

# The Ability to Integrate Beauty Scale (AIBS): Construction and Psychometric Properties on a Scale for Measuring Aesthetic Intelligence as a Resource for Personal Development

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**Background:** Ferrucci, a philosopher and psychotherapist, presented an original three-factor aesthetic intelligence concept in his book “Beauty and Soul” (2009). The subject of this article is the presentation of work on the construction of a scale for measuring one of the three dimensions of aesthetic intelligence, the ability to integrate beauty (AIB). This is probably the first attempt to empirically operationalize this concept.

**Methods:** The three independent studies were carried out with a total of 604 participants. The aim of the first study was to develop the AIBS scale and to test its factor structure. During Study 2 and Study 3, we verified the AIBS structure through the confirmatory analysis and checked its convergent and discriminant validity.

**Results:** The outcomes indicate that a one-factor, and seven-item tool is characterized by very good psychometric properties. Moreover, the results suggest that the AIB is indeed positively related to the perception of artworks (6 dimensions of an aesthetic experience), regulation of emotions through artistic creative activities, as well as to aesthetic competencies in art. The AIB is indeed positively related to the greater intensity of light triad traits (humanism, kantianism, faith in humanity) and to the development of the individual in five areas of spirituality. AIB is also only slightly related to the search for meaning and to one dimension of well-being, which is satisfaction and the sense of power.

**Keywords:** aesthetic intelligence, beauty integration, aesthetic competence, aesthetic experience, light triad, spirituality

## Introduction

The subject of this article is the presentation of the course of work on the construction of a scale for measuring one of the three dimensions of aesthetic intelligence according to the Ferrucci concept. The ability to integrate beauty is a capacity to change thinking and inner transformations as a result of aesthetic experiences. The study is probably the first attempt to empirically operationalize this concept of aesthetic intelligence. The result of the work is a short, one-factor scale for measuring the ability to integrate beauty with satisfactory psychometric properties.

Ferrucci, a philosopher and psychotherapist, presented an original three-factor aesthetic intelligence concept in his book “Beauty and Soul”.<sup>1</sup> According to the author, aesthetic intelligence is the ability to appreciate beauty, which may be nurtured and developed in the course of life. Its first component is the ability to notice beauty, that is aesthetic range – human sensitivity to aesthetic stimuli in an everyday setting. The aesthetic stimulus may be a shape or the color of a fallen leaf, the sound of rain, reflection of light from a surface, as well as a complex human work: literature, an art work, or architecture. Beauty is an aesthetic category and moral goodness is a category of excellence.<sup>2</sup> Although Diessner et al<sup>3</sup> divides beauty into natural, artistic and moral beauty, an excellent performance of a musical piece or socially oriented behaviors are not aesthetic stimuli in the strict sense (“non-aesthetic goodness”).<sup>4</sup> Research on the perception of

aesthetic stimuli is still developing and, therefore, different researchers use the same terms more or less precisely, which is reflected in the dispute over “visual aesthetic sensitivity”.<sup>5–7</sup>

The second component of aesthetic intelligence is depth of experience, that is the intensity with which our contact with an aesthetic stimulus is experienced. There is a difference between noticing beauty and expressing a judgment that we “like” something (it gives simple, sensual pleasure) and the feeling of extreme emotions, which touch the essence of existence. Contact with an aesthetic stimulus may be a source of deep delight, admiration, but also sadness or fear.<sup>8,9</sup> A strong emotional stir may be accompanied by a physical reaction (raised blood pressure, rapid breathing, tears).<sup>10</sup> Schoeller<sup>11</sup> writes that chills, shivers, and goose bumps, not related to the body temperature regulation, may occur in people as an aesthetic reaction. The feeling of being deeply touched by beauty helps in rediscovering oneself, encouraging the dropping of masks and roles, according to Ferrucci.

The third element of aesthetic intelligence is the ability to integrate beauty. This is understood as a change in how someone thinks as a result of an aesthetic experience and an inner transformation. According to the psychosynthesis paradigm, which is a current used by Ferrucci, the development of personality is growth, transformation of conscience and achieving full personal potential, including in the human spiritual sphere.<sup>12</sup> The ability to integrate beauty is a resource for complete self-fulfillment. Lomas<sup>13</sup> lists advantages, which are common for aesthetic experiences, related to various forms of art: sense-making, enriching experience, entertainment, and bonding. The conscious experience of beauty may result in a change in the way of thinking about oneself, the world and other people, teaching one how to adopt different perspectives, to understand the emotions and behaviors of oneself and others. Thanks to programs such as Transformative Learning through Aesthetic Experience (TLAE), we know that exploring works of art (being exposed to experiencing different manifestations and beauty standards) supports the development of creativity and critical thinking.<sup>14</sup> Therefore, contact with aesthetic objects develops the abilities of thinking to an extent that goes beyond art alone.

There is a construct in psychology that is close to aesthetic intelligence and a tool for its measurement known as “aesthetic responsiveness”. This disposition is treated as a personality trait<sup>10</sup> or mental resource<sup>15</sup> and is used to react to beauty and engage in beauty. Its two dimensions, the appreciation of aesthetic sensations and intense aesthetic experiences, are content-wise similar to the first two dimensions of aesthetic intelligence. However, they differ in the last factor. In terms of aesthetic responsiveness, it is one’s own creative behavior in response to beauty (for example, writing poetry). While Ferrucci, in defining aesthetic intelligence, shows it as a universal mental resource for people (artists and non-artists) and highlights the developmental and cognitive function of aesthetic experiences in human life.

## Overview of the Present Research

The main aim of the study is to operationalize the third element of aesthetic intelligence (the ability to integrate beauty, AIB) and to construct an original, short and reliable tool for measuring it (AIBS). In Study 1, we explored the underlying structure of the prospective measure through exploratory factor analysis (EFA). In Study 2, we estimated the relationship between the indicators and the AIB factor through confirmatory factor analysis (CFA). This procedure was repeated in Study 3 to verify whether the model was a good fit in other research groups as well. Next, we assessed the internal reliability of the AIBS and examined its convergent and discriminant validity (Studies 2–3). Based on Ferrucci’s theory, we chose only one aspect of aesthetic intelligence, which he called the ability to integrate beauty.<sup>1</sup> Therefore, in our approach, we expected that the new scale would present a one-dimensional structure reflecting the integration of beauty. Moreover, we assumed that the subscale would corroborate good reliability and correlate moderately with other constructs that share similar aspects, and show weak associations with distinct constructs.<sup>16</sup> Below there are theoretical and empirical justifications for the selection of the variables, along with hypotheses.

In order to better know and understand aesthetic intelligence, it was decided to verify the relationship between the ability to integrate beauty and other traits related to aesthetic experience,<sup>17</sup> engagement in an artistic activity,<sup>18</sup> regulating emotions by art<sup>19,20</sup> and aesthetic competencies.<sup>21</sup> Potential broader advantages related to experiencing beauty are also interesting; therefore, we adopted assumptions on the co-existence of the ability to integrate beauty with selected personality traits (humanism, kantianism, faith in humanity),<sup>22</sup> spiritual dimensions,<sup>23</sup> mental well-being,<sup>24</sup> and a sought and experienced sense of life.<sup>25</sup>

It is accepted in the literature that aesthetic experience is the cause and also the source of knowledge and skills.<sup>5</sup> It is not possible to pass judgment on a work of art without reflection, a reference to possessed knowledge. In the perspective of neurosciences, aesthetic processing functions regardless of perceptual processing, as it depends on cognitive processing.<sup>26</sup> Moreover, the authors of the work argue that: “We further conjecture that there might be a common faculty, labeled as aesthetic cognition faculty, in the human brain for all sensory aesthetics (.).”. As we are not neuroscientists, we are in no position to verify this thesis, but we think that the set of abilities that Ferrucci defined as aesthetic intelligence (in particular the general ability to integrate beauty concerning its various expressions, stimuli of various sensory modalities) may be its manifestation.

We know that aesthetic fluency<sup>27</sup> does not increase the likelihood of having a higher education in the arts,<sup>28</sup> and yet Persian results show that participation in art classes once a week and artistic education promote aesthetic fluency.<sup>29</sup> It is therefore assumed that high aesthetic intelligence may foster higher competencies in the reception and assessment of works of art from different fields:

H1: The ability to integrate beauty is positively related to aesthetic competencies.

An activity concerning art undoubtedly gives people pleasure even though “pleasure” in scientific terms is neither explicitly defined nor conceptually clear as an object of study.<sup>30</sup> The same applies to the genesis of taking pleasure from producing art.<sup>31</sup> It is believed that engagement in arts helps to create a sense of life and maybe a treatment tool.<sup>32</sup> Another qualitative study shows that art may contribute to the sense of being healthy by satisfying inner needs and dealing with the stress of everyday life; moreover, engagement in art can be a source of new perspectives on looking at or thinking about phenomena.<sup>33</sup> Stevenson-Taylor and Mansell<sup>34</sup> have similar conclusions, which result from their study in the area of creating art as a tool to discover, understand oneself and overcome mental suffering. It may be suspected that people for whom contact with beauty is an internally transformative experience may to a larger extent engage in artistic endeavors to cope with challenges. Therefore, it is assumed that:

H2: The ability to integrate beauty is positively related to the regulation of emotions through creative, artistic activities and to its individual dimensions.

Humanism, kantianism and faith in humanity, called the Light Triad (LT), are traits which positively relate to a number of self-transcendental values. The correlates of LT are, for example, religiousness, spirituality, life satisfaction, acceptance of other people, belief in the goodness of one’s own self and the goodness of the self of others, compassion, empathy, openness to experience, productivity, and competence.<sup>35</sup> If aesthetic intelligence is a resource of mental growth, it may be assumed that:

H3: The ability to integrate beauty positively relates to light triad dimensions.

Pelowski & Leder<sup>36</sup> wrote about an anecdotal, purple painting which heavily impacted the first author at the end of his master’s course. An intense aesthetic experience, called by artists and musicians “aesthetic delight”, is described by Csikszentmihalyi as an autotelic experience.<sup>37</sup> Pelowski and Akiba<sup>38</sup> took into account the current methods of characterizing the aesthetic experience, but they noticed that there was no bridge between the aesthetic experience and a human personality, and they made an attempt to formulate a five-stage art perception model, clarifying “art’s ability to mark and change lives”. If an intense aesthetic experience may lead to self-transformation, it may be assumed that:

H4: The ability to integrate beauty is positively related to all dimensions of the aesthetic experience in relation to visual stimuli.

According to Bialek,<sup>39</sup> the psychosynthesis highlights the need for spiritual development, and the basis of human existence is considered to be the search for fulfillment and finding meaning in life - it happens through exploring higher conscience and integration (that is, synthesis) of higher energies in everyday life. Socha<sup>40</sup> distinguished and described the following areas of human spiritual sphere: awareness and self-awareness, reason and wisdom, feelings, sensitivity,

morality, creativity, aesthetic sense, world view, religiousness and faith. Therefore, human spiritual development may take place in a few areas and the essence of spirituality is inner transformation.<sup>41</sup> Vaughan [42, p. 25] writes that

Sacred rituals, art, and music are meant to evoke consciousness of spirit, but no form of expression can do more than point the way to a direct experience of transcendence. Furthermore, although deep experiences can be subjectively significant, they do not necessarily lead to a religious or spiritual life.

It seems that it is not the aesthetic experience alone, but the ability to integrate beauty, that is the disposition conducive to transformations in the spiritual area. And vice versa, being a person highly involved in spiritual aspects of life may be conducive to higher abilities to consciously experience beauty. Thus:

H5: The ability to integrate beauty is positively related to spiritual dimensions.

Scripter<sup>43</sup> had interesting considerations in the field of philosophic aesthetics, confronting the question whether, and if yes, then why beauty experience situations can be treated as giving meaning to life. As no studies on this subject have been found in the psychological literature, the exploring hypothesis is put forward:

H6: The ability to integrate beauty is positively related to the perceived and sought meaning in life.

## Study I

### Tool Construction Process

The tool construction process began with the generation of a pool of statements and was based mainly on literature and people for whom beauty is a significant aspect of everyday life. The main reference for the content of items was the definition of aesthetic intelligence by Ferrucci,<sup>1</sup> who defined it as a universal ability to perceive beauty. Aesthetic intelligence relates to where (in what extent, items, situations) and how well (aesthetic experience depth and inner transformation as its result) people perceive beauty. As the beauty integration is related to reflection processes, works of Perkowska-Klejman<sup>44,45</sup> and general recommendations on the construction of tools for studies in social sciences, included in the Polish translation of Oppenheim's<sup>46</sup> work, were also used as inspiration.

Before creating the scale, we collected statements from people who declared that they were "aesthetes", had varying degrees of aesthetic competences (none, amateur involvement with art, professional involvement with art) and considered interacting with beauty to be an important part of their lives. More precisely, they included: a conservator of architectural monuments with 30 years of work experience in the field, people with various degrees of musical education, an amateur choir singer, a painter and craftsman, a photographer, and a literary scholar.

Following the recommendations about the number of items needed and expecting a brief scale of 6 items or more, we created 32 statements that seemed to fit the construct of interest.<sup>47</sup> We assumed a ratio of 5:1 in EFA.<sup>48</sup> All statements were created by authors of the article. A few items were formulated in a way that required inversion when calculating the results. Two experts in the field of psychology and one expert in the field of linguistics were asked to comment on the clarity of items, their stylistic correctness and length. After the expert assessment, 22 statements were deleted from the original pool as their content deviated from the essence of the examined construct (for example, I do not find beauty in any area of my life) or they were redundant (for example, contact with beauty makes me feel that I am alive). This resulted in a list of the pool of 10 items that were subjected to EFA (Table 1). A 7-level response scale was adopted for all items, where 1 = "Strongly disagree" and 7 = "Strongly agree".

In the process of work on the tool, 3 independent studies were carried out. We tried to prevent data overlap, and avoided people who claimed to have recently participated in research on similar topics. We considered positioning the research on different, independent internet groups. For example, if one link to the group was sent to a specific academic choir, links to other parts of the research were not sent to the same place.

The first verification of the scale structure using the exploratory factor analysis (EFA) was made during the first of the three assumed studies.

**Table 1** Output Item Pool of 10 Statements After Expert Assessment

1/34	Contact with beauty makes me want to be a better person.
2/22	When I listen to music, I often feel an inner stirring.
3/31	Contact with the beauty of nature lifts my spirits.
4/42	Contact with beauty prompts me to reflect.
5/35	Contact with beauty makes me feel the reality that surrounds me more intensely.
6/37	Contact with beauty stirs in me a longing for excellence.
7/38	Thanks to experiencing true beauty, I see certain things and matter differently.
8/43	Contact with beauty changed some of my attitudes and behaviors towards other people.
9/39	Contact with beauty changes my thinking of the world.
10/41	Experiencing beauty teaches me a new way of looking at the world.

## Participants

Sample 1 consisted of 208 participants between the ages of 18 and 55 years ( $M = 23.00$ ;  $SD = 7.88$ ) with 66% women, 31% men, and 3% who did not answer the question. Initial recruitment occurred through non-probability convenience sampling. Respondents were informed about the purpose of the study and the absence of negative effects resulting from participation in it.

## Procedure and Data Analysis

Prior to the implementation of exploratory factor analysis (EFA), descriptive statistics of the 10 AIBS items were used, assuming the value  $\pm 2$  for skewness and kurtosis as an indicator of a distribution close to normal.<sup>49</sup> Extraction of the factor structure from the data was done with the use of a maximum likelihood (ML) estimation, eigenvalues  $> 1$ , and promax rotation. The sample had no missing values as the lack of response made it impossible to continue filling in the questionnaire battery. The value of the Kaiser–Meyer–Olkin index of 0.90 was assumed to confirm sampling adequacy and Bartlett’s test of sphericity value of  $p = 0.05$  or smaller.<sup>50</sup> As the cut-off for the total variance in behavioral data, the level of 56.6% was considered.<sup>51</sup> The internal consistency reliability of expected factor was measured, adopting a value of  $\alpha > 0.80$  as its acceptable indicator. Finally, we used the corrected item–total correlation to check the coherence between an item and other items in a potential factor.<sup>52</sup>

The current project (Studies 1–3) was approved by the Bioethics Committee of the Institute of Psychology at the University of Szczecin (KB 6/2022) and completed according to the Declaration of Helsinki. All participants provided fully informed, written consent. Statistical analyses were performed using SPSS Statistics for Windows, version 20, and IBM SPSS AMOS 21.

## Results

A factor analysis using maximum likelihood estimation with promax rotation indicated that the construct was unidimensional. A closer scrutiny of the results showed a Kaiser–Meyer–Olkin (KMO) value of 0.94 and a significant level of Bartlett’s Test of Sphericity (1739.113;  $df = 45$ ; much less than  $p < 0.05$ ), suggesting sampling adequacy. The cumulative percent of variance explained was 63.96%. However, items AIB2 and AIB6 had lower cross loadings (0.60 and 0.59, respectively). Therefore, we decided to remove them from the set of items. Moreover, we took into consideration the outcomes of the total-item correlation. Item AIBS3 presented the lowest, although still high, association with the overall score ( $r = 0.79$ ). Since we opted for the construction of a brief scale, we deleted it from the set. The 7 items were subjected to another EFA. The KMO displayed a value of 0.93 and a significant level of Bartlett’s Test (1346.478;  $df = 21$ ;  $p < 0.05$ ), showing sampling appropriateness of data for the factor. The cumulative variance



presented a value of 73.04%, indicating a good factorial structure. The loadings for the remaining items were as follow: AIB1 = 0.83, AIB4 = 0.81, AIB5 = 0.83, AIB7 = 0.91, AIB8 = 0.80, AIB9 = 0.91, and AIB10 = 0.87. Cronbach's reliability value showed an excellent value, at  $\alpha = 0.95$ . The corrected item-total correlation values were very good: AIB1 = 0.81, AIB4 = 0.79, AIB5 = 0.82, AIB7 = 0.88, AIB8 = 0.78, AIB9 = 0.88, and AIB10 = 0.85.

The final EFA model constituted a one-factor solution with seven high-loading items.

## Study 2

### Participants

The participants were 201 Polish adults (74% women and 26% men). The age range of the sample was 18–54 years ( $M = 27.12$ ;  $SD = 8.19$ ). Similarly to the previous research group (Study 1), respondents were recruited through non-probability convenience sampling and informed about the goal of the study.

### Procedure and Data Analysis

Before the application of CFA to the data, the values of the skewness and kurtosis of all seven AIB items were examined to assure the assumption of normal distribution required by the structural equation.<sup>53</sup> Cut-off  $\pm 2$  was considered as acceptable for symmetric distribution.<sup>49</sup> Next, model parameters were scanned in the CFA. Factor loadings above 0.71 were regarded as excellent, 0.63 – very good, 0.55 – good, 0.45 – fair, and 0.32 – poor.<sup>54,55</sup>

In order to verify whether the hypothesized model adequately fitted the data, different, essential, and widely applied fit indices<sup>56–58</sup> were used: chi-square  $\chi^2$  with insignificant  $p > 0.05$ , the ratio  $\chi^2/df (\leq 3)$ , the goodness-of-fit index ( $GFI \geq 0.90$ ); the Tucker-Lewis index ( $TLI \geq 0.90$ ); the comparative fit index ( $CFI \geq 0.90$ ), the standardized mean square residual ( $SRMS \leq 0.08$ ), the root mean square error of approximation (RMSEA with the upper limit  $\leq 0.08$ ;  $LO \leq 0.08$ ;  $HI \leq 0.08$ ), and PCLOSE (above 0.05).

To assess the construct validity of AIBS, the convergent validity was established through the use of the Aesthetic Competence Scale, the Emotion Regulation Strategies for Artistic Creative Activities Scale, and the Light Triad Scale. From the theoretical perspective, the above-mentioned scales were supposed to be related to the construct of beauty integration measured through the newly developed AIBS. Moreover, their multidimensional structure helped select the psychological features connecting all the studied variables.

### Tools

Along the original scale for measuring the ability to integrate beauty (the third pillar of aesthetic intelligence), for the purpose of verifying the hypotheses put forward, we used tools for measuring aesthetic competence in various fields of art, emotion regulation strategies by involvement with an artistic, creative activity and the scale of exacerbation of the light triad traits.

Aesthetic Competence Scale (ACS)<sup>21</sup> is a 20-item tool to measure aesthetic competence in four different areas: music (eg, Upon hearing music, I can identify its name, composer, and provenance), visual arts (eg, Appreciating paintings can boost people's spiritual state), literature (eg, When reading a literary work, I can feel the author's language style) and movies (eg, Movies teach us more about the people and things around us). Each factor includes 5 statements which refer to the emotional sensitivity, experience and knowledge/skills of the recipient. The study subjects took a stance in relation to individual sentence on a 5-level Likert scale, where 1 = "I definitely disagree" and 5 = "I definitely agree". Results are calculated within each factor. It is also possible to calculate the overall score for ACS. The Polish translation of the scale was used in the study. Cronbach's alphas for all the dimensions were as follows: music ( $\alpha = 0.84$ ), visual arts ( $\alpha = 0.88$ ), literature ( $\alpha = 0.89$ ), and film ( $\alpha = 0.92$ ). The overall result of aesthetic experience was  $\alpha = 0.94$ .

Emotion Regulation Strategies for Artistic Creative Activities Scale (ERS-ACA)<sup>19</sup> allows us to assess the types of strategies used to regulate emotions when people engage in artistic activities. Thanks to ERS-ACA it was possible to calculate both the overall result of the general strategy for coping with emotions by engaging in artistic creative activities and the results for three sub-scales (avoidance strategies, approach strategies and self-development strategies). The study subjects took a stance in relation to each statement using the 5-level Likert scale, where 1 means "I definitely disagree" and 5 is tantamount to "I definitely agree". The Polish translation of the tool was used in the study. The reliability of

Cronbach's alphas for all three dimensions was as follows: avoidance strategies ( $\alpha = 0.87$ ), approach strategies ( $\alpha = 0.88$ ) and self-development strategies ( $\alpha = 0.83$ ). The overall result of the "general strategy" for coping with emotions was  $\alpha = 0.94$ .

Light Triad Scale (LTS)<sup>35</sup> is a tool to measure the intensity of three personality traits, which are: humanism, kantianism and faith in humanity. The Polish adaptation of the scale was used in the study.<sup>22</sup> It includes 12 statements, divided into three factors. Each factor includes 4 sentences of an affirmative nature. Study subjects indicate to what extent they agree with each of them, using the 5-level Likert scale, from "I definitely disagree" (1) to "I definitely agree" (5). The reliability of Cronbach's alphas for all three dimensions were as follow: faith in humanity ( $\alpha = 0.87$ ), humanism ( $\alpha = 0.69$ ) and kantianism ( $\alpha = 0.64$ ). The overall result of light triad was  $\alpha = 0.82$ .

## Results

Table 2 presents the outcomes of mean, standard deviation, skewness, and kurtosis for ability to integrate the beauty (items and overall), dimensions and overall score of aesthetic competence (music, visual arts, literature, and film), dimensions and overall score of emotion regulation strategies for artistic creative activities (avoidance, approach, and self-development strategies), dimensions and overall light triad (faith in humanity, humanism, and kantianism). Although the skewness (in one case) and kurtosis (in three cases) values exceeded  $\pm 2$ , we used the Pearson correlation as the vast majority of the values were within the restrictive range of  $\pm 2$ . We used 5000 bootstrap samples with confidence intervals.

The structure of the AIBS, obtained in the Study 1 was confirmed through the CFA in the Study 2. The loadings were excellent (between 0.80 and 0.90) for all the items of the AIBS (AIB5 = 0.80, AIB8 = 0.80, AIB1 = 0.83, AIB10 = 0.86, AIB4 = 0.86, AIB9 = 0.88, and AIB7 = 0.90). The goodness-of-fit showed a unifactorial solution consisting of beauty integration, which well represented the entire data set: ( $\chi^2 = 27.513$ ,  $p = 0.017$ ,  $\chi^2/df = 1.96$ , GFI = 0.96, TLI = 0.98, CFI

**Table 2** Descriptive Statistics for AIB Items, AIB Overall, ACS, ERS, and LTS (N = 201)

Variables	M	SD	Skewness	Kurtosis
AIB1	5.18	1.69	-0.88	-0.04
AIB4	5.51	1.51	-1.17	0.94
AIB5	5.21	1.66	-0.91	-0.01
AIB7	5.08	1.60	-0.68	-0.29
AIB8	4.81	1.71	-0.68	-0.39
AIB9	5.07	1.63	-0.87	0.09
AIB10	5.09	1.63	-0.86	-0.04
AIB	35.95	9.97	-0.82	0.29
ACS-M	17.20	4.50	-0.60	-0.22
ACS-VA	18.04	4.99	-0.82	-0.01
ACS-L	20.38	4.47	-1.48	2.35
ACS-F	21.42	4.43	-2.13	5.03
ACS-OI	77.06	15.29	-1.57	3.12
ERS-AV	3.77	0.80	-0.45	0.07
ERS-AP	3.70	0.83	-0.46	0.13
ERS-SD	3.74	0.86	-0.51	0.09
ERS-O	11.22	2.26	-0.39	0.32
LTS-FH	13.48	3.53	-0.55	-0.16
LTS-HU	15.56	2.78	-0.47	0.11
LTS-KA	15.56	2.80	-0.52	0.05
LTS-O	45.01	7.22	-0.47	0.25

**Abbreviations:** AIB, Ability to Integrate Beauty; ACS-M, Music; ACS-VA, Visual Arts; ACS-L, Literature; ACS-F, Film; ACS-O, Overall; ERS-AV, Avoidance Strategies; ERS-AP, Approach Strategies; ERS-SD, Self-Development Strategies; ERS-O, Overall; LTS-FH, Faith in Humanity; LTS-HU, Humanism; LTS-KA, Kantianism; LTS-O, Overall.

= 0.98, SRMS = 0.01, RMSEA = 0.06, LO = 0.02, HI = 0.10, and PCLOSE = 0.18). Although  $\chi^2$  was significant, which often occurs with larger samples to which chi-square is sensitive ( $> 200$ ), all other indices presented very good fit. Therefore, based on the results obtained, the model was accepted in its present form. The internal reliability for the ability to integrate beauty was  $\alpha = 0.94$ .

We received positive and moderate correlations (Table 3) between the ability to integrate beauty and two dimensions of aesthetic competence (visual arts and literature) and its overall result; dimensions and the overall score of emotion regulation strategies for artistic creative activities; two dimensions of light triad (humanism and kantianism) and its overall score. Weak associations were observed between the ability to integrate beauty, music, film competence, and faith in humanity as a dimension of the light triad.

### Study 3

The participants were 195 Polish adults (74% women and 26% men). The age range of the sample was 18–54 years ( $M = 27.12$ ;  $SD = 8.19$ ). Similarly to the previous research groups (Study 1 and Study 2), the respondents were recruited through non-probability convenience sampling and were informed about the goal of the study.

### Tools

The third study employed an original measure of aesthetic intelligence, a scale for assessing experiences concerning visual aesthetic experiences, a tool allowing the examination of the intensity of the development of different dimensions of spirituality, as well as a two-factor measure of the meaning of life.

Aesthetic Experience Questionnaire (AEQ)<sup>17</sup> is a questionnaire which allows the measurement of a number of dimensions related to the perception of art, mainly in relation to visual arts (like painting, sculpting). Twenty-two statements were grouped into 6 dimensions: emotional (eg, My emotions change as I continue to view the work of art), cultural (eg, I compare the past culture of the art with present-day culture), perceptive (eg, I focus on the subtle aspects of the work of art), understanding (eg, I gain new insights about the work of art itself), proximal flow conditions (eg, I have a clear idea of what to look for when viewing works of art) and the flow experience during contact with works of art (eg, I lose track of time when I view works of art). The study subjects took a stance in relation to each statement on a 7-level Likert scale, from 1 (I definitely disagree) to 7 (I definitely agree). Results for each scale are obtained by summing points gained by a study subject. The questionnaire does not contain reversed questions. The Polish translation of the tool was used in the study. Cronbach's alphas for all the dimensions were as follows: emotional ( $\alpha = 0.87$ ), cultural ( $\alpha = 0.87$ ), perceptual ( $\alpha = 0.84$ ), understanding ( $\alpha = 0.88$ ), flow-conditions ( $\alpha = 0.84$ ), and flow-experience ( $\alpha = 0.92$ ). The overall result of aesthetic experience was  $\alpha = 0.95$ .

The Spirituality Scale (SD-36)<sup>23</sup> is a 36-item tool which enables the examination of spirituality intensity as a trait defined in 6 ways. It may be used to measure: religious spirituality (eg, I feel a strong bond with God), spirituality understood as expanding awareness (eg, I try to understand the surrounding world), spirituality as a search for meaning (eg, I ask myself about the meaning of my existence), spirituality as sensitivity to art (eg, Listening to concerts is a spiritual experience for me), spirituality as doing good (eg, I am sensitive to the suffering of others), as well as spirituality as sensitivity to internal beauty (moral choices, eg I try to be open to other people) and external beauty (the world, eg I see the beauty of nature). Study subjects indicate to what extent they agree with individual sentences, using a 4-level scale (from "Definitely not" = 1 to "Definitely yes" = 4). The results are calculated by summing up points for each sub-scale individually. Calculating the overall result for SD-36 is also provided for by summing up the results from individual sub-scales. Reliability of individual dimensions and the overall result was satisfactory in our study: religious spirituality ( $\alpha = 0.97$ ), spirituality understood as expanding awareness ( $\alpha = 0.79$ ), spirituality as a search for meaning ( $\alpha = 0.76$ ), spirituality as sensitivity to art ( $\alpha = 0.81$ ), spirituality as doing good ( $\alpha = 0.81$ ), spirituality as sensitivity to internal and external beauty ( $\alpha = 0.80$ ), and the overall result ( $\alpha = 0.93$ ).

Meaning Life Questionnaire (MLQ)<sup>59</sup> is a popular tool to assess the sense of the meaning of life in two dimensions, a perceived sense (declared, eg My life has a clear sense of purpose) and sense that is searched for (eg, I am looking for something that makes my life feel meaningful). It contains 10 questionnaire items in relation to which study subjects take a stance on a 7-level Likert scale. The Polish version of the tool was used in the study.<sup>25</sup> Sub-scales showed in the current study a satisfactory reliability of  $\alpha = 0.83$  for both of them.



**Table 3** Correlations Between Dimensions/Overall Score of AIB, ACS, ERS, and LTS (N = 201)

	ACS-M	ACS-VA	ACS-L	ACS-F	ACS-O	ERS-AV	ERS-AP	ERS-SD	ERS-O	LTS-FH	LTS-HU	LTS-KA	LTS-O
AIB	0.169* [0.004;0.328]	0.313*** [0.154;0.460]	0.288*** [0.141;0.442]	0.171* [0.025;0.329]	0.286*** [0.122;0.456]	0.388*** [0.233;0.528]	0.482*** [0.329;0.621]	0.477*** [0.343;0.598]	0.499*** [0.354;0.626]	0.290*** [0.143;0.424]	0.368*** [0.238;0.493]	0.352*** [0.210;0.484]	0.421*** [0.288;0.540]
ACS-M	I	0.505*** [0.375;0.624]	0.503*** [0.363;0.620]	0.483*** [0.351;0.594]	0.747*** [0.680;0.807]	0.127 <sup>a</sup> [-.028;0.284]	0.165* [0.010;0.312]	0.189** [0.041;0.343]	0.179* [0.025;0.332]	0.101 [-.045;0.245]	0.035 [-.112;0.188]	-0.023 [-.159;0.122]	0.054 [-.095;0.207]
ACS-VA		I	0.701*** [0.593;0.784]	0.594*** [0.465;0.696]	0.853*** [0.810;0.888]	0.223** [0.066;0.380]	0.294*** [0.133;0.448]	0.304*** [0.150;0.452]	0.305*** [0.145;0.459]	0.200** [0.044;0.351]	0.238** [0.092;0.383]	0.179* [0.035;0.318]	0.259*** [0.112;0.406]
ACS-L			I	0.727*** [0.593;0.813]	0.881*** [0.825;0.916]	0.164* [-.008;0.341]	0.269*** [0.095;0.445]	0.257*** [0.077;0.435]	0.257*** [0.072;0.439]	0.198** [0.023;0.365]	0.184** [0.026;0.346]	0.260*** [0.128;0.389]	0.269*** [0.101;0.433]
ACS-F				I	0.839*** [0.759;0.891]	0.189** [0.021;0.358]	0.223** [0.041;0.396]	0.204** [0.021;0.380]	0.228** [0.040;0.406]	0.137 <sup>a</sup> [-.023;0.294]	0.156* [-.002;0.314]	0.173* [0.028;0.315]	0.195* [0.023;0.363]
ACS-O					I	0.213** [0.037;0.390]	0.288*** [0.111;0.462]	0.289*** [0.109;0.465]	0.293*** [0.105;0.475]	0.193** [0.036;0.350]	0.187** [0.032;0.351]	0.178* [0.041;0.316]	0.236** [0.075;0.398]
ERS-AV						I	0.664*** [0.559;0.755]	0.700*** [0.603;0.788]	0.870*** [0.820;0.909]	0.243** [0.093;0.385]	0.364*** [0.228;0.490]	0.231** [0.075;0.373]	0.349*** [0.201;0.482]
ERS-AP							I	0.790*** [0.713;0.853]	0.909*** [0.871;0.938]	0.336*** [0.178;0.482]	0.402*** [0.267;0.524]	0.297*** [0.146;0.438]	0.435*** [0.287;0.571]
ERS-SD								I	0.925*** [0.900;0.945]	0.358*** [0.200;0.501]	0.379*** [0.241;0.504]	0.366*** [0.213;0.498]	0.464*** [0.322;0.586]
ERS-O									I	0.348*** [0.191;0.491]	0.423*** [0.292;0.544]	0.332*** [0.179;0.471]	0.463*** [0.317;0.588]
LTS-FH										I	0.449*** [0.328;0.557]	0.344*** [0.202;0.479]	0.796*** [0.737;0.846]
LTS-HU											I	0.534*** [0.420;0.637]	0.813*** [0.759;0.857]
LTS-KA												I	0.763*** [0.694;0.821]
LTS-O													I

Notes: <sup>a</sup>0.05 < p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

Abbreviations: AIB, Ability to Integrate Beauty; ACS-M, Music; ACS-VA, Visual Arts; ACS-L, Literature; ACS-F, Film; ACS-O, Overall; ERS-AV, Avoidance Strategies; ERS-AP, Approach Strategies; ERS-SD, Self-Development Strategies; ERS-O, Overall; LTS-FH, Faith in Humanity; LTS-HU, Humanism; LTS-KA, Kantianism; LTS-O, Overall.

## Results

Table 4 presents the results of descriptive statistics (mean, standard deviation, skewness, and kurtosis) for ability to integrate the beauty, dimensions and overall score of aesthetic experience, dimensions and overall spirituality, presence of meaning, and search for meaning. The skewness and kurtosis values did not exceed  $\pm 2$ , which indicates a relatively normal distribution of variables.

The structure of the AIBS was also confirmed through the CFA in the Study 3. The loadings were excellent (between 0.81 and 0.91) for all the items of the AIBS (AIB5 = 0.81, AIB1 = 0.82, AIB4 = 0.84, AIB8 = 0.84, AIB7 = 0.88, AIB10 = 0.90, and AIB9 = 0.91). The goodness-of-fit showed unifactorial model consisting of beauty integration, which adequately represented the data:  $\chi^2 = 23.187$ ,  $p = 0.039$ ,  $\chi^2/df = 2.37$ , GFI = 0.95, TLI = 0.97, CFI = 0.98, SRMS = 0.02, RMSEA = 0.08, LO = 0.04, HI = 0.12, and PCLOSE = 0.06. Cronbach's alpha was excellent at  $\alpha = 0.95$ .

The Pearson correlation showed positive and moderate correlations between the ability to integrate beauty and overall/all dimensions of aesthetic experience, expanding consciousness, sensitivity to art, doing good, sensitivity to beauty and overall spirituality (Table 5). With the other variables, the ability to integrate beauty displayed weak (religious spirituality, spiritual search for meaning, and search for meaning) and negligible correlations (presence of meaning).

**Table 4** Descriptive Statistics for AIB Items, AIB Overall, AEQ, SD, and MLQ (N = 195)

Variables	M	SD	Skewness	Kurtosis
AIB1	4.71	1.65	-0.52	-0.45
AIB4	5.15	1.56	-0.78	-0.13
AIB5	4.95	1.50	-0.71	-0.03
AIB7	4.94	1.50	-0.70	-0.04
AIB8	4.61	1.63	-0.56	-0.32
AIB9	4.78	1.53	-0.57	-0.31
AIB10	4.89	1.54	-0.80	-0.05
Ability to Integrate Beauty	34.02	9.61	-0.77	0.01
AEQ-E	18.24	5.54	-0.38	-0.47
AEQ-C	17.91	5.96	-0.24	-0.72
AEQ-P	18.88	5.59	-0.45	-0.44
AEQ-U	16.79	6.27	-0.07	-0.81
AEQ-F1	12.53	4.26	-0.20	-0.55
AEQ-F2	15.18	4.34	-0.73	-0.08
AEQ-O	99.55	26.98	-0.50	-0.06
SD-RE	28.60	11.62	-0.01	-1.35
SD-EC	13.55	2.12	-0.82	0.79
SD-SM	13.86	3.37	-0.10	-0.40
SD-SA	11.79	2.78	-0.60	-0.08
SD-DG	16.57	2.75	-0.98	1.45
SD-SB	20.01	3.01	-0.93	1.54
Overall Spirituality	104.41	18.30	-0.23	-0.07
Presence of Meaning	22.65	6.82	-0.42	-0.08
Search for Meaning	25.66	5.93	-1.01	1.26

**Abbreviations:** AIB, Ability to Integrate Beauty; AEQ-E, Emotional; AEQ-C, Cultural; AEQ-P, Perceptual; AEQ-U, Understanding; AEQ-F1, Flow-Proximal Conditions; AEQ-F2, Flow-Experience; AEQ-O, Overall Aesthetic Experience; SD-RE, Religious spirituality; SD-EC, Spirituality-Expanding Consciousness; SD-SM, Spirituality-Search for Meaning; SD-SA, Spirituality-Sensitivity to Art; SD-DG, Spirituality-Doing Good; SD-SB, Spirituality-Sensitivity to Beauty; O-SD, Overall Spirituality; MLQ-P, Presence of Meaning; MLQ-S, Search for Meaning.

**Table 5** Correlations Between Dimensions/Overall Score of AIBS, AEQ, SD-36, and MLQ (N = 195)

	AEQ-E	AEQ-C	AEQ-P	AEQ-U	AEQ-F1	AEQ-F2	AEQ-O	SD-RE	SD-EC	SD-SM	SD-SA	SD-DG	SD-SB	SD-O	PM	SM
AIB	0.477*** [0.343;0.600]	0.539*** [0.420;0.640]	0.518*** [0.387;0.636]	0.486*** [0.352;0.607]	0.493*** [0.362;0.610]	0.415*** [0.275;0.545]	0.582*** [0.465;0.686]	0.156* [0.005;0.299]	0.449*** [0.303;0.576]	0.377*** [0.258;0.486]	0.490*** [0.352;0.606]	0.424*** [0.274;0.553]	0.453*** [0.313;0.573]	0.433*** [0.299;0.549]	0.120* [-0.038;0.277]	0.286*** [0.132;0.426]
AEQ-E	I	0.585*** [0.475;0.683]	0.659*** [0.549;0.750]	0.723*** [0.639;0.797]	0.640*** [0.545;0.722]	0.639*** [0.526;0.735]	0.844*** [0.792;0.887]	0.106 [-0.032;0.244]	0.438*** [0.306;0.552]	0.281*** [0.148;0.410]	0.527*** [0.403;0.640]	0.378*** [0.248;0.493]	0.479*** [0.359;0.582]	0.386*** [0.251;0.508]	0.162* [0.009;0.310]	0.379*** [0.213;0.528]
AEQ-C		I	0.671*** [0.564;0.758]	0.558*** [0.438;0.664]	0.623*** [0.603;0.760]	0.689*** [0.510;0.718]	0.819*** [0.764;0.864]	0.184** [0.039;0.322]	0.398*** [0.268;0.508]	0.415*** [0.287;0.524]	0.417*** [0.284;0.537]	0.334*** [0.192;0.458]	0.388*** [0.261;0.495]	0.417*** [0.287;0.530]	0.190** [0.034;0.336]	0.345*** [0.214;0.464]
AEQ-P			I	0.683*** [0.584;0.768]	0.766*** [0.699;0.825]	0.683*** [0.570;0.777]	0.881*** [0.837;0.916]	0.065 [-0.077;0.210]	0.402*** [0.266;0.519]	0.256*** [0.120;0.387]	0.374*** [0.230;0.505]	0.320*** [0.188;0.441]	0.416*** [0.282;0.530]	0.309*** [0.161;0.445]	0.219** [0.080;0.360]	0.316*** [0.165;0.459]
AEQ-U				I	0.715*** [0.626;0.790]	0.561*** [0.446;0.662]	0.849*** [0.801;0.890]	0.032 [-0.113;0.175]	0.337*** [0.201;0.458]	0.209** [0.073;0.341]	0.416*** [0.290;0.532]	0.251*** [0.107;0.382]	0.311*** [0.175;0.432]	0.250*** [0.106;0.379]	0.137* [-0.014;0.289]	0.193** [0.032;0.346]
AEQ-F1					I	0.611*** [0.509;0.699]	0.865*** [0.827;0.897]	0.139* [0.006;0.271]	0.283*** [0.141;0.405]	0.267*** [0.136;0.387]	0.394*** [0.260;0.516]	0.224** [0.077;0.359]	0.310*** [0.177;0.431]	0.315*** [0.181;0.438]	0.195*** [0.062;0.322]	0.271*** [0.135;0.399]
AEQ-F2						I	0.799*** [0.731;0.852]	0.022 [-0.117;0.164]	0.377*** [0.235;0.504]	0.271*** [0.134;0.393]	0.410*** [0.267;0.535]	0.275*** [0.124;0.409]	0.373*** [0.227;0.500]	0.273*** [0.120;0.409]	0.038 [-0.105;0.184]	0.232*** [0.063;0.394]
AEQ-O							I	0.109 [-0.027;0.246]	0.445*** [0.315;0.556]	0.337*** [0.215;0.449]	0.503*** [0.373;0.618]	0.356*** [0.215;0.480]	0.452*** [0.323;0.561]	0.387*** [0.249;0.508]	0.189** [0.052;0.325]	0.345*** [0.190;0.489]
SD-RE								I	0.134* [-0.10;0.263]	0.227** [0.078;0.371]	0.249*** [0.113;0.379]	0.327*** [0.200;0.441]	0.181* [0.055;0.301]	0.809*** [0.765;0.850]	0.231** [0.091;0.376]	0.242** [0.120;0.364]
SD-EC									I	0.483*** [0.365;0.586]	0.553*** [0.432; 656]	0.729*** [0.635;0.808]	0.806*** [0.735;0.860]	0.617*** [0.508;0.706]	0.218** [0.073;0.361]	0.469*** [0.332;0.595]
SD-SM										I	0.421*** [0.282;0.543]	0.399*** [0.251;0.525]	0.405*** [0.289;0.506]	0.576*** [0.466;0.671]	0.073 [-0.094;0.245]	0.397*** [0.287;0.501]
SD-SA											I	0.479*** [0.360;0.585]	0.576*** [0.462;0.668]	0.619*** [0.521;0.700]	0.085 [-0.066;0.236]	0.262*** [0.104;0.406]
SD-DG												I	0.755*** [0.648;0.843]	0.713*** [0.632;0.782]	0.245** [0.095;0.393]	0.498*** [0.368;0.619]
SD-SB													I	0.649*** [0.556;0.729]	0.249*** [0.113;0.385]	0.494*** [0.349;0.625]
SD-O														I	0.276*** [0.137;0.416]	0.477*** [0.372;0.574]
MLQ-P															I	0.469*** [0.347;0.579]
MLQ-S																I

**Notes:** \*0.05 < p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Abbreviations:** AIB, Ability to Integrate Beauty; AEQ-E, Emotional; AEQ-C, Cultural; AEQ-P, Perceptual; AEQ-U, Understanding; AEQ-F1, Flow-Proximal Conditions; AEQ-F2, Flow-Experience; AEQ-O, Overall Aesthetic Experience; SD-RE, Religious spirituality; SD-EC, Spirituality-Expanding Consciousness; SD-SM, Spirituality-Search for Meaning; SD-SA, Spirituality-Sensitivity to Art; SD-DG, Spirituality-Doing Good; SD-SB, Spirituality-Sensitivity to Beauty; O-SD, Overall Spirituality; MLQ-P, Presence of Meaning; MLQ-S, Search for Meaning.

## Discussion

The article presents the process of constructing a scale for measuring the ability to integrate beauty – one of the three components of aesthetic intelligence according to Ferrucci ([Appendix](#)). According to our knowledge, it is the first attempt to empirically operationalize part of his theory.

The aim of the first study was to develop the AIBS scale and to test its factor structure. While the first EFA analysis showed good results in terms of KMO, Bartlett's Test, and percent of variance, we decided to improve the new beauty integration scale by removing two items from the pool of 10, due to their lower cross loadings, and a third, due to lower correlation with the overall score. As a consequence of this choice, the final results of the entire scale and individual items significantly improved, leading to a one-factor solution with seven high-loading items.

During the second study, we verified whether the AIBS structure separated in Sample 1 would be confirmed. All the selected fit indices except  $\chi^2$  met the criteria of a good fit to the data, suggesting that we were dealing with a robust tool for measuring beauty integration as a dimension of aesthetic intelligence. When interpreting the lack of non-significant chi-square, it should be remembered that this statistic is likely to reject plausible models, and conclusions about data-model fit have to rely on different indices.<sup>60</sup> Moreover, we did not have to conduct any model modification to get a better fit by allowing the error covariance between specific items. The factor loadings of AIBS and the internal reliability for the ability to integrate beauty were excellent. Based on the results obtained, the seven-item model well represents the Sample 2 data.

A total of 3 hypotheses were also put forward in this study to carry out the validation of the new tool. The first one related to the positive correlation between the high ability to integrate beauty and aesthetic competencies in 4 areas of art (H1), that is in music, visual arts, literature and movies. Although the power of these correlations turned out to be diverse, depending on the area of art, the thesis that there is a positive relation between these variables was confirmed. The results suggest that people characterized by high aesthetic intelligence are very likely to have competencies in one or more areas of art. Perhaps, people with high aesthetic intelligence are more interested in art and, thanks to the experience depth and the ability to integrate aesthetic experiences, it is easier for them to achieve greater competencies in the scope of accessing works of art. It is highly probable that it is a reciprocal relation, which means that frequent contact with art could deepen the universal (going beyond art) ability to integrate beauty.

The second hypothesis (H2) was related to the anticipated positive relation between the ability to integrate beauty and the regulation of emotions through artistic creative activities (general factor) and with its individual dimensions, that is avoidance strategies, approach strategies and self-development strategies. Engaging in artistic activities, motivated by self-development, fits directly into the postulate of aesthetic intelligence being a resource for personal development. Correlation with another dimension of engagement in an artistic creative activity, that is approach strategies (redefining hard experiences or gaining new perspective) and avoidance strategies (distraction or redirecting attention as a source or relief or gaining space to confront the difficulty) with integration of beauty also seems justified. Other data showed that creating art may be a more effective form of coping with psychological distress than other therapies, particular, when concerning the strategy of distraction.<sup>61</sup> When it comes to gaining a new insight, practicing art offers new, non-verbal cognition methods. Harter<sup>62</sup> writes in her paper that visual images offer access to interpretation levels that are hard to express in words – linguistically unavailable. It is also known that using engagement in art as a method supporting other forms of treatment (art therapy) aims to develop identity, personality, sense of fulfillment, and focusing on mental needs.<sup>63</sup> People with high aesthetic intelligence are probably engaging in emotion regulation methods based on artistic creative activities to a greater extent. Perhaps coping with everyday challenges by engaging in art is a more natural choice for people who are sensitive to various manifestations of beauty. This is indicated by research into the construction of an aesthetic responsiveness scale, in which one's own artistic activity is considered to be a component of responsiveness.<sup>10</sup>

The third hypothesis assumed the co-existence of the ability to integrate beauty and the enhancement of all three dimensions of the light triad (H3). The results confirmed the assumption on the co-existence of the ability to integrate beauty and the faith in humanity, humanism and kantianism. People who evince a high ability to integrate beauty are at the same time socially oriented people who declare compassionate and protective beliefs and behaviors towards others. We suppose that conscious contact with beauty and the ability to integrate it make a person more sensitive to the

surrounding world and other people. Beauty is connected to the circumstances in which it occurs and, when it comes to works of art or architecture, to the author. An attempt to understand beauty present in human creations teaches one to discern the broader context. Therefore, we believe that high aesthetic intelligence may foster the shaping of socially oriented traits and attitudes.

In the third study, we once again verified whether the AIBS structure from Sample 1 could be confirmed. A single-factor CFA model was supported without any additional modifications (eg, error covariances). Inspection of the values of selected fit statistics indicated good fit for AIBS. Only  $\chi^2$  did not meet the criteria for a good fit to the data. Moreover, the factor loadings of AIBS and its internal reliability was excellent. Given these results, the model was recognized as well-fitting data.

A further three hypotheses were put forward. The first one related to the statistically significant positive correlation between the ability to integrate beauty and all dimensions of an aesthetic experience in relation to visual arts (H4). The results confirmed the assumption. The ability for deep aesthetic experiences, described as a sense of wonder, amazement, fascination, or being moved and touched<sup>64</sup> fits into the nature of aesthetic intelligence and the beauty integration seems impossible without them. Pelowski<sup>65</sup> infers that tears and a “feeling like crying”, as a result of cognitive processes under the influence of the contact with art, indicate the completion of the aesthetic experience process, including, apart from the positive assessment of goodness, beauty and the understanding of meaning, self-reflection and revelation. The results suggest that people characterized by a high ability to integrate beauty declare more intense experiences related to contact with plastic arts.

The second hypothesis from Study 3 adopted in this study was the assumption of the existence of a positive, statistically significant relation between a high ability to integrate beauty and the high results in individual dimensions of spirituality (H5). The outcomes confirmed this assumption and the results were not particularly surprising. Anyone who is characterized by the high ability to integrate beauty is at the same time characterized by a higher level of spirituality, understood as expanding awareness, searching for meaning, sensitivity to art, doing good, sensitivity to moral choices and the inner world, as well as the religious spirituality, but to a smaller extent. It may be inferred that using aesthetic intelligence fosters the development of various aspects of spirituality, as well as that of being someone with a developed spirituality that fosters the shaping of the ability to integrate beauty.

The third hypothesis from Study 3 related to the positive relation between aesthetic intelligence and the sought and perceived meaning of life (H6). The hypothesis was only confirmed in part. No correlation between the ability to integrate beauty and the perceived (present) meaning was found, but the relation is present at the tendency level. Whereas we observed its significant, but weak, correlation with the meaning that is searched for. Outcomes show that people searching for the meaning of life may be to a greater extent able to integrate beauty than people who are not oriented towards the search for meaning. Perhaps aesthetic experiences are for them one of the ways to discover the meaning of life. On the other hand, this would suggest that people with a high sense of meaning may fail to focus on the path of personal development, which aesthetic engagement may constitute: they minimize it, do not feel the need or do not take into account this possibility. When we searched for sources, we found that a similar conclusion was reached by Howell et al<sup>66</sup> who, in their research on self-fulfillment and engagement in beauty, observed that people with high self-fulfillment were not interested in beauty as a development path, which they described as the “tragedy of beauty”.

## Conclusions

The article discusses the process of construction and psychometric properties of a scale for measuring one of the dimensions of aesthetic intelligence, the ability to integrate beauty. The outcomes indicate that the tool is characterized by very good psychometric properties and that it is worth recommending its use in research in the field of psychological of aesthetics, the psychology of individual differences or artistic education.

A number of correlative hypotheses were put forward in the two independent studies. The results suggest that the ability to integrate beauty is indeed positively related to measures concerning music activities, the perception of artworks (6 dimensions of an aesthetic experience), regulation of emotions through artistic creative activities, as well as to aesthetic competencies in selected fields of art. Moreover, the studies show that the ability to integrate beauty is indeed positively related to the greater intensity of light triad traits (humanism, kantianism, faith in humanity) and to the development of the individual, in six areas of spirituality. These results indicate a possibly significant role of aesthetic intelligence in personal development.

As Kowalik<sup>67</sup> has stated, the usefulness of the created psychological knowledge is what counts, and art is not something that directly allows you to improve your life situation. He writes that, in psychology, the vision prevails of a person as a being adapting to the environment still dominates; emphasis is placed on facilitating or seeking ways to adapt (action towards the “outside”), and not on perfecting the inner life under the influence of aesthetic experiences. However, we believe that these two elements are not in opposition to each other. Ferrucci's construct is able to change thinking about the minor usefulness of the psychology of aesthetics in the practical approach, in everyday life, not only in the context of art therapy. The ability to integrate beauty, thanks to the enrichment of mental life, makes it possible to change beliefs and attitudes, potentially acting as a tool that increases adaptation to various situations.

## Limitations

Although our study brings new knowledge about the concept of beauty integration and offers a new tool to measure it, it also has its limitations. Apart from those related to the correlative nature of studies and the selection of the sample with the snowball method, we did not present any assumptions concerning the negative correlations of aesthetic intelligence. Therefore, these should be taken into account when designing further research using this tool.

Essentially, the measure developed as one-factor does not allow it to portray the level of all components of aesthetic intelligence; that is, it does not provide information about the extent of the perception of beauty or the level of intensity (depth or intensity) of experiences associated with being touched by beauty. Thus, we plan to continue work on the operationalization of Ferrucci's concept of aesthetic intelligence with the aim of creating or extending the current version of the scale by the two remaining dimensions of aesthetic intelligence.

According to Ferrucci, the ability to integrate beauty is a universal resource, available to all and it does not require special education in arts. Studies on the scale construction did not verify whether formal artistic education is important in terms of the level of the ability to integrate beauty. When it comes to obtaining data, in all three studies, the respondents were chosen from among people with different aesthetic competencies (people from non-artistic fields prevailed, with amateur artists and musicians also participating, as well as artists and musicians with a formal education in art). Due to the high unevenness of the three groups, statistical analyses were not carried out in this respect. It is a significant element for planning further studies using this tool.

Three studies described in the article were focused on operationalization of the concept of beauty integration, creation and perfection of the measuring scale. They merely touch on the subject. In the future, it would be interesting to examine the relation between the ability to integrate beauty and other personality traits (starting with those reported by other researchers to be associated with, for example, high aesthetic sensitivity or engagement in beauty, to universal ones that can be enhanced or developed through aesthetic intelligence, eg empathy).

Whereas in order to better understand the function and variability of aesthetic intelligence over the life course, a cross-sectional or longitudinal research strategy would have to be applied. Experimental studies on the development of the ability to integrate beauty based on planned interactions concerning contact with different forms of beauty would also be interesting. We hope that the limitations presented and the new horizons associated with the use of this scale will inspire further research.

## Disclosure

The authors report no conflicts of interest in this work.

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