



universität
wien

DIPLOMARBEIT

Titel der Diplomarbeit

„Context effects on the appreciation of facial
attractiveness“

Verfasserin

Katharina Ott, BA

Angestrebter akademischer Grad

Magistra der Naturwissenschaften (Mag. rer. nat.)

Wien, 11.06.2015

Studienkennzahl lt. Studienblatt: A 298

Studienrichtung lt. Studienblatt: Diplomstudium Psychologie

Betreuerin / Betreuer: Mag. Marcos Nadal-Roberts, PhD

Für meine Schwester

Acknowledgement

I would like to express my sincere thanks to my supervisors Mag. David Brieber and Dr. Marcos Nadal-Roberts for giving me the opportunity to study this topic. Due to their continuous support and advice I have learned a lot and contributed a lot to the quality of this thesis.

Furthermore I am grateful to Josephine Wagner and the team of the gallery Raum mit Licht. They were so kind to offer the premises for this thesis and gave professional input how to hang the images.

Special thanks are given to Eva Luna Farina, Rob Horwood and Stephan Preinztorfer for spending time to read this thesis and providing useful suggestions about the readability.

Ingeburg Ott, Herbert Ott, Helga Fasching, Stephan Preinztorfer, Bernhard Gössweiner, Vera Gubensäk, Dominik Matzinger, Anna Reingruber, Julian Provenzano, Andrea Spitzer and Martina Reitmayr; I do not know where to begin. You have encouraged me, challenged me and supported me through my studies.

Danksagung

Ich möchte meinen Betreuern Mag. David Brieber und Dr. Marcos Nadal-Roberts für die Bereitstellung dieses Diplomarbeitsthemas danken. Ihre fortlaufende Unterstützung und Begleitung hat mich zum einen viel gelehrt und zum anderen hat diese entscheidend zu der Qualität dieser Diplomarbeit beigetragen.

Weiters möchte ich Josephine Wagner und den MitarbeiterInnen der Galerie Raum mit Licht danken. Sie haben großzügiger Weise die Räumlichkeiten der Galerie zur Verfügung gestellt und weiters durch ihren professionellen Input die Hängung der Bilder ermöglicht.

Außerdem möchte ich Eva Luna Farina, Rob Horwood und Stephan Preinztorfer danken, die so freundlich waren diesen Text Korrektur zu lesen.

Ingeburg Ott, Herbert Ott, Helga Fasching, Stephan Preinztorfer, Bernhard Gössweiner, Vera Gubensäk, Andrea Spitzer, Julian Provenzano, Anna Reingruber, Dominik Matzinger und Martina Reitmayr; ich weiß nicht wo ich anfangen soll. Ihr seid diejenigen, die mich ermutigt, gefordert und gefördert haben.

1. Zusammenfassung

Vorhergehende wissenschaftliche Studien haben sich auf die Auswirkungen von Kontext auf Kunstwertschätzung fokussiert. Die Studie von Brieber, Nadal und Leder (2014) berichtete, dass die Zusammenwirkung von einem räumlichen Kontext einer Kunstgalerie und semantischen Kontext die Wertschätzung von Kunstwerken erhöht. Stimuli wie Gesichter sind belohnend und kontextsensitiv wie Kunstwerke. Deshalb lautet die Fragestellung dieser Studie ob dieser „Museumseffekt“ auch auf Nicht-Kunstwerke wie Gesichter übertragbar ist. Des Weiteren möchte die Studie untersuchen, ob die spezifischen Charakteristika von Gesichtern (Attraktivitätslevel) diesen Effekt moduliert. Innerhalb eines ausbalancierten within-subject Studiendesigns schätzten 60 Versuchspersonen Gesichter, welche sich in ihrem Attraktivitätslevels unterschieden, einmal in der Galerie und eine Woche später im Labor hinsichtlich ihrer Attraktivität ein. Die Attraktivitätseinschätzungen unterschieden sich nicht im Labor oder in der Galerie. Weibliche Gesichter wurden als attraktiver eingeschätzt als männliche Gesichter. Außerdem wurden sehr attraktive Gesichter als attraktiver eingestuft als nicht-attraktive Gesichter. Diese Ergebnisse deuten darauf hin, dass die aufmerksamkeitsbindenden Eigenschaften von Gesichtern den subtilen Kontexteffekts der Galerie überboten haben. Zudem scheint der Museumseffekt sowohl auf räumliche als auch auf semantische kontextuelle Hinweisreize zu basieren.

Schlüsselwörter: Museumseffekt, Gesichter, Valenz, Modulation, physischer Kontext

2. Abstract

Recent research has focused on effects of context on art appreciation. Brieber, Nadal and Leder (2014) reported that the physical context of a gallery combined with semantic context enhances the appreciation of artworks. Stimuli like faces are rewarding and context sensitive like artworks. Therefore this study seeks to examine if this museum effect is specific for art works or if it is transferable to non-artistic works like faces as well. Furthermore this study addresses the question if specific features of the stimuli (level of attractiveness) modulates this effect. A fully counterbalanced within subject design was chosen. The participants rated 60 faces, which differed in their attractiveness one time in the gallery and one week later in the laboratory. The attractiveness ratings did not differ in the gallery or the laboratory context. Female faces were perceived as more attractive than male faces. Moreover attractive faces elicit higher preferences than non-attractive faces. These results suggest that the attention binding properties of faces have overridden subtle context effects. Furthermore the museum effect may work as a function of physical and semantic contextual cues.

Key words: museum effect, faces, valence, modulation, physical context

Table of contents

1. Zusammenfassung	8
2. Abstract.....	9
3. Introduction	13
2.1. Aesthetic appreciation	14
2.2. Modulating factors of aesthetic judgement	15
2.3. The impact of context on art appreciation	17
2.4. Context sensitivity of non-artworks	19
2.5. Aesthetic perception style.....	19
2.6. Aesthetic preferences and physical context.....	21
2.7. Aesthetic stimuli	24
2.8. Faces and attention	25
2.9. Facial attractiveness.....	25
2.10. Faces and context sensitivity.....	28
2.11. Faces and the processing of visual scenes.....	30
2.12. Modulation effects	31
2.13. Additional research questions	33
2.14. The Present study	34

4. Experiment 1	35
3.1. Method.....	36
3.2. Procedure	36
3.3. Results	37
3.4. Discussion.....	39
5. Experiment 2	40
4.1. Method.....	40
4.2. Stimuli	40
4.3. Procedure	42
4.4. Results.....	45
6. General Discussion.....	54
4.5. Procedure effects on time	56
5.1. Positive and negative affect.....	56
5.2. Aesthetic properties	57
5.3. Main effect of sex	59
5.4. Attractiveness ratings and context.....	59
5.5. Comparison to other studies	62
7. Conclusion.....	65
8. Appendix	66
9. List of figures and tables	68
10. References	69

8. Lebenslauf	78
---------------------	----

3. Introduction

Objects are never perceived isolated from their context (Bar, 2004; Oliva & Torralba, 2007). This is applicable for all daily objects as well as for art. Context has always been important for art. Especially installation art is context bound and challenges the perceiver to acknowledge the physical space (Kelly, 2010; Azhari & Azizan, 2007). Others like the land artist Richard Long tried to preserve their artworks in their natural context – namely nature itself. Designed to be perceived in their natural surroundings, Long faced the difficulty of making his art accessible to a broader audience and the art market.

“The outdoor and indoor works are complementary, although I would have to say that nature, the landscape, the walking, is at the heart of my work and informs the indoor works. But the art world is usually received 'indoors' and I do have a desire to present real work in public time and space.” (Long, 1990)

With this notion Long refers to the gallery space also known as the white cube. A white cube is a space that was designed to enfold effectively the aura of the art work (O'Doherty, 1986). And furthermore O'Doherty (1986) claims that the “white cube as part of the art work”. Especially in the reception of modern art, physical space and context became important to identify objects as artworks. In consideration of this development Riggle (2010) noted, that art and non-art can no longer be defined by their visual properties alone, because

”artworks, it seemed, could look like, or be, anything. Even the most banal everyday object could be “transfigured” by appropriately placing it in the artworld.”

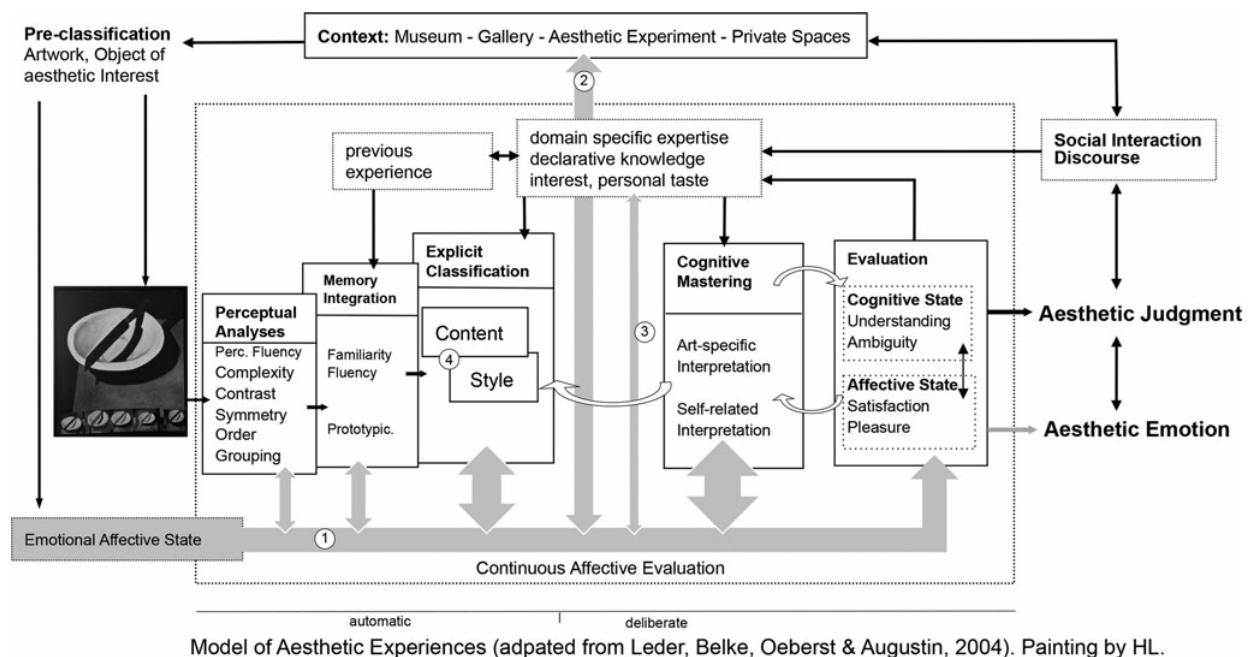
In the consideration of the nature of such physical context Carr (2001) stated that the museum space is a place of self-reflection in which the visitor can contemplate about his or her own experiences, wishes and fears. Furthermore Carr (2001) refers to the museum

as a kind of safe space, which enables the visitor to explore his or her own opinions without any feelings of threat.

2.1. Aesthetic appreciation

In accordance with the above noted importance of context recent psychological models about aesthetic appreciation (Leder, Belke, Oberst & Augustin, 2004; Leder, Gerger, Dressler & Schabmann, 2010; Leder & Nadal, 2014) identify context next to properties of the artwork and the perceiving subject as a crucial factor for art appreciation.

Figure 1. Model of aesthetic appreciation from Leder et al. (2004)



Note. This is an adaption of the model of Leder et al. 2004 from Leder and Nadal (2014). The major changes are numerated.

Context as defined by the model of aesthetic appreciation from Leder et al. (2004) prompts the identification of an object as an art object. This “pre-classification” (see

Figure 1) triggers cognitive processes, which Leder et al. (2004) classifies in four stages. The perceiver engages at first in a 1) perceptual analysis of the object regarding e.g. its shape or complexity, then the perceiver 2) integrates implicit memory like familiarity or prototypicality (e.g. how often has the perceiver seen this painting before), in the third stage the artwork is classified regarding its style (is it Surrealism, is it Cubism?) and content and finally 4) the perceiver tries to interpret the artwork. This process is labelled as cognitive mastering. These cognitive components are accompanied by a continuous affective evaluation. Moreover the emotional (affective evaluation) and cognitive output (aesthetic judgement) reciprocally influences each other. Through this process of evaluation the perceiver derives pleasure. Figure 1 shows the ascending character of these cognitive stages and aesthetic emotions. (Leder & Nadal, 2014).

2.2. Modulating factors of aesthetic judgement

Furthermore there are some factors which modulate the quality of aesthetic judgement like time (Smith & Smith, 2001; Tröndle, Greenwood, Kirchberg & Tschacher, 2012; Brieber, Nadal, Leder & Rosenberg, 2014) or art expertise (Leder, Gerger, Brieber & Schwarz, 2014; Leder et al., 2004; Augustin & Leder, 2006).

The judgement of layperson in contrast to art experts rely more on their intuition. Therefore they prefer what elicits positive emotions (Augustin & Leder, 2006). Art experts on the contrary engage in a more distanced perception style (Gerger, Klemer & Leder, 2014), which results in a more attenuated aesthetic response to artworks as well to non-art works (Leder et al., 2014). Moreover a recent study (Leder et al., 2014) reports that an increase with art expertise correlates with a decrease of inter correlation among emotional and cognitive variables. Which means that art experts respond not as intense to the valence of stimuli as art naïve viewers do. Thus lay viewer are more sensitive to the valence properties of the stimuli. Furthermore lay viewer rely heavily on contextual

information like information from experts regarding authenticity of the art work (Huang, Bridge, Kemp & Parker, 2014). Consequently lay viewer might depend more on external cues like a gallery space to make their aesthetic judgements than expert viewers do.

A recent focus of aesthetic research is the impact of time and space on aesthetic appreciation (Leder & Nadal, 2014). Leder and Nadal (2014) conclude through several studies (Smith & Smith, 2001; Troendle et al., 2012; Brieber et al., 2014) that an aesthetic experience is closely connected to its duration. An aesthetic episode is defined by its prolonged time which allows the perceiver to encounter the art object in a process of several feedback cycles of perception, cognition and emotion. This assumption is in line with previous findings (Leder, Carbon & Ripsas, 2006), which suggest that the comprehension of an art work is modulated by its presentation time. Thus when artworks are perceived for a longer period of time an aesthetic episode might follow (Leder & Nadal, 2014).

As mentioned above, context influences aesthetic appreciation (Leder et al., 2004). On the one hand context prompts the pre-classification of an object as an art object (Leder et al., 2004, Brieber, et al., 2014; Brieber, Nadal & Leder, 2015) and on the other hand context influences expectations and attitudes towards the experience of these aesthetic objects (Cupchik et al., 2009; Leder & Nadal, 2014; Brieber et al., 2014). These findings are in line with general context research. According to recent research real life experiences build up expectations and schemata; these expectations can be framed by context whereby specific visual scenes are experienced and consequently impact how we perceive our environment (Levanthal and Scherer, 1987; Bar, 2004). This context effect works in a top down process (Bar, 2004). Applied to aesthetic appreciation this means that people are used to see art works in a gallery or a museum. Therefore the context

either by semantic information or the visual scene of an art gallery lets us expect to see an art work or even more to experience aesthetic pleasure.

Hitherto, context is an often underestimated aspect in empirical aesthetics, and most studies present aesthetic objects isolated on a screen or miss to investigate the modulating character of context on aesthetic preferences (Gartus, Klemer & Leder, 2014). Though, it is well known that visual context has an important impact on behavioural performance, perceptual judgments and cognitive control processes (Bar, 2004; Oliva & Torralba, 2007; Engelmann & Hein, 2012). Therefore this diploma thesis focuses on the contextual effects on aesthetic appreciation. In the following section I want to review recent empirical findings on the modulating effect of context on aesthetic appreciation.

2.3. The impact of context on art appreciation

Several studies indicate that semantic material like titles enhances the understanding (Leder et al., 2006) and the appreciation of art (Swami, 2013; Millis, 2001). Different types of information (e.g. elaborative or descriptive titles) enhances the understanding for specific art genres (Swami, 2013; Leder et al., 2006) and change during the time course of aesthetic appreciation (Leder et al., 2006). Elaborative titles (titles which provide the viewer with possible interpretations) increased the understanding more than descriptive titles (titles which describe what is depicted e.g. lakeside view with water lilies).

In accordance with the effect of semantic information on understanding (Leder et al., 2006; Millis, 2001; Swami, 2013) recent studies report that semantic context about the origin of the art work (Kirk, Skov, Hulme, Christensen & Zeki, 2009, Gartus and Leder, 2014; Gerger, Leder & Kremmer, 2014; Hagtvedt & Patrick, 2011) or its genuineness (Noguchi et al., 2011;) influences the appraisal of the art works.

The study of Kirk et al. (2009) addresses the question if there is an effect of context on the appreciation of art. In their study the shown artworks were described to either origin from a gallery or being generated from a computer. People rated art works labelled to origin from a gallery as more aesthetically pleasing as when labelled to origin from a computer. Similarly Hagtvedt and Patrick (2011) reported that the label of an object as an art object increases the evaluation of the object as in contrast to when the same object is labelled to be a mere illustration. This “art infusion effect” (Hagtvedt & Patrick, 2011) is based on the expectation that art is something precious, intellectual and has a certain monetary value. These findings suggest that the museum surrounding is something precious and unique and consequently enhances the evaluation of art works (Kirk et al., 2009).

There also are recent attempts to investigate the effect of genuineness on art appreciation (Noguchi & Murota, 2013; Huang et al., 2011). Genuineness and authenticity of an art work is a crucial factor in the art historic discourse of art. Walter Benjamin (1935) equals the genuineness of an artwork with its unique “aura”, which cannot be replaced by modern reproductions. In this sense using genuineness framing on renaissance sculptures (genuine vs. fake) and show them either in original shape or deformed Noguchi and Murota (2013) reported that sculptures labelled as genuine are more appreciated than sculptures labelled as fake. Furthermore people tend to like original sculptured more than deformed sculptures. Huang et al. (2011) reported comparable results with paintings. After manipulating participants’ expectations about the authenticity of the artworks, genuine pieces are liked more compared to labelled copies. These enhanced preferences were accompanied by an increased activity of the orbitofrontal cortex, which is discussed to be involved in art appreciation and general rewarding processes (Brown, Gao, Tisdelle, Eickhoff & Liotti, 2011).

2.4. Context sensitivity of non-artworks

Furthermore there was a recent attempt to investigate the effect of framing on non-art images with emotional valence (Gerger et al., 2014; Wagner, Menninghaus, Hanich, & Jacobsen, 2014). These two studies used images from the International Affective Picture System (IAPS) (Bradley & Lang, in press), framed as art works elicit significant different aesthetic and physiological responses compared to as when framed as news photography. Positive and negative emotions are less intense when the images are considered as art works in comparison to news photography. These attenuated emotional responses may appear due to a distanced perception style which is triggered by the art context (Gerger et al., 2014; Cupchik, 2002). Likewise Wagner et al (2014) reported this altered emotional response for disgusting images. When framed as art works the disgusting images prompt more positive emotions compared to when labelled as educational documentary material. Conclusively the cognitive framing of an art context might work independently from the depicted stimuli. Thus viewers may have an art experience for non-art works if the cognitive scheme of an art work is triggered (see also Leder & Nadal, 2014).

2.5. Aesthetic perception style

There are some theories about why the appreciation alters over different context conditions. As mentioned above some researchers (Gerger et al., 2014; Cupchik, 2002; Cupchik et al., 2009) argue that the gallery context prompts a perception style that allows the perceivers to distance themselves psychologically from the objects. This

psychological distance is reflected by reduced intensity (Gerger et al., 2014) and a generally more positive evaluation of non-art images (Wagner et al., 2013).

This is in line with another study which claims that an aesthetic approach towards a painting prompts a subjective experience that is different from everyday concerns (Cupchik et al., 2009). The aesthetic approach was defined to view the paintings in an attached and engaged way. In contrast the pragmatic everyday approach encouraged the participants to look at the paintings in an objective and distanced manner. The aesthetic approach activated the bilateral insula, which is thought to be involved in the experience of emotion. In contrast the pragmatic everyday approach activated the fusiform gyrus, a brain region which is important to identify meaningful objects (e.g. like faces, see also McCarthy, Puce, Gore & Allison, 1997) and the integration of situational information of visual scenes. Likewise Scherer (2005) noted that objects are perceived in a different way in a context defined as art compared to a day-to-day life perception of the same object. Therefore external cues like context provide the perceiver with cues as to how to react to the art objects (Gerger et al., 2014). Moreover as mentioned above the art context elicits specific expectations about the experience in this context (Cupchik, 1994) and this creates with the words of Gerger et al (2014) “a positive bias towards the context”. Therefore this positive bias might also work for everyday and pragmatic stimuli.

In summary, the appreciation of artworks is modulated by their context. The artistic context of an object provides the perceiver with information, which heightens the perceived preciousness (see also Hagtvedt & Patrick, 2011) of the object. These context cues enable the perceiver to approach objects with a specific awareness (Cupchik et al., 2002, Scherer, 2005; Carr, 2001) that results in an enhanced aesthetic experience and an attenuated emotional response (Gerger et al., 2014; see also Leder et al., 2013).

2.6. Aesthetic preferences and physical context

These studies mentioned above have been conducted in a controlled environment like a laboratory or an fMRI scanner. Yet there is a recent demand to conduct studies about art in a natural and ecologically valid environment (Tschacher et al., 2012; Brieber, Nadal, & Leder, 2015; Brieber, Nadal, Leder & Rosenberg, 2014; Brieber, Nadal & Leder, 2015a; Brieber, Leder & Nadal, 2015b) namely a gallery or museum space.

Several studies suggest that people's emotions and self-perception alter during the course of a museum visit (Smith & Smith, 2001; Tröndle et al., 2012, Mastandrea, Bartoli & Bove, 2007; Mastandrea et al., 2009). Mastandrea and colleagues' (2007, 2009) results illustrate how different physical contexts (Modern art museum vs. ancient art museum) and personality traits influence the aesthetic experience in a museum. Visitors of a modern art museum named pleasure seeking and emotional experience as their motives to go to the museum (Mastandrea et al., 2007). On the other hand acquiring knowledge and understanding were the principle motives for visitors of an ancient art museum. Furthermore modern art museum visitors had a higher score in sensation seeking and had higher levels of education (Mastandrea et al., 2009). The study of Tröndle and colleagues (2012) indicates that looking at paintings evokes distinguished autonomous responses and furthermore that movement patterns in the museum are related to the experience of art. Additionally self-perception changes with the progression of a museum visit (Smith & Smith, 2001). People stated feelings of higher reflection and awareness of their obligations to others. This mental state increases steadily and then drops towards the end of their visit.

To sum up these findings the museum context elicits a specific emotional experience (Mastandrea et al., 2007; Mastandrea et al. 2009, Smith & Smith, 2001) as well as physiological responses (Tröndle et al. 2012).

However these studies do not report a specific context effect on art appreciation per se. Even though it is well known that there are differences between experiments conducted in a laboratory and the same experiments done in a gallery (Leder et al., 2004). Likewise Heidenreich and Turano (2011) pointed out:

“Given that several aspects of the viewing process, such as stimulus size, angle of regard, and viewing distance, can differ markedly between labs and galleries, effects found in the former environment may not generalize to more natural settings.”

Some studies investigated the different experience between a curatorial space (gallery or museum) and a laboratory experience. One study of Locher, Smith and Smith (1999) reported that paintings depicted in a gallery context are appreciated more compared to when depicted on a computer or a slide. Three recent studies investigated the modulating effects of context on art appreciation for lay viewer. The study by Brieber et al. (2014) shows that a manipulation of physical context (laboratory vs. context), presentation format (original vs. computer presentation) and additional information about the artwork influences art appreciation and viewing time. Participants rated the art works presented in galleries as more arousing, like and understand them more and looked at them longer than compared to shown in the laboratory context (Brieber, et al., 2014). Similarly a recent study reported (Leder & Gartus, 2014) that modern art works were rated as more interesting in the gallery (white cube) as when shown in the street (grey cube). A related study (Gartus, Klemer & Leder, 2015) stated that the participants generally looked longer at modern artworks and graffiti in the gallery than presented in a street context.

Besides, another study (Brieber, Nadal & Leder, 2015a) was able to replicate the findings of Brieber et al. (2014). The study created three groups; in the first group the participants saw the paintings which were also accompanied with titles in the gallery then in the laboratory. The second group rated first in the laboratory and then in the gallery. The control group saw the paintings in the laboratory both times. In the laboratory condition the images were displayed on a computer screen and in the gallery they were hung on a wall. The results of this study replicate the findings of Brieber et al. (2014), and could exclude the possible context order effects with a counterbalanced within subject design. Furthermore art works are better recalled in the gallery compared to when presented in the laboratory. This is in line with the findings that context may function as nodes by which associated experiences are memorized (Bar & Aminoff, 2003). The museum functions as a node, which activates an easier recollection of the seen artworks.

On the other hand, a recent study did not find neither a context effect nor a genuineness effect (see above Huang et al., 2011) at all on art appreciation of conceptual artworks (Brieber et al., 2015b). The authors argue that attribute meaning to the shown artworks modulates the effect of physical context. To understand an artwork is a crucial step in art appreciation (Leder et al., 2004; Swami, 2013; Millis, 2001; Leder et al., 2006). Therefore, if participants are not able to elaborate meaning due to ambiguous information or art genre, the effect of physical context cannot unfold. In line with these results Brieber et al. (2015b) suggests that stimuli with a certain everyday relevance are more appropriate to investigate the effect of physical context.

To summarize these findings, the physical context of a museum enhances the aesthetic experience for artworks (Brieber et al., 2014; Brieber et al., 2015a; Locher et al., 1999) if art naives are able to elaborate meaning (Brieber et al., 2015b). Furthermore, the museum

context contributes to a longer viewing time for congruent stimuli like modern art works as well as for non-congruent graffiti (Leder et al., 2015) and elicit better recollection of the depicted artworks (Brieber et al., 2015a).

Whether experience of the gallery space itself (O'Doherty, 1986) or an interplay between physical context, presentation format and cognitive context or just the effect of movement in the gallery (Leder & Nadal, 2014) enhances the experience of art, remains unclear (Brieber et al., 2015). As mentioned above, the semantic context of a gallery (Gerger et al., 2014) or an artwork (Wagner et al., 2014) is transferable to non-art as well. *Therefore, the first research question of this study is: Does physical context enhances the aesthetic evaluation for non-art as well?*

2.7. Aesthetic stimuli

As mentioned above, there are cognitive, emotional, and reward-related processes involved in the evaluation of artworks (Lacey, Hagtvedt, Patrick, Anderson, Stilla, Deshpande, Hu, Sato, Reddy & Sathian, 2011; Nadal & Leder, 2014). In consideration of the model of Leder et al. (2004) the general construct of aesthetic appreciation is not particularly limited to artworks alone (Leder et al., 2004; Brown, Gao, Tisdelle, Eickhoff & Liotti, 2011; Faerber, Leder, Gerger, Carbon, 2010). Stimuli like architecture (Vartanian, Navarrete, Chatterjee, Fich, Leder, Modroño, Nadal, Rostrup & Martin Skov, 2013), faces (Cloutier, Heatherton, Whalen, & Kelley, 2008), and interior design (Gerger, Leder, Faerber, & Carbon, 2010) are rewarding and therefore elicit an aesthetic response. In line with these findings, several meta analyses (Brown et al., 2011; Sescousse, Caldu, Segura and Dreher; 2012) indicate that also profane objects, which we encounter in our everyday life, like food, money or faces are rewarding and activate the same brain region

as art. Faces and artworks have in common that both are aesthetically pleasing and rewarding. Moreover faces have an all daily relevance (see also Brieber et al., 2015b). Therefore faces are suitable stimuli for this study. Furthermore the concept of attractiveness is a core element of aesthetic appreciation (Faerber et al., 2010; Gerger, Leder, Tinio & Schacht, 2010). However faces have a strong evolutionary context and therefore it is important to consider the special properties of faces.

2.8. Faces and attention

Faces are unique in their perception and aesthetic judgment (Tinio, Gerger & Leder, 2013). Attractive faces have been shown to bind attention (Leder, Tinio, Fuchs, & Bohrn, 2010; Sui & Liu, 2009; Parks, Kim & Hopfinger, 2014; Jung, Ruthruff, Tybur, Gaspelin, Miller, 2010), are processed very fast and automatically (Ekman, 1992, Schacht et al. 2008) and once they have caught our attention, attractiveness can be appraised with little visual information (Olsen & Marhuetz, 2005). Moreover recent fMRI studies (Aharon, Etcoff, Ariel, Chabris, O'Connor & Breiter, 2001; Brown et al., 2011) indicate that faces activate reward related brain regions like the nucleus accumbens or the orbitofrontal cortex. Besides attractive faces are more rewarding than non-attractive ones (Cloutier et al., 2008; Leder et al., 2010) and are looked at longer (Geldart, 2009; Leder et al., 2010) compared to non-attractive faces.

2.9. Facial attractiveness

The perception of attractiveness elicits a wide array of scientific research. There are two theoretical frameworks which investigate attractiveness: the general socialization and social expectancy theories on the one hand and fitness-related evolutionary theories on

the other hand (for a review see Langlois, Kalakanis, Rubenstein, Larson, Hallam & Smoot, 2000; Thorndill & Gangestad, 1999). The first one understands attractiveness as a function of cultural norms and social stereotypes. Therefore, our environment and cultural preferences shape our attractiveness preferences. According to evolutionary based theories attractiveness is a cue for good genes and mating choices (for a review see Thorndill & Gangestad, 1999) and stable over different cultures (Langlois et al., 2000) even though familiarity with the faces plays a crucial role (Coeteeze et al., 2014).

No matter what the function of attractiveness is literature suggests some main factors which predicts facial attractiveness: i) face properties itself like shape, symmetry (Tinio et al., 2013), averageness (Langlois, Roggman & Musselman, 1994), reflectances like colouring of the face (Said & Todorov, 2011), sex (Leder et al., 2010; Schacht et al., 2008) or femininity or masculinity of the faces (sexual dimorphism) (Perrett, Lee, Penton-Voak, Rowland, Yoshikawa, Burt, Henzi, Castles & Akamatsu, 1998); ii) features of the perceiver (e.g. sex, hormone cycle, relationship status) and iii) context (Leder et al., 2010; Watkins, DeBruine, Little, Feinberg & Jones, 2012).

This study focuses more on the altered perception of faces due to context effects and features of the perceiver rather than detecting what is perceived as attractive or not attractive. Therefore in the next section sex differences and context sensitivity of faces are reviewed.

2.9.1. Sex of the perceiver

Several studies reported that the sex of a participant modulates physical attractiveness ratings. However the findings of sex differences are inconsistent. One recent study reported (Nedelec & Beaver, 2011) that sex of the faces is a predictor for male participants ratings but not for female participants. Specifically, females were more likely than males

to judge a male respondent as very attractive and males were more likely than females to judge a male face as very unattractive. Other studies reported that female participants rated female faces more attractive than male participants (Leder et al., 2010, Schacht et al., 2008, Cogan, Parker & Zellner, 2013). This might be in line with social expectancy theories (for a review see Langlois et al., 2000) which claim that attractiveness in females is valued more than in males in our culture. People agree more on the attractiveness of females than males and thus the female appearance experiences a more differential judgement than males.

In line with this theory, Hahn and colleagues (2013) reported that females judge faces regarding their overall beauty in opposite to males who are more motivated to view faces of the opposite sex than attractive male faces (see also Aharon et al., 2001).

2.9.2. Relationship status

Often discussed and closely connected with sex differences are theories of mating choices (Langlois et al., 2000). There is evidence that the relationship status (Little, Jones, Penton-Voak, Burt & Perrett, 2002; Sacco, Jones, DeBruine & Hugenberg, 2012; Swami, Stieger, Haubner, Voracek & Furnham, 2009; Little & Jones, 2012) influences the preferences of faces. Swami and his colleagues (2009) reported that relationship status biases influences attractiveness ratings of the partner and the perception of self-attractiveness. Moreover relationship status moderates the preferences of sexual dimorphism. Little et al. (2002) reported that females prefer high masculine faces if they are looking for a short-term relationship or are in a long-term relationship. Furthermore the tendency for sexual activity without a committed relationship (sociosexuality) moderates the preferences for opposite sex faces (Sacco et al., 2012; Swami, Miller, Furnham, Penke & Tovée, 2008). Single females prefer masculine male faces more if they score high in sociosexuality (Sacco et al., 2012). Swami et al. (2012) reported similar findings for males with high

sociosexuality scores. Males rated female faces with low Body Mass Index (BMI) and hip-to-waste ratio (both indicators for high attractiveness) as more attractive than males with low scores.

Taken together the perception of facial attractiveness is a special category because of their attention binding and rewarding properties. Furthermore research suggests that there are sex differences in the perception of facial attractiveness which might be modulated by relationship status. *Therefore the second research question is: Are female faces preferred over male faces?*

2.10. Faces and context sensitivity

Flexas, Rosselló, Christensen, Nadal, La Rosa and Munar (2013) reported that valence of facial expressions influences the aesthetic preferences for art works (target stimuli). Participants reported higher aesthetic responses when happy faces were shown before the art works than when neutral facial expressions preceded the art works. Furthermore art works, which were preceded with facial expressions of disgust elicit lowered aesthetic responses. The affective properties have an impact on art appreciation. Thus the valence of the preceded stimuli had carried over to the evaluation of art works (see also Leder & Nadal, 2014).

This “carry-over-effect” is also reported for faces as target stimuli. (Kim, Somerville, Johnstone, Polis, Alexander, Shin & Whalen, 2004; Schwarz, Wieser, Gerdes, Mühlberger & Pauli, 2013; Righart & Beatrice de Gelder, 2006; Watkins, DeBruine, Little, Feinberg & Jones, 2012; Leder, Tinio, Fuchs & Bohrn, 2010; Barrett & Kiesinger, 2010; Morel, Beauconsin, Perrin & George, 2012; Iidaka, Saito, Komeda, Mano, Kanayama, Osumi Ozaki & Sadato 2010; Wieser, Gerdes , Büngel, Schwarz, Mühlberger & Pauli, 2014; for a review see Wieser & Brosch, 2012).

Recent research has focused on the influence of context on emotional encoding in faces (Kim, et al., 2004). The facial encoding of rather ambiguous emotions like surprise is influenced more by the valence of context (she found 500 Dollars vs. she lost 500 Dollars) than from subjective ratings. In line with these results, Iidaka et al. (2010) stated that the perception of faces is restrained by a stressful social situation. Neutral and angry faces which were presented simultaneously with a negative acoustic stimuli (voice saying “stupid”) produced higher amygdala activation and autonomic responses than faces presented without the voice.

Moreover the findings of Morel et al. (2012) indicated that early stages of visual processing are modulated by prior context related information. Neutral faces, which were earlier paired once with neutral, positive or negative auditory contextual information, evoked early different brain responses according to the contextual information. In detail, faces preceded with a positive context elicit a dissociated neural response as compared to faces preceded in either a neutral or negative context. Additionally the electro cortical study from Wieser et al. (2014) reported similar results for neutral faces combined with emotional context in a later stage of perception. Negative and positive context influenced early and later stages of facial processing and likewise faces preceded with negative and positive context are perceived as more arousing than in the neutral context condition.

Similarly the study of Schwarz and colleagues (2013) strengthens the support of the previous findings: Neutral faces preceded with a positive context were evaluated as more positive than in a negative context. Moreover self-reference plays a crucial role in perception of context. If the context was related with the participants themselves (self-related context) the faces were perceived as more negative or as more positive than when faces were attributed to relate to someone else (Schwarz et al., 2013; Wieser et al., 2014).

Altogether these findings demonstrate that the perception of faces is influenced by the valence of the context and moreover that context modulates facial processing in a top-down manner independent of the emotional feature of a face.

2.11. Faces and the processing of visual scenes

In our day-to-day life faces are never perceived isolated, they are embedded in a visual scene.

Barrett and Kensinger (2010) reported that facial expressions are simultaneously processed with their visual context in a memory task. Context was remembered better when the participants had to categorize the facial expressions rather than to judge if they wanted to approach or avoid the scene. Moreover participants recalled the context better when combined with a face than with an object. However faces have not been remembered better regarding the context.

Furthermore using videos as visual context, (Mobbs, Weiskopf, Lau, Featherstone, Dolan & Frith, 2006) it was shown that faces preceded with a positive and negative context evoked significantly altered ratings of the faces compared to those preceded with a neutral context.

Likewise Righart and Beatrice de Gelder (2006) stated that context influences the electrocortical N170 amplitude, which is linked to facial processing. Isolated faces showed the largest N170 amplitude. Yet the data suggests that especially emotional physical context like a fear resulted in a higher N170 amplitude than compared to a neutral context.

This context sensitivity is also reported for attractiveness ratings (Leder et al., 2010; Watkins et al., 2012). Using embedded faces in a natural scene, Leder et al. (2010) reported that faces are perceived as more attractive and are looked at longer in a positive context than compared to a negative context. Moreover independent from the level of

attractiveness, male faces did not receive longer looks and are not rated as attractive in the negative context in contrast to female faces. This means the attractiveness difference remained for female faces in the threat condition however not for male faces. This may be due to a perceived higher aggression potential of males, which results in a more attenuated attractiveness rating.

Similarly the study of Watkins et al. (2012) investigated if females change their preferences for opposite sex faces in the perception of context (pathogen vs. resource scarcity). In general masculine faces are identified as more dominant than feminine faces. Moreover females rated masculine faces as more attractive when they are concerned about a pathogen environment than when they believe resources are rare. Additionally they attributed higher dominance to masculine faces when resources are rare compared to when the environment seems to be pathogen.

To review the previously discussed studies: faces are encoded simultaneously with the visual context. Furthermore this data suggests that faces are modulated by the valence of contexts. Especially attractiveness ratings of faces are sensitive to sex of the faces and situation. In consideration of these findings and in addition to the first research: *does the physical context of a gallery enhance the attractiveness ratings of faces compared to when shown in the laboratory?*

2.12. Modulation effects

Furthermore there is some evidence that valence properties of stimuli modulates aesthetic judgements (Leder, Tinio, & Bar, 2010; Harvey, Kirk, Denfield & Read Montague, 2013, Watkins et al., 2012). One study (Leder, Tinio & Bar, 2010) reported that curved objects are only liked more when the objects have a positive valence. That means that people prefer the curved form of a chocolate bar more than an edgy shaped one. However this

effect diminishes if the object has a negative valence (e.g. a shark or a spider). The study from Harvey et al. (2013) showed that art preferences are modulated by the rewarding characteristics of the context stimuli. Three groups of participants rated art works and each group got a different amount of reward: one group received 30 Dollar, the second 100 Dollar and the third group 300 Dollar. Only the group which received the most rewarding monetary refund (300 Dollar) liked the paintings significantly more. Thus especially rewarding stimuli modulate aesthetic preferences. This valence effect was also shown with faces, a positive valence (an attractive face) has an influence of the aesthetic judgement (perceived attractiveness). Meaning attractive faces are liked more (Schacht et al., 2008, Langlois et al., 2000; Aharon et al., 2001) than non-attractive faces.

2.12.1. Object context congruency

Moreover Potter and Davenport (2004) reported that objects placed in semantically contexts (e.g. seawater turtle & underwater) were recognized more precisely and faster (Ganis & Kutas, 2003) than objects in semantically incongruent contexts (e.g. seawater turtle & church). Another study reported that subjects rated everyday life objects regardless of their context (normal vs. abnormal) as aesthetic pleasing (Kirk, 2008), however abnormal contexts produces more extreme ratings in contrast to normal context which evoked average ratings. Similarly modern art works are more interesting in the white cube than compared to the grey cube (street) (Leder & Garts, 2014) and conclusively graffiti art is more liked in the context of the grey cube (street) than in the white cube. Taken together, a congruent context object relation elicits enhanced aesthetic appreciation and viewing time compared to non-congruent context object matching.

Moreover, top down processes like a stimulus' affect can override the effects of attractiveness ratings (Leder et al., 2010), or the effects of symmetry after familiarization (Tinio, Gerger & Leder, 2013).

Thus attractive faces shown in a positive environment (gallery space) are congruent in contrast to non-attractive faces in the gallery context. Therefore the third research question is: *does the attractiveness level of faces modulate the effect of the gallery context?*

To my knowledge this is the first study that tries to investigate the gallery effect on non-artworks like faces. Furthermore it is the first study which tries to investigate the effect of a nonthreatening environment like a gallery on the appreciation of faces.

2.13. Additional research questions

In consideration of the results of context on viewing time (Brieber et al., 2014; Leder & Gatus, 2014) this study predicts a longer viewing time in the gallery context than in the laboratory context. Furthermore a lot of studies used positive and negative primes to alter mood (Allbaracin & Hart, 2011; Avramova, Stapel & Lerouge, 2010). Thus the theoretical positive valence of the gallery context enhances positive mood and reduces negative mood compared to the laboratory context.

2.14. The Present study

On the basis of the previous, the aim of this study is to examine the effect of physical context on the aesthetic evaluation of facial attractiveness. In comparison to previous studies (Brieber et al., 2014; Brieber et al., 2015) this study controls for presented medium and the faces are not accompanied by semantic information like titles or fake intentions of a fake artist. This is the first study which examines the museum effect on non-art works. Furthermore it is the first which addresses the question if faces are sensitive to a positive or neutral context like a gallery space.

This study wants to address the following research questions: Is the museum effect as reported by Brieber et al. (2014, 2015) also transferable to non-art works like faces? Furthermore there is evidence that congruent object-context-relations are better processed than incongruent object-context-relations. Additionally stimuli with a positive valence are better modulated by context than negative or neutral ones. Therefore the second research question is: does the valence of the faces modulate this museum effect? And moreover are female faces perceived as more attractive than male faces?

On the basis of this theoretical background the main hypotheses of this study are: The faces shown in the gallery will be perceived as more attractive as compared to when shown in the laboratory (i). Additionally this gallery effect is modulated by the level of facial attractiveness. Highly attractive faces will be judged as more attractive in the gallery and in the laboratory than moderate or low attractive faces (ii). Furthermore female faces are rated higher than male faces (iii). The faces will be looked at longer in the gallery than in the laboratory context (iv). Additionally the positive context of the

gallery enhances affect. Therefore positive affect will be enhanced after a session in the gallery and negative affect will be reduced after a session in the gallery (v).

To answer these hypotheses I conducted two experiments. The first experiment was an online survey and was used to create a stimuli set which is based on the faces from Schacht et al. (2008). The second experiment bases on a counterbalanced within subject design and addresses the mentioned hypotheses. Participants answered questions about their mood and how they appraise the set of faces regarding their attractiveness in different physical contexts (gallery and laboratory).

4. Experiment 1

The purpose of the pre-study was to create a stimuli set ($n=60$) that contains three levels of attractiveness (low, moderate and high attractive faces) for each sex (male, female).

A recent study (Chamorro-Premuzic, Furnham & Reimers, 2007) noted that it is difficult to compare the outcome of aesthetic investigations due to the variety of stimuli sets that are used across different studies. In consideration of this notion I have used the stimuli set of Schacht et al. (2008). The stimuli set consists of 122 images (*females*=59; *males*=63) which varies in attractiveness. The faces were standardized regarding their emotional expression, their gaze direction (frontal) and the lighting of the images. All models signed a written consent about the usage of their portraits and have been informed about the scientific purpose of the study.

3.1. Method

3.1.1. Participants

The sample of this study is a convenient sample. A part of the participants has been recruited via the RSAP-system (<http://www.univie.ac.at/experimentalwiki/rsap/index.html>) and the other part are recruited from the social milieu of the author. Psychology students got extra credit for their courses. People with other sexual orientations ($n=3$) than heterosexual have been excluded. Thirty-two heterosexual women and 20 heterosexual men completed the questionnaire, their age ranged from 19 to 54 (age $M=23.86$, $SD=5.5$). The participants had no art specific background and therefore no training. Most of the participants were students ($n=43$) and the minority worked (2 employees, 3 freelancer).

3.2. Procedure

The online survey (<https://www.soscisurvey.de/>) was online until 20 male participants and 20 female participants finished the questionnaire. The participants were informed that their data would be handled anonymously and that they could end the questionnaire at any time they wanted to. The participants filled out a sociodemographic questionnaire concerning their age, sexual orientation, education and recent employment. Additionally they filled out a five-item art expertise questionnaire to control for art interest. Each participant rated the randomized stimuli set on a scale from 1 (*not very attractive*) to 7 (*very attractive*). The new stimuli set should contain three groups of attractive faces for the opposite sex (high, moderate, low attractive faces). For each sex 10 faces with the highest mean ratings (high attractive faces), 10 faces with the mean lowest ratings (low attractive faces) and 10 faces with average mean ratings - to be more exact - the ten

highest rated faces between 25 and 75 percentiles of the mean attractiveness ratings (moderate attractive faces) have been chosen.

3.3. Results

The data was analysed with IBM SPSS 20 software. The *Art Expertise Questionnaire* form A has a range from 7 to 35. The participants showed an average interest in art with a median of 17 ($M=17.1$, $SD=6.3$).

3.3.1. Sex differences

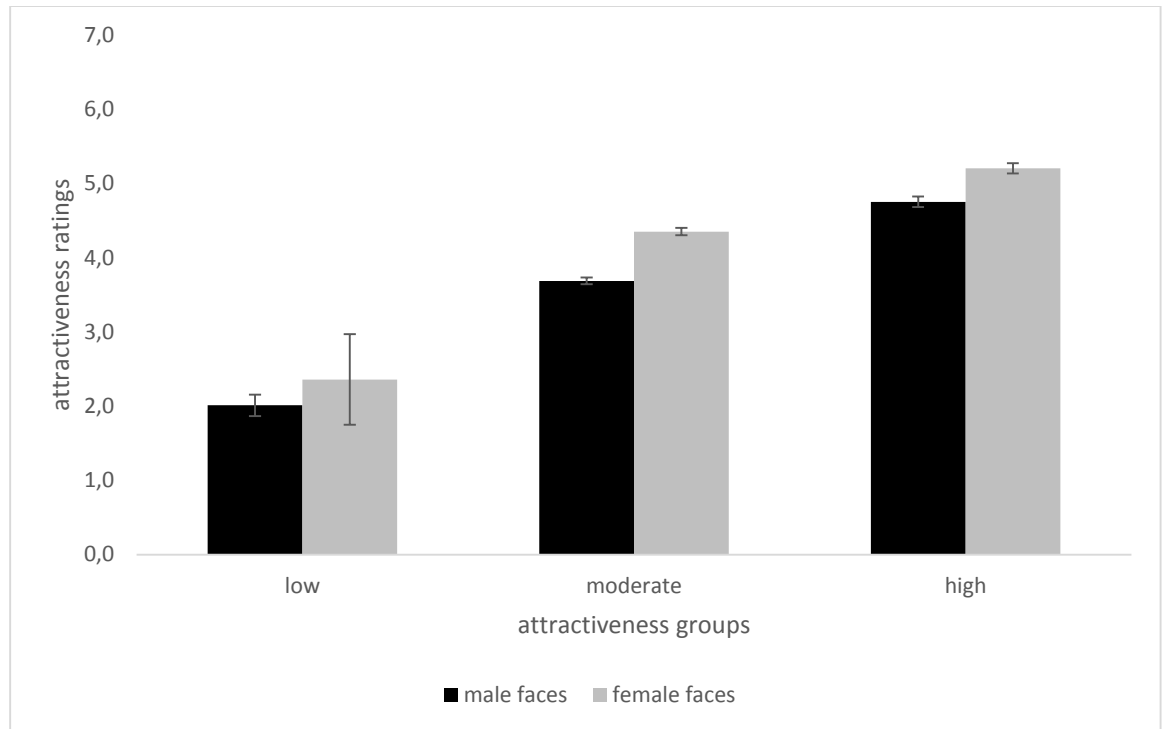
A t-test reported that female participants ($M=4.02$, $SD=2.07$) rated significantly higher regarding attractiveness than male participants ($M=3.89$, $SD=2.00$) [$t(122) = 21.544$, $p < .001$]. Female participants rated female faces ($M=4.14.02$, $SD=0.98$) significantly higher than male faces ($M=3.55$, $SD=0.98$) [$t(120) = 3.313$, $p < .001$]; and male participants also rated female faces ($M=3.95$, $SD=0.096$) significantly higher than male faces ($M=3.5$, $SD=0.73$) [$t(120) = 2.94$, $p=.004$].

3.3.2. Attractiveness groups

Three attractiveness levels for each sex were formed, creating a stimuli set of 60 faces: For each sex 10 faces with the highest mean ratings, 10 faces with the mean lowest ratings and 10 with an average mean (between 25 and 75 percentiles) were chosen. Ten male attractive faces ($M=4.41-5.19$, $SD=0.96-1.69$), 10 male moderate attractive faces ($M=3.5-3.96$, $SD=1.0-1.52$) and 10 low attractive male faces ($M=1.19-2.48$, $SD=0.4-1.09$); 10 female attractive faces ($M=5.00-5.75$, $SD=0.55-1.52$), 10 female moderate attractive faces ($M=4.10-4.53$, $SD=1.17-1.45$) and 10 low attractive faces ($M=1.65-2.95$, $SD=0.75-1.31$). Appendix A displays the means of this Experiment and the Schacht et al.

(2008) findings. Please note that Schacht et al. (2008) used a reversed rating scale (1 = "very attractive" to 7 = "not attractive")

Figure 33 Mean attractiveness ratings for male and female faces over the three attractiveness categories



Note. The error bars display the standard error.

A one-way ANOVA was used to test if the three attractiveness groups (*high*, *average* and *low*) differ from each other. Figure 2 displays the attractiveness ratings. Female faces differ significantly between the three categories ($M_{high}=5.21$, $SD=0.23$; $M_{moderat}=4.35$, $SD=0.16$; $M_{low}=2.36$, $SD=0.51$), [$F(2, 29) = 190.51$, $p < .001$]; as well as male faces ($M_{high}=4.76$, $SD=0.15$; $M_{moderat}=3.69$, $SD=0.15$; $M_{low}=2.01$, $SD=0.46$) [$F(2, 29) = 206.11$, $p < .001$]. As Figure 2 shows, highly attractive faces are judged higher than moderate attractive faces and low attractive faces. Furthermore female faces are rated higher than male faces.

3.4. Discussion

This experiment was designed to create a stimuli set which includes three groups of attractiveness (low, moderate, and high) for each sex (female and male). Every participant rated female as well male faces. The three groups differ significantly from each other. Compared with the findings of Schacht et al. (2008) the faces elicit similar attractiveness ratings. These findings are in line with previous research that attractiveness ratings are quite robust. Moreover this result replicates the notion that female faces are rated more attractive than male faces (Leder et al., 2010; Hahn et al., 2013).

5. Experiment 2

The second experiment is a within subject design with art naïve participants. This experiment investigates if the physical context (laboratory vs. gallery) influences facial attractiveness ratings.

4.1. Method

4.1.1. *Participants*

Seventy-two participants were recruited with flyers, the RSAP system and from the social surrounding of the author. No participants had any formal training in arts or art history. Psychology students got extra credit for their courses. Four participants dropped out, because they forgot about their second appointment or had other obligations. In total sixty-eight people (33 women, 35 men, M age = 27.5 years $SD=4$, *range*: 20-38 years) participated in the whole study. Fifteen female and 17 male participants assigned for group LG (first appointment in the laboratory and the second session in the gallery) and 18 female and 18 male participants assigned for group GL (gallery then laboratory).

4.2. Stimuli

The sixty faces resulting from Experiment 1 have been used. A sample of the stimuli is displayed in Figure 3. The resolution ranged between 72 and 300 dpi. (See Appendix A, Table 1). In consideration of the findings of Brieber et al. (2015b) and Locher et al., 1999 the medium (all stimuli were shown in frames) was standardized over the contexts.

Furthermore Linsen, Leyssen, Sammartino & Palmer (2011) reported that the frame size relative to the real size of an object has an influence of the aesthetic preferences of the image. People prefer the natural size of an image more compared to over- or undersized versions of the same image. The A4 format resembles the size of a natural human face the most. Thus the images were adapted to the A4 format with Adobe Photoshop, printed on photographic paper and put in a black A4 frame from IKEA. Each participant saw the faces in the same medium (frames).

Figure 34 Stimuli sample for each category of attractiveness



Note. Stimuli from Schacht et al. (2008). Decreasing attractiveness levels from left to right (high, moderate, low)

Recent studies report contrasts or assimilation effects of attractiveness (Cogan, Parker & Zellner, 2013; Rodway, Schepman & Lambert, 2013). The preceded face alters the perception of the target face. A contrast effect occurs if the participant viewed an attractive face before the target face (a neutral face). Subsequently the attractive face decreases the subsequent perceived attractiveness of the target face. In turn preceded unattractive faces increase the attractiveness of the target face. To counter this effect two stimuli sets were created. Participants assigned to set A saw female faces and afterwards the male faces and vice versa with Set B (first male faces then female faces).

4.3. Procedure

I choose a counterbalanced within subject design to exclude context orders (see Brieber et al., 2015a, 2015b.). The participants were assigned to two different groups. Group LG was first invited to do their ratings in the laboratory (Universität Wien, Liebiggasse 5, 1010 Wien, TRK2) and one week later in the gallery (Raum mit Licht, Kaiserstraße 33, 1070 Wien) and group GL vice versa: they were first invited to the gallery and then to the laboratory.

In order to assign the two context conditions (laboratory, gallery) and the order of the shown faces (Set A: participants saw first female then male faces, Set B: participants saw first male then female faces) four different groups of sequences were used, which differed in their context conditions, sequence of faces and the sex of the participants. Table 1 summarizes the contribution of the participants.

Table 1 Assignment of participants to different sets and groups

Set	Sex		Group	
	women	Men	LG	GL
Set A	16	20	16	20
Set B	17	15	16	16
Total	33	35	32	36

Note. Set A= female faces then male faces; Set B= male faces then female faces; LG=laboratory then gallery; GL=gallery then laboratory.

The study was divided into three blocks, one free viewing block, a rating block and a questionnaire block. For each session the participants answered a questionnaire regarding their current mood and affect – the Positive Affect and Negative Affect Scale (PANAS; Watson, Clark and Tellegen, 1988) before each viewing phase and after the rating and questionnaire block. Both groups looked at the same stimuli (size A4, 21,0 x 29,7 cm) in the same frames in each experimental condition. After signing a formal consent, the participants filled out the PANAS and were asked to view the images as long as they wanted to. In account with previous findings (see Brieber et al., 2015a; Brieber et al., 2015b) two different presentation methods were used to preserve the natural environment of a laboratory and an art gallery. In the gallery the participants saw the stimuli hung on a wall and walked freely through the gallery. In contrast I placed the stimuli on the table in four different piles in the laboratory. The participants were instructed to sit down and look at the image piles in a specific manner: they had to take each frame in the hand and look at the faces. After they had finished a pile they turned the pile around, went to the next table, sat down and repeated the procedure. This procedure should ensure that the processes of looking at the images were as similar as possible to their natural context (e.g.

wandering around in a gallery like at a vernissage, sitting down in a laboratory to participate in an experiment).

4.3.1. First session

In the first session the participants filled out the PANAS, did the attractiveness ratings, filled out the POST PANAS and answered questions regarding the aesthetic quality of the images (*“Wie schätzen Sie die ästhetische Qualität der Bilder ein?”* 7-point-Likert-scale; 1= *“sehr geringe ästhetische Qualität”* till 7=*“sehr hohe ästhetische Qualität”*), their interestingness (*“Wie interessant fanden Sie die Bilder?”*, 7-point-Likert-scale, 1= *“gar nicht interessant”*, 7= *“sehr interessant”*) and if the participants felt comfortable during the session (*“Wie wohl fühlten Sie sich während der Durchführung der Studie?”* 7-point-Likert-scale, 1= *“gar nicht wohl”*, 7= *“sehr wohl”*).

4.3.2. Second session

After the second session the participants filled out a questionnaire regarding sociodemography, their relationship status (1 = *“ja”*, 2= *“nein”*, 3= *“keine Antwort”*) and their sexual orientation. Additionally they completed the Art expertise questionnaire. Questions regarding interestingness, aesthetic quality and comfort were added to compare if the aesthetic properties differ regarding context or/and over time.

Additionally I asked the participants to rate the similarity/difference between the two sessions (*“Wie ähnlich/unterschiedlich war Ihre Erfahrung im Labor und in der Galerie?”*, 7-point-Likert-scale, 1=*sehr ähnlich*, 7=*sehr unterschiedlich*).

4.4. Results

The data analysis was conducted with IBM SPSS 20.

4.4.1. Sociodemographic variables

Twenty-four participants studied psychology at the University of Vienna, 27 participants studied something else and 16 participants were currently working. During the study 38 participants (55.9%) were in a relationship, 27 (39.7%) were not in a relationship and 3 (4.4%) did not answer that question. 10 reported that they are looking for a relationship (14.7%), 12 (17.6%) did not look for a relationship and seven (10.3%) did not answer the question.

4.4.2. Art expertise

For each participant an overall Art expertise value was computed ($range = 7 - 35$). The participants had an average median of 18.5 for Art expertise. An independent t-test with the experimental group as grouping variable revealed that group LG ($M=19.2$, $SD=6.1$) and Group GL ($M=18.4$, $SD=5.6$) did not differ significantly in their interest in art $t(66) = 0.59$, $p=0.56$.

4.4.3. Aesthetic properties

For interestingness, aesthetic quality and pleasantness a mixed design ANOVA was conducted with *Group* (LG or GL) as a between subject factor. A one factorial ANOVA was conducted to see if the means of similarity differ between the groups.

Interestingness. The participants have been rather interested in the images ($range=1 - 7$) in the first session (s1) with a Median of 5 ($M=5.2$, $SD=1.5$) and in the

second session (s2) with a Median of 4.5 ($M=4.8$, $SD=1.5$) There was a significant main effect of time [$F(1, 65) = 9.3$, $p=0.003$, $\eta_p^2=0.06$]. The interestingness of the images decreased from the first session ($M=5.2$, 95% CI [4.8, 5.6]) to the second session ($M=4.8$, 95% CI [4.4, 5.1]), however there were no differences between the interestingness of images displayed in the gallery compared to when shown in the laboratory.

Aesthetic quality. The general aesthetic quality was above an average value with a Median of 4 for s1 and a Median of 3.8 for s2. The participants ratings regarding the aesthetic quality decreased over time ($Ms1=4.1$, 95% CI [3.7, 4.5]; $Ms2=3.7$, 95% CI [3.4, 4.1]) [$F(1, 65) = 5.6$, $p = 0.02$, $\eta_p^2 = 0.08$]. This means that participants rated the images lower in their quality after seeing them the second time.

Pleasantness. The participants reported a high Median of 6 for pleasantness in both sessions. In contrast to the mentioned previous findings pleasantness decreased not over time [$F(1, 65) = 0.01$, $p=0.92$, $\eta_p^2=0$].

Similarity. The participants experienced the gallery and the laboratory context as quite different with a Median of 5 ($M=4.5$, $SD=1.8$).

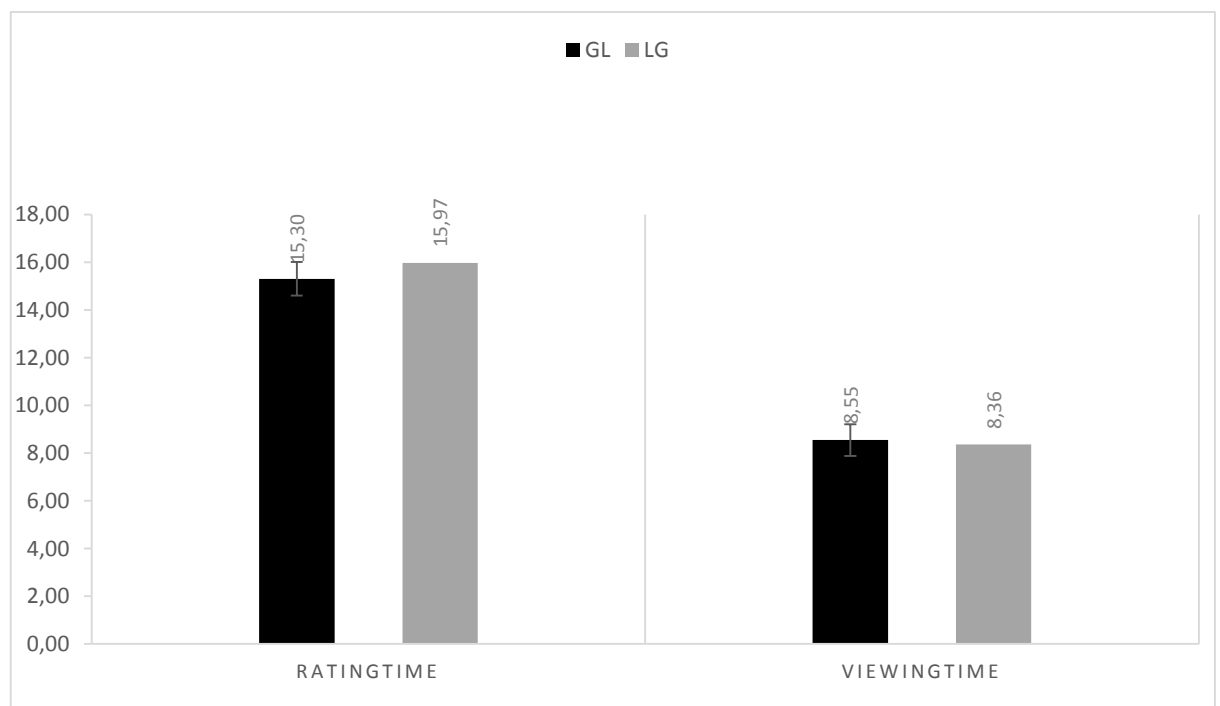
For Interestingness, aesthetic quality pleasantness and similarity the ratings didn't differ between the groups (LG; GL).

4.4.4. Rating- and Viewing time

For viewing and rating time a mixed ANOVA with *Time* as a within subject factor (session1 and session2) and *Group* (LG and GL) as a between subject factor has been conducted.

Viewing time. The analysis revealed a significant main effect of *Time* [$F(1, 66) = 6.5, p=0.013, \eta_p^2=0.09$]. Participants looked longer at the images in session1 ($M=9.5, 95\% \text{ CI } [7.9, 11.1]$) than in session2 ($M=7.4, 95\% \text{ CI } [6.6, 8.2]$). This was qualified by an interaction between *Time* and *Group* [$F(1, 66) = 20.7, p=0.00, \eta_p^2=0.24$]. Group LG looked at the stimuli longer in session 1 than group GL. This effect reversed for session 2: group LG had a shorter viewing time for session 2 than group GL. Taken together the participants took more time to look at the faces in the laboratory condition than in the gallery condition. But the groups did not vary in their overall viewing time, [$F(1, 66) = 0.04, p=0.85, \eta_p^2=0.001$].

Figure 35 Rating and viewing time for group GL and LG



Note. Error bars represent standard errors. Time is displayed in minutes. LG=laboratory then gallery GL=gallery then laboratory

Rating time. Participants needed less time to rate the faces in session 1 ($M=14.6$, 95% CI [13.2, 15.9]) than in session 2 ($M=16.7$, 95% CI [15.4, 18.1]), [$F(1, 66) = 13.4$, $p=0.001$, $\eta_p^2=0.18$]. As seen in figure 4 group GL spent more time to rate faces in session 2 than in session 1; group GL spent overall more time in rating the faces than group LG. Similarly to the viewing phase the participants needed more time to rate the faces in the laboratory than in the gallery. Boxplots of the rating time revealed two outlier participants. Outliers are defined as those whose values exceeded 1.5 times the 75 percentile of the sample. To make sure that these extreme values do not artificial qualify the findings an additional analysis without these two participants was conducted. After excluding these two participants the *Time* $\times$ *Group* interaction was still significant, [$F(1, 66) = 4.3$, $p=0.042$, $\eta_p^2=0.065$]. Group LG ($M=15.3$, 95% CI [13.5, 17.1]) and group GL ($M=16$, 95% CI [14.3, 17.6]) did not differ in rating time [$F(1, 66) = 0.3$, $p=0.58$, $\eta_p^2=0.005$].

4.4.5. Attractiveness ratings

A mixed-design 2 x 3 x 2 ANOVA was conducted with context (gallery, laboratory), attractiveness level of faces (low, moderate, high) and sex of faces (male, female) as within-subjects factors and sex of participants (male, female) as a between subject factor.

Mauchly's test indicated that the assumption of sphericity had been violated for *Attractiveness* [$\chi^2(2) = 29.1$, $p = 0.000$] and the interaction of *Context* $\times$ *Attractiveness* $\times$ *Sex of faces* [$\chi^2(2)=7.8$, $p=0.020$], therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity for attractiveness [$\epsilon=0.74$] and the interaction of *Context* $\times$ *Attractiveness* $\times$ *Sex of faces* [$\epsilon=0.898$].

Context. There was no main effect of context [$F(1, 66) = 0.39, p = 0.536 \eta_p^2 = 0.006$].

This means the attractiveness ratings did not differ in the laboratory or in the gallery.

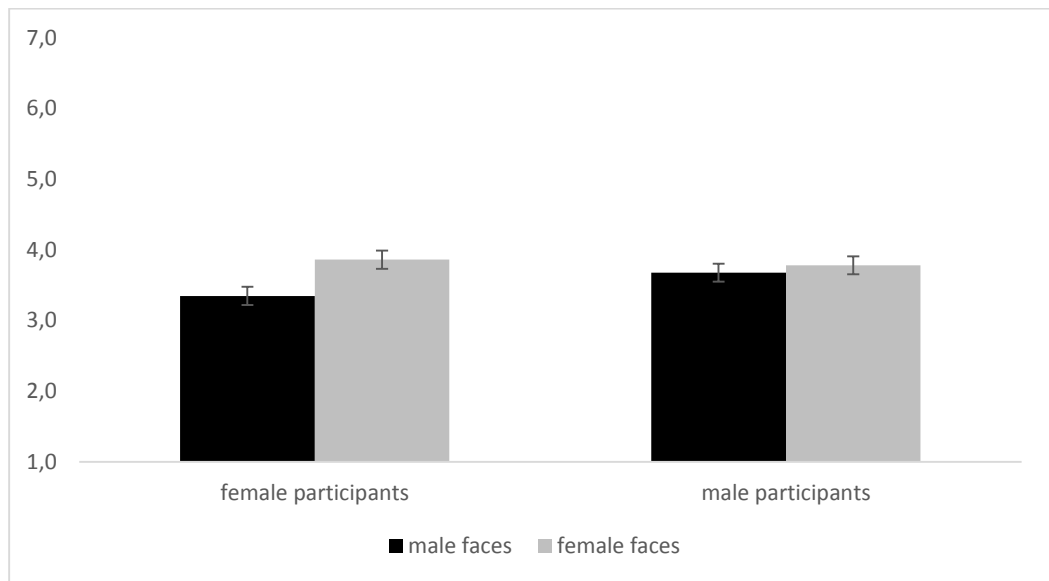
Attractiveness. The analysis revealed a main effect of attractiveness [$F(1, 48) = 11119.8, p < 0.001, \eta_p^2 = 0.99$] and sex of the faces [$F(1, 66) = 27.9, p < 0.001 \eta_p^2 = 0.3$]. As seen in Table 2 high attractive faces are rated higher than moderate and low attractive faces. Post hoc comparison using Bonferroni indicated that all three attractiveness groups differed significantly from each other. The ratings for high attractive faces ($M = 4.8, 95\% CI [4.6, 5]$) were rated significantly higher than low attractive faces ($M = 2.2, 85\% CI [2, 2.3]$) [$F(1, 66) = 1370.5 p < 0.001, \eta^2 = 0.95$]. Thus these findings replicate the findings of Experiment 1.

Table 2 Mean attractiveness ratings of females and males

Sex	faces	attractiveness	<i>M</i>	<i>SD</i>	95% CI	
					LL	UL
female	male faces	low	1.90	1.07	1.64	2.15
		moderate	3.61	1.24	3.32	3.91
		high	4.54	1.24	4.24	4.83
	female faces	low	2.24	1.07	1.98	2.49
		moderate	4.19	1.24	3.90	4.48
		High	5.16	1.24	4.86	5.46
male	male faces	low	2.33	0.99	2.08	2.57
		moderate	4.04	1.16	3.76	4.33
		high	4.66	1.16	4.38	4.95
	female faces	low	2.21	0.99	1.96	2.45
		moderate	4.23	1.16	3.94	4.51
		high	4.91	1.24	4.62	5.20

Note. CI=confidence interval; LL= lower limit; UL = upper limit.

Figure 36 Sex differences in attractiveness ratings



Note. Error bars display standard errors

4.4.6. Sex differences

The analysis revealed an interaction of attractiveness-groups and the sex of the faces [$F(2, 33.2) = 4.16, p < 0.001, \eta_p^2=0.112$]. As figure 5 displays females rated lower attractive faces higher than male participants. Conversely males rated moderate and high attractive faces higher than female participants. Additionally females rated females higher than male faces [$F(1, 66) = 12.3, p < 0.01, \eta_p^2=0.16$]. Male and female participants did not differ significantly in their overall ratings [$F(1, 66) = 0.53, p = 0.468, \eta_p^2=0.008$].

The analysis revealed a main effect of the sex of the participants. [$F(1, 7.4) = 12.3, p < 0.001, \eta_p^2=0.157$]. Females rated female faces higher than male faces and males rated female and male faces as nearly equally high.

Relationship status. An additional mixed design ANOVA with relationship status as a between subject variable was conducted to exclude the effect of Relationship Status.

There was no significant difference in the overall findings for relationship status [$F(1, 65) = 2.7, p = 0.104, \eta_p^2=0.04$]. The main effect of the sex of the faces diminished [$F(1, 65) = 3.5, p = 0.05, \eta_p^2=0.05$].

Additional one-way ANOVAs have been conducted to address the question if there were any group differences regarding the attractiveness ratings. There were no significant findings.

4.4.5. Mood

For each participant the mean of positive affect (PA) and negative affect (NA) was computed before and after the session: before the session PA (*PREPOS*), after the session (*POSTPOS*), for NA *PRENEG* was computed as the baseline mood and *POSTNEG* after the session.

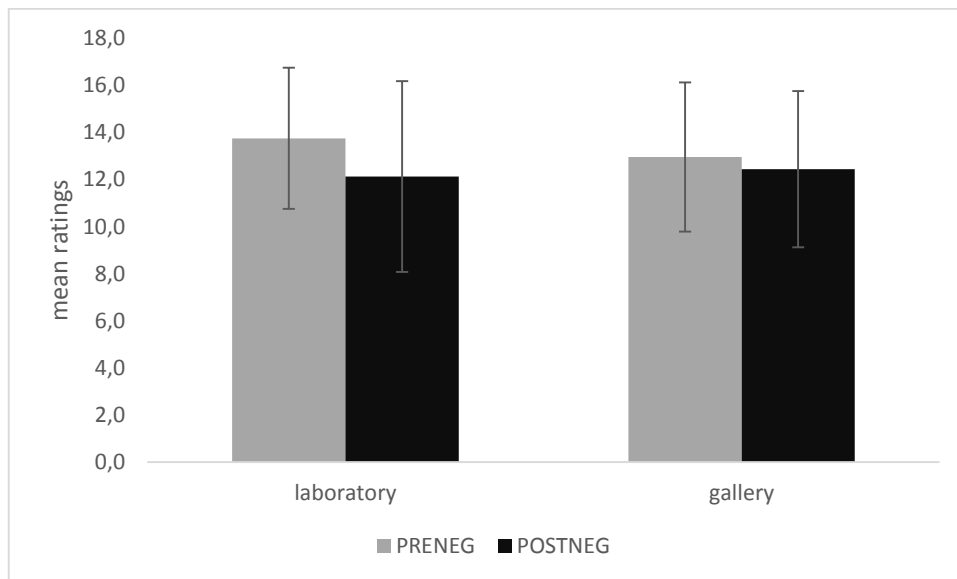
Baseline. The ratings did not differ in their PA in the gallery ($M=29.1, SD=6.5$) from those in the laboratory ($M=29.3, SD=6.6$), [$t(67) = 0.24, p=0.81$]; and didn't differ in their negative affect ($M_{gallery}=13, SD_{gallery}=3.3; M_{lab}=13.7, SD_{lab}=4$) [$t(66) p= 0.14$]. A one-factorial ANOVA revealed that participants in the gallery, which were assigned to group LG ($M=26.7, SD=6.1$) had a significantly lower baseline positive affect than compared to those from group GL ($M=31.3, SD=6$), [$F(1, 67) = 9.4, p=0.003$].

Context effect on mood. Two 2x2 repeated measurement ANOVAs were conducted to assess if the mood changes over time and over contexts positive Affect (PA) and negative Affect (PN) were the dependent variable; the within subject variables were context (gallery and laboratory) and time (before and after the session) and group (LG vs. GL) was the between subject variable.

There were no main effects for the ratings of positive affect for context [$F(1, 65) = 0.08$, $p=0.78$, $\eta^2=0.001$]; and time [$F(1, 65) = 0.14$, $p=0.71$, $\eta^2= 0.002$].

The analysis revealed for negative affect a significant main effect of time [$F(1, 65) = 23.2$, $p=0.00$, $\eta^2=0.26$]. The self-evaluated negative affect reduces significantly over time ($MPRE=13.3$, 95% CI [12.6, 14.1]; $MPOST=12.3$, 95% CI [11.6, 12.9]). Additionally there was a significant interaction between time and context [$F(1, 65) = 20.19$, $p= 0.024$, $\eta^2=0.08$]. The negative affect reduces significantly more in the laboratory ($MPRE=13.7$, 95% CI [12.8,14.7]; $MPOST=12.1$, 95% CI [11.4, 12.9]) than in the gallery ($MPRE=13$, 95% CI [12.1, 13.8]; $MPOST=12.4$, 95% CI [11.7, 13.2]). As it can be seen in figure 6, the overall value of the baseline negative affect was higher in the laboratory than in the gallery. Moreover the standard deviation for the laboratory ($SDPRE=4.05$) was higher than for the gallery ($SDPRE=2.99$).

Figure 37 Mean negative affect for gallery and laboratory over time



Note. Error bars indicates standard deviation, PRENEG=baseline for negative affect, POSTNEG= negative affect after the session.

6. General Discussion

There is the recent proposal that the physical context of a museum (Brieber et al. 2014; Brieber et al., 2015) enhances the appreciation of art works. As presented in the model of Leder et al. (2004; see also Leder & Nadal, 2014) physical context like a white cube (O'Doherty, 1986) prompts the classification of an object as an art work. Aim of this study was to identify if physical context could alter the pre-classification of faces as art works and therefore alters the aesthetic appreciation of faces (i). Faces are aesthetic pleasing (Brown et al., 2011; Gerger et al., 2009) and recent research suggests that faces are encoded within their visual scene (Barett & Kensinger, 2010; Righart & de Gelder, 2005) and are sensitive to context (Leder et al., 2010, Wieser et al., 2009, Watkins et al., 2012). Furthermore some researchers reported that the positive valence of stimuli (Tinio et al., 2008; Haydn et al., 2008) - in this case high level of attractiveness- influences aesthetic ratings and mood (Albarracin & Hart, 2011) (ii).

Deriving from this theoretical background the main hypotheses of this study are: The faces shown in the museum will be perceived as more attractive as compared to when shown in the laboratory (i). High attractive faces will be judged as more attractive in the gallery as in the laboratory than moderate or low attractive faces. (ii). Furthermore there is some evidence that female faces are rated higher than male faces. (Leder et al., 2010) Therefore female faces are rated higher than male faces (iii). Additionally participants will spend more time in the gallery than in the laboratory (iv) and the mood will be enhanced after a session in the gallery (v).

In this study, art-naïve participants rated faces regarding attractiveness once in a gallery and another time in a laboratory. In comparison to previous studies (Brieber et al., 2014, 2015a, 2015b) this study displays all stimuli with the same medium (picture frames) furthermore stimuli are not accompanied by semantic information like titles or intentions of a fake artist. Therefore if a change of ratings occurs it is due to the change of physical context. To my knowledge this is the first study which investigates the gallery effect on the aesthetic evaluation of facial attractiveness.

Nonetheless the results of this study are not in line with the theoretical derived hypotheses: (i) the attractiveness ratings did not differ between the gallery and the laboratory context. Therefore there was also no interaction between context and the attractiveness levels of the faces (ii), however there was a significant sex difference (iii). Females rated female faces in all three attractiveness levels higher than male faces. Males rated female high attractive faces and female moderate attractive faces higher than male faces in these attractiveness levels. Contrariwise male participants rated low attractive male faces higher than low attractive female faces. Furthermore there was a significant effect of attractiveness level. Participants rated high attractive faces as more attractive than low or moderate attractive faces. The viewing time was not prolonged in the gallery context (iv) Moreover the mood did not change over the sessions (v). However with one exception: negative affect decreased during sessions in the laboratory. Another unexpected finding was that participants viewed the faces longer in the laboratory than in the gallery. Additionally the rating time was longer in session 2 than in session 1.

In the next session I want to embed the findings of this study in the context of previous studies and then discuss possible explanations why there was no context effect.

4.5. Procedure effects on time

Participants looked longer at the stimuli in the laboratory than in the gallery. Moreover the rating phase was longer for session 2 than for session 1. These findings contradict previous studies which reported a longer viewing time in the gallery condition (Brieber et al., 2014, 2015; Leder & Gatus, 2014). Yet this might be due to the different viewing-instructions of the contexts. The viewing instructions were established to preserve the natural characteristics of the two contexts. The participants were instructed to sit down, take each frame in their hands, look at it, turn it over and repeat this procedure with each pile of stimuli in the laboratory. Thus the laboratory procedure forced the participants to spend a certain amount of time to view the images. Contrary to the laboratory condition the participants moved freely around in the gallery and could therefore decide to a certain degree for themselves how much time they want to spend looking at the images. This instruction effect might also have occurred in the rating phase. The rating phase for session 2 absorbed more time because the participants had to fill out more questionnaires compared to session 1. Thus the prolonged rating time and all-over viewing time in the laboratory is due to the design of that study.

Concluding, in a natural setting like a gallery people tend to spend less time on viewing images compared to a task-oriented environment like a laboratory. This short viewing time is in line with the findings (Smith & Smith, 2001) that participants viewed art images averagely 27 seconds (median of 17 seconds). The observations of each image lasted between 10 seconds and around half a minute, viewing time above a minute was more the exception (10 %) than the rule.

5.1. Positive and negative affect

Positive affect did not alter between the contexts neither between session 1 nor session 2. Surprisingly, negative affect was reduced significantly in the laboratory context. However this may be due to high variation of the negative affects ratings. The baseline of the negative affect as well as the standard deviation was higher in the laboratory than in the gallery. Especially mood is quite sensitive to a lot of confounder variables like perceived stress, social engagement and physical activity (Watson & Tellegen, 1985). Furthermore the study of Clark, Watson and Leeka (1989) stated that especially positive affect showed a systematic variation during the day compared to negative affect. Positive affect increased from morning till noon and stayed relatively stable until the early night and then fell abruptly. In turn negative affect did not show this systematic pattern like positive affect did. Particularly negative affect has shown to vary a lot within a person. This high within subject fluctuation is quite dependent on social interaction and perceived stress. Thus this variation of mood might be due to variation of sessions during the day and intrapersonal factors like stress. Hence it seems not legitimated to conclude that context changed the reported affect ratings.

5.2. Aesthetic properties

Both interestingness and aesthetic quality of the stimuli decreased over time. This may due to a session fatigue comparable with museum fatigue (see also Bitgood, 2010).

In turn, the perceived pleasantness did not decrease over time. This indicates that the pleasantness of the session is more context oriented as compared to interestingness and aesthetic quality which addresses the properties of the stimuli. These findings show that both contexts are perceived to have a positive valence (highly comfortable). The perceived sameness in comfort of these two settings might express the same perceived

valence of gallery and the laboratory. Therefore it might be one reason why the attractiveness ratings have not altered between the laboratory and gallery context.

Surprisingly the participants reported that they experienced the two settings as quite different from each other. Moreover the open format question about the nature of this difference indicates that there was an awareness of the difference and the special nature of the contexts:

„Unterschiedlich - in der Galerie nehme ich mir mehr innere Ruhe um die Bilder zu betrachten man ist weniger abgelenkt von weglegen, schlichten der Bilder, kann sich ganz auf das Betrachten der Bilder Konzentrieren (Vorteil). Das Herumgehen in der Galerie hat einen entspannenderen Effekt auf mich, man fühlt sich freier. Im Labor am Tisch sitzend ein bisschen prüfungsähnliche Situation. Dieses Mal fiel es mir leichter die Frauen klar einzuteilen /im Labor war das umgekehrt (Stimmung?) Ähnlich weil Bilder schon bekannt und weil man selbe/ähnliche Denk- und Einteilungsmuster in sich beobachten kann(die aber stark von Stimmungen abzuhängen scheinen) In Galerie: Männer ??? betrachtet (gefühlsmäßiger) als Frauen. aber beide gefühlsmäßig milder bewertet als im Labor“.

The reported differences are displayed in Appendix B. The gallery and the laboratory context are described as different but not experienced as different. Maybe the special features of faces moderated the difference between the contexts and the aesthetic as well as affective experience.

5.3. Main effect of sex

Moreover females and males rated the faces regarding their sex differently. Female faces are preferred over male faces; an effect which was found in previous studies (Leder et al., 2010; Schacht et al., 2008). These findings strengthen support to the notion that women appraise the beauty of both sexes equally in contrast to men which prefer to see opposite sex faces (Hahn et al., 2013). In line with these findings a current study reported that facial attractiveness is more appraised by men concerning mate selection than by women (Meltzer, McNulty, Jackson & Karney, 2014).

5.4. Attractiveness ratings and context

The ratings of the three attractiveness levels (low, moderate, high) differ significantly from each other. Participants found high attractive faces more attractive than moderate attractive faces and moderate attractive faces are rated as more attractive compared to low attractive faces. This effect occurred for male and female raters. These findings replicate as mentioned above the findings from Experiment 1.

5.4.1. Unique face properties

One possible explanation why there is no context effect is that the properties of faces have extinguished the effect of context. Faces are attention binding and could have outweighed the subtle effects of context (Brieber et al., 2015). It is well known that that faces are processed very quickly (Ekman, 1992, Schacht et al. 2008; Jung et al, 2010) and that faces are appraised in a glance (Olson & Marschuetz, 2005). Moreover facial attractiveness is a strong biological marker, whose ubiquitous effect seems to override different contexts

(Thornhill & Gangestad, 1999). Therefore attractiveness is stable and robust in the gallery and the laboratory context.

Furthermore Rensink, O'Regan and Clark (1987) stated that change in context needs some attentional resources. If however attention is captured by faces then there are no cognitive resources to pay attention to the context. Likewise recent research suggests that faces strongly bias attention and distract from other salient stimuli (Parks, Kim & Hopfinger, 2014). This would be in line with the notion of Bar (2004) that weak context can be overridden by stronger cues like faces. If the participants are asked specifically about the difference of the two contexts they highlight the different atmospheres of the gallery and laboratory. Yet this perceived difference diminishes in the light of facial appraisal.

5.4.2. Valence of context

Scientific literature states that perceived facial attractiveness is altered by context (Leder et al., 2010; Watkins et al., 2012). Leder et al. (2010) reported that facial attractiveness of male faces was moderated by the perceived threat of the situation. Similar results were reported by Watkins et al. (2012) for female perceiver. The preference of male faces changed in the perception of a pathogen environment. Moreover negative context biased the processing of faces (Kim et al. 2004; Ildika et al. 2010; Mobbs et al., 2010). That research suggest that salient stimuli like faces (Ekman, 1999) or threatening scenes (Calvo & Lang, 2004) are processed quicker than non-salient ones. Thus especially threatening context has an impact on facial attractiveness. In turn some studies suggest that a context with a strong positive valence alters the perception of faces (Wieser et al., 2014; Schwarz et al., 2013).

In respect of these findings the data of this study indicates that neither the gallery context nor the laboratory context owns a strong enough positive or negative valence to alter

aesthetic appreciation of faces in contrast to art works (Brieber et al., 2014; Brieber et al., 2015). Even though the participants described the isolated context as different, this difference was not strong enough to alter the attractiveness ratings. There is also evidence that an incongruent object context relation is processed slower (Ganis & Kutas, 2003; Potter & Davenport, 2004) and preferred more (Leder & Gartus, 2014; Leder, Gartus & Kemer, 2015) than congruent context object relations. In this case biological important stimuli like faces and an aesthetic context like a gallery space might be such an incongruent object context relation. In other words people do not expect to see and appraise faces in a gallery. To overcome this incongruence a specific framing might be the answer. Two recent studies reported context effects on non-art works (Wagner et al., 2014; Gerger et al., 2014). The studies used images with emotional content (IAPS) and framed them as either as images with an artistic (portrait photography) or a pragmatic background (documentary material). This specific framing is suitable for the stimuli (Bar, 2004) and facilitates (Potter & Davenport, 2004; Ganis & Kutas, 2003; Kirk, 2008) an artistic perception mode towards the stimuli. Applied to this research topic it is quite common to exhibit portrait photography in galleries; so if the target stimuli (faces) are labelled with a congruent and plausible framing like portrait photography then the physical context can theoretically enfold its impact on art appreciation. Future research could investigate the interplay of physical context and semantic material on faces. Faces could be labelled in one condition as portrait photographs from a famous artist in a gallery as well as in a laboratory. These kinds of studies could unwind the question if semantic information overrides the physical context effect.

In summary, faces are attention binding, crucial biological marker and bias the perception of other stimuli. Furthermore the effects of attractiveness and sex difference are replicated over different studies. Therefore these specific properties might have

overridden the effect of physical context. Also future research should address the question if these properties can be altered by a semantic artistic context.

5.5. Comparison to other studies

This study was planned on the basis of the findings of Brieber et al (2014, 2015a, 2015b). To understand why Brieber (2014, 2015) found context effects on art appreciation and this study did not, it is important to consider the main differences of the studies, which are mainly the use of semantic context (titles, descriptions and the label as art works) and physical context.

5.5.1. Semantic context

One major difference between this study and Brieber et al. (2014, 2015) is the semantic presentation of the stimuli and the stimuli itself. This study labelled the stimuli as faces and not as something artistic (e.g. portrait photography). Brieber et al. (2014, 2015) reported context effects for art works which have been accompanied with titles and further information about the artworks. Many studies showed that semantic framing (Kirk et al., 2009; Gerger et al., 2014; Haegvedt & Patrick, 2008; Wagner et al., 2014) or additional information like titles (Leder et al., 2006; Swami, 2013; Millis, 2001) have an impact on art appreciation. The appreciation rises when art specific information is available (Leder et al., 2006; Gerger et al., 2014, Kirk et al., 2009, Millis, 2001; Swami, 2013). Research suggest that semantic information serves two purposes: first to engage in a distinct perception style and second to elaborate meaning (Leder et al. 2006; Brieber et al., *subm.*; Millis, 2001).

Cupchik and colleagues (2009) argue in accordance with Leder et al. (2004) that a distinct intention to perceive the unique properties of an object as artistic is necessary to view objects as *artworks*. This intention is in contrast to everyday object identification.

This specific perception style results in an attenuated emotional response (Gerger et al., 2014; Wagner et al., 2013) and an enhanced appraisal (Leder et al., 2006). Therefore it might be that the perceivers did not approach the faces with the expectations to see a piece of art rather more to evaluate faces as usual: fast and without an artistic attention.

Especially elaborating meaning is an important factor to appraise art and to modulate contextual information and aesthetic experience (Brieber et al., 2015b, Leder et al., 2006; Swami). Particularly lay people rely on labels of art and non-art (Jucker, Barrett & Wlodarski, 2014). Hence it seems that a specific semantic framing in addition to physical context is necessary for laypeople to trigger this specific perception style (Cupchik, 2002; Cupchik et al, 2009; Gerger et al, 2014) and to elaborate meaning. In accordance with the previous mentioned object context relation it is still important that the semantic material suits the depicted stimuli (Bar, 2004) and is harmonized with the level of understanding of the perceiver (Brieber et al., 2015b). Therefore faces labelled as portrait photography seem to be a suitable solution.

5.5.2. Physical context

The second difference between the studies is the physical context in which the studies have been conducted. In contrast to the museum (Museum Startgalerie Athothek; MUSA) in which the study of Brieber et al. (2014, 2015) was conducted, this study as well as Brieber et al. (subm.) took place in an art gallery (Galerie Raum mit Licht). The difference in physical context might be relevant because a museum could elicit different expectations (Cupchik et al., 2009, Mastandrea et al., 2007; Mastandrea et al., 2009) than a gallery. Lay people are more familiar with the concept of a museum (Mastandrea et al., 2007) than with a modern art museum. Modern art galleries are more attractive to people with interest in modern art than people who are not. There might be a difference in the

expectations that these two contexts elicit in their audience. Additional research could investigate the interplay of art expertise and different physical context (museum vs. art gallery).

7. Conclusion

Faces are not appreciated more in the context of a gallery than in the context of a laboratory and furthermore strengthen the support for the robustness of facial attractiveness. This might have an important implication for future study designs. Furthermore the results of this study suggest that the “museum effect” does not unfold with the physical context alone. In accordance with previous studies I propose that physical context in combination with semantic congruent titles and for lay viewer appropriate stimuli enhances aesthetic evaluation.

Furthermore using faces as stimuli needs specific consideration. Faces are attention binding and need strong contextual cues to regulate facial processing. Future research should adapt these findings and investigate if faces can also be framed as artistic stimuli.

In accordance with Leder and Nadal (2014) aesthetic experience cannot be explained by a single factor like physical context. It is, moreover, an interplay of different factors like cognitive and emotional components of the perceiver, properties of the aesthetic object and contextual cues.

8. Appendix

Table 3 Ratings and image properties of Experiment 1 compared to Schacht et al. (2008)

ID	M	SD	sex	attractiveness level	Schacht ID	Schacht M	Schacht SD	dpi
21	1,74	0,85	female	low	14	6,73	0,42	161
12	3,19	1,21	female	low	18	4,56	1,02	150
19	1,85	1,02	female	low	30	6,02	1,10	151
15	2,69	1,08	female	low	32	5,16	0,94	145
30	2,79	1	female	low	50	6,17	0,48	159
8	3,34	1,27	female	low	52	3,86	1,05	159
29	1,8	0,81	female	low	54	6,67	0,43	174
18	1,94	0,87	female	low	67	6,76	0,35	157
11	2,91	0,99	female	low	82	5,48	0,88	147
1	3,06	1,13	female	low	90	4,97	0,75	300
24	4,35	1,22	female	moderate	5	3,86	0,92	154
27	4,43	1,3	female	moderate	13	3,76	1,18	149
2	4,64	1,13	female	moderate	27	3,17	0,74	158
14	4,6	1,25	female	moderate	36	3,05	1,13	161
10	4,66	1,27	female	moderate	37	2,46	0,99	153
23	4,57	1,38	female	moderate	47	3,02	0,93	156
17	4,38	1,26	female	moderate	63	2,90	1,05	169
20	4,3	1,25	female	moderate	64	3,05	0,97	168
25	4,51	1,36	female	moderate	84	2,73	1,33	300
4	4,28	1,25	female	moderate	97	3,17	1,12	300
16	5,18	1,17	female	high	7	2,68	0,64	160
13	4,96	1,16	female	high	25	2,25	1,01	160
6	4,98	1,16	female	high	65	2,32	0,78	72
28	5,32	1,3	female	high	68	3,29	1,21	72
5	5,06	1,22	female	high	96	2,32	1,21	300
22	5,6	1,1	female	high	115	1,86	0,64	300
9	5,34	1,29	female	high	116	2,62	1,19	300
3	4,98	1,58	female	high	117	3,03	1,39	300
26	5,96	0,78	female	high	121	1,56	0,63	300

7	5,17	1,19	female	high	123	2,63	1,03	300
43	1,41	0,69	male	low	15	6,78	0,88	161
33	2,55	1	male	low	26	5,11	1,17	177
42	1,55	0,72	male	low	29	6,75	0,53	168
31	2,17	0,87	male	low	41	5,95	0,86	158
32	2	1,02	male	low	42	6,65	0,49	166
49	2,53	1,14	male	low	69	6,06	0,68	151
48	2,4	0,95	male	low	85	4,94	1,39	300
36	2,38	0,92	male	low	88	5,60	0,72	300
39	2,34	0,96	male	low	103	5,38	0,71	300
47	1,83	0,83	male	low	105	6,87	0,26	300
45	3,79	1,49	male	moderate	2	4,56	1,28	72
52	3,74	1,15	male	moderate	43	3,76	0,98	169
40	3,85	1,17	male	moderate	55	3,79	1,26	173
44	3,64	1,26	male	moderate	77	4,02	0,80	170
34	3,85	1,3	male	moderate	79	3,19	1,02	163
38	3,7	1,25	male	moderate	83	4,43	0,99	147
51	3,76	1,23	male	moderate	95	4,43	1,50	300
56	3,7	1,27	male	moderate	102	4,48	1,25	300
58	3,7	1,2	male	moderate	118	3,60	1,19	300
35	3,87	1,36	male	moderate	119	4,32	0,82	300
46	4,39	1,06	male	high	4	4,05	1,16	72
41	4,74	1,42	male	high	16	2,62	0,87	169
50	4,34	1,26	male	high	39	3,92	1,20	168
59	4,62	1,54	male	high	40	3,24	1,26	167
53	4,96	1,2	male	high	61	3,08	1,13	169
60	4,45	1,4	male	high	94	3,02	1,06	300
57	4,39	1,44	male	high	104	3,43	1,16	300
54	4,57	1,28	male	high	107	3,16	1,06	300
37	4,7	1,37	male	high	109	2,68	0,90	300
55	5,13	1,53	male	High	113	3,32	1,22	300

Note. ID= Identificationnumber of Experiment 1. sex: f=female; m=male; Schacht ID=Identificantionnumber from Schacht et al. (2008); dpi=dots per inch. Note that Schacht et al. (2008) used a reversed rating scale (*1="attractive" – 7="not attractive"*).

9. List of figures and tables

Figure 1. Model of aesthetic appreciation from Leder et al. (2004)	14
Figure 2 Mean attractiveness ratings for male and female faces over the three attractiveness categories	38
Figure 3 Stimuli sample for each category of attractiveness	41
Figure 4 Rating and viewing time for group GL and LG	47
Figure 5 Sex differences in attractiveness ratings	50
Figure 6 Mean negative affect for gallery and laboratory over time	52
Table 1 Assignment of participants to different sets and groups.....	43
Table 2 Mean attractiveness ratings of females and males.....	49
Table 3 Ratings and image properties of Experiment 1 compared to Schacht et al. (2008).....	66

10. References

- Aharon, I., Etcoff, N., Ariely, D., Chabris, C. F., Connor, E. O., & Breiter, H. C. (2001). Beautiful faces have variable reward value : fMRI and behavioral evidence. *Neuron*, 32, 537–551.
- Albarracin, D., & Hart, W. (2011). Positive mood + action = negative mood + inaction: effects of general action and inaction concepts on decisions and performance as a function of affect. *Emotion (Washington, D.C.)*, 11(4), 951–7. doi:10.1037/a0024130
- Avramova, Y. R., Stapel, D. a, & Lerouge, D. (2010). Mood and context-dependence: Positive mood increases and negative mood decreases the effects of context on perception. *Journal of Personality and Social Psychology*, 99(2), 203–14. doi:10.1037/a0020216
- Azhari, T., & Azizan, T. (2007). The key concepts and elements of installation art. *Journal of Arts Discourse*, 6, 49–58.
- Bar, M. (2004). Visual objects in context. *Nature Reviews. Neuroscience*, 5(8), 617–29. doi:10.1038/nrn1476
- Barrett, L. F., & Kensinger, E. a. (2010). Context is routinely encoded during emotion perception. *Psychological Science*, 21(4), 595–9. doi:10.1177/0956797610363547
- Bitgood, S. (2010). *An attention-value model of museum visitors. Visitor At*, 1–17.
- Bradley, M. M., & Lang, P. J. (n.d.). Studying emotion with the International Affective Picture System (IAPS). In A. J. Coan & J. B. Allen (Eds.), *Handbook of Emotion Elicitation and Assessment*. Oxford University Press.
- Brieber, D., Nadal, M., & Leder, H. (2015a). In the white cube: Museum context enhances the valuation and memory of art. *Acta Psychologica*, 154, 36–42. doi:10.1016/j.actpsy.2014.11.004
- Brieber, D., Leder, H., & Nadal, M. (2015b). The experience of art in museums: An attempt to dissociate the role of physical context and genuineness. *Empirical Studies of the Arts*, 33, 95-105.
- Brieber, D., Nadal, M., Leder, H., & Rosenberg, R. (2014). Art in time and space: context modulates the relation between art experience and viewing time. *PloS One*, 9(6), e99019. doi:10.1371/journal.pone.0099019
- Brown, S., Gao, X., Tisdelle, L., Eickhoff, S. B., & Liotti, M. (2011). Naturalizing aesthetics: Brain areas for aesthetic appraisal across sensory modalities. *NeuroImage*, 58(1), 250–258. doi:doi:10.1016/j.neuroimage.2011.06.012

- Carr, D. (2010). A Museum is an Open Work. *International Journal of Heritage Studies*, 7(2), 173–183. doi:10.1080/13527250117281
- Cela-Conde, C. J., Agnati, L., Huston, J. P., Mora, F., & Nadal, M. (2011). The neural foundations of aesthetic appreciation. *Progress in Neurobiology*, 94(1), 39–48. doi:10.1016/j.pneurobio.2011.03.003
- Cela-conde, C. J., García-prieto, J., Ramasco, J. J., Mirasso, C. R., Bajo, R., Munar, E., ... Maestú, F. (2013). Dynamics of brain networks in the aesthetic appreciation. *PNAS*, 110(2), 10454–10461. doi:10.1073/pnas.1302855110/-/DCSupplemental.www.pnas.org/cgi/doi/10.1073/pnas.1302855110
- Clark, L. A., Watson, D., & Leeka, J. (1989). Diurnal variation in the Positive Affects. *Motivation and Emotion*, 13(3), 205–234. doi:10.1007/BF00995536
- Cloutier, J., Heatherton, T. F., Whalen, P. J., & Kelley, W. M. (2008). Are attractive people rewarding? Sex differences in the neural substrates of facial attractiveness. *Journal of Cognitive Neuroscience*, 20(6), 941–51. doi:10.1162/jocn.2008.20062
- Coetzee, V., Greeff, J. M., Stephen, I. D., & Perrett, D. I. (2014). Cross-cultural agreement in facial attractiveness preferences: the role of ethnicity and gender. *PloS One*, 9(7), e99629. doi:10.1371/journal.pone.0099629
- Cogan, E., Parker, S., & Zellner, D. a. (2013). Beauty beyond compare: effects of context extremity and categorization on hedonic contrast. *Journal of Experimental Psychology. Human Perception and Performance*, 39(1), 16–22. doi:10.1037/a0031020
- Cupchik, G. C., Vartanian, O., Crawley, A., & Mikulis, D. J. (2009). Viewing artworks: contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition*, 70(1), 84–91. doi:10.1016/j.bandc.2009.01.003
- Davenport, J. L., & Potter, M. C. (2004). Scene consistency in object and background perception. *Psychological Science*, 15(8), 559–64. doi:10.1111/j.0956-7976.2004.00719.x
- Doherty, B. O. (1986). *Inside the white cube. The ideology of the gallery space* (pp. 7–91). San Francisco: Lapis Press.
- Engelmann, J. B., & Hein, G. (2013). *Contextual and social influences on valuation and choice. Progress in brain research* (1st ed., Vol. 202, pp. 215–37). Elsevier B.V. doi:10.1016/B978-0-444-62604-2.00013-7
- Faerber, S. J., Leder, H., Gerger, G., & Carbon, C.-C. (2010). Priming semantic concepts affects the dynamics of aesthetic appreciation. *Acta Psychologica*, 135(2), 191–200. doi:10.1016/j.actpsy.2010.06.006
- Flexas, A., Rosselló, J., Christensen, J. F., Nadal, M., Olivera, A., & Rosa, L. (2013). Affective priming using facial expressions modulates liking for abstract art. *PloS One*, 8(11), 1–6. doi:10.1371/journal.pone.0080154

- Flexas, A., Rosselló, J., Christensen, J. F., Nadal, M., Olivera La Rosa, A., & Munar, E. (2013). Affective priming using facial expressions modulates liking for abstract art. *PloS One*, 8(11), e80154. doi:10.1371/journal.pone.0080154
- Franklin, R. G., & Adams, R. B. (2009). A dual-process account of female facial attractiveness preferences: Sexual and nonsexual routes. *Journal of Experimental Social Psychology*, 45(5), 1156–1159. doi:10.1016/j.jesp.2009.06.014
- Franklin, R. G., & Adams, R. B. (2010). The two sides of beauty: laterality and the duality of facial attractiveness. *Brain and Cognition*, 72(2), 300–5. doi:10.1016/j.bandc.2009.10.002
- Gartus, A., Klemer, N., & Leder, H. (2015). The effects of visual context and individual differences on perception and evaluation of modern art and graffiti art. *Acta Psychologica*, 156C, 64–76. doi:10.1016/j.actpsy.2015.01.005
- Gartus, A., & Leder, H. (2014). The white cube of the museum versus the gray cube of the street : the role of context in aesthetic evaluations. *Psychology of Aesthetics, Creativity, and the Arts*, 8(3), 311–320. doi:http://dx.doi.org/10.1037/a0036847
- Geldart, S. (2010). That woman looks pretty , but is she attractive ? Female perceptions of facial beauty and the impact of cultural labels. *Revue Europeenne de Psychologie Appliquee*, 60(2), 79–87. doi:10.1016/j.erap.2009.12.003
- Gerger, G., Leder, H., & Kremer, A. (2014). Context effects on emotional and aesthetic evaluations of artworks and IAPS pictures. *Acta Psychologica*, 151, 174–83. doi:10.1016/j.actpsy.2014.06.008
- Gerger, G., Leder, H., Tinio, P. P. L., & Schacht, A. (2011). Faces versus patterns: Exploring aesthetic reactions using facial EMG. *Psychology of Aesthetics, Creativity, and the Arts*, 5(3), 241–250. doi:10.1037/a0024154
- Hagtvedt, H., & Patrick, V. M. (2011). Turning art into mere illustration: concretizing art renders its influence context dependent. *Personality & Social Psychology Bulletin*, 37(12), 1624–32. doi:10.1177/0146167211415631
- Hahn, A. C., Xiao, D., Sprengelmeyer, R., & Perrett, D. I. (2013). Gender differences in the incentive salience of adult and infant faces. *Quarterly Journal of Experimental Psychology (2006)*, 66(1), 200–8. doi:10.1080/17470218.2012.705860
- Hayden, B. Y., Parikh, P. C., Deaner, R. O., & Platt, M. L. (2007). Economic principles motivating social attention in humans. *Proceedings. Biological Sciences / The Royal Society*, 274(1619), 1751–6. doi:10.1098/rspb.2007.0368
- Howell, E. C., Etchells, P. J., & Penton-Voak, I. S. (2012). The sexual overperception bias is associated with sociosexuality. *Personality and Individual Differences*, 53(8), 1012–1016. doi:10.1016/j.paid.2012.07.024

- Huang, M., Bridge, H., Kemp, M. J., & Parker, A. J. (2011). Human cortical activity evoked by the assignment of authenticity when viewing works of art. *Frontiers in Human Neuroscience*, 5(November), 134. doi:10.3389/fnhum.2011.00134
- Iidaka, T., Saito, D. N., Komeda, H., Mano, Y., Kanayama, N., Osumi, T., & Ozaki, N. (2009). Transient neural activation in human amygdala involved in aversive conditioning of face and voice. *Journal of Cognitive Neuroscience*, 22(9), 2074–2085.
- Jucker, J.-L., Barrett, J. L., & Wlodarski, R. (2014). “I just don’t get it”: perceived artists’ intentions affect art evaluations. *Empirical Studies of the Arts*, 32(2), 149–182. doi:10.2190/EM.32.2.c
- Jung, K., Ruthruff, E., Tybur, J. M., Gaspelin, N., & Miller, G. (2012). Perception of facial attractiveness requires some attentional resources: implications for the “automaticity” of psychological adaptations. *Evolution and Human Behavior*, 33(3), 241–250. doi:10.1016/j.evolhumbehav.2011.10.001
- K. Smith and Lisa F. Smith, J. (2001). Spending time on art. *Empirical Studies of the Arts*, 19(2), 229–236. doi:10.2190/5MQM-59JH-X21R-JN5J
- Kelly, N. A. (2010). *What is installation art?* (pp. 1–15). Dublin: Irish Museum of Modern Art.
- Kettlewell, N. (1988). An examination of preferences for subject matter in painting. *Empirical Studies of the Arts*, 6(1), 59–65. doi:10.2190/DFK1-TBC2-JLEX-5TEC
- Kim, H., Somerville, L. H., Johnstone, T., Polis, S., Alexander, A. L., Shin, L. M., & Whalen, P. J. (2004). Contextual modulation of amygdala responsivity to surprised faces. *Journal of Cognitive Neuroscience*, 16(10), 1730–45. doi:10.1162/0898929042947865
- Kirk, U. (2008). The neural basis of object-context relationships on aesthetic judgment. *PloS One*, 3(11), e3754. doi:10.1371/journal.pone.0003754
- Kirk, U., Skov, M., Hulme, O., Christensen, M. S., & Zeki, S. (2009). Modulation of aesthetic value by semantic context: an fMRI study. *NeuroImage*, 44(3), 1125–32. doi:10.1016/j.neuroimage.2008.10.009
- Lacey, S., Hagtvedt, H., Patrick, V. M., Anderson, A., Stilla, R., Deshpande, G., ... Sathian, K. (2011a). Art for reward’s sake: visual art recruits the ventral striatum. *NeuroImage*, 55(1), 420–33. doi:10.1016/j.neuroimage.2010.11.027
- Lacey, S., Hagtvedt, H., Patrick, V. M., Anderson, A., Stilla, R., Deshpande, G., ... Sathian, K. (2011b). Art for reward’s sake: visual art recruits the ventral striatum. *NeuroImage*, 55(1), 420–33. doi:10.1016/j.neuroimage.2010.11.027
- Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, 126(3), 390–423. doi:10.1037//0033-2909.126.3.390

- Langlois, J. H., Roggman, L. a., & Musselman, L. (1994). What Is average and what is not average about attractive faces? *Psychological Science*, 5(4), 214–220. doi:10.1111/j.1467-9280.1994.tb00503.x
- Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *The British Psychological Society*, 95(Pt 4), 489–508.
- Leder, H., Carbon, C.-C., & Ripsas, A.-L. (2006). Entitling art: Influence of title information on understanding and appreciation of paintings. *Acta Psychologica*, 121(2), 176–98. doi:10.1016/j.actpsy.2005.08.005
- Leder, H., Gerger, G., Brieber, D., & Schwarz, N. (2014). What makes an art expert? Emotion and evaluation in art appreciation. *Cognition & Emotion*, 28(6), 1137–47. doi:10.1080/02699931.2013.870132
- Leder, H., Gerger, G., Dressler, S. G., & Schabmann, A. (2012). How art is appreciated. *Psychology of Aesthetics, Creativity, and the Arts*, 6(1), 2–10. doi:10.1037/a0026396
- Leder, H., & Nadal, M. (2014a). Ten years of a model of aesthetic appreciation and aesthetic judgments : The aesthetic episode - Developments and challenges in empirical aesthetics. *British Journal of Psychology (London, England : 1953)*, 105(4), 443–64. doi:10.1111/bjop.12084
- Leder, H., & Nadal, M. (2014b). Ten years of a model of aesthetic appreciation and aesthetic judgments : The aesthetic episode - Developments and challenges in empirical aesthetics. *British Journal of Psychology (London, England : 1953)*, 105(4), 443–64. doi:10.1111/bjop.12084
- Leder, H., Tinio, P. P. L., Fuchs, I. M., & Bohrn, I. (2010). When attractiveness demands longer looks : The effects of situation and gender. *The Quarterly Journal of Experimental Psychology*, (November 2013), 37–41. doi:10.1080/17470211003605142
- Leventhal, Howard Scherer, K. (1987). The relationship of emotion to cognition: a functional approach to a semantic controversy. *Cognition & Emotion*, 1(1), 3–28.
- Linsen, S., Leyssen, M. H. R., Sammartino, J., & Palmer, J. S. (2011). Aesthetic preferences in the size of images of real-world objects. *Perception*, 40, 291–299. doi:10.1068/p6835
- Little, a C., Jones, B. C., Penton-Voak, I. S., Burt, D. M., & Perrett, D. I. (2002). Partnership status and the temporal context of relationships influence human female preferences for sexual dimorphism in male face shape. *Proceedings. Biological Sciences / The Royal Society*, 269(1496), 1095–100. doi:10.1098/rspb.2002.1984
- Locher, Lisa Smith, and Jeffrey Smi, P. (1999). Original paintings versus slide and computer reproductions: a comparison of viewer responses. *Empirical Studies of the Arts*, 17(2), 121–129. doi:10.2190/R1WN-TAF2-376D-EFUH

- Locher, Paul & Dolese, M. (2004). A comparison of the perceived pictorial and aesthetic qualities of original paintings and their postcard images. *Empirical Studies of the Arts*, 22(August 2003), 129–142.
- Long, R. (1990). *Heaven and Earth*. Retrieved 14.April, 2015, from <http://www.tate.org.uk/whats-on/tate-britain/exhibition/richard-long-heaven-and-earth/explore-exhibition/richard-long-2>
- Mastandrea, S., Bartoli, G., & Bove, G. (2007). Learning through ancient art and experiencing emotions with contemporary art: comparing visits in two different museums. *Empirical Studies of the Arts*, 25(2), 173–191.
- Mastandrea, S., Bartoli, G., & Bove, G. (2009). Preferences for ancient and modern art museums: Visitor experiences and personality characteristics. *Psychology of Aesthetics, Creativity, and the Arts*, 3(3), 164–173. doi:10.1037/a0013142
- Mccarthy, G., Puce, A., Gore, J. C., & Truett, A. (1996). Face-specific processing in the human fusiform gyrus. *Journal of Cognitive Neuroscience*, 9(5), 605–610.
- Meltzer, A. L., McNulty, J. K., Jackson, G. L., & Karney, B. R. (2014). Sex differences in the implications of partner physical attractiveness for the trajectory of marital satisfaction. *Journal of Personality and Social Psychology*, 106(3), 418–28. doi:10.1037/a0034424
- Millis, K. (2001). Making meaning brings pleasure: The influence of titles on aesthetic experiences. *Emotion*, 1(3), 320–329. doi:10.1037//1528-3542.1.3.320
- Mobbs, D., Weiskopf, N., Lau, H. C., Featherstone, E., Dolan, R. J., & Frith, C. D. (2006). The Kuleshov Effect: the influence of contextual framing on emotional attributions. *Social Cognitive and Affective Neuroscience*, 1(2), 95–106. doi:10.1093/scan/nsi014
- Morel, S., Beaucousin, V., Perrin, M., & George, N. (2012). Very early modulation of brain responses to neutral faces by a single prior association with an emotional context: evidence from MEG. *NeuroImage*, 61(4), 1461–70. doi:10.1016/j.neuroimage.2012.04.016
- Nedelec, J. L., & Beaver, K. M. (2011). Beauty is in the sex of the beholder: An examination of the effects of interviewer characteristics on assessments of respondent attractiveness. *Personality and Individual Differences*, 51(8), 930–934. doi:10.1016/j.paid.2011.07.025
- Noguchi, Y., & Murota, M. (2013a). Temporal dynamics of neural activity in an integration of visual and contextual information in an esthetic preference task. *Neuropsychologia*, 51(6), 1077–84. doi:10.1016/j.neuropsychologia.2013.03.003
- Noguchi, Y., & Murota, M. (2013b). Temporal dynamics of neural activity in an integration of visual and contextual information in an esthetic preference task. *Neuropsychologia*, 51(6), 1077–84. doi:10.1016/j.neuropsychologia.2013.03.003

- Oliva, A., & Torralba, A. (2007). The role of context in object recognition. *Trends in Cognitive Sciences*, 11(12), 520–7. doi:10.1016/j.tics.2007.09.009
- Olson, I. R., & Marshuetz, C. (2005). Facial attractiveness is appraised in a glance. *Emotion (Washington, D.C.)*, 5(4), 498–502. doi:10.1037/1528-3542.5.4.498
- Parker, A. J. (2014). Revealing rembrandt. *Frontiers in Neuroscience*, 8(April), 76. doi:10.3389/fnins.2014.00076
- Parks, E. L., Kim, S.-Y., & Hopfinger, J. B. (2014). The persistence of distraction: a study of attentional biases by fear, faces, and context. *Psychonomic Bulletin & Review*, 21(6), 1501–8. doi:10.3758/s13423-014-0615-4
- Perrett, D. I., Lee, K., Penton-Voak, I., Rowland, D., Yoshikawa, S., Burt, D. M., ... Akamatsu, S. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature*, 394(August), 884–887.
- Principe, Connor, P., & Langlois, Judith, H. (2011). Faces differing in attractiveness elicit corresponding affective responses. *Cognition & Emotion*, 25(1), 140–148. doi:10.1080/02699931003612098.Faces
- Rensink, R. A., Regan, J. K. O., & Clark, J. J. (1997). To See or Not to See : The Need for Attention to Perceive Changes in Scenes. *Psychological Science*, 8, 368–373.
- Riggle, N. A. (2010). Street art : The transfiguration of the commonplaces. *Journal of Aesthetics and Art Criticism*, 68(3), 243–257. doi:10.1111/j.1540-6245.2010.01416.x
- Righart, R., & de Gelder, B. (2006). Context influences early perceptual analysis of faces- an electrophysiological study. *Cerebral Cortex (New York, N.Y. : 1991)*, 16(9), 1249–57. doi:10.1093/cercor/bhj066
- Rodway, P., Schepman, A., & Lambert, J. (2013). The influence of position and context on facial attractiveness. *Acta Psychologica*, 144, 522–529. doi:10.1016/j.actpsy.2013.09.004
- Sacco, D. F., Jones, B. C., DeBruine, L. M., & Hugenberg, K. (2012). The roles of sociosexual orientation and relationship status in women's face preferences. *Personality and Individual Differences*, 53(8), 1044–1047. doi:10.1016/j.paid.2012.07.023
- Said, C. P., & Todorov, A. (2011). A statistical model of facial attractiveness. *Psychological Science*, 22(9), 1183–90. doi:10.1177/0956797611419169
- Schacht, A., Werheid, K., & Sommer, W. (2008). The appraisal of facial beauty is rapid but not mandatory. *Cognitive, Affective, & Behavioral Neuroscience*, 8(2), 132–142. doi:10.3758/CABN.8.2.132
- Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 695–729. doi:10.1177/0539018405058216

- Scherer, K. R., & Ellgring, H. (2007). Are facial expressions of emotion produced by categorical affect programs or dynamically driven by appraisal? *Emotion*, 7(1), 113–130. doi:10.1037/1528-3542.7.1.113
- Schwarz, K. a, Wieser, M. J., Gerdes, A. B. M., Mühlberger, A., & Pauli, P. (2013). Why are you looking like that? How the context influences evaluation and processing of human faces. *Social Cognitive and Affective Neuroscience*, 8(4), 438–45. doi:10.1093/scan/nss013
- Sescousse, G., Caldú, X., Segura, B., & Dreher, J.-C. (2013). Processing of primary and secondary rewards: a quantitative meta-analysis and review of human functional neuroimaging studies. *Neuroscience and Biobehavioral Reviews*, 37(4), 681–96. doi:10.1016/j.neubiorev.2013.02.002
- Smith, L. F., & Smith, J. K. (2006). Effects of time and information on perception of art. *Empirical Studies of the Arts*, 24(July 2004), 229–242.
- Sui, J., & Liu, C. H. (2009). Can beauty be ignored? Effects of facial attractiveness on covert attention. *Psychonomic Bulletin & Review*, 16(2), 276–81. doi:10.3758/PBR.16.2.276
- Swami, V. (2013). Context matters: Investigating the impact of contextual information on aesthetic appreciation of paintings by Max Ernst and Pablo Picasso. *Psychology of Aesthetics, Creativity, and the Arts*, 7(3), 285–295. doi:10.1037/a0030965
- Swami, V., Miller, R., Furnham, A., Penke, L., & Tovée, M. J. (2008). The influence of men's sexual strategies on perceptions of women's bodily attractiveness, health and fertility. *Personality and Individual Differences*, 44(1), 98–107. doi:10.1016/j.paid.2007.07.017
- Swami, V., Stieger, S., Haubner, T., Voracek, M., & Furnham, A. (2009). Evaluating the Physical Attractiveness of Oneself and One's Romantic Partner. *Journal of Individual Differences*, 30(1), 35–43. doi:10.1027/1614-0001.30.1.35
- Thornhill, R., & Gangestad, S. (1999). Facial attractiveness. *Trends in Cognitive Sciences*, 3(12), 452–460. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10562724>
- Tinio, P. P. L., Gerger, G., & Leder, H. (2013). Birds of a feather... Generalization of facial structures following massive familiarization. *Acta Psychologica*, 144(3), 463–71. doi:10.1016/j.actpsy.2013.08.003
- Tröndle, M., Greenwood, S., Kirchberg, V., & Tschacher, W. (2012). An integrative and comprehensive methodology for studying aesthetic experience in the field: merging movement tracking, physiology, and psychological data. *Environment and Behavior*, 20(10), 1–34. doi:10.1177/0013916512453839
- Tschacher, W., Greenwood, S., Kirchberg, V., Wintzerith, S., van der Berg, K., & Tröndle, M. (2012). Physiological correlates of aesthetic perception of artworks in a

- museum. *Psychology of Aesthetics, Creativity, and the Arts*, 6(1), 96–103. doi:10.1037/a0023845
- Van der Stock, J., Vandenbulcke, M., Sinke, C., Goebel, R., & de Gelder, B. (2013). How affective information from faces and scenes interacts in the brain. *Social Cognitive and Affective Neuroscience*. doi:doi: 10.1093/scan/nst138
- Vartanian, O., Navarrete, G., Chatterjee, A., Fich, L. B., Leder, H., Modroño, C., ... Skov, M. (2013). Impact of contour on aesthetic judgments and approach-avoidance decisions in architecture. *Proceedings of the National Academy of Sciences of the United States of America*, 110 Suppl , 10446–53. doi:10.1073/pnas.1301227110
- Watkins, C. D., DeBruine, L. M., Little, A. C., Feinberg, D. R., & Jones, B. C. (2012). Priming concerns about pathogen threat versus resource scarcity: dissociable effects on women's perceptions of men's attractiveness and dominance. *Behavioral Ecology and Sociobiology*, 66(12), 1549–1556. doi:10.1007/s00265-012-1408-2
- Watson, D., & Clark, L. A. (1994). The PANAS-X. Manual for the positive and negative affect schedule - expanded form. IOWA: David Watson & Lee Anna Clark.
- Watson, D., Clark, L. a., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. doi:10.1037//0022-3514.54.6.1063
- Waynforth, D., Delwadia, S., & Camm, M. (2005). The influence of women's mating strategies on preference for masculine facial architecture. *Evolution and Human Behavior*, 26(5), 409–416. doi:10.1016/j.evolhumbehav.2005.03.003
- Wieser, M. J., & Brosch, T. (2012). Faces in context: a review and systematization of contextual influences on affective face processing. *Frontiers in Psychology*, 3(November), 471. doi:10.3389/fpsyg.2012.00471
- Wieser, M. J., Gerdes, A. B. M., Büngel, I., Schwarz, K. a, Mühlberger, A., & Pauli, P. (2014). Not so harmless anymore: how context impacts the perception and electrocortical processing of neutral faces. *NeuroImage*, 92, 74–82. doi:10.1016/j.neuroimage.2014.01.022

8. Lebenslauf

Ausbildung

10/2014 – 01/2015	Erasmus Semester an der Bangor University (Wales). Schwerpunkt Neuropsychology
- 10/2008	Psychologiestudium an der Hauptuniversität Wien.
10/2007-04/2012	Bachelorstudium Kunstgeschichtestudium an der Hauptuniversität Wien
09/1999-06/2007	Stiftgymnasium Kremsmünster
09/1995-06/1999	Volksschule Bad Hall

Fachspezifische Praktika

03/2013 – 06/2013	Volontariat LeFoP (Lehr- und Forschungspraxis) Universität Wien, Schwerpunkte: Cyberpsychologie und klinische Diagnostik
08/2012	Volontariat Caritas WG Ponte, teilzeitbetreute Einrichtung für unbegleitete minderjährige Flüchtlinge.
01/2011-08/2011	6-Wochen-Praktikantin bei der Gesellschaft gegen Sekten und Kultgefahren (GSK)

berufliche Erfahrung

- 05/2009	Mitarbeiterin bei GIN (Gemeinschaft Integration Normalisierung): Betreuung für Menschen mit intellektueller und mehrfacher Behinderung. Besuchsdienst, Nachtdienst, Leitung für Freizeitbetreuung
10/2012 – 06/2014	Tutorin an der Medizinischen Universität Wien unter der Leitung von Prof. Klaus Spiess.
10/2012 – 10/2013	Mitarbeiterin der WG-Refugio (Caritas), 24 h Betreuung für unbegleitete minderjährige Flüchtlinge.

Zusatzausbildungen und Kenntnisse

Maitreffen. Studentischer Kongress, Wien, 2015. Moderation, Organisation und Workshopbetreuung

Grazer Konferenz für Lehre 2014. Teilnahme und Poster Präsentation. Mundt, L., Ott, K. und Spiess, K. (2014). Anamnesis Groups` Exam Strategies Based on Creative Media. Poster Präsentation auf der 18. Grazer Konferenz für Lehre, Salzburg, Österreich.

Statistikkenntnisse

SPSS (gut)
R (Einführungskurs)
MATLAB (Einführungskurs)

Sprachkenntnisse

Deutsch (Muttersprache)
Englisch (sehr gut) Cambridge First Certificate
Französisch (Grundkenntnisse)
Spanisch (A1 Niveau)

Office-kenntnisse

Sehr gut

Recherchekenntnisse

Sehr gut