



Psychology UNIVERSITY OF TORONTO

Toronto, Ontario, December 30, 2025

Review Report of doctoral thesis

Name of doctorate student: Manuela Marin

Title of the dissertation: "Towards a Comparative Approach to Empirical Aesthetics: Complexity and Emotion in Environmental Scenes, Representational Paintings and Music"

Basis of assessment: written report (see below)

Assessment: very good (1)

Date: December 30th, 2025

Name of the assessor: Prof. Dirk Bernhardt-Walther (University of Toronto)

Signature: see the end of the document on page 4

Esteemed colleagues:

Thank you for the opportunity to review Manuela Marin's PhD thesis "Towards a Comparative Approach to Empirical Aesthetics: Complexity and Emotion in Environmental Scenes, Representational Paintings and Music." It has been a pleasure and educational experience to read this thesis. I am impressed with the collective scholarly work presented in this thesis.

This dissertation represents a substantial and cohesive contribution to the field of empirical aesthetics. Through a series of interrelated empirical and theoretical studies, Ms. Marin offers a rigorous re-examination of Berlyne's psychobiological model of aesthetic response across visual and musical domains. Her comparative and multi-method approach is highly ambitious, theoretically coherent, and executed with impressive technical and analytical competence. The work stands out for its clarity of conceptual framing, consistency of research design, and thoughtful reflection on the implications of the findings for contemporary theories of aesthetic experience.

Conceptual and Theoretical Contributions

The central innovation of the thesis lies in its **comparative, cross-domain framework**. By bringing together experiments on affective environmental scenes, representational paintings, and Romantic-era instrumental music, the candidate successfully argues for the value of studying aesthetic responses across sensory modalities within a unified empirical framework. The re-engagement with Berlyne's arousal-based model is especially well judged: Marin manages to

both reaffirm its enduring explanatory power (particularly the positive relationship between complexity and arousal and the mediating role of arousal in the complexity–pleasantness link) and to identify limitations, most notably the absence of clear support for the predicted inverted U-shaped relation.

Equally valuable is the demonstration that both **complexity** and **hedonic tone** should be treated as multidimensional constructs. Her disentangling of beauty, liking, and pleasantness as distinct yet related evaluative responses is theoretically insightful and empirically convincing. This nuanced view modernizes Berlyne’s framework and connects it productively to more recent approaches such as processing fluency, predictive coding, and motivational models of aesthetic experience. The discussion chapters show deep command of the literature and link her results persuasively to broader debates on arousal, emotion, and aesthetic reward.

Methodological Rigor and Innovation

Methodologically, the thesis is exemplary. Across multiple published studies, Marin integrates **subjective ratings, computational analyses, and psychophysiological proxies** (eye-tracking) in a series of carefully controlled experiments. The decision to use shared stimulus sets across studies is a particular strength, ensuring a high degree of internal consistency and enabling cumulative theoretical inference. The stimuli are well chosen to vary along core collative dimensions while remaining ecologically valid: real-world scenes, genuine artworks, and naturalistic musical excerpts.

The breadth of measurement is impressive. The use of both subjective responses (familiarity, arousal, pleasantness, complexity) and **objective indices of complexity**, including contrast, edge detection, compression size for images, and file-size/event-density metrics for music, demonstrates methodological range and creativity. The eye-tracking experiments add a valuable behavioral dimension, showing systematic differences in viewing patterns for paintings versus environmental scenes and providing indirect evidence for the concept of aesthetic distance.

The thesis also makes effective use of **sophisticated statistical modelling**, including mediation analyses and linear mixed-effects models that account for individual differences. The integration of **person-level variables**, such as stress reactivity, empathy, and emotional intelligence, is a notable advancement for empirical aesthetics, an area that often neglects these influences.

Presentation and Scholarly Quality

The manuscript is well written, with a clear narrative connecting the component publications to the overarching research program. The introduction and general discussion are particularly strong, weaving historical context, theoretical argument, and empirical findings into a coherent

story. Tables summarizing main results across studies are highly effective. The author demonstrates a mature sense of how her work fits within the broader field, critically evaluating both her own findings and those of others. Overall, the scholarly tone is balanced and rigorous, and the cumulative format is used to very good effect.

Limitations and Areas for Further Development

While the thesis is of a very high standard, several limitations should be noted, most of which the candidate herself acknowledges:

1. **Sample composition:** Several key studies were conducted exclusively with female participants. While justified by prior gender effects, this restricts generalizability, particularly given that gender differences themselves form part of the theoretical discussion. A more balanced sample would strengthen future research.
2. **Stimulus diversity:** The visual and musical materials are centered on representational art and Romantic piano music. Additional styles, especially abstract visual art, non-Western or contemporary musical genres, would allow stronger claims about the generality of the reported effects.
3. **Scope of objective measures:** The objective indices of complexity are largely low-level perceptual metrics. The author explicitly proposes expanding toward higher-order semantic or structural measures; this would be an important future direction.
4. **Task structure:** Rating paradigms are necessarily limited in capturing the richness of aesthetic experience. The separation of subjective ratings and eye-tracking samples, while methodologically clean, precludes direct within-subject links between looking behavior and reported affect. Future studies integrating subjective, behavioral, and physiological data in real time would further enhance explanatory power.
5. **Generalizability of theoretical synthesis:** The comparative design is limited to two visual and one musical category. The theoretical framework now calls for extension into additional artistic and sensory domains (poetry, film, multimodal art) and into cross-cultural contexts, as the author herself recommends.

Overall Assessment

This dissertation represents a **substantial, original, and methodologically sophisticated contribution** to the psychology of aesthetics. Its comparative strategy, meticulous empirical execution, and thoughtful theoretical integration make it a model for research in the Berlyne tradition and beyond. The work significantly advances understanding of how complexity, arousal, and emotion interact across sensory modalities and provides a solid empirical basis for future multidomain theories of aesthetic experience.

While certain constraints in sampling and stimulus diversity temper the generality of the conclusions, these are outweighed by the conceptual clarity, analytical care, and integrative ambition of the project. Dr. Marin has demonstrated not only technical proficiency but also theoretical independence and scholarly maturity. The thesis will stand as an important reference point for empirical and neuroaesthetic research for years to come.

Recommendation

The dissertation is **original, methodologically rigorous, and theoretically well developed**. It provides a major empirical and conceptual advance in understanding the interplay of complexity, emotion, and arousal across sensory modalities. The candidate demonstrates exceptional competence in experimental design, data analysis, and theoretical synthesis. I recommend that the thesis be **accepted without major revisions** and assess as **“very good.”**

Sincerely,



Dirk Bernhardt-Walther, Ph.D.
Professor, Department of Psychology, University of Toronto
Program Director, Cognitive Science at University College
Phone: +1-416-978-6193
Email: dirk.bernhardt.walther@utoronto.ca