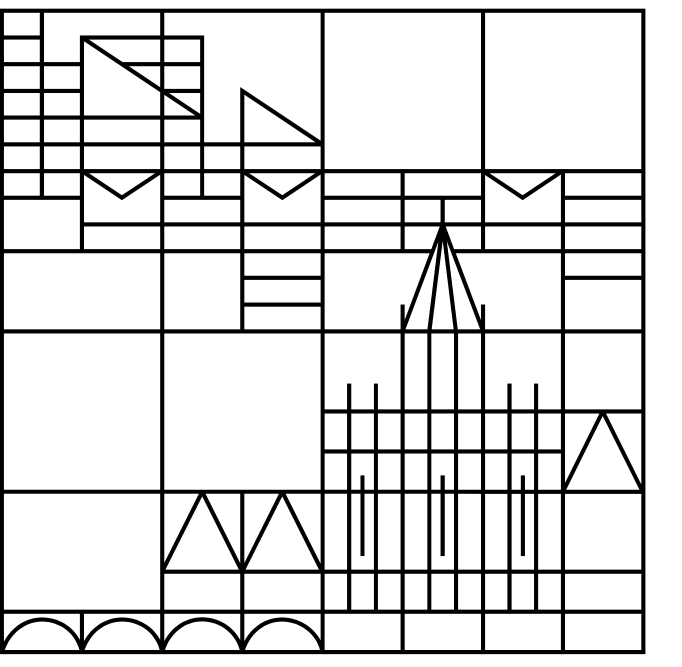


Does 'pictorial balance' have different meanings depending on the picture type?



Introduction

It is commonly assumed that the aesthetic appreciation of a picture depends on how well its composition is balanced. In the present study, we investigated the generality of this assumption. Balance and liking ratings were collected for pictures from the *Visual Aesthetic Sensitivity Test* (VAST; Götz et al., 1979), which can roughly be categorized into three different types: *Single-object (SO)*, *multiple-object (MO)*, and *dynamic-pattern (DP)* pictures.

Furthermore, formal measures (APB, and DCM) of visual balance have recently been developed, whose scores strongly correlated with mean liking ratings. However, up to now, they were mostly applied to simple stimuli, where balance mainly varies with the spatial distribution of elements. Therefore, it remains open to what extent the observed relations also hold for other pictorial compositions. In the present study we applied these measures to the VAST pictures and compared the resulting scores with our empirical ratings. We also tried to improve one of the measures (DCM).

Visual Balance Measures

- **APB**: *Assessment of Preference for Balance* (Wilson & Chatterjee, 2005)
- **DCM**: *Deviation of the Center of 'Mass'* (Hübner and Fillinger, 2016)

Method

Stimuli

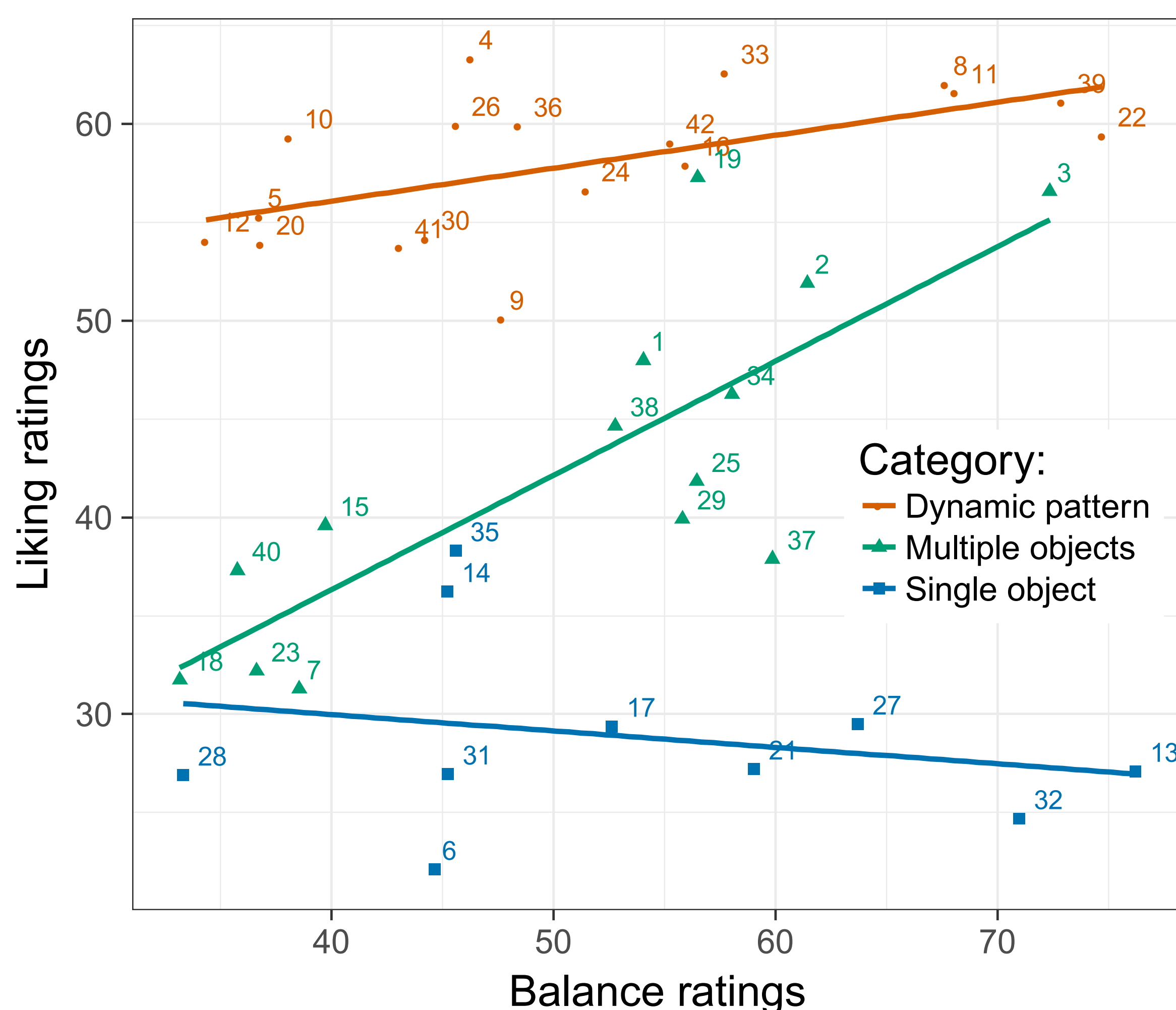
'Correct' pictures from the VAST (Götz et al., 1979)

- 17 DP (dynamic-pattern) pictures
- 14 MO (multiple-object) pictures
- 11 SO (single-object) pictures

Participants and Procedure

- 52 persons (16 male, mean age 24.6, $SD = 7.95$) rated all pictures with respect to liking and balance
- Two blocks: one for liking, one for balance judgments

Category	Dynamic-Pattern (DP) Pictures (n=17)							Multiple-Object (MO) Pictures (n=14)							Single-Object (SO) Pictures (n=11)						
Picture Examples																					
Balance Ratings	34	37	37	.....	68	73	75	33	36	37	.....	60	61	72	33	45	45	.....	64	71	76
Liking Ratings	54	55	54	.....	62	61	59	32	37	32	.....	38	52	57	27	22	36	.....	30	25	27



Results

- Relation between balance and liking depends on the picture type
- Substantial relations only for MO and DP pictures
- No general relation of APB and DCM with balance ratings
- cDCM predicts balance for SO and MO pictures
- No relation between the considered balance measures and liking

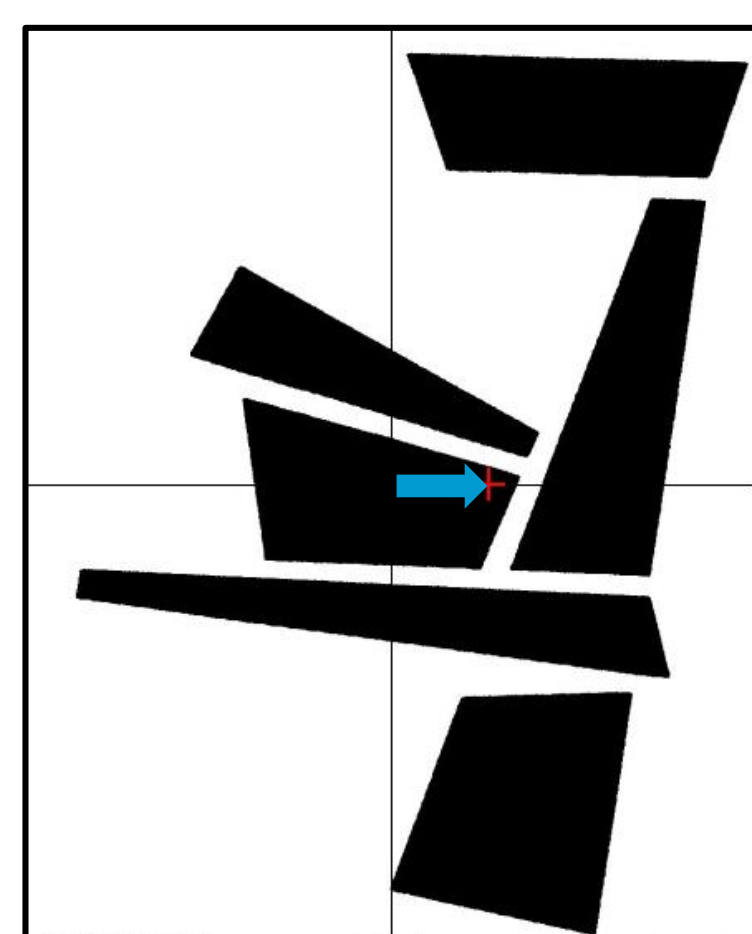
Table 1. Correlations between mean (across stimuli) balance ratings, liking ratings, and objective measures.

		Liking	APB	DCM	cDCM
Balance	Single object	-0.26	0.49	-0.60	-0.65*
	Liking	-	0.04	-0.04	-0.06
Balance	Multiple objects	0.83***	-0.41	-0.40	-0.53*
	Liking	-	-0.36	-0.36	-0.41
Balance	Dynamic pattern	0.59*	0.23	-0.20	-0.14
	Liking	-	0.13	0.13	0.21
Balance	Overall	0.15	0.11	-0.26	-0.22
	Liking	-	-0.26	0.27	0.26

Note. * $p < 0.05$, *** $p < 0.001$

DCM

The DCM score represents the deviation of the center of 'mass' from the center of the picture.



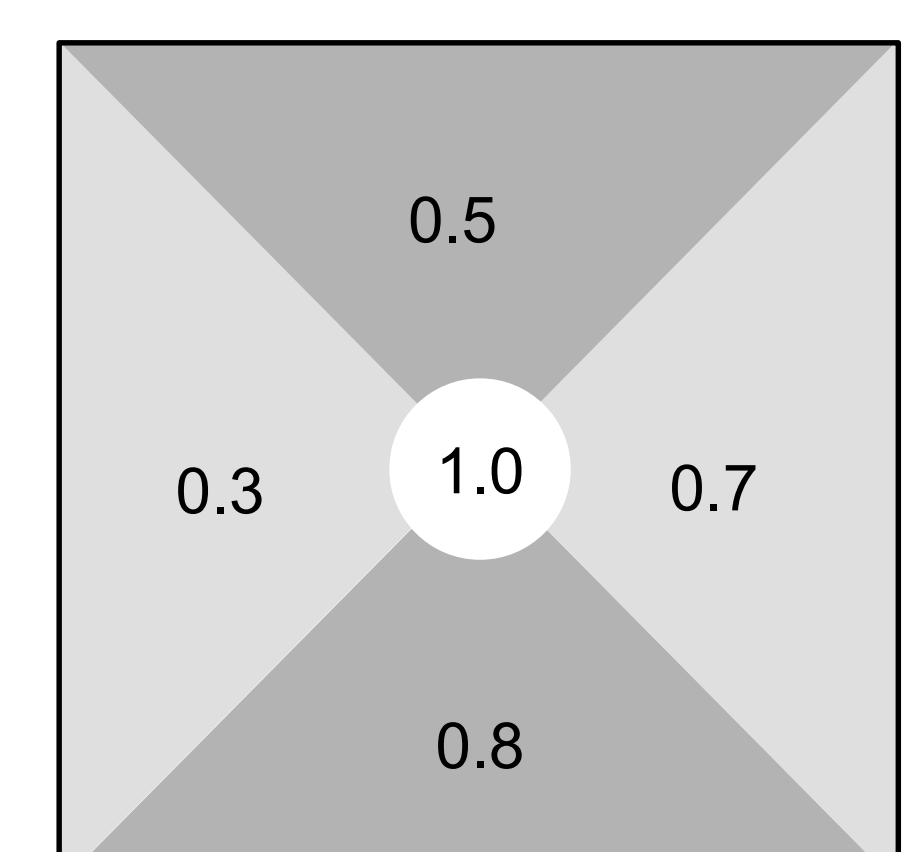
Improved measure: cDCM (categorical DCM)

The DCM can be improved for certain picture types by weighting areas differently.

$$cDCM = DCM / \text{weight}[\text{area}]$$

Weights were optimized by a fitting procedure.

Weights of different areas



Conclusion

Balance and liking ratings were positively correlated only for multiple-object (MO) and dynamic-pattern (DP) pictures, but not for single-object (SO) ones. This shows that an improved balance does not always increase liking.

The fact that balance ratings do not significantly correlate with the DCM and APB scores indicates that these measures have a restricted generality. By considering the area, where the center of 'mass' is located, the DCM could be improved. This suggests that balance measures should be orientation sensitive, what APB and the original DCM are not.

The fact that the measures are not correlated with liking suggests that there are different types of balance. For the MO pictures it is conceivable that 'balance' was interpreted in the sense of 'gravitational stability'.

References

- Götz, K. O., Borisy, A. R., Lynn, R., & Eysenck, H. J. (1979). A new visual aesthetic sensitivity test: I. Construction and psychometric properties. *Perceptual and Motor Skills*, 49, 795-802.
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