# How Does Knowledge About an Artist's Disability Change the Aesthetic Experience?

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## ABSTRACT

Based on concepts of cognitive mastering and the rewarding effect of making sense of challenging visual art (taken from a psychological model of aesthetic appreciation and aesthetic judgments of Leder et al., 2004), we hypothesised that viewers who have knowledge about an artist's disability will appreciate their ambiguous works more than viewers who do not have such knowledge. Additionally, we aimed to explore how information about the artist's disability changes the viewer's aesthetic emotions. We investigated the effect of information on the creator's visual disability on aesthetic experience in relation to three categories of visual art: photos, sculptures, and drawings. We showed digital reproductions of artworks ($N = 32$) produced by amateur artists with severe visual impairment to nonexperts in art ($N = 145$). Viewers assessed their aesthetic appreciation (understood as liking and value) and aesthetic emotions on the Self-Assessment Manikin scales for valence, arousal, dominance, origin, and significance. In accordance with our hypothesis, knowledge of the artists' disability had a positive influence on appreciation, but the effect of information was moderated by artwork category and was significant only in the case of sculptures and drawings (works created using these techniques were assessed in the preliminary study as more difficult to interpret than photos). A similar pattern of results was found for the dependent variables of arousal and significance. Therefore, the positive influence of information about the artists' disabilities on aesthetic experience is mainly revealed when the artworks are characterised by low detectability (defined as the difficulty in interpreting an artwork due to difficulty in recognizing what it depicts).

## KEYWORDS

aesthetics
stereotypes
meaning-making
appreciation
emotions

## INTRODUCTION.

### Reception of Art of Artists With Disabilities

Providing information on an artist's disability enhances aesthetic evaluation of their works (Niestorowicz, 2017; Szubielska et al., 2012; Szubielska & Fudali-Czyż, 2019). Nonexperts in the field of visual arts evaluated digital photos higher if they were told that the photographer was an individual with an intellectual disability, especially when the photo was out of focus (Szubielska et al., 2012). Sculptures of artists with deafblindness were assessed by experts in fine arts as more creative, original, innovative, and exciting when viewers knew about the artists' disabilities. Moreover, imperfections in sculptures (e.g., figure deformations) were less often deemed as intended by the creators when the viewers were given information about their disability (Niestorowicz, 2017). A pilot study in the physical context of an art gallery showed that nonexperts' subjective understanding and aesthetic appreciation of embossed drawings were higher when they were aware that persons with blindness created these drawings compared with viewers unaware of the artists' disabilities (Szubielska & Fudali-Czyż, 2019). The results of the above-mentioned studies are in line with the growing body of research which implies that art reception is a conjoint

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function of the characteristics of the artwork and its contextual information—like its title or description (Gerger & Leder, 2015; Jucker et al., 2014; Leder et al., 2006; Millis, 2001; P. A. Russell, 2003; Russell & Milne, 1997; Smith et al., 2006; Specht, 2010; Swami, 2013; Szubielska, Imbir, et al., 2019; Szubielska, Ratomska, et al., 2018) or knowledge about the artist (Cleeremans et al., 2016; Mastandrea & Crano, 2019; Smith & Newman, 2014)—which drive top-down processing.

## Aesthetic Evaluation as an Interaction Between Top-Down and Bottom-Up Processes

Zeki (1999) claimed that any assumption of a theory of aesthetic experience should not ignore knowledge of its neural basis. Based on findings from cognitive neuroscience relating to visual aesthetics, Chatterjee (2004) proposed a model of the neural underpinnings of visual aesthetics. The model assumes that visual processing includes three stages—early, intermediate, and late—where visual information is processed both hierarchically and in parallel. Early vision occurs in the striatal cortex and consists of simple coding features of visual objects (colour, shape, luminance, spatial organisation, location, and motion). Intermediate vision, occurring in the extrastriatal cortex, relies on feature grouping. Both the early and intermediate stages of aesthetic perception are preferably automatic and universal. However, the last step—later vision—is not fully automatic, but rather context-dependent. At the later stage of visual processing, aesthetic experience presumably is a derivative of the interaction between emotion valuation, sensorimotor, and meaning–knowledge neural systems (Chatterjee & Vartanian, 2016). The fact that three neural circuits are involved in aesthetic awareness may explain the context effects on human preferences, such as information about the artist. Different information about can provoke diverse and specific emotions, memories, and meanings.

The importance of top-down knowledge in art reception, especially contemporary art, is stressed in the model of aesthetic appreciation and aesthetic judgments (Leder et al., 2004; see also Leder & Nadal, 2014)—one of the influential models of aesthetic experience according to Chatterjee and Vartanian (2016). Exposure to contemporary art is a cognitively challenging situation and the viewer needs either expert knowledge or contextual information (and motivation) to successfully interpret it. The model of aesthetic appreciation and aesthetic judgment postulates that an aesthetic episode consists of five phases: perception, implicit classification, explicit classification, cognitive mastering, and evaluation (formulating aesthetic judgements and aesthetic emotions). The depth of aesthetic experience is treated as a function of the information seeking process in the later stage of cognitive mastering, which may or may not lead to an understanding of a given work. Expert knowledge, but also any hints (contextual information) about the work, facilitate the stage of cognitive mastering and the depth of understanding of the aesthetic object. For example, contextual information might help interpret artworks characterized by low detectability, that is, the ease (or difficulty) of interpreting or recognizing what they depict, or why an installation has a specific appearance (Leder & Nadal, 2014).

## The Rewarding Effect of Making Sense of Art

The influence of information about the artists' disabilities on aesthetic appreciation was initially considered as the reception of art through the stereotype of disability (Niestorowicz, 2017; Szubielska et al., 2012). In other words, it was thought that increased appreciation for the artwork resulted from the viewers' belief that individuals with disabilities are not able to create artworks which are as good as those of people without disabilities and that they should pity the disabled artists. However, a higher evaluation of the works of artists with disabilities may also result from the fact that information about the disability (similar to any other artwork-related information) helps the viewers give meaning to the artwork.

The model of aesthetic appreciation and aesthetic judgment (Leder et al., 2004) assumes that appreciating art is fostered by its understanding–especially in the case of contemporary art, which is often ambiguous. In other words, the cognitive operations involved in the meaning-making process of visual art are often self-rewarding.

Making sense of artworks might even cause the *aesthetic Aha*, an increase in aesthetic pleasure and higher appreciation of artworks (cf. Muth & Carbon, 2013; Muth et al., 2013; Muth et al., 2015, 2016; Muth et al., 2019). The experience of Aha in the aesthetic episode should cause an increase in positive emotions (cf. Shen et al., 2016). Contextual information (in the form of a curatorial description) also increases understanding and appreciation of contemporary art and causes an increase in the positive affect, feeling control, and significance of aesthetic emotions (Szubielska, Imbir, et al., 2019).

Artworks created by individuals with blindness are similar to works of contemporary artists in the sense that they are often ambiguous and difficult to interpret (e.g., Szubielska et al., 2017, Szubielska, Niestorowicz, et al., 2019; Vinter et al., 2018). However, it also depends on the technique used–drawings are less detectable (cf. Szubielska, 2018) and less liked by adult recipients (Szubielska, Pasternak, et al., 2018) than sculptures.

## The Dimensions of Emotional Reactions

The quantification of an emotional reaction is an important issue when considering aesthetic emotions (Imbir & Gołąb, 2017; Lang, 1980; Osgood et al., 1957). There are two distinct approaches to this issue. The first states that basic emotions like happiness, anger, or disgust (Ekman et al., 2013; Ekman, 1992) would describe how people react to different objects. The second claims that there should exist some mechanisms underlying the formation of emotional reactions. (Jarymowicz, 2012; Jarymowicz & Imbir, 2015; Russell, 2009). Therefore, these mechanisms should be identified, and the reactions measured. This approach is called dimensional and it started from the semantic differential introduction (Osgood et al., 1957) followed by the creation of the Self-Assessment Manikin (SAM) scale (Lang, 1980). Three dimensions of affect, namely, valence, arousal, and dominance, were initially found to account for the semantic differential variability (Osgood et al., 1957). Valence represents the pleasantness/unpleasant-

ness of emotional experiences (Moors et al., 2013) and is most typically associated with affect in the commonly accepted sense (J. A. Russell, 2003). Arousal represents the amount of bodily energy/activation available at a certain moment (Russell, 2009). Dominance is thought to represent control/power over an emotional reaction (Moors et al., 2013). Dominance is typically highly correlated with valence such that positive emotions are treated as controllable while negative emotions are treated as uncontrollable (Imbir, 2015; Imbir & Gołąb 2017; Moors et al., 2013). Recently, two supplementary dimensions, origin and subjective significance, were proposed on a theoretical basis (Imbir, 2015; Jarymowicz, 2012). They allow for including the concept of cognitively based emotional reactions (feelings) into the dimensional approach to affect, and therefore, are useful in aesthetics (Imbir & Gołąb, 2017). Numerous of studies have shown that origin and subjective significance can be successfully measured with SAM scales (Imbir, 2015, 2016a; Imbir & Gołąb, 2017) and that they influence cognition under the effect of emotions (for a review, see Imbir, 2016b).

Origin represents the engagement of automatic ("from the heart") versus reflective ("from the mind") mechanisms responsible for the formation of an emotional reaction (Jarymowicz & Imbir, 2015). On the one hand, emotions may be experiences that emerge immediately after seeing something in the environment, for example, a decomposing body of a dead animal in the forest would evoke immediate disgust in everyone seeing it. Such a feeling does not need any high-order cognition to appear. Simply put, decomposing corpses are sources of disease, therefore, we have to avoid them and automatic emotions facilitate this reaction (Damasio, 2010; Imbir, 2016b). On the other hand, emotions may be the products of deliberation, that is, seeing the decomposing body of a dead animal, we may ask ourselves (especially if we have some knowledge about biology, or if our work involves the prevention of poaching) what was the reason for the death. If it was a snare, the disgust may be replaced by anger at the poacher. Such anger is due to a cognitive analysis of the situation and it is far more complicated than the automatic anger that occurs when, for example, somebody steps on our foot on a crowded bus. Therefore, origin represents the complexity of an emotional reaction to a stimulus, starting from automatic and ending at fully cognitive-based reflective emotion. Earlier studies on art showed that experiencing art results in more automatically originated judgments of emotional reaction (Imbir & Gołąb, 2017; Szubielska, Imbir, et al., 2019). Its subjective significance is the proposition that covers the reflective form of activation and is the supplement for arousal. Arousal was found to activate relatively simple cognitive processes, but disrupt more demanding and complex processes like thinking or judging (Epstein, 2003; Imbir, 2016b). For this reason, the question emerged concerning the motivation behind complex processing. The answer was subjective significance: the feeling that the situation is important from the perspective of one's goals and plans. Such a reflection on the congruence of the situation with expectations may be a part of reflective emotions (Imbir, 2016b). Earlier studies in emotional reactions to art (Imbir & Gołąb, 2017; Szubielska, Imbir, et al., 2019) showed that a more intense judgment of subjective significance indicated a more intense aesthetic experience.

## The Current Study: Background and Hypotheses

In the psychological model of aesthetic appreciation and judgment (Leder et al., 2004; see also Leder & Nadal, 2014), the viewer's ability to give meaning to the work they are contemplating is treated as a condition for appreciating art. On the basis of this model, we predicted that providing viewers with contextual information about the artists' disabilities (i.e., that the artists are blind) should help in classifying and understanding the artworks. As a consequence of driving a satisfying cognitive mastering process, the information about an artist's visual impairment should increase aesthetic appreciation, especially for those works that are more difficult to interpret.

The aim of the current study was to test the effect of information about an artist's disability on the aesthetic experience of three categories of visual art: photos, sculptures, and drawings. We put forward a hypothesis that viewers who know about the artist's disability (blindness) will appreciate their works more than viewers who do not know about the disability—but only in the case of works that are difficult to interpret due to their form.

Additionally, we sought to explore how information about the artist's disability changes the viewers' aesthetic emotions. We assumed that the dimensions of valence, origin, dominance, arousal, and subjective significance would be susceptible to changes in the aesthetic experience during the perception of a work. We expected that information about the artist's disability would influence the aesthetic appreciation and that this effect would be moderated by the artwork's detectability. Taking affective measures into consideration, on the basis of earlier studies (Imbir & Gołąb, 2017; Szubielska, Imbir, et al., 2019), we assumed that more positively valenced, controllable, automatically originating, arousing, and subjectively significant emotional reactions would suggest that a given work is evoking more intense aesthetic emotions.

## METHOD

## Participants

A total of 145 students from various academic fields took part in the study (descriptive statistics of their age and gender are presented in Table 1). We ensured that there were no differences in the educational background between our two independent groups ($\chi^2$ = .03, $p$ = .999). In both groups, over half of the subjects (59.21%) studied psychology, while the remaining participants were students of cognitive science (14.09%), law (13.34%), and economics (13.36%). Our subjects did not have modules on visual arts in their curricula. During the study, we asked the participants several control questions regarding their knowledge of art and their direct contact with people with disabilities. None of our respondents declared participation in classes devoted to art, either at university or outside of it. There were no differences between the groups regarding the frequency of monthly visits to an art gallery ($Z$ = −1.62, $p$ = .105) and the number of people with disabilities whom

**TABLE 1.**

Descriptive Statistics for age (in years) in the Sample, Classified by Information on The Artists' Disability and Participant's Gender

| Information given | Gender | $M$ | $SD$ | $N$ |
|---|---|---|---|---|
| Yes | Female | 20.2 | 3.0 | 52 |
|  | Male | 20.9 | 1.4 | 19 |
| No | Female | 19.9 | 1.3 | 51 |
|  | Male | 20.8 | 1.4 | 23 |

the respondents know or knew personally ($Z = -1.44$, $p = .150$). There were 103 women and 42 men. The mean age in the sample was 20.3 years ($SD = 2.1$, range: 17–40 years). The participants were randomly assigned to one of two experimental groups: either with or without information about the artist's disability. These groups did not differ either in terms of age, $t(143) = -.68$, $p = .498$) or gender distribution ($\chi 2 = .22$, $p = .640$).

## Materials and Apparatus

### ARTWORKS

High-quality digital reproductions of 12 embossed drawings, eight ceramic sculptures, and 12 photos taken during an actual art exhibition (see Szubielska, 2018; all the pictures, drawings and sculptures that were presented at the exhibition were used in our study) in the Galeria Labirynt gallery in Lublin—which is one of the most notable contemporary art galleries in Poland. The topics of the photos were not varied (landscapes), while the topics of the drawings and sculptures were varied (objects and places that the artists knew well). All the images were presented on a computer screen.

In the preliminary study, 21 (10 male) adult judges (mostly students, $M_{age} = 24.57$, $SD = 4.27$ years) assessed the detectability (ease in recognizing what an artwork depicts) of each artwork on a seven-point Likert scale. A one-way analysis of variance (ANOVA) with the type of artwork (drawings, sculptures, and photos) as the within-subjects variable showed that detectability depends on the category of work, $F(2, 40) = 57.54$, $p < .001$, $\eta_p^2 = .74$. Post hoc comparisons using Bonferroni adjustments revealed that differences in detectability between all categories of works are significant (all $p$s <.001). Photos were assessed as the most detectable ($M = 5.90$, $SD = 1.31$), sculptures as less detectable ($M = 4.67$, $SD = 1.34$), and drawings as the least detectable ($M = 3.38$, $SD = 1.25$). Examples of works—whose average detectability ($M_{drawing} = 3.29$, $SD_{drawing} = 1.79$; $M$sculpture $= 4.67$, $SD_{sculpture} = 2.01$; $M_{photo} = 5.81$, $SD_{photo} = 1.57$) was the closest to that for a given type of artwork—are shown in Figure 1.

### SCALES

Aesthetic emotions were assessed using five affective scales based on the SAMs for valence, arousal, dominance, origin, and significance (see Imbir, 2015; Imbir & Gołąb, 2017; Lang, 1980). The idea behind the SAMs is to provide a visual method of assessment of the subject's current emotional feeling towards an object. Each SAM is based on

a schematic human figure expressing a certain affective state, gradually changing from the first to the last picture. The SAMs measure the distinct dimensions of affect that together enable for describing the complexity of an emotional reaction to given stimuli. The SAM measurement was found to be effective for the study of affective norms (Imbir, 2015, 2016a; Lang, 1980; Monnier & Syssau, 2014; Moors et al., 2013) in the case of both words and music (Imbir & Gołąb, 2017), allowing for repeatable measurements of the affect elicited by stimuli. In the current study, participants assessed each work using a nine-point Likert scale, where 1 represented *negative/calm/being in control/from the heart/of no consequence*, and 9 represented *positive/excited/controlling/from the mind/important*. Aesthetic appreciation was assessed on a nine-point scale of liking and value (cf. Szubielska, Imbir, et al., 2019), the ends of which were described as disliked—liked and no value—valuable, respectively.

### APPARATUS

The experimental procedure was written in the OpenSesame program version 3.2.3. Stimuli were displayed on a standard 15 in. computer screen running the Windows 7 operating system. Responses were collected by clicking a computer mouse. All analyses were carried out using the IBM SPSS 25 statistical package.
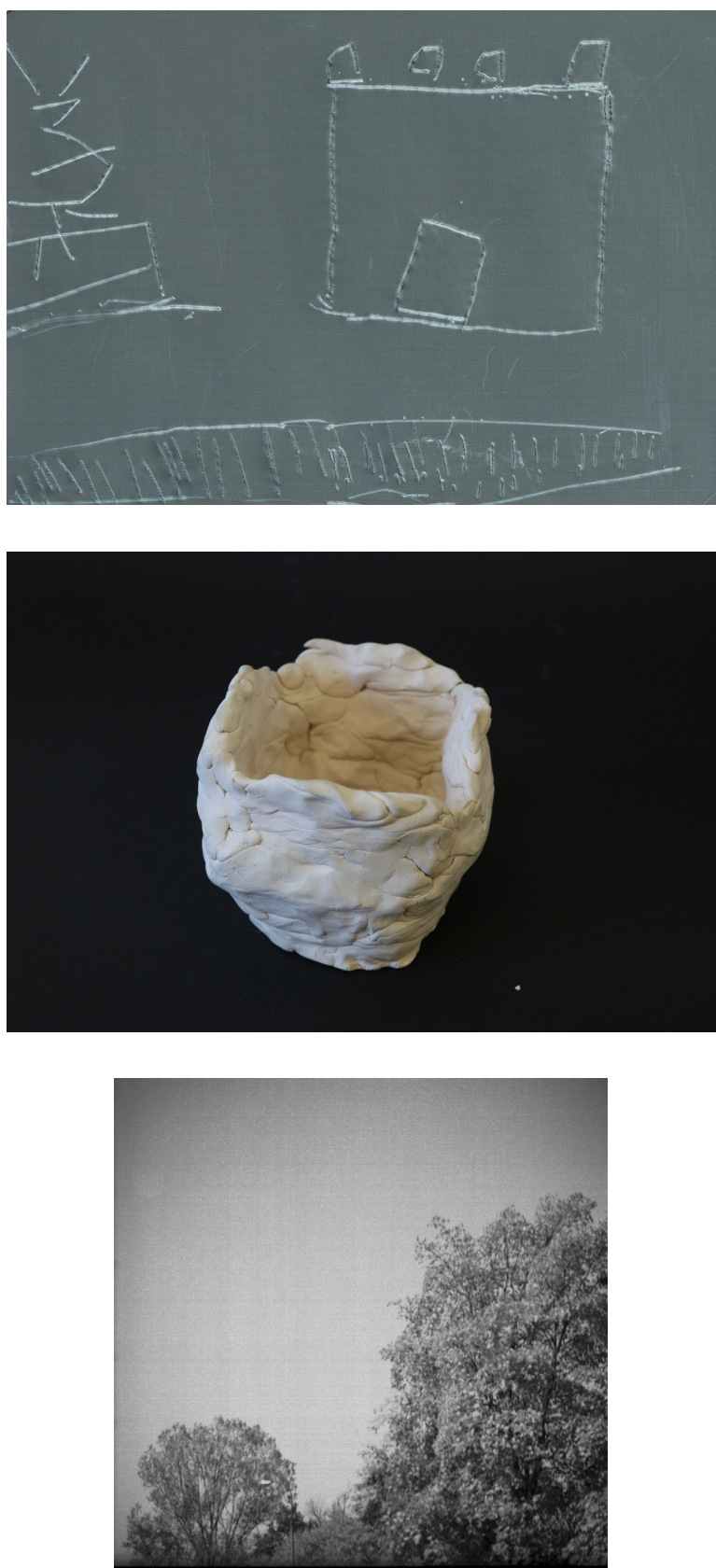
### PROCEDURE

The participants were first familiarised with the SAM and aesthetic judgment scales. Then, they underwent training in which they evaluated three artworks (different from those in the main part of the study) on a series of SAM scales. In the main part of the study, they watched 32 artworks in random order. Each artwork was presented for 10 seconds. After each exposure, the participants evaluated the artworks on the seven scales, presented in a fixed order: valence, arousal, dominance, origin, significance, liking, and value. The study took approximately 40 minutes and was conducted in a single session.

## RESULTS

We applied six 2-way mixed ANOVAs to assess the effect of information about the artist's disability (yes, no) as the between-subjects variable and artwork type (drawings, sculptures, and photos) as the within-subject variable on six aspects of aesthetic experience–valence, arousal, dominance, origin, subjective significance, and aesthetic appreciation (for inferential statistics, see Table 2). The indicator of aesthetic appreciation was calculated using the mean ratings of the liking and value scales; the reliability of the index was high (Cronbach's α = .97).

The results showed that information about the artist's disability affected three dimensions of aesthetic experience as the main effect: arousal, significance, and appreciation. However, these effects were moderated by artwork type (see Table 2). Follow-up comparisons with Bonferroni adjustments (here and throughout) revealed that the effect of information about the artist's disability was significant only in the case of drawings and sculptures, excluding photos (all $p$s > .211) because those in the information group appreciated drawings

**FIGURE 1.**

Examples of: (a) drawings (a railway station in the artist's hometown), (b) sculptures (a historic tower in the artist's hometown), and (c) photos (a landscape).

**TABLE 2.**

Effects of Information on The Artist's Disability and Artwork Type on Emotion Valence, Arousal, Dominance, Origin, and Significance and Aesthetic Appreciation: Inferential Statistics

|  | Artwork type | Information on disability | Artwork type × information on disability |
|---|---|---|---|
| Valence | $F(2, 286) = 32.94, p < .001, \eta_p^2 = .19$ | $F(1, 143) = 2.53, p = .070$ | $F(2, 286) = 1.34, p = .250$ |
| Arousal | $F(2, 286) = 4.28, p = .017, \eta_p^2 = .03$ | $F(1, 143) = 5.29, p = .023, \eta_p^2 = .04$ | $F(2, 286) = 3.18, p = .047, \eta_p^2 = .02$ |
| Dominance | $F(2, 286) = 6.40, p = .002, \eta_p^2 = .04$ | $F(1, 143) = 1.67, p = .198$ | $F(2, 286) = 1.19, p = .305$ |
| Origin | $F(2, 286) = 8.95, p < .001, \eta_p^2 = .06$ | $F(1, 143) = .65, p = .423$ | $F(2, 286) = 4.24, p = .018, \eta_p^2 = .03$ |
| Significance | $F(2, 286) = 12.10, p < .001, \eta_p^2 = .08$ | $F(1, 143) = 8.56, p = .004, \eta_p^2 = .06$ | $F(2, 286) = 5.01, p = .011, \eta_p^2 = .03$ |
| Appreciation | $F(2, 286) = 65.11, p < .001, \eta_p^2 = .31$ | $F(1, 143) = 8.78, p = .004, \eta_p^2 = .06$ | $F(2, 286) = 3.61, p = .036, \eta_p^2 = .03$ |

($p = .003$) and sculptures ($p < .001$) more, were more aroused ($p_{\text{drawings}} = .023$, $p_{\text{sculptures}} = .006$), and assessed their aesthetic emotions as more significant ($p_{\text{drawings}} = .004$, $p_{\text{sculptures}} < .001$) than those in the no information group (see Figure 2). Moreover, in contrast to photos, both drawings ($p < .001$) and sculptures ($p = .005$) were less appreciated ($M_{\text{drawings}} = 2.41$, $SE_{\text{drawings}} = .13$; $M_{\text{sculptures}} = 3.29$, $SE_{\text{sculptures}} = .14$; $M_{\text{photos}} = 3.69$, $SE_{\text{photos}} = .13$). Drawings were rated as evoking less significant feelings than the other two artwork types (both $ps < .001$; $M_{\text{drawings}} = 2.81$, $SE_{\text{drawings}} = .13$; $M_{\text{sculptures}} = 3.17$, $SE_{\text{sculptures}} = .12$; $M_{\text{photos}} = 3.33$, $SE_{\text{photos}} = .12$).

Artwork type did affect two dimensions of aesthetic experience as a main effect: valence and dominance (see Table 2). In contrast to both photos and sculptures, drawings caused more negative emotions (both $ps < .001$; $M_{\text{drawings}} = 3.14$, $SE_{\text{drawings}} = .10$; $M_{\text{sculptures}} = 3.75$, $SE_{\text{sculptures}} = .11$; $M_{\text{photos}} = 3.99$, $SE_{\text{photos}} = .11$). Drawings caused less dominance than sculptures ($p < .001$; $M_{\text{drawings}} = 3.47$, $SE_{\text{drawings}} = .10$; $M_{\text{sculptures}} = 3.79$, $SE_{\text{sculptures}} = .10$).

The ANOVA on the origin of emotions yielded a significant effect of artwork type, which was qualified by a significant interaction of artwork type and information (see Table 2). Participants having information about the artist's disability rated their feelings toward the sculptures as coming more from the heart than the mind in contrast to participants lacking this information (see Figure 2). Moreover, in contrast to photos, both drawings ($p = .001$) and sculptures ($p = .004$) were more connected with feelings coming from the head than from the heart ($M_{\text{drawings}} = 4.28$, $SE_{\text{drawings}} = .10$; $M_{\text{sculptures}} = 4.24$, $SE_{\text{sculptures}} = .10$; $M_{\text{photos}} = 3.87$, $SE_{\text{photos}} = .11$).
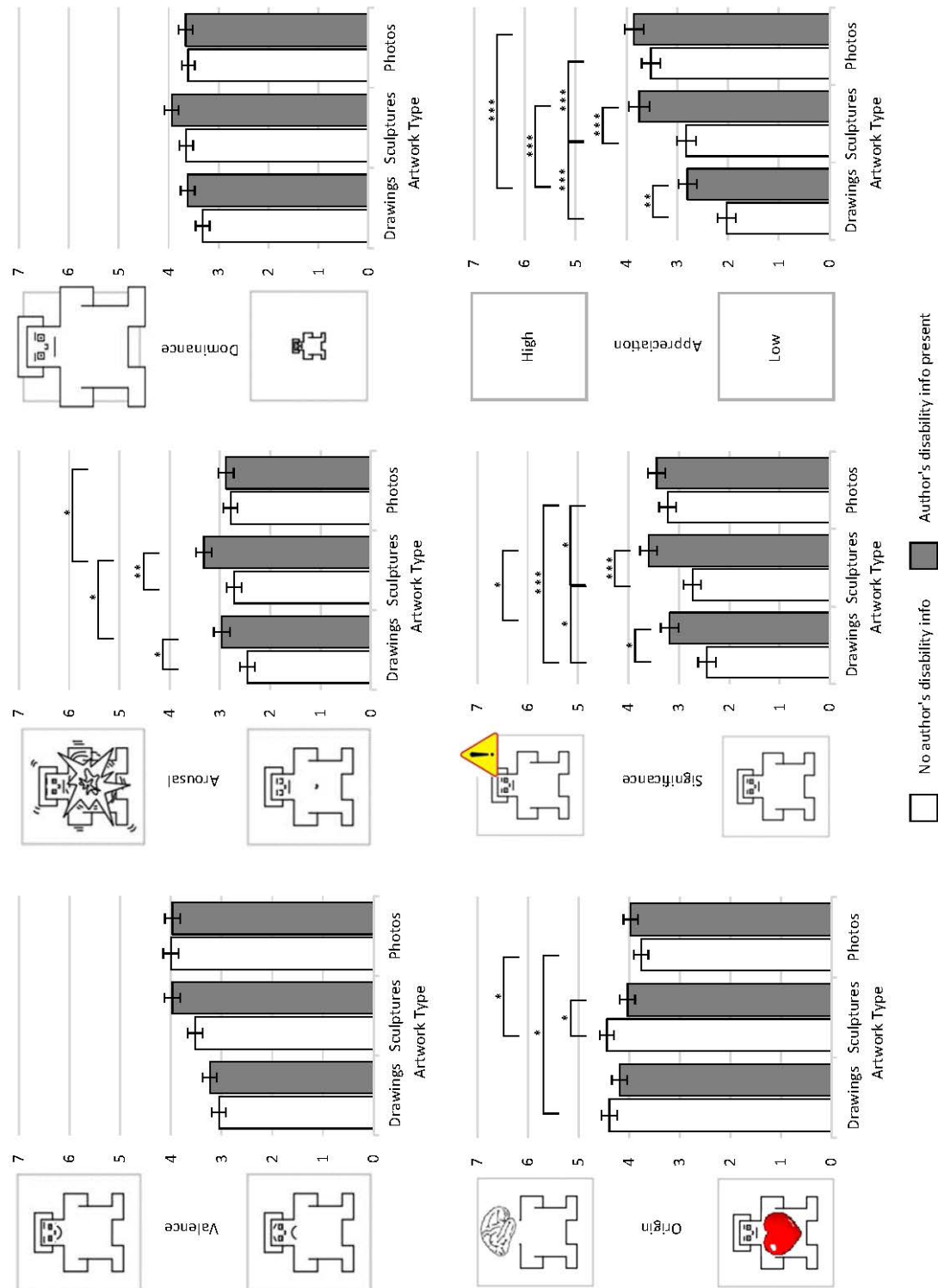
## DISCUSSION

The aim of the current study was to further explore the positive impact of information about the artist's disability on aesthetic experience that had been demonstrated in earlier studies (Niestorowicz, 2017; Szubielska et al., 2012; Szubielska & Fudali-Czyż, 2019). We tested the influence of knowledge about the artist's disability on the reception of artworks belonging to three categories of different detectability–photography, sculpture, and drawing. The preliminary study showed that the photos were the most detectable (more than sculptures and drawings). Moreover, sculptures were more detectable than drawings.

Based on a model of aesthetic appreciation and judgment (Leder et al., 2004; see also Leder & Nadal, 2014) we hypothesised that viewers informed about the artist's disability (blindness) would appreciate the artworks more than those without this information—but only in the case of artworks that are difficult to interpret due to their form. The results showed that informed viewers had a greater appreciation of artworks made in less detectable forms, namely, sculptures and drawings compared to uninformed viewers. This pattern of results was not present with respect to photos. These results were in accordance with our hypothesis.

Information about the artist's disability probably facilitates the execution of a cognitive mastering process which increases aesthetic appreciation. Hence, our results are in line with the model of aesthetic appreciation and aesthetic judgment (Leder et al., 2004; see also Leder & Nadal, 2014); and more generally, with Chatterjee's (2004; see also Chatterjee & Vartanian, 2016) model of the neural underpinnings of visual aesthetics, especially with its assumptions regarding a later stage of visual information processing. Viewing art of amateur artists with visual impairments that is difficult to interpret is a cognitively challenging situation, and knowledge of the artists' disabilities allows viewers to understand the formal imperfections of the artworks and may increase their motivation to interpret them. Moreover, in cases of sculptures and drawings, information on the artist's disability increased arousal and subjective significance of the emotional reactions, which means that information about the artist's disability only evoked more intense aesthetic emotions (cf. Imbir & Gołąb, 2017; Szubielska, Imbir, et al., 2019) towards less detectable artworks. As shown in the preliminary study, the photos were the least ambiguous category of artworks. This is probably why the viewers did not need contextual cues to interpret them (cf. Leder et al., 2004; Leder & Nadal, 2014). However, when interpreting of drawings and sculptures, they needed help to accomplish the cognitive mastering process. Therefore, the rewarding effect of making sense of artworks when informed about the artist's disability was only revealed for the less detectable artworks–sculptures and drawings.

Our results do not allow us to claim that the information about the artist's disability caused the aesthetic Aha experience (Muth & Carbon, 2013; Muth et al., 2013; Muth et al., 2015, 2016; Muth et al., 2019) towards sculptures and drawings made by blind artists–as this information did not cause the aesthetic emotions to become more positive (cf. Shen et al., 2016). Probably, knowledge about the artist's disability makes it easier to understand why the artworks have a given structure but it does not make their interpretation easier (cf. Szubielska, Niestorowicz, et al., 2019). To gain insight into the specific artwork,

**FIGURE 2.**

Valence, arousal, dominance, origin, and significance of emotions, and aesthetic appreciation as a function of information about the artist's disability for different artwork types. Error bars represent +/- 1 SE.

the viewer should discover its Gestalt and be able to interpret what the work represents (cf. Muth & Carbon, 2013; Muth et al., 2013).

An additional aim of our study was to explore how information about the artist's disability changes the aesthetic emotions evoked by their artwork. We predicted that all dimensions of affect measured in the current study would be susceptible to change. It appeared that, among classical measures, only arousal, but not valence or dominance, changed due to the information. Valence expresses the unpleasantness versus pleasantness of reactions toward stimuli (Moors et al., 2013) and studies of affective norms found it to be highly correlated with dominance (Imbir, 2015; Imbir & Gołąb, 2017; Moors et al., 2013). This high correlation may, at the same time, explain the lack of results related to both valence and dominance. Surprisingly the appreciation ratings were influenced by the knowledge about the artist's disability. The appreciation measure in the current study was composed of two assessments: lining and value, on a conceptual level, both based on or associated with valence to some extent. Probably the liking and value assessments go beyond the degree of pleasantness in interacting with the artwork. Especially value may be interpreted in terms of reflection on the importance and significance of a given artwork. This result is in line with assessments of subjective significance. Information about the artist's disability boosted the subjective significance of the viewers' experience. Congruent with arousal effects are origin scale assessments showing increasing automatic originated inclination in the information condition (but significant only towards sculptures). Epstein (2003) argued that increasing arousal should promote perception through the experiential self and thus, the emergence of automatically originated rather than reflective emotional states (c.f. Imbir, 2016b). The overall pattern of results suggests two components of aesthetic reactions. The first is purely emotional in the common sense: the viewer's experiences are rated as more automatically originated and more arousing. The second corresponds to the reflective mind as a component of the aesthetic phenomenon: the viewers' experiences are rated as more subjectively significant, with higher appraisals of aesthetic value and liking. Such a pattern of results is coherent with previous studies using aesthetic stimuli (Imbir & Gołąb, 2017; Szubielska, Imbir, et al., 2019), but contrasts with studies involving affective norms for verbal stimuli (i.e. Imbir, 2015; 2016a), where such no dissociation was observed. The context of art perception and experiencing aesthetic emotions is far more complex and multidimensional than emotional reactions to everyday stimuli (like words).

The above-mentioned effect of information about the artist's disability, which relates to the origin of emotions being more from the heart, was present with sculptures (with no significant effects in the case of other kind of artworks). This may seem counterintuitive, as contextual knowledge of an artwork should facilitate its interpretation (cf. Cleeremans et al., 2016; Gerger & Leder, 2015; Jucker et al., 2014; Leder et al., 2006; Millis, 2001; P. A. Russell, 2003; Russell & Milne, 1997; Smith et al., 2006; Specht, 2010; Swami, 2013; Szubielska, Imbir, et al., 2019; Szubielska, Ratomska, et al., 2018). However, it is not high fluency, but rather a certain level of ambiguity in the artwork (cf. Jakesch et al., 2017; Jakesch & Leder 2009) that is desirable in the aes-

thetic experience. Therefore, perhaps in the case of sculptures, which were characterised by an intermediate degree of ambiguity (between drawings and photographs), the viewers did not want to engage their thinking to better interpret them. Instead, because of the information about the artist's disability, they focused more on the distortions in the form (cf. Niestorowicz, 2017) than on the content and, consequently, experienced more automatic aesthetic emotions (cf. Damasio, 2010; Imbir, 2016b; Jarymowicz & Imbir 2015).

Summing up, information about the artist's disability facilitates the execution of the cognitive mastering process, which increases aesthetic appreciation, especially in the case of ambiguous pieces of visual art (Leder et al., 2004, Leder & Nadal, 2014).

The current study has its strengths and its limitations. We consider it a strength that the level of detectability (ease in interpreting what an artwork depicts) of artworks by artists with visual impairment was manipulated. Another strength is that we used SAM ratings to measure the emotions–which is rare in the field of empirical aesthetics (cf. Szubielska, Imbir, et al., 2019). The first limitation of our study is that it was only conducted in laboratory conditions and should not be generalised to the reception of art in the physical context of a gallery. The second limitation is that detectability was established in the preliminary study, so we are not sure to what extent the three artwork categories were ambiguous for the people who evaluated aesthetic emotions and appreciation toward the specific works.

## ETHICAL APPROVAL

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## REFERENCES

Cleeremans, A., Ginsburgh, V., Klein, O., & Noury, A. (2016). What's in a name? The effect of an artist's name on aesthetic judgments. *Empirical Studies of the Arts, 34*, 126–139. doi: 10.1177/0276237415621197

Chatterjee, A. (2004). Prospects for a cognitive neuroscience of visual aesthetics. *Bulletin of Psychology and the Arts, 4*, 56–60. doi: 10.1037/

e514602010-003

Chatterjee, A., & Vartanian, O. (2016). Neuroscience of aesthetics. *Annals of the New York Academy of Sciences, 1369*, 172–194. doi: 10.1111/nyas.13035

Damasio, A. (2010). *Self comes to mind: constructing the conscious mind.* Pantheon.

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*, 169–200. doi: 10.1080/02699939208411068

Ekman, P., Friesen, W. V., & Ellsworth, P. (2013). *Emotion in the human face: Guidelines for research and an integration of findings.* Elsevier.

Epstein, S. (2003). Cognitive-experiential self-theory. In T. Millon, & M. J. Lerner (Eds.), *Handbook of personality: Theory and research* (pp. 165–192). John Wiley & Sons, Inc.

Gerger, G., & Leder, H. (2015). Titles change the aesthetic appreciations of paintings. *Frontiers in Human Neuroscience, 9*, 464. doi: 10.3389/fnhum.2015.00464

Imbir, K. (2015). Affective norms for 1,586 polish words (ANPW): Duality-of-mind approach. *Behavior Research Methods, 47*, 860–870. doi:10.3758/s13428-014-0509-4

Imbir, K. (2016a). Affective norms for 4900 Polish words reload (ANPW_R): Assessments for valence, arousal, dominance, origin, significance, concreteness, imageability and, age of acquisition. *Frontiers in Psychology, 7*, 1081. doi: 10.3389/fpsyg.2016.01081

Imbir, K. (2016b). From heart to mind and back again. A duality of emotion overview on emotion-cognition interactions. *New Ideas in Psychology, 43*, 39–49. doi: 10.1016/j.newideapsych.2016.04.001

Imbir, K., & Gołąb, M. (2017). Affective reactions to music: Norms for 120 excerpts of modern and classical music. *Psychology of Music, 45*, 432–449. doi: 10.1177/0305735616671587

Jakesch, M., & Leder, H. (2009). Finding meaning in art: Preferred levels of ambiguity in art appreciation. *Quarterly Journal of Experimental Psychology, 62*, 2105–2112. doi: 10.1080/17470210903038974

Jakesch, M., Goller, J., & Leder, H. (2017). Positive fEMG patterns with ambiguity in paintings. *Frontiers in Psychology, 8*, 785. doi: 10.3389/fpsyg.2017.00785

Jarymowicz, M. (2012). Understanding human emotions. *Journal of Russian and East European Psychology, 50*, 9–25. doi: 10.2753/RPO1061-0405500301

Jarymowicz, M., & Imbir, K. (2015). Toward a human emotions taxonomy (based on their automatic vs. reflective origin). *Emotion Review, 7*, 183–188. doi: 10.1177/1754073914555923

Jucker, J.-L., Barrett, J. L., & Wlodarski, R. (2014). "I just don't get it": Perceived artists' intentions affect art evaluations. *Empirical Studies of the Arts, 32*, 149–182. doi: 10.2190/EM.32.2.c

Lang, P. J. (1980). Behavioral treatment and bio-behavioral assessment: Computer aplications. In J. B. Sidowski, J. H. Johnson, & T. A. Williams (Eds.), *Technology in mental health care delivery systems* (pp. 119–137). Ablex. Retrieved from http://ps.psychiatryonline.org/article.aspx?articleid=67156

Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology, 95*, 489–508. doi: 10.1348/0007126042369811

Leder, H., Carbon, C.-C., & Ripsas, A.-L. (2006). Entitling art: Influence of title information on understanding and appreciation of paintings. *Acta Psychologica, 121*, 176–198. doi: 10.1016/j.actpsy.2005.08.005

Leder, H., & Nadal, M. (2014). Ten years of a model of aesthetic appreciation and aesthetic judgments: The aesthetic episode–Developments and challenges in empirical aesthetics. *British Journal of Psychology, 105*, 443–464. doi: 10.1111/bjop.12084

Mastandrea, S., & Crano, W. D. (2019). Peripheral factors affecting the evaluation of artworks. *Empirical Studies of the Arts, 37*, 82–91. doi: 10.1177/0276237418790916

Millis, K. (2001). Making meaning brings pleasure: The influence of titles on aesthetic experiences. *Emotion, 1*, 320–329. doi: 10.1037/1528-3542.1.3.320

Monnier, C., & Syssau, A. (2014). Affective norms for french words (FAN). *Behavior Research Methods, 46*, 1128–1137. doi: 10.3758/s13428-013-0431-1

Moors, A., De Houwer, J., Hermans, D., Wanmaker, S., van Schie, K., Van Harmelen, A.-L., . . . & Brysbaert, M. (2013). Norms of valence, arousal, dominance, and age of acquisition for 4,300 Dutch words. *Behavior Research Methods, 45*, 169–177. doi: 10.3758/s13428-012-0243-8

Muth, C., & Carbon, C.-C. (2013). The Aesthetic Aha: On the pleasure of having insights into Gestalt. *Acta Psychologica 144*, 25–30. doi: 10.1016/j.actpsy.2013.05.001

Muth, C., Pepperell, R., & Carbon, C.-C. (2013). Give me Gestalt! Preference for cubist artworks revealing high detectability of objects. *Leonardo, 46*, 488–489. doi: 10.1162/LEON_a_00649

Muth, C., Raab, M. H., & Carbon, C.-C. (2015). The stream of experience when watching artistic movies. Dynamic aesthetic effects revealed by the Continuous Evaluation Procedure (CEP). *Frontiers in Psychology, 6*, 365. doi: 10.3389/fpsyg.2015.00365

Muth, C., Raab, M. H., & Carbon, C.-C. (2016). Semantic stability is more pleasurable in unstable episodic contexts. On the relevance of perceptual challenge in art appreciation. *Frontiers in Human Neuroscience, 10*, 43. doi: 10.3389/fnhum.2016.00043

Muth, C., Ebert, S., Marković, S., & Carbon, C.-C. (2019). "Aha"ptics: Enjoying an aesthetic Aha during haptic exploration. *Perception, 48*, 3–25. doi: 10.1177/0301006618818014

Niestorowicz, E. (2017). *The world in the mind and sculpture of deaf-blind people.* Cambridge Scholars Publishing.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning.* University of Illinois Press.

Russell, P. A., & Milne, S. (1997). Meaningfulness and the hedonic value of paintings: Effects of titles. *Empirical Studies of the Arts, 15*, 61–73. doi: 10.2190/EHT3-HWVM-52CB-8QHJ

Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*, 145–172. doi: 10.1037/0033-295X.110.1.145

Russell, P. A. (2003). Effort after meaning and the hedonic value of paintings. *British Journal of Psychology, 94*, 99–110. doi: 10.1348/000712603762842138

Russell, J. A. (2009). Emotion, core affect, and psychologi-

cal construction. *Cognition & Emotion, 23*, 1259–1283. doi: 10.1080/02699930902809375

Shen, W., Yuan, Y., Liu, C., & Luo, J. (2016). In search of the 'Aha!' experience: Elucidating the emotionality of insight problem-solving. *British Journal of Psychology, 107*, 281–298. doi: 10.1111/bjop.12142

Smith, L. F., Bousquet, S. G., Chang, G., & Smith, J. K. (2006). Effects of time and information on perception of art. E*mpirical Studies of the Arts, 24*, 229–242. doi: 10.2190/DJM0-QBDW-03V7-BLRM

Smith, R. K., & Newman, G. E. (2014). When multiple creators are worse than one: The bias toward single authors in the evaluation of art. *Psychology of Aesthetics, Creativity, and the Arts, 8*, 303–310. doi: 10.1037/a0036928

Specht, S. M. (2010). Artists' statements can influence perceptions of artwork. *Empirical Studies of the Arts, 28*, 193–206. doi: 10.2190/EM.28.2.e

Swami, V. (2013). Context matters: Investigating the impact of contextual information on aesthetic appreciation of paintings by Max Ernst and Pablo Picasso. *Psychology of Aesthetics, Creativity, and the Arts, 7*, 285–295. doi: 10.1037/a0030965

Szubielska, M., Bałaj, B., & Fudali-Czyż, A. (2012). Estetyczny odbiór fotografii poprzez stereotyp umysłowej niepełnosprawności twórcy [Aesthetic evaluation of photographs through the stereotype of author's mental disability]. *Psychologia Społeczna, 7*, 372–378.

Szubielska, M., & Fudali-Czyż, A. (2019). If I knew they were the expression of the creativity of people with blindness, I would rate them higher – Bias in evaluating the work of people with blindness. *Creativity: Theories-Research-Applications, 6,* 182–197. doi: 10.1515/ctra-2019-0011

Szubielska, M., Niestorowicz, E., & Marek, B. (2017). Drawing without eyesight. Evidence from congenitally blind learners. *Roczniki Psychologiczne, 19*, 681–700. doi: 10.18290/rpsych.2016.19.4-2en

Szubielska, M. (2018). People with sight impairment in the world of visual arts: Does it make any sense? *Disability & Society, 33*, 1533–1538. doi: 10.1080/09687599.2018.1480261

Szubielska, M., Pasternak, K., Wójtowicz, M., Szymańska, A. (2018). Evaluation of art of visually impaired people by children and adults. *Interdyscyplinarne Konteksty Pedagogiki Specjalnej, 22*, 161–177.

Szubielska, M., Ratomska, M., Wójtowicz, M., & Szymańska, A. (2018). Effect of educational workshops in an art gallery on children's evaluation and interpretation of contemporary art. *Empirical Studies of the Arts*, 0276237418790917

Szubielska, M., Imbir, K., & Szymańska, A. (2019). The influence of the physical context and knowledge of artworks on the aesthetic experience of interactive installations. *Current Psychology*, 1–14. doi: 10.1007/s12144-019-00322-w

Szubielska, M., Niestorowicz, E., & Marek, B. (2019). The relevance of object size to the recognizability of drawings by individuals with congenital blindness. *Journal of Visual Impairment & Blindness, 113*, 295–310. doi: 10.1177/0145482X19860015

Vinter, A., Bonin, P., & Morgan, P. (2018). The severity of the visual impairment and practice matter for drawing ability in children. *Research in Developmental Disabilities, 78*, 15–26. doi: 10.1016/j.ridd.2018.04.027

Zeki, S. (1999). Art and the brain. *Journal of Consciousness Studies, 6*, 76-96.