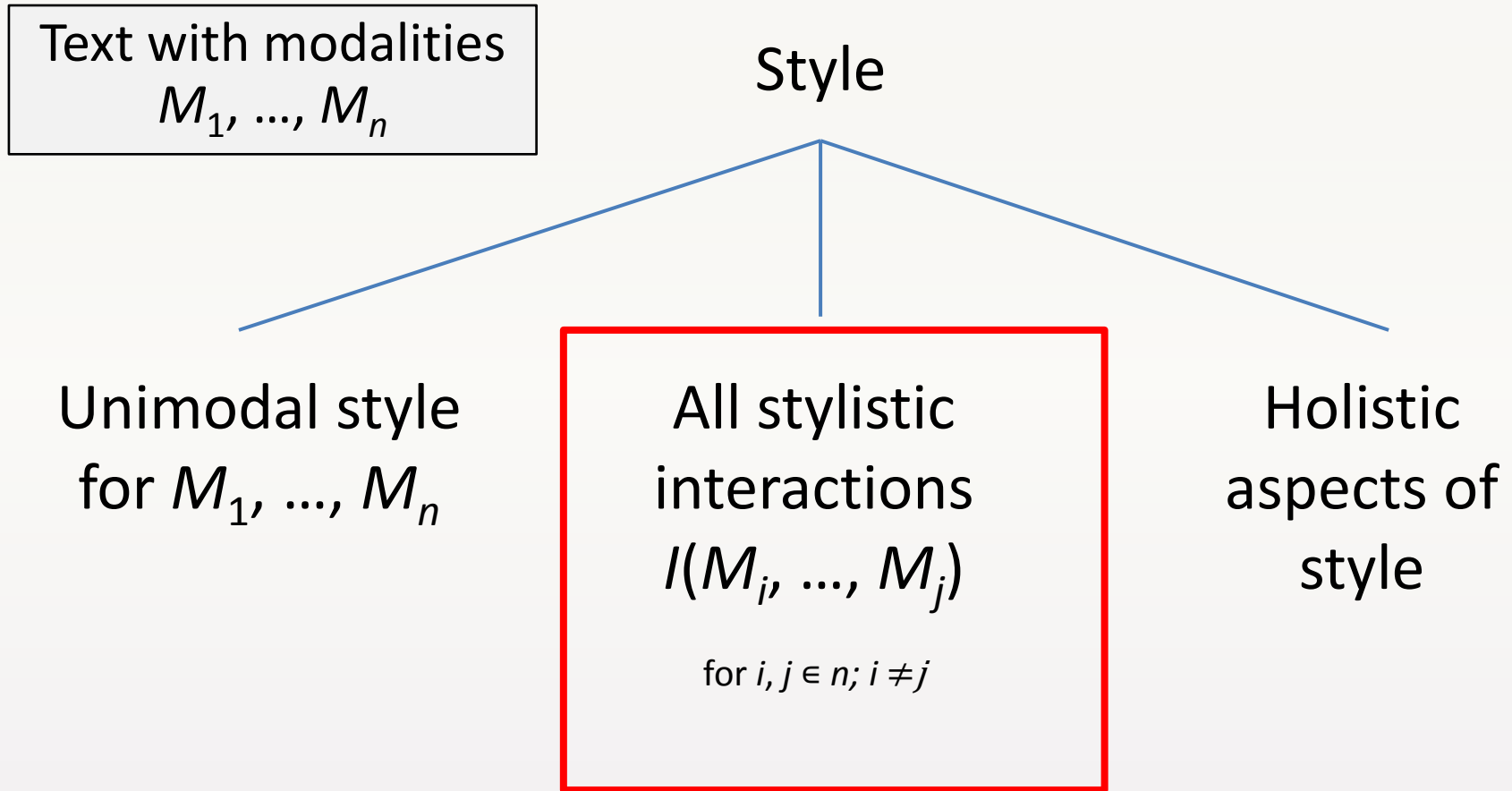
Style

- Choice-related aspects
- Connect artefacts with different function / content

Layers in multimodal texts



Style in multimodal texts



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