GIVE ME GESTALT! PREFERENCE FOR CUBIST ARTWORKS REVEALING HIGH DETECTABILITY OF OBJECTS

Claudia Muth[1], Robert Pepperell[2], Claus-Christian Carbon[1],
[1]Department of General Psychology and Methodology, University of Bamberg, 96047 Bamberg, Germany
[2]Cardiff School of Art & Design, Cardiff Metropolitan University, Cardiff CF24 0SP, UK
E-mail: <claudia.muth@uni-bamberg.de>

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Abstract

In cubist paintings by Picasso, Braque and Gris it is possible to detect everyday objects like guitars, bottles or jugs, although they are often difficult to decipher. In this art-science collaborative study we found that participants without expertise in cubism appreciated cubist artworks more if they were able to detect concealed objects in them. The finding of this strong correlation between detectability and preference offers wide implications for art history and human cognition as it points to a mechanism that allows us to derive pleasure from searching for and finding meaningful patterns.

Keywords: Art perception, Gestalt, Ambiguity, Indeterminacy, Cubism

Introduction

The visual system continually constructs order out of highly ambiguous and instable stimuli we receive from the world. Artworks often exploit, reveal, and play with the perceptual and cognitive mechanisms involved by presenting viewers with prediction-errors [1], contradictions [2], indeterminacy [3,4], or ambiguity [3, 5] inducing elaboration of various interpretations at the same time. Cubist paintings are especially open to interpretation as they are full of everyday objects that are concealed because they are depicted in a fragmented way that makes immediate recognition very difficult. In this paper we show that viewers' appreciation of cubist paintings is closely linked to their ability to identify an object, or a Gestalt, respectively, from partial clues.

Many art theorists and perception researchers have proposed such a relation between appreciation and emerging order from disorder, ambiguity, or indeterminacy. The philosopher of art George Dickie stresses the recognition of "uniformity in variety" or "simplicity in complexity" [6] while according to the psychologists Hekkert and Leder: "we like to look at patterns that allow us to see relationships or create order" [7]. Reber et al. claim that increased fluency in processing a complex topic enhances appreciation [8]. Meanwhile, Van de Cruys and Wagemans suggest that artworks often violate viewers' perceptual predictions, and that they are then able to derive aesthetic pleasure from reducing the cognitive uncertainty induced by those violations [1]. The neurologists Ramachandran and Hirstein argue that perceptual grouping processes in general are linked with the neural structures known as the 'reward system' [9].

But despite the frequent claims that detecting Gestalt, or recognizable form, in challenging visual stimuli is inherently pleasing, to date this has not been demonstrated empirically. In this study we chose as stimuli cubist artworks by Picasso, Braque and Gris because they offer a high degree of visual indeterminacy and ambiguity yet at the same time are full of recognizable depicted objects [3, 4]. Thus, they provide a perfect opportunity to test whether the viewers' ability to detect these objects is linked to their appreciation of the paintings.

Participants

Twenty participants (M_{age}= 23.8 yrs; range: 19-36 yrs; 13 females) volunteered in the study. They had normal or corrected-to-normal vision ensured by a Standard Snellen's eye chart test and by a short version of the Ishihara color vision test. They had no expertise in cubist art.

Apparatus and stimuli

Stimuli consisted of photographs of 120 cubist artworks by Pablo Picasso (47), Georges Braque (33), and Juan Gris (40); all of them being adapted to 450 pixels width and 600 pixels height (if the proportion was not 4.5:6 we cropped the pictures accordingly). The participants sat with an approximate distance of 55 cm in front of a LG W2220P screen with 22-inch screen size at a resolution of 1680 × 1050 pixels yielding a visual angle of about 16.6° x 21.6° for the stimuli.

Procedure and results

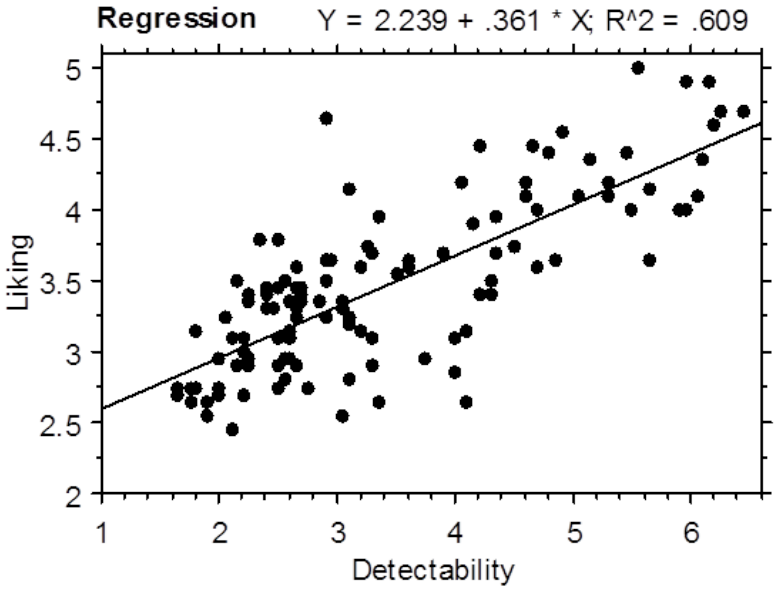
The study was structured in two blocks, each showing the stimuli in a randomized order. During the first block, subjects had to rate the pictures on liking. During the second block, participants rated how well they could detect objects within the artwork. All ratings were chosen from a 7-point-Likert-scale from 1 ('not at all') to 7 ('very').

For both variables we aggregated data across participants revealing a strong relationship between the detectability of objects within cubist artworks and liking indicated by a Pearson correlation of R= .781, p<.0001 (see Fig. 1).

Discussion

The results show that Gestalt formation is closely linked to appreciation; viewers much preferred paintings in which they were able to decipher concealed objects. This finding is in line with previous proposals about the link between detecting

Fig. 1. Data points represent detectability of objects and liking per stimulus revealing that the better the participants could detect objects within an artwork, the more they liked it. The amount of explained variance is 60.9% indicated by R^2. The equation gives the relationship of X (Detectability) and Y (Liking).



order and appreciation [7], reward by uncertainty reduction [1] and the detection of simplicity in complexity [6, 8]. We did not replicate previous findings showing that over-familiar [10] or insufficiently ambiguous stimuli [5] had a negative effect on appreciation.

The reason why Gestalt recognition is linked to positive appreciation in the case of cubist paintings, however, may not be due merely to the fact that hitherto objects invisible are recognized, or because enjoyment is derived from increased fluency in coping with a complex perceptual process [8]. As the art historian Dario Gamboni demonstrates, cubist paintings of this period (1909-1914) never show explicit or complete objects but rather 'potential' objects, as he puts it, which cannot be fully resolved [3]. Ernst Gombrich points out that the experience of reading a cubist painting is unsettling because the paintings present us with "contrary clues which will resist all attempts to apply the test of consistency…We will always come across a contradiction somewhere which compels us to start afresh" [11]. Another art historian, Robert Hughes, writes of the paintings that "as a description of a fixed form they are useless"; their value lies in the way they "report on multiple meanings, on process" [12].

Unlike images that offer effortless and determinate recognition cubist paintings present the viewer with ongoing perceptual indeterminacy while offering clues to enable Gestalt recognition. Our finding of increased preference for paintings revealing high detectability of objects might then be attributable not just to the mere recognition of forms but also to the fact that recognition is occurring against a background of ongoing uncertainty. The principle of 'uniformity in variety' noted above highlights this point while holding provided that we can appreciate the qualities of uniformity and variety at the same time. As the critic and early supporter of cubism Guillaume Apollinaire emphasized, this requires great involvement and effort of the viewer, which enhances aesthetic pleasure [13].

This link between elaboration and appreciation is supported by empirical studies showing that appreciation increases with the elaboration of innovative material but not with that of conventional and easy stimuli [14] – a result that is consistent across different types of measurement [15] and different age groups [16]. In line with Van de Cruys and Wagemans we thus propose that it is the presence of novelty, uncertainty or other challenges evoked by a stimulus that promotes dynamic aesthetic processes [1], not the fluency or immediacy of recognition per se. Further studies might assess in which way Gestalt detection influences those dynamics: is there an immediate effect of the insight [17] during Gestalt recognition on aesthetic appreciation and how does this relation unfold with time?

Getting the balance right between unrecognizability and recognizability seems critical to maximizing aesthetic response. This can be illustrated by a key episode in the history of the development of cubism: In 1910 Picasso spent the summer in the Spanish town of Cadaqués where he produced a large body of highly abstract paintings in which objects were barely discernible. Art historians now refer to this as the 'hermetic' phase of cubism. Picasso's main dealer, Daniel-Henry Kahnweiler, declined to buy any of these works (with one exception) – a sign that he had concerns about selling them on to collectors [18]. Probably stung by this (the dealer had purchased nearly all of the artist's cubist works up to that point) Picasso quickly embarked on a major portrait of Kahnweiler (1910, Art institute of Chicago) which is notable for the reintroduction into the cubist language of much more identifiable cues about the objects being depicted [19]. Kahnweiler soon resumed purchasing Picasso's works, which thereafter explicitly avoided indecipherable abstraction.

Together with our empirical findings, this episode suggests that part of the reason we value perceptually challenging images, and cubist paintings in particular, is that they offer us an opportunity to wrestle with our own perceptual processes and discover hidden patterns and order. When this process of discovery becomes too difficult appreciation is diminished; when the struggle is rewarded then it is increased. The motivation for and success of the perceivers' efforts are likely to be linked to the interplay between determinacy and ambiguity or order and disorder, which the cubist artists were highly successful at manifesting in their works.

Our findings have relevance beyond aesthetic perception and art history as they might point to a general principle of cognition: we derive pleasure from stimuli in which we can detect meaning and ambiguity at the same time. Understanding the appreciation of works of art thus offers insights into the way the human mind operates.

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