Art Affinity Influences Art Reception (in the Eye of the Beholder)

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Abstract

It is widely assumed that one does only experience and appreciate what one knows. This becomes evident when overviewing studies on the interplay of art expertise and art reception. Many authors may state that art is only experienced through knowledge, yet several other authors did not find such links. All in all, many questions concerning the influence of art expertise on art reception and appreciation have remained unanswered, although this is a major topic in empirical aesthetics and art sociology. We therefore empirically tested the significance of art affinity in a large population of common museum visitors, based on the newly developed scale Art Affinity Index. Using different types of data (entrance surveys, exit surveys, physiological and locomotion recordings), we firstly found that art affinity influences visitors' aesthetic expectations prior to the museum visit, but is clearly less predictive of their actual experiences, physiological reactions and spatial behavior in the museum. Secondly, in visitors with high art affinity we found marked discrepancies between self-assessments before and actual experiences during the museum visits. We may conclude

that art affinity does have an influence on art reception at large, yet this linkage is not as close as assumed in the literature. The impact of art affinity on the experience and appreciation of art is more in the eye of the beholder because art affinity affects more visitors' attitudes towards art than their actual experiences or behavior.

Bourdieu and Darbel (1991) developed arguably the most influential book on the interplay between knowledge and art appreciation—*The love of art*. According to Bourdieu and Darbel, it is the 'educated taste' that enables someone to properly receive artworks; this taste has the property of competency – 'compétence artistique', which is socially determined. Bourdieu and Darbel's concept has remained fundamental to sociologically oriented art theory and art mediation to this day. Thus, we will describe their approach in some detail. In 1964 and 1965, Bourdieu and Darbel carried out over 9000 data collections using four different questionnaires spanning various studies. Standard socio-economic items included age, gender, income, occupation and qualification of the visitors. Bourdieu and Darbel also asked the museum visitors about their motivation to visit the museum ('What prompted you to visit the museum?', as well as 'Did you come to see anything in particular?'), and on their companionship (e.g., alone, family, friends etc.). The records included data on when each participant had first visited a fine arts museum, and on which had been the three museums visited prior to their index visit. Further items assessed whether orientation in the museum should be facilitated by more direction signs, whether more information about the artworks should be given, participants' preferences in visiting a museum (alone, in an organized group, with a knowledgeable friend) and, finally, which information the visitors actually processed (e.g., reading the labels, using a catalogue, hiring a tour guide etc.). Visitors rated their overall estimation of the museum, the presentation of the artworks, and the expense of the admission charge. Furthermore, the durations of visitors' tours through the exhibitions were estimated (Bourdieu & Darbel, 1991, Appendix 2).

These data collections were foundational for Bourdieu's art sociology. Bourdieu connected art perception to an information-theoretical notion of coding/decoding, assuming that artworks carry a code or a message within themselves, which can be decoded and understood (1970, p. 159). Knowledge about artists, artworks and styles, for Bourdieu, constitute significant factors in the competence of recipients' decoding capabilities (1970, p. 160). The more one knows, the more one is proficient in enjoying the artwork. According to Bourdieu, the 'love of art' arises from 'cultural capital', the notion he developed in his sociological writings based on the idea of an "aesthetic competence" acquired through education (Bourdieu & Darbel, 1991, pp. 37ff.).

Other authors investigated the correlation of knowledge and art appreciation with significantly less focus on socio-economic factors. A large body of empirical literature addresses the impact of expertise, knowledge, and art training on aesthetic appreciation – this is one of the topics investigated most in empirical aesthetics and aesthetic education. A selection of such studies will be introduced to provide insight into the variety of research carried out in recent years.

Aesthetic Understanding. "The Model of Aesthetic Understanding as Informed Experience" of Lachapelle et al. (2003) focused on direct encounters with artworks (p. 85). The model consists of two steps: Firstly, experimental learning (when encountering the artwork: mediated, objectified and constructed knowledge), and secondly, theoretical learning (reflecting on the artwork: theoretical and reconstructed knowledge). The authors concluded that with every loop in this learning model, a better understanding of the artwork is being constructed (2003, p. 95). To demonstrate this they used a spiral model, which indicates progress in art appreciation. According to this model, art competence is achieved through multiple cycles of encountering and reflecting.

Hekkert and van Wieringen (1996) investigated differences between art experts' and non-experts' appreciation of contemporary art. 34 art experts and 26 non-experts rated the

artworks of 30 young artists. Each artist's work was presented through a series of slides. The participants rated the artwork using bipolar scales ("simple-complex, static-dynamic, incoherent-coherent, absence of craftsmanship-craftsmanship, poor in concept-rich in concept, lacking power of expression-power of expression, negative development-positive development, not original-original, little personal affinity-strong personal affinity, uninteresting-interesting, and poor quality-good quality", p. 394). According to the authors, experts and non-experts reached high concord with respect to originality, but no agreement with respect to craftsmanship and quality. The authors concluded that experts appeared "…to attach much more value to originality in determining aesthetic quality than non-experts" (p. 389).

A differentiation between participants with formal art training and those without is often made across studies. McManus and Kitson (1995) and Locher et al. (1999) did so for studying the sensitivity to the balance structure of visual displays by showing the original and an experimentally reconstructed, less well-organized version of each painting. In a literature overview, Locher (2003) concludes that the findings demonstrated "…that naïve individuals, as well as those trained in the visual arts, were in good agreement as to the location of a painting's balance center within the composition and to the structural framework underlying its balance organization." (p. 128). Locher and Nagy (1996) could further show that even when using fixed viewing times for the participants (100ms or 5s), both naïve and sophisticated participants favored the less balanced paintings less than the more balanced versions, even with a single glance at each.

Aesthetic education. A rather different understanding of "knowing" and "experiencing" artworks can be found in the literature concerning aesthetic education. In the *Encyclopedia of Aesthetics* (1988, "Appreciation"), Stein Olson defines appreciation as "the act of apprehending a work of art with enjoyment." Based on this interpretation, Barrett (2007) argues for an "engaged appreciation" (p. 639), emphasizing interpretation and self-

reflection in the process of art experience. Winters (1998, p. 1) echoes such a position by stating that "Looking at and appreciating works of art are more a matter of sensitivity than of accumulated knowledge." Notably, Åhlberg (1999) adds:

> I do not wish to deny that formalist approaches to art, concentrating as they do on the artwork itself and its formal and structural properties, can illuminate certain aspects of works of art; but I do not believe that … [this] approach provides us with the key to understanding art (p. 11).

According to this position, the appreciation of visual art can only be described in terms of a thoughtful experience: "It is the appearance of a work of visual art to which we attend when we both understand and enjoy it; that is, when we appreciate it. But the apprehension of the appearance can bear more weight than a merely causal account of perception might offer" (Winters, 1998, p. 2).

The capacity for aesthetic knowing, this kind of differentiated knowledge, is also emphasized by Smith (1999). For Smith, art experience constitutes "a distinctive kind of cognition in which content, function, and feeling play important roles" (p. 17). Smith argues that an art experience corresponds to an amalgamation between the involvement of the beholder on the one hand and particular qualities of the encountered artwork or event on the other. Artworks are not essentially referring to things or events external to a work, but they inhabit an intrinsic/embodied meaning via their specific quality.

Clearly this literature review is only partial, but in summarizing the discourses in art sociology, art psychology, and art pedagogy, one notes a considerable and ongoing interest in the interplay of knowledge (or expertise) and art appreciation. It is also obvious that both terms—'knowledge' and 'art appreciation'—are employed inconsistently depending on the different disciplines and research interests. The overview shows that a great variety of methodological approaches, such as quantitative and qualitative surveys, experiments, and eye-movement recordings, were used to explicate the influence of knowledge, expertise, or

training on art reception vis-à-vis art appreciation/understanding. As such, despite thematic similarities, comparisons across studies are difficult to make. The examination of the influence of knowledge on art reception was sometimes entirely absent, and sometimes supported and explained via the influence of socio-economic factors of experience or of art training. As a result, we conclude that the findings are manifold, yet incomplete, and partially contradictory. In several studies a differentiation of artistically naïve and artistically experienced participants was based on samples of university students. The two groups were often constituted by the distinction between untrained viewers and those with formal art training, and recruited from art and art history departments of a university (cf. Bordens, 2010; Chatterjee et al., 2010; Locher & Nagy, 1996; Smith & Smith, 2006). Also, many of the studies were merely laboratory studies; in most cases, participants rated images of artworks on computer screens or slides (not actual artworks). Some of the studies also had rather small sample sizes. Only few studies addressed encountering real artworks in a gallery environment, surveying museum visitors in the process.

Considering the large efforts that are poured into art education by fine-art museums, it is important to use a scale that satisfactorily represents the influence of knowledge on art appreciation across disciplines. Various methods have been used to assess art expertise and affinity of viewers, notable the "aesthetic fluency" scale (Smith & Smith, 2006), which measures art expertise with a knowledge-based approach. This scale, however, proved to be inapplicable in the present project. Detailed information on the construction of an appropriate instrument to measure the influence of art affinity on art reception, together with a critical evaluation of other measures, are provided in Tschacher, Bergomi, & Tröndle (2015). We decided to develop an instrument—the *Art Affinity Index* (AAI)—within the context of the large-scale research project *eMotion – mapping museum experience*[1]. We will briefly describe the AAI, its factor structure and psychometric properties in the course of the next section.

[1] www.mapping-museum-experience.com/en

The principal goal of the present analysis concerns the modeling of how art expertise influences art reception. To date, results addressing the expertise-reception linkage have remained heterogeneous. This article does not concern ‘learning in the museum’ (for learning models in museums see Kirchberg & Tröndle, 2012), rather, we were interested in the impact of museum visitors' preexisting knowledge about art and relationship to art on their expectations and experiences in the museum. Therefore, art reception measured by the AAI was linked with museum entrance and exit survey data, as well as locomotion and physiological data. On the basis of previous literature on art experts/novices and their art reception, we formulated two general hypotheses.

First, we hypothesized that art affinity is associated with subjective self-reports. Specifically, we predicted that visitors with higher art affinity would differ in their expectations when entering the museum, in their overall assessments of the museum experience, and in their specific experience with single artworks. To investigate this first set of hypotheses we analyzed the subjective data collected in the entrance and exit surveys.

Essentially, prospective expectations are formed by one’s knowledge structures (which art affinity measures) but retrospective assessments are formed by one’s actual experiences and by, as e.g. Bourdieu & Darbel state, art affinity. The second group of hypotheses was therefore developed on the premise that the more one knows, the more one is proficient in enjoying the artwork. This difference of aesthetic encounters should be visible in differing behavioral patterns of museum visitors with varying art affinity (spatial behavior, walking patterns, and physiological arousal in front of artworks), but also in their assessments of the artworks after the museum visit. We therefore investigate the group of hypotheses that these variables are associated, respectively, with art affinity.

Method

Setting

The *eMotion* project aimed at investigating museum experience experimentally, analyzing both how and why art objects affect museum visitors. Between June and August 2009 the Fine Arts Museum St. Gallen (Switzerland) was outfitted with elaborate data acquisition technology. The exhibition *11 : 1 (+ 3) = Eleven collections for one museum* was particularly designed for the experimental purposes and consisted of approximately 70 artworks from the museum's collection combined with 14 detailed text panels presenting biographies of collectors who had donated to the collection. The exhibition roughly followed a chronological tour from Impressionism to Contemporary Art, displaying paintings, drawings, sculptures, and installations by Claude Monet, Max Liebermann, Ferdinand Hodler, Max Bill, Andy Warhol, Roy Lichtenstein, On Kawara and others. Artworks represented different styles (e.g., figurative, surreal, conceptual), came from different decades and were materially diverse (e.g., oil on canvas, ink, watercolor, bronze, wood). The exhibition spanned seven halls and the museum foyer, where the ticket counters, the project booth and entrance survey were situated.

Participants

Upon entering the museum, each adult visitor fluent in either German or English was invited to participate in the *eMotion* project. Single visitors and groups of up to five persons were included (the limitation of tracking five persons simultaneously was caused by the employed technology). At the end of the study period a total of 577 persons had participated, accounting for approximately every second visitor to the exhibition. The socio-economic background of this sample group was described in detail by Kirchberg and Tröndle (2015).

Materials and procedures

Before departing on their tour, participants were fitted with a data glove that contained various measuring devices to continuously trace exact visitor paths as well as the viewing duration in front of an object. Up to five participants could be identified simultaneously with a precision of 15cm and each participant's position was tracked once per second. Additionally, two physiological parameters were recorded: heart rate (HR) and skin conductance level (SCL), along with their respective variabilities—HRV and SCV.

The aforementioned datasets were accompanied by an entrance survey (administered prior to entering the exhibition), and an exit survey (administered directly following the visit). The entrance survey covered standard socio-demographic information as well as visitor motivation, attitudes towards and expectations of art exhibitions, and the visitor's art expertise using the AAI (cf. Tschacher, Bergomi, & Tröndle, 2015). The exit survey consisted of items addressing the particular tour the visitor had just completed, including their exhibition experience and the evaluation of five specific artworks selected on the basis of the visitor's physiological records. This individualized exit survey reproduced some entrance survey items, allowing for comparisons of pre-visit expectations and post-visit experiences. An anonymous code was assigned to each visitor in order to merge all collected data into a uniform record on the server (technical description and reliability of the methodology: Tröndle, Greenwood, Kirchberg, & Tschacher, 2012).

AAI. The AAI was constructed based on seven items of the entrance survey. Exploratory and confirmatory factor analyses of 288, respectively 289, visitors of the museum (Tschacher, Bergomi, & Tröndle, 2015) established a two-factor formulation of art affinity consisting of 'Art relation' and 'Art knowledge'. The confirmatory factor analysis corroborated the reliability of the factors. Factor 1, Art relation, stands for a visitor's self-reported interest and relation to art, which may be expressed in a visitor working

professionally in the art field. Factor 2, Art knowledge, indicates the extent to which a visitor is familiar with artworks, styles of art and artists. Art relation and Art knowledge were significantly correlated (r = .58). In the present application, we computed the AAI factors, 'Art relation' and 'Art knowledge', for the complete sample of 577 visitors, using the factor structure described in the exploratory factor analysis. Tschacher, Bergomi, & Tröndle (2015) assessed the association between the two AAI factors and visitor age, which was insignificant for Art relation and significant for Art knowledge: Art knowledge was found to increase with age as expected. The AAI of male visitors (38%) and female visitors (62%) did not differ significantly. In the previous year, visitors high in art affinity had visited museums significantly more often than those low in art affinity, which pointed to the validity of this measure. The psychometric properties of the AAI instrument were satisfactory: Reliability as well as validity of the AAI supported its application in the present context.

In the following, a number of statistical procedures are used to assess the hypotheses on the associations between AAI and assorted variables of art reception. For clarity, we will introduce the methodological details grouped together with the respective findings in the section below.

Results

Entry Survey

182 visitors declared themselves to be working in art-related positions (such as professional artist, hobby artist, fine arts teacher/professor, art critic/journalist, art manager/gallerist, museum director/curator, student of the fine arts or working in another area connected to the fine arts). We averaged the art affinity levels in the various subgroups of those visitors who held jobs and/or were professionally active in art-related contexts (bearing in mind that having an art-related vocation was used to construct Factor 1, Art relation, of the AAI). These 182 visitors with an art-related vocation had an average Art relation score of

1.32 (*SD* = .03) and an average Art knowledge score of 0.64 (*SD* = .06) (Table 1). The subgroups showed higher art affinity in both factors than those visitors who had vocations not related to art, which is an expected finding. Each subgroup was tested, using independent t-tests, against the other subgroups of the 182 visitors to describe the group with most art affinity among these particularly art-related visitors. Differences were found with respect to Art knowledge, but not Art relation: Visitors who worked in (other) art museums as well as art publishers/critics had significantly higher levels of Art knowledge, whereas hobby artists had significantly lower values.

Table 1. Subgroups among 182 visitors with art-related professions.

Art-related vocation	*n*	*mean Art relation (SD)*	*mean Art knowledge (SD)*
(all art-related vocations)	*182*	*1.32 (0.03)*	*0.64 (0.06)*
artist	35	1.32 (0.03)	0.79 (0.11)
hobby artist	17	1.36 (0.04)	0.10*** (0.10)
teacher of art	38	1.33 (0.03)	0.62 (0.11)
art publisher/critic	14	1.30 (0.04)	1.04* (0.18)
art manager/gallery	4	1.29 (0.08)	1.25 (0.34)
works in art museum	24	1.30 (0.03)	1.01** (0.14)
student of fine arts	18	1.34 (0.04)	0.45 (0.16)
other art-related job	55	1.30 (0.02)	0.55 (0.09)

Note. t-test comparisons of each art-related subsample with other art-related visitors:
* $p < .05$; ** $p < .01$; *** $p < .001$

Art Affinity and Education. The entry survey recorded the visitor's highest level of education (or, in cases where the person was still a student, the qualification for which the person was aiming). The levels were:

1 elementary/secondary school, O-Level (UK)

2 apprenticeships

3 A-Level (UK), high school (US), Matura/Abitur (Switzerland/Germany)

4 graduate studies: sciences/engineering

5 graduate studies: humanities/social sciences

6 graduate studies: arts/cultural sciences

Visitors with divergent educational levels also showed significant difference in terms of art affinity in variance analyses using F-tests (Art relation: $F(5,570) = 30.15$, $p < .0001$; Art knowledge: $F(5,570) = 19.28$, $p < .0001$). Higher qualifications were generally accompanied by higher art affinity (both factors).

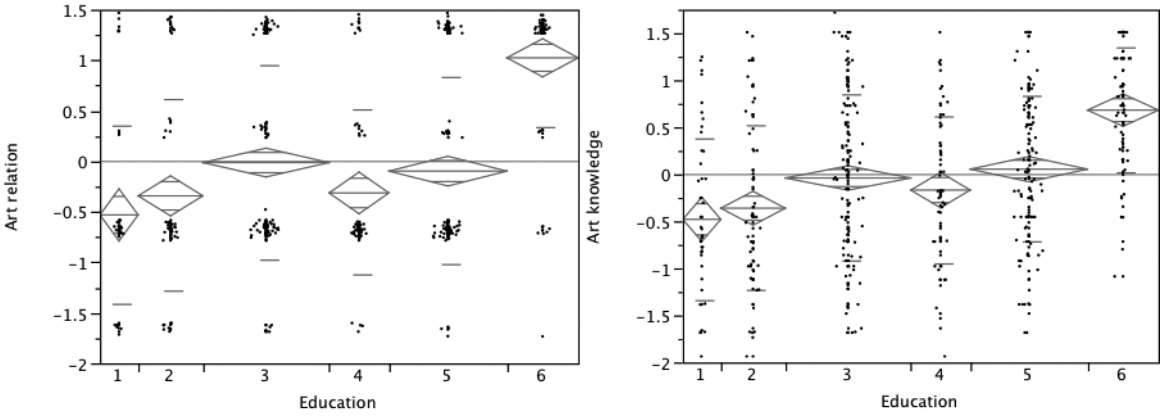


Figure 1. Association between art affinity factors and education.

Notes. left: Art relation (1a); right: Art knowledge (1b). The rhombs indicate the means of education levels and the 95% confidence intervals. 1 = elementary/secondary school, O-Level (UK), 2 = apprenticeships, 3 = A-Level (UK), high school (US), Matura/Abitur (Switzerland/Germany), 4 = graduate studies: sciences/engineering, 5 = graduate studies: humanities/social sciences, 6 = graduate studies: arts/cultural sciences.

We expected a steady increase of Art relation and Art knowledge by education (Bourdieu & Darbel, 1991), but the results were less evident: visitors with high school or A-level (3) and visitors with graduate studies in humanities/social sciences (5) were almost on a par. The visitors with graduate studies in sciences/engineering (4) demonstrated even lower art affinity levels, akin to visitors with an apprenticeship (2) level of education. The visitors with graduate studies in arts/cultural sciences (6) were considerably above average, which is self-explanatory. With respect to these results we concluded that the impact of possessing an academic degree was less crucial than the field in which one graduated. It should be noted,

however, that the results of the six educational groups established for our study reflect our museum public, and are not representative of the general Swiss population.

Art Affinity and Visitors' Expectations. The expectations related to an art exhibition were investigated using five-point Likert scales ("What do you expect of an art exhibition?"). The scales addressed twelve different motivational fields of a museum visit, such as "I expect the exhibition to be thought-provoking", "I expect to experience the beauty of the artworks" etc. In the museum visitors' evaluations performed in the entry survey, ten out of twelve expectations were significantly linked with art affinity (Table 2 gives the results of multiple regression analyses that assess the link of each expectation item with the two art affinity factors, age and gender). The most pronounced associations occurred with Art knowledge: visitors with high knowledge levels expected the exhibition to be thought-provoking, to improve their understanding of fine arts, and to have a convincing design. Art-knowledgeable visitors had fewer expectations to experience the beauty of the artworks, to be entertained, to enjoy the museum in silence, and to view something well-known or familiar. Visitors with high levels of Art relation expected to experience a deep connection to art and, again, a convincing exhibition design. Visitors high in Art relation had a lower expectation of enjoying a nice/pleasant time with friends in the exhibition (for details see Table 2).

Table 2. Multiple regression models of visitors' expectations (assessments prior to the visit). Predictors: art relation and art knowledge of visitors

	exhibition to be thought-provoking	**exhibition design to be convincing**	**to enjoy the museum space in silence**	**to improve my understanding of fine arts**	**to have a nice time with my friends**	to be immersed in an exhibition with all senses	**to experience a deep connection to art**	**to see something familiar**	**to experience the beauty of artworks**	**to be entertained**	to be surprised by new impressions	**to see well-known artworks**
n	567	567	567	564	534	563	562	566	562	560	566	565
explained variance (r^2)	7.1%	5.4%	3.8%	12.5%	4.0%	4.7%	5.6%	6.5%	8.8%	7.0%	0.9%	6.4%
Art relation (t value)	0.8 ns	2.5*	0.3 ns	1.7 ns	-2.1*	-0.2 ns	3.2**	-1.9 ns	-1.5 ns	-0.5 ns	0.6 ns	-0.7 ns
Art knowledge (t value)	4.5****	2.4*	-2.6**	4.1****	-1.8 ns	1.6 ns	1.1 ns	-2.0*	-3.5***	-2.8**	1.2 ns	-2.5*

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$; Positive t-values of a predictor mean that the respective expectation is more dominant in visitors with higher values of this predictor. Expectations with significant multiple regression models are printed bold.
Age and gender were included in the regression model to account for their confounding influence in the model.

Art Affinity and Visitors' Preferences: Art Form Preferences. Prior to their exhibition visit, participants reported their preferences for specific art forms and genres by answering the question "Which of the following art forms do you like?". In seven out of eight art forms proposed, significant relationships between visitors' preferences and art affinity

were observed. Generally, persons with greater art affinity exhibited higher preferences for all genres, especially for installation, video art, drawing and sculpture.

Table 3. Multiple regression models of visitors' preferences for art categories (assessments prior to the visit). Predictors: art relation and art knowledge of visitors

	Painting	**Drawing**	Photography	**Video Art**	**Performance**	**Sculpture**	**Installations**	**Sound Art**
n	566	567	567	564	561	565	565	563
explained variance (r^2)	9.6%	5.5%	4.8%	11.2%	6.9%	10.7%	20.1%	1.5%
Art relation (t value)	-0.0 ns	3.5***	0.4 ns	0.9 ns	2.2*	-0.3 ns	1.4 ns	2.2*
Art knowledge (t value)	2.4*	0.7 ns	0.5 ns	4.2****	3.2**	3.3***	8.3****	0.0 ns

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$; Positive t-values of an predictor mean that the respective preference is higher in visitors with higher values of this predictor. Preferences with significant multiple regression models are printed bold.
Age and gender were included in the regression model to account for their confounding influence in the model.

Art Affinity and Visitors' Preferences: Aspects of Artworks. A further item of the entry survey addressed an auxiliary class of preferences in art appreciation: "Art employs many features that attempt to draw attention from the viewer. How important are the following aspects of artworks for you?". Again, a majority of these aspects (seven out of nine) were significantly associated with art affinity, predominantly with Art knowledge (Table 4). Visitors with greater art affinity rated the beauty of the artwork and 'liking the artwork in general' as less important. In contrast, visitors with high Art knowledge deemed curatorial aspects such as the connection of the artwork to other works, and its presentation in exhibition space as more important. Art knowledge was also related to the importance of the artist and the composition of the artwork, whereas the content of the artwork was the only aspect associated with Art relation. The work's importance within the context of art history and the importance of the artistic technique were not significantly related with art affinity. A noteworthy finding was the polarity of predictors in the items 'beauty of the artwork' and as well 'liking the artwork in general', whose association with Art knowledge was negative.

Table 4. Multiple regression models of visitors' assessment of important aspects of artworks (assessments prior to the visit). Predictors: art relation and art knowledge of visitors.

	Composition of the artwork	Importance within art history	**Beauty of the artwork**	Artistic technique of the artwork	**Content of the artwork**	**Presentation in exhibition space**	**Artist of the artwork**	**Relation to other artworks in exhibition**	**Liking the artwork in general**
n	563	567	563	563	562	567	566	562	563
explained variance (r^2)	3.8%	1.6%	17.9%	0.6%	5.0%	7.2%	7.0%	9.0%	6.1%
Art relation (t value)	1.3 ns	0.7 ns	-0.8 ns	1.2 ns	2.5*	1.3 ns	-0.5 ns	1.2 ns	-0.5 ns
Art knowledge (t value)	2.1*	1.5 ns	-7.3****	-0.2 ns	1.9 ns	2.7**	3.3**	4.9****	-3.9****

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$; Positive t-values of an predictor mean that the respective aspect is assessed higher in visitors with higher values of this predictor.
Preferences with significant multiple regression models are printed bold.
Age and gender were included in the regression model to account for their confounding influence in the model.

Art Affinity and Assessment of the Art Museum's Importance. We found a relationship between the answer to the question "How would you characterize the importance of the Kunstmuseum St. Gallen?" and the visitors' art affinities. Possible answers ranged from 1 = international to 5 = local. Visitors with greater art affinity generally evaluated the importance of the Kunstmuseum St. Gallen more highly, with answers differing significantly with regard only to Art knowledge: $F(4,534) = 2.57$, $p = 0.037$.

Summary. We found that art affinity had a strong influence on visitors' general expectations of the visit (ten out of twelve items showed significant associations), on their preferences for art forms (seven out of eight items), and their assessments of specific aspects of artworks (seven out of nine items). We might state that visitors with greater art affinity generally gave a higher rating to the reputation of the fine arts museum. The self-rating data of the entrance survey thus clearly differentiated between visitors with greater and lower art affinity scores. We now turn to the findings of how art affinity was related to visitors' exit survey assessments given *after* the tour through the exhibition halls.

Exit Survey

Upon termination of their tours through the exhibition, the visitors were surveyed a second time. A set of twelve motivational topics had been presented in the entry survey to record expectations (Table 2). In the exit survey, we readdressed these motivational topics to assess visitors' experiences ("After viewing this exhibition, which of the following statements fits best your own experience?"), deploying the same wording as in the entry survey. Table 5 presents the relationships between the two art affinity factors and visitors' experiences.

Table 5. Multiple regression models of visitors' experiences (assessments after the visit; cf. Table 6). Predictors: art relation and art knowledge of visitors.

	exhibition was thought-provoking	exhibition design was convincing	enjoyed the museum space in silence	improved my understanding of fine arts	had a nice time with my friends	was immersed in the exhibition with all senses	**experienced a deep connection to art**	**saw something familiar**	experienced the beauty of artworks	was enter-tained	was surprised by new impressions	saw well-known artworks
n	549	540	545	541	519	546	546	549	546	545	548	544
explained variance (r^2)	6.5%	5.1%	1.3%	2.5%	1.8%	6.0%	9.2%	20.9%	4.5%	0.9%	0.7%	5.0%
Art relation (t value)	-0.2 ns	-0.6 ns	0.8 ns	0.5 ns	-1.3 ns	-0.6 ns	-0.1 ns	-0.6 ns	-0.5 ns	-0.6 ns	0.6 ns	0.0 ns
Art knowledge (t value)	1.6 ns	0.7 ns	0.1 ns	1.1 ns	-0.7ns	1.2 ns	3.8***	8.3****	1.8 ns	-0.9 ns	-0.6 ns	0.4 ns

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$; Positive t-values of a predictor mean that the respective experience is more dominant in visitors with higher values of this predictor. Experiences with significant multiple regression models are printed bold.
Age and gender were included in the regression model to account for their confounding influence in the model.

Art knowledge was found to be a significant predictor of only two out of twelve types of experiences, namely 'seeing something familiar' and 'experiencing a deep connection to the art'. No significant associations were found for Art relation. If one compares this result to those of Table 2, obvious changes in the assessments have occurred. The self-assessments before the museum visit differed highly for visitors with greater and lower art affinity. Before the visit, visitors with higher Art knowledge differed in their general expectations of their museum visit in ten out of twelve items. After the museum visit, only two items showed significant differences for visitors with higher art knowledge, pointing to disparities between antecedent self-assessments and actual experiences.

Art Affinity and Visitors' Satisfaction. The repetition of analogous topics, as expectation in the entry survey and as experience in the exit survey, allowed for the assessment of satisfaction or frustration of visitors' motivations in connection with the exhibition. We therefore computed the differences of both items (*expectation minus experience)* in each visitor and for each motivational topic. If the experience was equal to or stronger than its respective expectation, we assumed that the motivation was satisfied; if the experience item had values smaller than the expectation, we assumed a frustration in the respective motivation. According to the literature our hypothesis is that art affinity/art relation is a significant predictor of exhibition experience.

Table 6. Multiple regression models of the satisfaction of visitors' expectations (computed as 'expectation minus experience', i.e. high values indicate satisfaction, low values indicate frustration of an expectation; cf. Tables 6 and 9). Predictors: art relation and art knowledge of visitors.

	exhibition was thought-provoking	**exhibition design was convincing**	**enjoyed the museum space in silence**	**improved my understanding of fine arts**	had nice time with my friends	was immersed in the exhibition with all senses	**experienced a deep connection to art**	**saw some-thing familiar**	**experienced the beauty of artworks**	was enter-tained	Was surprised by new impressions	saw **well-known artworks**
n	549	540	545	538	492	543	541	548	543	538	547	542
explained variance (r^2)	5.1%	4.1%	1.9%	2.4%	2.2%	1.2%	2.6%	15.0%	6.4%	5.7%	0.8%	5.2%
Art relation (t value)	-0.7 ns	-2.1*	0.3 ns	-0.6 ns	0.4 ns	-0.5 ns	-2.6*	1.1 ns	0.7 ns	-0.2 ns	0.0 ns	0.4 ns
Art knowledge (t value)	-1.8 ns	-1.1 ns	2.2*	-2.2*	1.4 ns	0.0 ns	2.2*	7.1****	4.4****	1.9 ns	-1.2 ns	2.8**

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$; Positive t-values of a predictor mean that the respective expectation was satisfied more in visitors with higher values of this predictor.
Age and gender were included in the regression model to account for their confounding influence in the model.
Expectations with significant multiple regression models are printed bold.

This analysis yielded a number of associations with art affinity: Seven out of twelve motivational fields returned significant statistics in the regression models (Table 6). In comparing expectation to experience, one may thus note that satisfaction or even over-fulfillment was significantly linked with art affinity, especially in two fields, ‘seeing something familiar’ and ‘experiencing the beauty of artworks’. Seeing well-known art and enjoying museum space in silence also belonged to what visitors with greater art affinity experienced more often than expected. These findings relate to Art knowledge more than to Art relation. In fact, visitors with high Art relation tended to experience frustrated expectations (deep connection to art; exhibition design convincing). In one of the motivational topics, ‘deep connection to art’, Art knowledge and Art relation were associated in opposite ways: visitors with high Art knowledge tended to be satisfied whereas visitors with high Art relation tended to be frustrated (based on expectation minus experience).

Art Affinity and Aesthetic Evaluations of Works. Following the exhibition visit, five “index works” were comprehensively assessed using 19 items in the exit survey. The index works were selected as they characteristically represented specific styles (i.e., figurative, abstract, pop-art and conceptual) displayed in the exhibition. The index works were:

- Claude Monet: “Palazzo Contarini”, Venedig, 1908

- Ferdinand Hodler “Linienherrlichkeit”, 1909
- Hans Arp: “Entre Lys et défense”, 1958
- Andy Warhol: “Campbell’s Condensed Tomato Soup”, 1962
- Günther Uecker: “Antibild, Räumliche Struktur, Aggressive Reihung”, 1974

Factor analysis of these items yielded the following five aesthetic-emotional factors (Tschacher et al., 2012): “Aesthetic Quality” (the work is rated as pleasing; beautiful; emotionally moving; well done with respect to technique, composition, and content; artist and its importance in art history); “Surprise/Humor” (the work is considered as surprising; makes one laugh; partially, makes one think); “Negative Emotion” (the work conveys sadness; fear; anger); “Dominance” (the work is experienced as dominant; stimulating) and “Curative Quality” (the work is staged and presented well; is connected to other artworks). Each participant’s aesthetic and emotional preferences for an artwork were henceforth described by scores on these factors (for a detailed overview, see Tröndle & Tschacher, 2012).

In order to determine how art affinity relates to aesthetic evaluations, we applied mixed-effects modeling. For each aesthetic-emotional factor (i.e., the dependent variable), we computed a separate model to analyze the contribution of both factors of art affinity (the fixed effects, i.e. the predictors) (Table 7).

Table 7. Mixed effects models of the associations of aesthetic-emotional assessments, performed after the visit. Predictors: art relation and art knowledge of visitors.

dependent variable	Variance of total model	Number of observations (n)	random effect ‘artwork’: variance component	random effect ‘subjectID’: variance component	fixed effect 'Art Relation': t-test	fixed effect 'Art Knowledge': t-test
Aesthetic Quality	47.1%	1962	16.6%	13.1%	1.7 ns	3.8****
Surprise/Humor	46.9%	1962	15.6%	17.8%	-0.3 ns	-1.2 ns
Negative Emotion	37.6%	1962	8.1%	18.0%	1.6 ns	-2.0*
Dominance	31.1%	1962	10.2%	10.3%	1.1 ns	0.3 ns
Curative Quality	41.0%	1962	10.4%	21.1%	-0.2 ns	0.0 ns

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$
Age and gender were included in the regression model to account for their confounding influence in the model.

Overall, the greater the level of art affinity, the higher their evaluations of the aesthetic quality of the works and the lower their perceived negative emotion of the works. In both models, only Art knowledge was a significant predictor. For the factors “Surprise/Humor”, “Dominance” and “Curative Quality”, no link with art affinity was observed. Art affinity thus influenced the subjective evaluation of the works in two out of five factors, with age and gender considered as covariates. We found no statistical evidence for a correlation of Art relation with any of the five aesthetic-emotional factors.

Summary. With respect to the aesthetic evaluations of artworks, Art knowledge was found to be a significant predictor only in two out of twelve types of experiences, and no associations resulted for Art relation (Table 5). Furthermore, we found that visitors with greater art affinity rated the aesthetic quality of the works higher, and showed fewer negative emotions (Table 6).

With respect to our first hypothesis we may allude that in comparison to numerous findings resulting from the entrance survey which differentiated between visitors with high and low art affinity, the results from the exit survey were less clear-cut. Why this discrepancy between assessments prior to the museum visit compared to the assessments after the museum experience? Before we can discuss this, we will investigate the second hypothesis. Therefore we compare the ‘subjective data’ retrieved from the visitors’ self-assessments with the ‘objective data’ generated by the museum visitors, and examine overt behavioral and physiological measures.

Physiological and Locomotion Measurements

According to Bourdieu and Darbel, the viewing time of an artwork relates to the viewer’s capacity, i.e. Art knowledge, to decode the meaning of the artwork’s message (1991, p. 38). Visitors with high art affinity thus may be expected to remain longer in front of single artworks because they can ‘read’ the artwork and therefore derive higher pleasure from the

aesthetic encounter. Presumably, such visitors should also spend more time in the museum altogether. Bourdieu & Darbel (1991, Appendix 1) roughly estimated the time visitors spent in the exhibition, finding that the duration of the museum visit "…increases in proportion to the amount of education received, from 22 minutes for working-class visitors, to 35 minutes for middle-class visitors and 47 minutes for upper-class visitors." (ibid., 37f.).

In order to test this, we defined with the help of the curators the 'effective region' of each individual artwork. The 'effective region' is the space in front of the work, which a viewer had to enter in order to properly observe it (for a detailed description, see Tröndle et al. 2012). Entering this region is referred to as a 'visit'. By defining the regions and measuring the time visitors spent in front of an artwork, we tested the relationship between viewing time spent in front of an artwork (in seconds) and the number of visits to a specific artwork (all artworks could be accessed repeatedly, since visitors in our study were completely free in their viewing choices). The art affinity factors were predictors in all models (together with age and gender included as covariates to control for potential biases). The resulting mixed effects models, based on 1,962 viewings of artworks (visits) are provided in Table 8. The third analysis, also printed in Table 8, was a multiple regression model of the dependent variable 'Time spent in exhibition' measured for each visitor (n = 526).

Table 8. Regression models of behavioral variables measured during visits. Predictors: art relation and art knowledge of visitors.

dependent variable	Variance of total model	Number of observations (n)	random effect 'artwork': variance component	random effect 'subjectID': variance component	fixed effect 'Art Relation': t-test	fixed effect 'Art Knowledge': t-test
Number of visits to artworks	38.4%	1962	13.3%	16.6%	1.2 ns	1.0 ns
Viewing times of artworks	32.3%	1962	15.8%	6.0%	-1.2 ns	0.7 ns
Time spent in exhibition	4.4%	526	–	–	-1.2 ns	2.2*

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$
Age and gender were included in the regression model to account for their confounding influence in the model.

Looking at all three aspects of the viewing behavior–firstly, time spent in front of an artwork, secondly, number of visits to an artwork, and thirdly, the overall time spent in the exhibition–only the third aspect was significantly associated to art affinity. Although visitors with higher Art knowledge spent more time in the exhibition halls, they did not necessarily use this time for the viewing of artworks (see rows 2 and 3, Table 8).

Art Affinity and Locomotion Patterns. In light of the results of the entrance survey – such as their expectations regarding the visit (Table 2), the preferences of visitors with greater art affinity for specific art forms (Table 3), and their assessments of specific aspects of artworks (Table 4) – one may assume that visitors with high art affinity are more attracted by the artworks than those with low art affinity, and therefore show different walking patterns, such as approaching the artworks at closer distances or responding with higher physiological arousal. Tschacher et al. (2012) found significant correlations of physiological, embodied responses to art perception. Physiological measures were linked to predictors of aesthetic-emotional origin. The heart rate variability was accounted for by aesthetic-emotional factors: beautiful, high-quality artworks, and surprising/humorous artworks were significantly associated with raised heart rate variability. Higher skin conductance variability was significantly linked to more dominant artworks.

Therefore one could hypothesize that visitors with greater art affinity would show stronger physiological responses than visitors with low art affinity.

In addition to the statistical evaluation of the entry and exit surveys, we therefore tested this hypothesis in depth using movement tracking methods with integrated markers of physiological responses (for a detailed technical description see Tröndle, Greenwood et al., 2012 , on the development of the cartographies see Tröndle et al., 2011).

In the following, we apply a cartographic method to investigate Bourdieu and Darbel's (1991) proposal that visitors with high art affinity receive higher aesthetic gratifications than

visitors with low art affinity. We visually analyzed the locomotion cartographies in two groups, 30 randomly chosen visitors with low art affinity and 30 randomly chosen visitors with high art affinity.

In the following cartographies, visitor locomotion was graphically portrayed by grey lines, representing the path of every visitor (Figures 2a-b). The position of each visitor was tracked every second and subsequent points were connected to visualize the motion trajectory. When a visitor stopped walking, the lines became black. Dark grey markers (circular clouds / blots) on the trajectory represent significant SCV for that particular visitor, whereas light grey markers represent significant HRV. The stronger the physiological significance, the larger the marker (technical description: Tröndle, Greenwood et al., 2012). To reduce the number of figures, we based the cartographies on a composite of Art knowledge and Art relation. This composite measure of art affinity correlated highly ($r(574) = .79$; $p < 0.0001$) with Art knowledge as well as Art relation ($r(574) = .68$; $p < 0.0001$). The following two figures show the visitor paths and physiological reactions of 30 visitors with high (Figure 2a) and low (Figure 2b) art affinity.

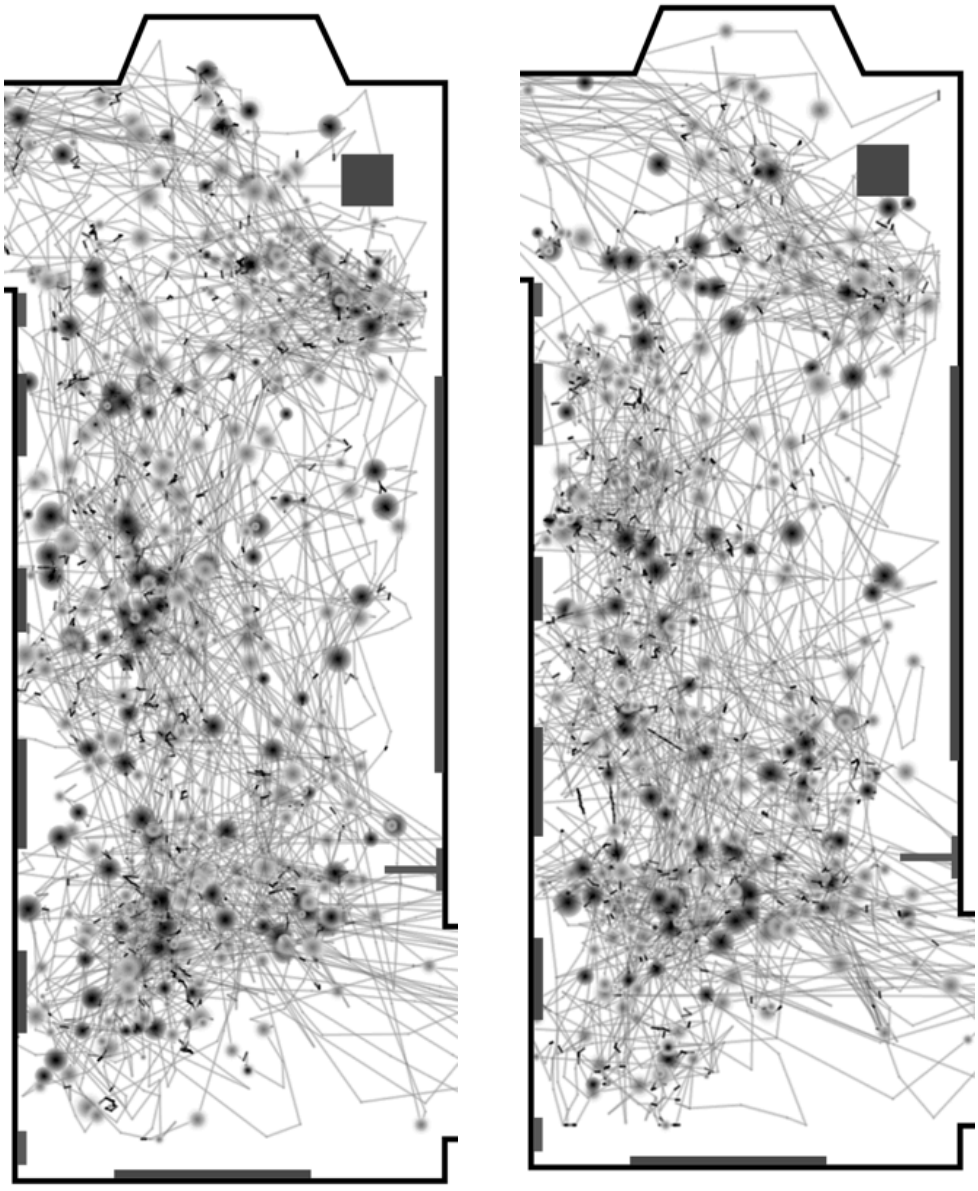


Figure 2a. 30 visitors with high art affinity.

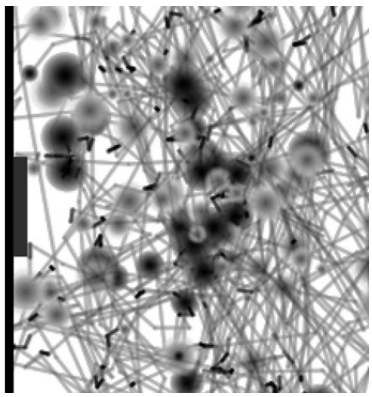
Figure 2b. 30 visitors with low art affinity.

Figure 2. Schematic view into Space 7 from above: Visitor locomotion.

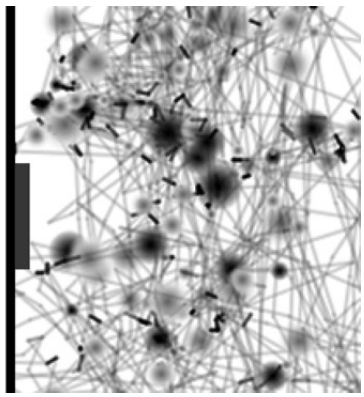
Notes. Dark line on the left, wall; rectangles, artworks; grey lines, locomotion trajectories; light grey markers (HRV); dark grey markers (SCV). Visitors entered Space 7 from the bottom right and left on the top left side.

In this exhibition hall the museum visitors could see pop-art artworks by Andy Warhol, Roy Lichtenstein, James Rosenquist, and others. The two cartographies appear similar at first glance. However, at a closer look one difference becomes apparent: In front of Andy Warhol's "Campbell's Condensed Tomato Soup" (Figure 3a) visitors with high art affinity showed stronger physiological responses (middle left hand in Figure 3b). In the close-ups, the differences are even more obvious (Figures 3b-c).

a.



b.



c.

Figure 3. Andy Warhol, Campbell's Condensed Tomato Soup (1962, oil on canvas, 30 x 23 cm).

Notes. *b* = 30 visitors with high art affinity, *c* = 30 visitors with low art affinity.

The visitors with high art affinity (Figure 3b) showed more SCV markers. The SCV markers indicate that this work was experienced as "dominant" by visitors with high art affinity. Importantly, Warhol's iconic artwork (Campbell's Condensed Tomato Soup) was the

only artwork from around 70 artworks representing different styles, periods, and media which evoked physiological differences. In all the other seven exhibition spaces no differences could be found, either for the physiological responses or the locomotion data comparing visitors with high and low levels of art affinity. Visitors with greater art affinity reported that they had a particular preference for certain art forms such as drawings, installations etc. (cf. Table 4). Yet, this was not recognizable using visual inspection of the cartographies. The distributions of physiological responses as well as the locomotion patterns in front of the artworks were generally similar.

This finding becomes more significant when comparing the influence of art affinity to the influence of other aspects such as environment or behavior. Tröndle, Wintzerith, Wäspe and Tschacher (2012) found that the behavioral aspect of conversing while visiting the exhibition (we asked 'Walking through the exhibition, did you discuss the artworks with anyone?') has a much stronger effect on the physiological and locomotion data than art affinity (www.tandfonline.com/doi/abs/10.1080/09647775.2012.737615). Similarly, the environmental aspect of re-hanging and repositioning artworks produces very clear and obvious changes in visitors' locomotion and physiological responses (Tröndle et al., 2014) (www.tandfonline.com/doi/pdf/10.1080/09647775.2014.888820). In this context and based on comprehensive visual inspection, we may conclude that art affinity exerted only a minor influence on the observable behavior of visitors in the museum and on their embodied reactions to aesthetic stimuli.

Due to previous findings (Tschacher et al. 2012; Tröndle & Tschacher 2012), which did generally show strong correlations of HRV, SCV and SCL with aesthetic experience, we also tested the impact of art affinity on physiology. We found no significant correlation between art affinity and physiological variables (Table Appendix physiological variables).

This means that the aesthetic sensation as an embodied reaction did not differ in visitors with high or low art affinity. This finding supports the finding in the cartographies discussed above.

Discussion

In the present project, a methodological triangulation of self-report entry and exit surveys, physiological data acquisition and locomotion tracking was implemented on a large scale, including 577 museum visitors. We used this broad spectrum of data to illuminate the influence of art affinity on the reception of fine arts in a differentiated way.

According to visitors' self-assessment in the entrance survey, significant correlations existed between art affinity and many variables that mark characteristics and attitudes of visitors (such as area and level of education, art-related expectations, preferences of art forms, and preferred aspects of artworks). If we had used only this type of questionnaire data, as many studies on this topic do, we would have been left with the impression that visitors with greater art affinity represent a unique category of recipients. Interestingly, however, the distinction between visitors of varying art affinity became less evident in the exit survey. Art affinity generally had only a moderate influence on aesthetic appreciation assessed by five different aesthetic-emotional factors. Finally, the physiological measures as well as locomotion and viewing behavior showed hardly any relationship with art affinity.

In short, art affinity had large effects on subjective appraisals and preferences, but most of these subjective attitudes did not translate into behavioral differences, or even into aesthetic experiences. These results foster the position of Winters (1998, p. 1), who stated that art appreciation would be rather influenced by sensitivity than of accumulated knowledge. But how can these incongruities between self-evaluation and the actual behavior in the exhibition spaces of the art affinity and less affine visitors be explained?

Art Affinity as a Form of Self-Assurance. In contemporary art discourse, beauty is a neglected and even irrelevant property of artworks; art should be critical, political or socially

engaged, rather than just ‘beautiful’. This discursive tendency, we believe, is mirrored in the following: Visitors with greater art affinity expressed a strong disinterest in the aspect ‘beauty of artworks’ in general; when asked about their specific expectations of this exhibition, visitors with high Art knowledge did not wish to see beautiful artworks. Yet, immediately after the visit, they reported having experienced beauty similar to other visitors. Consequently, visitors with greater art affinity were significantly more satisfied by the beauty of art than the other visitors. Similar results were found for ‘experiencing a deep connection’ to the art. Again we found discrepancies in visitors with greater art affinity between self-assessment and actual experience, i.e. before and after the museum visit. Visitors with greater art affinity also evaluated almost all art forms/mediums higher, but none of these preferences reappeared in their actual behavior.

One may therefore raise the question whether “art affinity” is, to a large degree, a social construction ascribing a moment of self-assurance and self-esteem to one’s person. In “The Rules of Art” (1996), Bourdieu laid out a theoretical conception to support this suggestion. He coined the term ‘illusio’, identifying a field-specific logic which stands for the construction of reality by actors in the art field: “In short, the *illusio* is the condition for the functioning of a game of which it is also, at least partially, the product” (p. 228). The belief in the value, “what matters to me” (Bourdieu, 1996) appears to be well captured in our concept of art affinity. Art affinity, via its factors Art knowledge and Art relation, is part of the self-concept of many visitors – in the Bourdieuian sense of a *foundation of belief* “…the illusion is reserved for the happy few, …the belief of learned people” (Bourdieu, 1996, p. 335). This is in line with our finding that particularly visitors who graduated in the arts or cultural sciences possessed high values of art affinity (cf. Kieren, 2010). It is also mirrored in the finding that visitors with greater art affinity generally evaluated the importance of the Kunstmuseum St.

Gallen more highly—they "believe" in its value. Hence, what are the implications of these findings for fine art museums and their art mediation programs?

Bourdieu and Darbel followed an information-theoretical model when speaking about art. For them, one has to *understand* and not to *experience* an artwork, their concept culminates in statements such as the following: "When the code of the work exceeds the code of the spectator in its sophistication and complexity, the latter cannot master a message which seems to him or her devoid of all necessity" (Bourdieu & Darbel, 1991, p. 43). As a milestone in empirical art sociology, Bourdieu and Darbel's study deserves appreciation; yet it must be read in its socio-historical circumstances (Holt, 1997). Today, based on new insights into embodied and situated cognition, we have moved beyond cognitivist frameworks. The nature of a picture is not assessed simply in terms of an understanding via its iconic references, its formal characteristics. Rather, we would advocate a more reflexive understanding of the relationship between visitor, artwork and art museum. The processes of art reception are decidedly too complex to be steered by a one-sided causal relationship between knowledge and aesthetic experience (Tröndle et al., 2014). Certainly the findings presented here have to be read within their timely and regional context. Therefore one has to be careful when making generalizations to other fine arts museum visitors in other countries. Nonetheless the findings rather question the oft-cited correlation of art knowledge or art relatedness (subsumed as art affinity) with art experience. This correlation may lie to a large part in the eye of the more or less art-affine beholder.

Bourdieu's critique of the museum as an institution led to an important social and political debate about the opening of museums in the 1970s and 1980s. Our findings have turned Bourdieu's presupposition on its head. Based on our results, one may suspect that art mediation programs may (paradoxically) build the obstacles that they seek to dismantle; where the stage of *illusio* in the field is established by conveying a sense to the visitors that they cannot receive artworks 'properly'. Some are experts on 'reading' artworks, while others

are ‘novices’ that require education in order to adequately experience artworks. Correspondingly, we found museum employees (who make up the professional group) most strongly correlated with the concept of art affinity. Critically speaking, one might say that art mediators assume a gate-keeping role by explaining to others how to properly ‘see’ or ‘read’ artworks (Tlili, 2008).

The present results can contribute to a new definition of the relationship between art and the observer within art sociology, as well as support a reconceptualization of the museum less as an apparatus of distinction and a place of exclusivity, but more as a site of equal aesthetic experience. This would open up new possibilities for museums to define relationships to their visitors, and bring forth a revised understanding of art mediation—rooted in an understanding of the aesthetic experience as a commonly shared opportunity.

Appendix

Mixed effects models of physiological variables measured during visits. Predictors: art relation and art knowledge of visitors.

dependent variable	Variance of total model	Number of observations (n)	random effect ‘artwork’: variance component	random effect ‘subjectID’: variance component	fixed effect 'Art Relation': t-test	fixed effect 'Art Knowledge': t-test
Heart rate level (HR)	66.4%	1883	5.9%	50.4%	0.2 ns	-0.2 ns
Heart rate variability (HRV)	41.7%	1882	10.7%	19.0%	-0.6 ns	0.8 ns
Skin conductance level (SCL)	97.8%	1787	0.2%	96.7%	-0.6 ns	-0.4 ns
Skin conductance variability (SCV)	43.1%	1783	3.5%	24.3%	-0.9 ns	-0.2 ns

Note. ns, not significant; * $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$
Age and gender were included in the regression model to account for their confounding influence in the model.

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