

The Aesthetics of Frieze Patterns: A Preference for Emergent Features



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Abstract

Thirty-nine undergraduates used a seven-point rating scale to assess the perceived beauty of the seven frieze pattern types. Textures were preferred more than motifs as were patterns with greater symmetries.

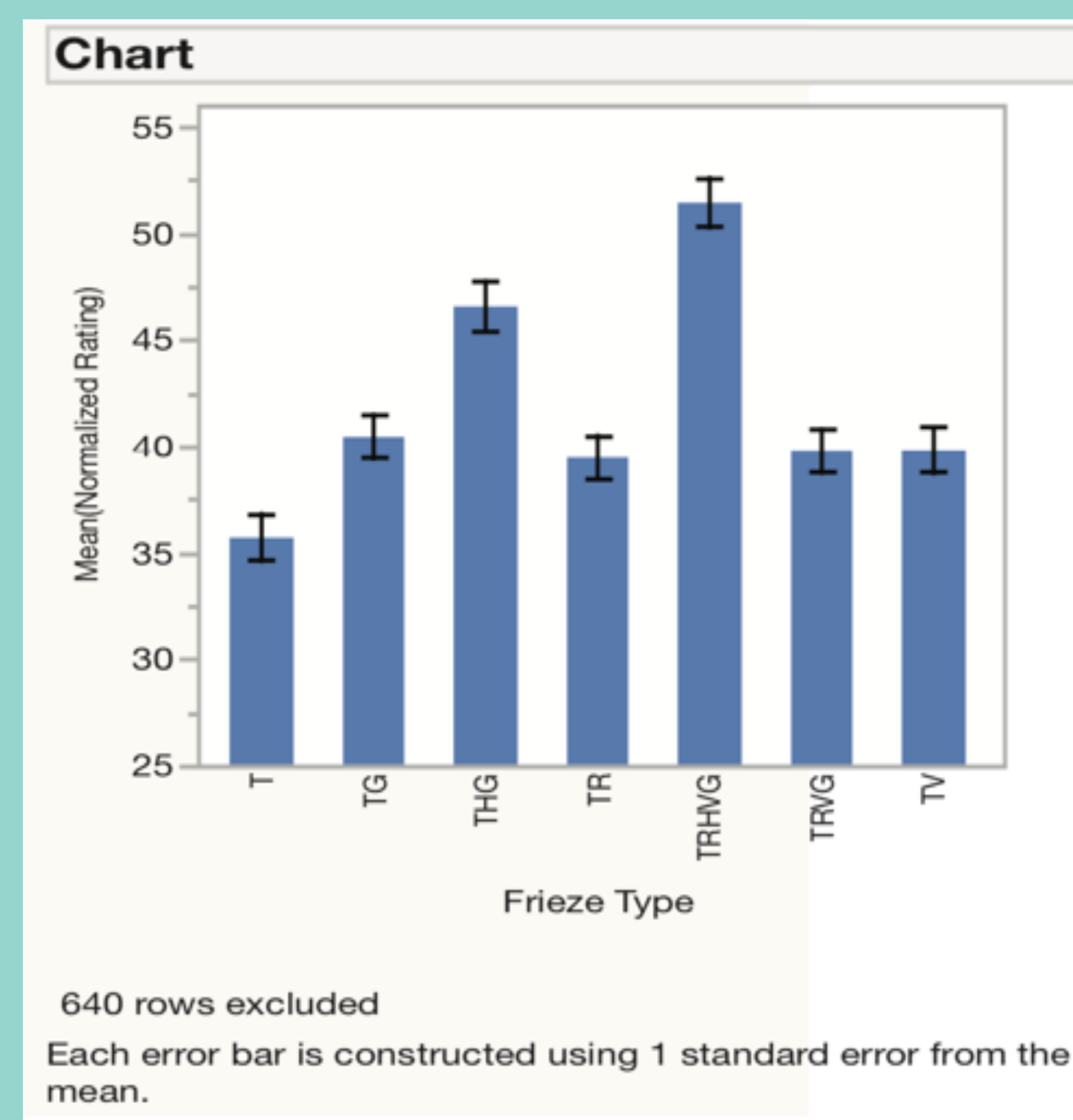
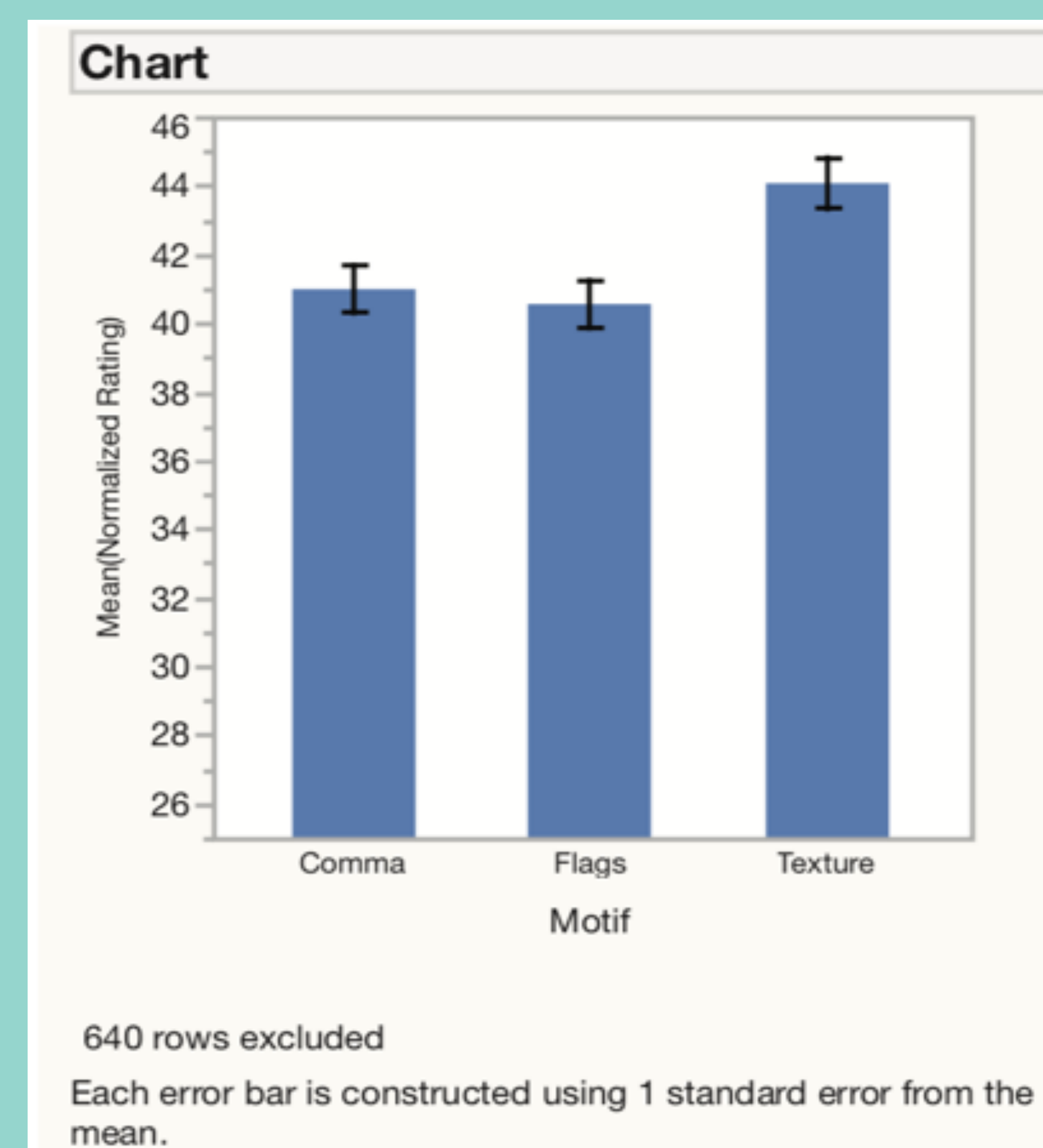
Introduction

Frieze patterns are found throughout human art history. They appear in architectural designs and in ornamental tiling. A frieze is defined as a design on a two-dimensional surface that is repetitive in one direction (Grunbaum & Shephard, 1987). The current study investigates the perceived beauty of each of the seven frieze types using various single object motifs as well as textures. We hypothesize that friezes with a greater number of symmetries will be rated as more beautiful based on previous work showing a preference for complexity in random texture patterns (Friedenberg & Liby, 2016).

Method

- Participants included 18 females and 24 males. Mean age was 18.92 years.
- There were 7 frieze types with a comma, flag, and filled texture as elements.
- Stimuli were presented at a standard viewing distance of 48 cm.
- These 21 stimuli were presented in 10 blocks. Presentation order was randomized.
- Participants rated the beauty of each frieze on a Likert scale of 1 to 7.

	Comma	Texture	Flag
T	, , , , , , ,		^ ^ ^ ^ ^ ^ ^
TV	, ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ
TG	, ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ
TR	, ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ
THG	, ʹ , ʹ , ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ
TRVG	, ʹ , ʹ , ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ
TRHVG	, ʹ , ʹ , ʹ , ʹ , ʹ , ʹ		^ ʹ ^ ʹ ^ ʹ ^ ʹ



T = Translation, TV = Translation & Vertical Mirrors, TG = Translation & Glide Reflection, TR = Translation & 180 Degree Rotation, THG = Translation, Horizontal Mirrors, & Glide Reflection, TRVG = Translation, Reflection, Vertical Mirrors, & Glide Reflection, TRHVG = Translation, Reflection, Horizontal Mirrors, Vertical Mirrors, and Glide Reflection

Results

- A two-way analysis of variance (ANOVA) yielded a main effect for Motif (Flag, Comma, Texture), $F(2,117) = 17.6975$, $p < .000$, and Frieze Type (T, TR, TV, TG, THG, TRVG, and TRHVG), $F(6,273) = 39.8646$, $p < .0001$.
- TRHVG ($M = 51.80$, $SE = 0.913$) was rated the highest.
- T ($M = 34.340$, $SE = 0.915$) was rated the lowest.
- The texture motif ($M = 44.429$, $SE = 0.599$) was rated significantly more beautiful than the comma motif ($M = 40.215$, $SE = 0.603$), or the flag motif ($M = 39.85$, $SE = 0.605$).

Conclusion

- There is a general complexity preference for friezes with the greatest variety of symmetries.
- There is also a preference for filled patterns not separated by spaces.
- Filled patterns are more likely to produce emergent features where smaller parts group together to create larger ones.

References

- Grunbaum, B. & Shephard, G. C. (1987). *Tilings and Patterns*. W.H. Freeman and Company, New York.
- Friedenberg, J., & Liby, B. (2016). Perceived beauty of random texture patterns: A preference for complexity. *Acta Psychologica*, 168, 41-49. <https://doi.org/10.1016/j.actpsy.2016.04.007>