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Karolina Pietras[*]
Karolina Czernecka[*]

Art training and personality traits as predictors of aesthetic experience of different art styles among Polish students

***Abstract**: Personality, demographics and art experience proved to play an important role in reactions to visual art. Nevertheless, research attempts that take into account all those factors when determining predictors of aesthetic responses to different artistic styles are quite rare. The study presented here investigates predictors of aesthetic experience across figurative, abstract and contemporary paintings in individuals with varying expertise.*
Students enrolled in Sport, Humanities and the Arts programmes (N = 181) declared their art exposure and filled out personality measures (Big Five, alexithymia, need for closure). Next participants evaluated three paintings using a tool constructed by the authors to track various dimensions of aesthetic reactions (i.e. negative/positive affective responses, self-references, explicit knowledge and perceived mastery of the artwork).
Reactions to figurative painting depended mostly on formal knowledge about arts, not personality traits. Aesthetic perception of abstract art rely not only on art exposure, but also on some individual characteristics (openness to experience, tolerance of ambiguity and ability to identify one's own emotions and track their source). Reception of contemporary art was predicted mostly by art exposure variables and in the case of negative emotionality by ability to identify one's own emotions and track their source.
Both formal art education and art experience were stronger predictors of aesthetic responses than personality traits, for all art styles and dimensions of aesthetic experience. Personality predictors were significant mostly for abstract art. Personal interest in the arts seems to be as good predictor of aesthetic reactions as formal expertise.

***Keywords**: individual differences, expertise, aesthetic experience, art training, art styles*

Introduction

If the beauty is in the eye of the beholder, viewers' characteristics are crucial to understand aesthetic reactions. Personality, demographics, and art experience proved to play an important role in shaping aesthetic preferences (see, e.g., Furnham & Walker, 2001; Chamorro-Premuzic, Furnham, & Reimers, 2007). But art appreciation does not only depend on the observer's features but also on features of the artwork. Apart from its content, different artistic styles present a variety of formal solutions that affect the viewers' reactions, challenging tastes and expectations. Visual art elicits different types of responses, from automatic perceptual analysis to deliberate evaluation. Art can provoke a wide range of emotions, trigger personal memories or be given a variety of interpretations.

However, reactions to art are too often measured as a simple preference or a degree of "liking" (e.g., Furnham & Walker, 2001; Chamorro-Premuzic et al., 2009). There is clear evidence that art can elicit far wider range of emotions than simple pleasure (see e.g., Cooper & Silvia, 2009; Silvia, 2010) and a far more extreme. When coupled with multidimensionality of aesthetic experience, it becomes clear that the aesthetic experience itself is impoverished with such operationalization. Ignoring the complexity of personal experiences of art may limit its empirical accessibility and, as a consequence, our understanding of the nature of associations between personality traits and aesthetic experiences.

Personality and aesthetic experience

Unquestionably, openness to experience from the Big Five personality model is a well-known predictor of positive reactions to art in general (e.g., Furnham & Walker, 2001; Chamorro-Premuzic et al., 2009). Openness corre-

[*] **Pedagogical University of Cracow**

Corresponding author: Karolina Czernecka, e-mail: czernecka.karolina@gmail.com

lates with preferences for different types of art (McManus & Furnham, 2006), being involved in various art-related activities (McCrae & Costa, 1997), visiting museums and reading about the history of art (e.g., Chamorro-Premuzic et al., 2007) as well as with art knowledge (Silvia, 2007). The other personality traits within the model are weaker predictors, however studies show that extraversion is positively related to awareness of aesthetic objects (Alkan et al., 2007), agreeableness positively correlates with feeling of being touched by art (Silvia & Nusbaum 2011), while conscientiousness determines less interests in art in general (Chamorro-Premuzic et al., 2007; McManus & Furnham, 2006). Finally, neuroticism has been linked to the preference of emotional tone of the artwork, showing attraction to the negative (Furnham & Walker, 2001).

The studies mentioned above show relations between basic personality traits and general reaction to art. However, individual differences could also be predicting preferences of particular styles. Studies conducted so far reveal that openness to experience correlates positively with preferences for mostly non-traditional art styles as cubism, pop-art and abstract art (e.g., Rawlings, Barrantes-Vidal & Furnham, 2000; Feist & Brady, 2004; Chamorro-Premuzic et al., 2007), whereas agreeableness and conscientiousness correlate with liking of more traditional forms of art (Furnham & Avison, 1997; Chamorro-Premuzic et al., 2007). Neuroticism correlates positively with preferences for abstract and pop-art, while extraversion predicts the preference for representational and surrealistic art (Furnham & Walker, 2001; Furnham & Avison, 1997).

Another promising construct recently studied in the context of art preferences is the need for cognitive closure (NFC), which is defined as a desire for predictability, preference for order and structure, discomfort with ambiguity, decisiveness, and close-mindedness (e.g. Webster & Kruglansky, 1994). As NFC is negatively related to openness to experience (Neuberg & Newsom, 1993; Landau et al., 2004), one can expect art preferences that are exactly opposite to those of open individuals. Results of the studies remain consistent with this presumption, showing that individuals high on NFC like open-ended, abstract art significantly less (Wiersema et al., 2012).

The relationships between individual traits and aesthetic preferences in different art domains (such as paintings, architecture, and music) seem to be more complex than previously thought (see Cleridou, 2014). Moreover, it should be noted that classification methodology of artistic styles influences the results, showing that subjective classification allows for stronger preference predictions than external taxonomy based on expert evaluations (Chamorro-Premuzic et al., 2010). This suggests that further studies are needed to determine the role individual characteristics play in forming various dimensions of aesthetic reactions to visual art.

Art training and expertise

Expertise has a significant influence on aesthetic experience, when it comes to both liking and understanding it (e.g., Housen, 2001; Leder, Belke, Oeberst, & Augustin, 2004; Leder, Gerger, Dressler, & Schabmann, 2012). Experts are interested not only in the artwork but also in details concerning its production, socio-cultural context of its interpretation, etc. (e.g., Housen, 2001). Experts' experience is characterized by decoupling evaluation from evoked emotions, which means that advanced perceivers can appreciate and judge the work regardless of their personal preferences or current affective states (Leder et al., 2004; 2012). Moreover, experienced viewers seem to adopt analytic strategies that refer more to the art itself than their own experiences (Cupchik & Laszlo, 1992). Finally, as naïve viewers concentrate more on what is depicted rather than how the painting was done, it comes as no surprise that they prefer figurative over abstract art unless additional information about the piece is given to guide their interpretation (Belke, Leder, & Augustin, 2006).

Present Study

Our main aim was to further studies on the influence of personal characteristics on aesthetic judgments of visual artwork. We tried to expand on and overcome the limitations of previous work by, first, using an inventory that captures a broader spectrum of reactions to visual art, including affective reactions (both positive and negative), self-references as well as explicit knowledge and perceived mastery of the artwork. Breaking down the general aesthetic reaction into five dimensions allowed us to trace the specific relations between particular *dimensions* of the aesthetic experience of different styles and selected individual differences. Tracing if and how certain personality traits and educational choices shape and modify various aspects of art perception is important, and scarcely investigated. Second, we used figurative, abstract and contemporary paintings as stimuli. Therefore we were able to make inferences about universality *vs.* specificity of differential predictors across different art styles. Contemporary art was of special interest, as studies rarely utilize paintings created during the last decade. Although the number of stimuli used was limited and therefore cannot be accounted for all visual art styles, we expected the findings to be a starting point for further discussion and empirical investigation. Third, as personal experience with art seems to change the criteria used to assess artworks, we have carefully chosen the sample to represent both naïve participants and individuals with professional knowledge. Finally, besides personality traits we also measured self-declared art knowledge and art participation, which enabled us to estimate the influence of both types of factors on aesthetic perception independently.

For the personality predictors we have chosen the Big Five personality traits, need for cognitive closure and alexithymia (see below). As described above, both the Big Five traits as well as need for closure have already been identified as predictors of artistic preferences in general. Our goal was to expand on the previous results and

verify their role for all separate dimensions of aesthetic experience. We also decided to include one more trait that has not been studied yet in the context of art perception and judgement – alexithymia, a multi-faceted, normally distributed personality characteristic defined by difficulties in identifying and describing one's affective states, impoverished fantasy life and concrete cognitive style (e.g. Vorst & Bermond, 2001; Taylor & Bagby, 2012). When confronted with emotional stimuli, alexithymics are confused over the true meaning of their reaction. Art, on the other hand, is so engaging for us mainly because of its capability to evoke emotions. Results of few studies conducted so far support our claim – alexithymics prefer paintings that are emotionally neutral and rate affective ones as less clear, interesting or aesthetically pleasant than non-alexithymics (Giannini, Tizzani, Baralla, & Gurrieri, 2013). Second, alexithymia's cognitive dimensions might also be linked to aesthetic perception. The paucity of fantasy life and externally oriented style of thinking, i.e., focusing on irrelevant details instead of meaning, might pose difficulties when alexithymics try to find various interpretations or unobvious meanings of artworks. Taking this all into account, it is reasonable to expect a significant relationship between the degree of alexithymic features and emotional reactions to art.

We hypothesized, first, that (1) art experience is a stronger predictor of aesthetic reactions than personality traits and the influence will be most prominent in case of contemporary art. Its typical features, such as ambiguity or layering (see Gude, 2004) make it more cognitively demanding and dependent on explicit expertise. Art exposure provides the viewers with a conceptual framework, enabling successful interpretation of the work. Second, we suspected that (2) each dimension of aesthetic reaction will have its own unique set of predictors. Affective responses would be linked to traits such as neuroticism, extraversion, and alexithymia while evaluative responses, such as judgement of artistic quality, should be strongly predicted by art training and expertise variables. Third and finally, we expected that (3) predictors of aesthetic reactions would depend on the type of stimuli used. Abstract and contemporary pieces enable alternative interpretations, often non-literal with deep, sometimes even disturbing affective dimension. Therefore, such works might pose difficulties in interpretation for individuals low on openness and high on need for closure and alexithymia.

Method

Participants

181 volunteers took part in the study, 74 male and 107 female ($M_{age} = 23.68$; $SD_{age} = 1.97$), recruited from groups of Polish university students of different departments: Sports (N = 85), Humanities (N = 46) and Arts (N = 50) from Pedagogical University of Cracow and University of Physical Education in Cracow, Poland. Different departments were deliberately chosen to differentiate participants' level of formal art expertise. While Sports curriculum does not include any courses on art, students from Humanities department have an opportunity to pursue some basic courses on history of art and art criticism. Finally, Arts department provides student with complex and rigorous study of the arts including art evaluation as well as art production. As educational choices do not necessarily correlate with art interests, additional data concerning individual art exposure for each participant was recorded. The questions covered different areas of art experience such as creative activity, participation in artistic events related to visual art (such as art exhibitions) and declared knowledge on visual art.

Measures

The Aesthetic Reception Survey (ARS)

The inventory by Hager, Hagemann, Danner and Schankin (2012), was devised by the authors in a series of separate experiments (Authors, in preparation). It consists of 20 items, measuring 5 different dimensions of aesthetic experience in response to a visual stimulus: *Negative emotionality* and *Positive emotionality* (unpleasant and pleasant affective responses evoked by the artwork; e.g., "This painting relaxes me", "I get annoyed when I look at this painting"), *Self-reference* (feeling of personal connection through memories and associations with the artwork; e.g., "I can associate this artwork with specific events in my life"), *Artistic quality* (perceived creativity of the artist and his mastery; e.g., "The quality of the painting amazes me") and *Expertise* (explicit knowledge about the work and its historical context; e.g., "I know what specific art style this painting represents"). Using 5-point Likert scale, participants had to indicate whether they agree or not with each statement. The five-factors structure of the inventory was established in a separate pilot study on two samples (N = 218, N = 181; exploratory and confirmatory factor analyses). The pool of items was narrowed down on the basis of highest factor loading and lowest cross-correlations from the initial pool of 106 statements). All the subscales proved to have satisfactory Cronbach's alphas, ranging from 0.79 to 0.91.

The Bermond-Vorst Alexithymia Questionnaire

The Bermond-Vorst Alexithymia Questionnaire (BVAQ; Bermond & Vorst, 1994; Vorst & Bermond, 2001; Polish adaptation by Maruszewski & Zdankiewicz-Ścigała, 1998). This tool, measuring alexithymia level, consists of 40 statements in five subscales: *Verbalising* (the ability to describe and talk about one's feelings), *Identifying* (the ability to recognize one's affective states), *Emotionalizing* (emotional reactivity to external events), *Fantasizing* (the tendency to day-dream and make use of one's visual imagination) and *Analyzing* (the tendency to be focused on irrelevant aspects of emotional events). The overall alexithymia score is a sum of scores in subscales. Spearmann-Brown coefficient for the whole inventory equals 0.84.

The Need for Cognitive Closure Scale

The Need for Cognitive Closure Scale, short version (NCCS; Kossowska, Hanusz & Trejtowicz, 2012). This inventory is a short version of Polish Need for Cognitive Closure Scale, prepared and tested by Kossowska (2003). It consists of 16 items, measuring five facets of the need for closure: (Preference of) *Structure*, *Predictability*, *Decisiveness,* (Intolerance of) *Ambiguity* and *Close-mindedness.* Cronbach's alphas for the subscales of the short version are moderate to high, ranging from 0.52 to 0.80.

The NEO Five Factors Inventory

The NEO Five Factors Inventory (NEO-FFI, Costa & McCrae; Polish adaptation by Zawadzki, Strelau, Szczepaniak & Śliwińska, 1998). The questionnaire consists of 60 items, measuring five basic personality traits: *Neuroticism*, *Extraversion*, *Openness to experience*, *Agreeableness* and *Conscientiousness*. Cronbach's alphas range from 0.68 to 0.86, depending on the subscale.

Visual stimuli

Three paintings were chosen for the study, representing three types of art: figurative (Degas, 1885, *Woman Bathing in a Shallow Tub*), abstract (Braques, 1912, *Man with a Guitar*) and contemporary (Saville, 2008, *Bangface*). We selected the works by foreign artists to reduce familiarity effect clouding participants' scores. The choice was based on separate experiments (Authors, in preparation), in which a bigger set of stimuli was used (three figurative, three abstract and four contemporary). The first two paintings were successfully used before in studies with similar aims to ours (see Hager et al., 2012), so we decided to implement the same procedure using limited number of stimuli. The third painting was selected by the authors from a larger set of contemporary visual artwork used in the former study. This addition was expected to broaden the range of aesthetic reactions (*Positive/Negative emotionality*, *Self-reference*, *Expertise* etc.) to the paintings. It must be pointed out that contemporary art in particular shows enormous variety of individual styles. Consequently, a single stimulus cannot be a representative of the whole genre, however the characteristic of Saville's *Bangface*, such as layering, ambiguity (which is claimed to be typical for the contemporaneity in art; see Gude, 2004) made the choice adequate for preliminary studies.

Procedure

Students were tested in small groups. Participants completed personality questionnaires in fixed order: NEO-FFI, BVAQ and NCCS. Then digital versions of the paintings were displayed on a white screen, one at a time, using multimedia projector (1024 × 768 resolution, full-screen). Visibility conditions and room's lightning were adjusted to provide maximum comfort of viewing. The participants were instructed to just look at the painting for approximately 30 seconds and then complete the ARS for this stimulus. The order of presentation was fixed: Degas, Braques and Saville.

Data Analysis

Data of all 181 participants was included in further analyses, carried out using SPSS software. Apart from descriptive statistics, we chose to use hierarchical regression to test our hypotheses. As our study design contained varied set of predictors that potentially differed in their predictive power (e.g. *education and expertise vs. personality traits*), it suits our needs the best. Two sets of regression analyses were conducted, with five dimensions of aesthetic reactions as dependent variables, calculated for the aggregated scores of the three paintings together and then separately for each style of painting i.e. figurative, abstract, contemporary. In all cases, participant's gender was entered at step 1, educational background at step 2, self-declared art knowledge, art creation and art participation[1] at step 3 and all personality predictors (NEO-FFI, BVAQ and NCCS) at final step 4 of regression analyses.

Results

Art exposure, art experience and personality characteristics

Out of the whole group, 45% declared active involvement in art creation and, as it can be expected, Art students were most active – 94% were regularly involved in activities such as graphic design, animation, painting, drawing, cloths design etc., beyond requirements of their curriculum. In Sports and Humanities groups the percentages were smaller – 27% and 26%, respectively, saw themselves as art creators. Although, for those who did create, the declared types of activities were more varied than in the Arts group, ranging beyond visual arts (e.g., creative programming, music composition, writing, poetry, dancing). Further differences between the three groups were observed both for art exposure and self-declared art knowledge (irrespective of educational background). On average, Sports students took part in artistic events once a year, Humanities students – once every six months and Arts students – once a month. Finally, on 4-point scale of self-assessed knowledge of the visual arts, with 1 being the lowest and 4 the highest score, Art students rated themselves higher than both other groups (2.60 on average *vs.* 1.48 for Sports and 1.56 for Humanities students). These results show diversity among our participants in terms of self-declared interest and knowledge about visual arts.

Means, minimal/maximal values and standard deviations for all measured personality traits can be found in Table 1. NCCS and BVAQ inventories do not have norms for Polish population, but for standarized NEO-FFI measures our sample proved to have average scores in all subscales when compared to age-appropriate norms (5th–6th sten scores).

[1] Self-declared art knowledge and experience were entered into equations as separate predictors due to weak-to-moderate correlations, preventing us from combining them into a single measure.

Table 1. Descriptive statistics for personality measures

		Mean	Minimum	Maximum	Standard deviation
NEO-FFI	Neuroticism	21.95	3.00	42.00	7.86
	Extraversion	29.18	10.00	42.00	6.12
	Openness to experience	27.87	12.00	44.00	6.86
	Agreeableness	28.63	12.00	42.00	5.53
	Conscientiousness	29.63	9.00	47.00	7.37
BVAQ	Verbalisation	27.03	13.00	40.00	5.00
	Identifying	25.98	17.00	35.00	3.76
	Emotionalizing	24.33	10.00	33.00	3.78
	Analyzing	25.81	14.00	35.00	3.91
	Fantasizing	25.49	14.00	35.00	4.59
NCCS	Structure	11.63	3.00	18.00	3.05
	Predictability	10.40	3.00	18.00	3.04
	Ambiguity	13.16	7.00	18.00	2.53
	Close-mindedness	7.81	3.00	14.00	2.42
	Decisiveness	10.12	3.00	18.00	3.26

Regression analyses – general

Five separate hierarchical regression analyses were performed, with five subscales of the ARS inventory as criterions. Following Hager et al. (2012), we averaged the scores for each item across all stimuli for every participant. Table 2 contains detailed results for all regression analyses. Only significant predictors are presented; the number in brackets represents the step number.

First, in case of all five regression analyses, entering personality measures as predictors did not produce a significant change in variability explained by the model. When single traits were taken into consideration, only openness to experience and Identifying subscale of alexithymia questionnaire were significant predictors of two (out of five) dimensions of aesthetic judgement (as measured by ARS). Educational background, self-declared knowledge and interest in the arts predicted aesthetic reactions in all five dimensions. When both educational (formal and self-declared) and personality variables were significant predictors of a dimension of aesthetic reaction, the former influenced the dependent variable stronger that the latter. Second, when all chosen variables were taken into account, the percentage of explained variance in art perception measures is different for each dimension. The models predict scores on Expertise subscale of the ARS the best (approx. 60% of explained variance), but only approx. 5% of variance in case of Negative emotionality. Third and final, being formally trained in making aesthetic judgements is just as important as exploring the artistic domain on one's own, as an active participant or creator, irrespective of educational background – both factors seem to predict reactions to art independently.

Regression analyses – artistic styles

A separate sets of regression analyses were conducted for each dimension of aesthetic reaction in the context of a specific style of paining, i.e. figurative, abstract, contemporary.

First, for the figurative painting educational background (i.e., being enrolled in Sports or Arts academic track) proved to be the most consisted predictor of all aspects of aesthetic judgement, influencing Expertise scores most profoundly ($\beta = .35$) and being the only significant predictor of Self-reference ($\beta = .19$), Positive emotionality ($\beta = .31$) and Negative emotionality ($\beta = .22$). Second, self-declared interests in the arts proved to be just as important as formal academic knowledge. Art creation predicted perceived Artistic quality scores ($\beta = .24$) while participation in art-related events – Expertise scores ($\beta = .22$). Third and finally, entering personality measures into the analyses did not produce a significant change in the amount of variance explained by regression models. Nevertheless, two of the Big 5 model traits were found to be significant predictors of Artistic quality solely: Agreeableness ($\beta = .18$) and Conscientiousness ($\beta = .25$). To sum up, the results show that in case of figurative painting scores on all five dimensions of art reception depend on mostly formal knowledge about arts, as expected.

Second batch of regression analyses were performed for aesthetic judgement of nonfigurative painting. Again, formal education was the most stable predictor for all five subscales of the ARS inventory, the strongest for Artistic quality ($\beta = .33$) and Expertise factors ($\beta = .42$). Self-declared art knowledge was positively related with Self-reference scores ($\beta = .19$) and negatively with

Table 2. Predictors of five dimensions of aesthetic experience – details of regression analyses

	Artistic quality		Self-reference		Expertise		Positive emotionality		Negative emotionality	
Step 1	R^2_{adj} = .026 F(1, 177) = 5.83*		R^2_{adj} = .006 F(1, 177) = 2.11		R^2_{adj} = .061 F(1, 177) = 12.60***		R^2_{adj} = –.006 F(1, 177) = 0.00		R^2_{adj} = –.009 F(1, 177) = 2.66	
Step 2	R^2_{adj} = .067 F(2, 175) = 4.87**		R^2_{adj} = .064 F(2, 175) = 6.46**		R^2_{adj} = .408 F(2, 175) = 52.81***		R^2_{adj} = .083 F(2, 175) = 9.55***		R^2_{adj} = .067 F(2, 175) = 6.51**	
Step 3	R^2_{adj} = .154 F(4, 171) = 5.51***		R^2_{adj} = .110 F(4, 171) = 3.24*		R^2_{adj} = .604 F(5, 171) = 22.74***		R^2_{adj} = .160 F(4, 171) = 5.00**		R^2_{adj} = .051 F(4, 171) = 0.26	
Step 4	R^2_{adj} = .186 F(15, 156) = 1.44		R^2_{adj} = .114 F(15, 156) = 1.06*		R^2_{adj} = .586 F(15, 156) = 0.50		R^2_{adj} = .137 F(15, 156) = 0.70		R^2_{adj} = .081 F(15, 156) = 1.36	
	B	***T***		***β***	***t***		***β***	***t***	***β***	***t***	***β***	***t***
Gender (1)	–.179	–2.41*	Sports (2)	.203	2.28*	Gender (1)	–.258	–3.55***	Arts (2)	.390	4.23***	Sports (2)	.321	3.60***
Arts (2)	.288	3.10**	Arts (2)	.334	3.58***	Arts (2)	.680	9.12***	Gender (3)	.155	2.01*	Arts (2)	.207	2.23*
Sports (3)	.185	2.14*	Sports (3)	.222	2.50*	Sports (3)	.175	2.96**	LO Knwl (3)	–.217	–2.27*	Sports (3)	.331	3.61***
LO Knwl (3)	–.269	–2.80**	HI Knwl (3)	.205	2.40*	Arts (3)	.340	4.63***	HI Knwl (3)	.181	2.20*	Identifying (4)	–.219	–2.39*
Sports (4)	.198	2.00*	HI Knwl (4)	.210	2.33*	Participation (3)	.284	4.30***	LO Knwl (4)	–.229	–2.29*			
LO Knwl (4)	–.265	–2.73**				LO Knwl (3)	–.193	–2.94**	HI Knwl (4)	.198	2.22*			
Openness (4)	.220	2.00*				HI Knwl (3)	.232	4.01***						
						Sports (4)	.186	2.66**						
						Arts (4)	.335	3.99***						
						Participation (4)	.265	3.71***						
						LO Knwl (4)	–.187	–2.70**						
						HI Knwl (4)	.224	3.64***						

Gender – 0 = female, 1 = male; *Arts* – students of the Arts programme; *Sports* – students of the Sports programme; *LO Knwl* – participants rating their art knowledge as 1–2 on 4-point scale; *HI Knwl* – participants rating their art knowledge as 3–4 on 4-point scale; *Participation* – frequency of attending art events; *Openness* – trait from NEO-FFI; *Identifying* – trait from BVAQ.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Expertise (β = –.20) and Positive emotionality (β = –.24). Art participation scores predicted Expertise scores solely (β = .22). We also observed more interactions with personality measures that in the case of figurative painting. Ambiguity subscale scored of NCCS questionnaire was a significant predictor of both Artistic quality (β = .21) and Positive emotionality (β = .26), while Openness to experience was linked to Self-reference scores (β = .26). We have also found Identification subscale of BVAQ questionnaire of alexithymia predicting Negative emotionality scores (β = –.20). Generally speaking, aesthetic perception of non-figurative visual art seems to rely not only on art knowledge (both formal and informal) possessed by an individual, but also on some individual characteristics. Such result is in line with our expectations.

Final set of analyses were performed for the most "difficult" painting to aesthetically judge, a representative of contemporary art from the last decade. For the third time, we have found that formal education factor can reliably predict scores on all five subscales of the ARS (β ranging from .17 for Expertise to .25 for Positive emotionality). Surprisingly, self-declared interests and participation were on average stronger predictors than formal knowledge for three subscales: β = .28 for Artistic quality, β = .19 for Self-reference and β = .30 for Expertise. Both Positive and Negative emotionality scores were still predicted by formal art education only. Contrary to our expectations, personality traits did not predict any ARS scores but one – Identifying from BVAQ alexithymia questionnaire could predict Negative emotionality scores (β = .24). Overall, predictors of aesthetic reactions for contemporary painting resemble those of figurative work, with more marked influences of informal art experience. We anticipated a marked influence of personality traits – only a single relationship was observed, contrary to our hypotheses.

Discussion

First hypothesis that art experience will generally be a stronger predictor of aesthetic responses than personality traits was supported. Art training, assessed using both formal and informal criteria, explained a significant amount of variability in art perception scores, while personality traits remained inconsistent and weak predictors of only selected aspects of aesthetic reactions. In the course of formal academic education in the arts students are explicitly instructed how to deal with art and have numerous opportunities to develop complex, sophisticated strategies of aesthetic judging and interpreting, therefore this result comes as no surprise. Interestingly, self-declared art knowledge and exposure proved to be at least as good of predictor as educational background.

Second hypothesis that each dimension of aesthetic judgement will have its own unique set of predictors was not supported by the data. In general, measures of art training could predict (to a certain degree) each aspect of art reaction, not only those evaluative ones, such as artistic quality and expertise. It seems that affective responses as well as the ability to find a personal connection with a painting depend strongly on individual prior knowledge.

When it comes to the third hypothesis, predictors of aesthetic experience differ across artistic styles. However, the diversity is lower than we expected, partially supporting our hypothesis. Openness to experience and low need for cognitive closure determined reactions to abstract art only, while figurative and contemporary works were linked mostly to art-training variables (both formal and informal). Abstract art has the most unstructured form and could function as a projective stimulus for the viewers, not needing explicit knowledge. Figurative and contemporary works may not that easily allow for projection, so the aesthetic reactions could be less the function of personality and more of the expertise. When Identifying subscale of BVAQ alexithymia questionnaire was taken under consideration, relationships with Negative emotionality of the ARS was found for both abstract and contemporary pieces. This result indicates that ability to categorize one's affective states plays a crucial role when dealing with visual stimuli that are ambiguous, multilayered and potentially disturbing. Difficulty to name affective states evoked by art coupled with possible frustration experienced by alexithymics leads to negative emotional responses toward the whole painting. Figurative paintings with easier to process content do not challenge alexithymic individuals in the same way and, as a consequence, have no effect on emotional reactions. What's interesting, contemporary painting had in general more similar pattern of predictors to figurative, not abstract, painting. A plausible explanation involves the nature of stimuli themselves: contemporary painting was cognitively and affectively challenging but still had some representative elements. The hypothesis needs further verification with contemporary pieces of varying degree of figurativeness serving as stimuli. Irrespectively of that fact, frequent accusation that contemporary art needs lots of contextual clues and narrations to be understood seems to be supported, suggesting that what really matters in aesthetic experience of contemporary art is simply previous training and expertise.

Limitations and further studies

Personality traits appear to be rather weak predictors of aesthetic reactions, explaining 10% of overall variance at best (see Chamoro-Premuzic et al., 2007). The hypothesis that this effect may be partially explained by the use of general aesthetic reaction measure was not supported by the data obtained in the study (using five separate aesthetic dimensions did not significantly strengthen or clarify the pattern of results). Therefore, it is important to ask ourselves what other factors may influence aesthetic experiences of art viewers. First of all, the experience itself may depend on aspects such as content of the piece of art, cultural fashions and social trends or personal tastes to name only a few. Moreover, as Leder et al. (2004) point out, there are many temporal and contextual variables influencing aesthetic experiences. For example, participant's initial

mood and expectations might sway delivered judgements – positive mood influences active integration of new data into wide range of existing categories, facilitating broader associations (Isen, 2009), what could be particularly important when judging such complex stimulus as art. More studies are definitely needed that take transient affective and motivational states under consideration. In a similar manner, situational clues strongly determine art perception. Assessment of an art piece may lead to different results when carried out in a museum, laboratory setting or in the context of street art (e.g., Brieber, Nadal, Leder, & Rosenberg, 2014; Gartus, Klemer, & Leder, 2015; Gartus & Leder, 2014). What's more laboratory studies may not fully enable to reveal full spectrum of aesthetic experience, for example the art-related phenomena such as insight and transformation of one's self image or world-view (Pelowski, 2015) might be difficult to capture outside museum. Recently, Pelowski, Forster, Tinio, Scholl & Leder (2017) summarized psychological differences stemming from appreciation museum versus lab-based art. Taking all these considerations into account additional study on individual differences in art appreciation of various styles should be conducted in real-life situation of visual art exhibition.

Another limitation of our study is a homogenous sample consisting of Polish students only. As aesthetic perception is sensitive to demographic variables, such as age, or education level (e.g., Feist & Brady, 2004; Chamorro-Premuzic et al., 2007) future studies should be conducted using more heterogenous, international sample.

The last problematic factor which should be taken into consideration is the measurement of aesthetic reactions. Subjectivity of introspection and social approval factor might influence the quality of aesthetic measurement and be responsible for low predictive value of personality traits. Thus, it would be valuable to combine different measurement approaches, i.e., behavioral implications (Cooper & Silvia, 2009), visitors tracking (Tröndle & Tschacher, 2012) or IAT procedure (Mastandrea, Bartoli, & Carrus, 2011) with verbal declarations, such as ARS questionnaire. This could be of particular importance for contemporary art, which is very often automatically evaluated as less preferred due to greater complexity and lower prototypicality (see Mastandrea et al., 2011).

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