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**Beyond the Canvas:  
A Mixed Methods Study of Awe-Experiences in Virtual Reality  
Featuring Abstract and Figurative Art**

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## Abstract

*Purpose:* This thesis delves into the dynamic relation between awe and art, specifically focusing on abstract versus representational art within immersive Virtual Reality (VR) environments. Prompted by the expansion of awe research since Keltner and Haidt's seminal work (2003) and the research gap on art and VR, this study explores whether the level of abstraction in art influences the intensity of the awe experience. Inspired by the Construal Level Theory (CLT) and the recognized awe-inducing potential of VR, we comparatively measured awe experiences after two immersive VR artworks: the abstract *Hilma af Klint: The Temple* and the figurative *Art Plunge*.

*Method:* Utilizing the Awe Experience Questionnaire (AWE-S) and a repeated measures design in combination with semi-structured written reflections, we evaluated in a convenience sample ( $n=49$ ) whether an abstract, immersive art experience in VR elicited greater awe than similar, figurative content. Additionally, we evaluated the possible influence of familiarity with the art and personal art preferences on the awe experience.

*Results:* There was no significant difference in awe between abstract and figurative art in VR; a result consistent across all six factors underlying the AWE-S. However, preference for abstract art correlated with the general awe experience, underscoring the role of individual predispositions. The research thus concludes that there is seemingly no relationship between level of abstraction in art and awe-experience, but invites further exploration.

*Keywords:* awe, Virtual Reality, VR, emotions, abstract art, epistemic emotion

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**Beyond the Canvas:**  
**A Mixed Methods Study of Awe-Experiences in Virtual Reality**  
**Featuring Abstract and Figurative Art**

It has been two decades since Keltner and Haidt published their influential article on awe (2003), labeling it as moral, spiritual, and aesthetic emotion. Since then, the research on this emotion has started to blossom, and new research on its potential health benefits (Chirico & Gaggioli, 2021; Monroy & Keltner, 2022) has increased the interest in awe. Awe is a complex emotion that arises in response to stimuli of vastness (Griskevicius et al., 2010) that requires adjustment of mental structures to accommodate it (Keltner & Haidt, 2003; Shiota et al., 2007). Awe can be clustered together with the emotions wonder and astonishment (Yaden et al., 2019) and is considered an epistemological (Shiota et al., 2006) and prosocial emotion (Gordon et al., 2017; Piff et al., 2015; Rudd et al., 2012). Epistemologically, awe promotes curiosity to comprehend the external environment, changing personal views, and processing information more systematically. Awe is also a prosocial emotion, increasing other-related behaviors such as assistance, generosity, and sharing (Rudd, et al., 2012), as it makes individuals feel more connected to others and activates prosocial goals (Van Cappellen & Saroglou, 2012). In addition, awe can change the perception of the self, making it feel small (Piff et al., 2015). It has been reported as an “overwhelmingly positive” emotion (Yaden et al., 2019). Although research on awe is increasing in popularity, it is still underdeveloped (Septianto et al., 2023) and more attention to what elicits this complex emotion is required.

The experience of awe is often triggered by natural scenery, but it can also emerge from exposure to great skill, art, religious experiences, great virtue, music, and even ideas or epiphanies (Gordon et al., 2017; Shiota et al., 2007; Silvia et al., 2015; Yaden et al., 2019). That awe is considered an aesthetic emotion and that art can elicit awe is of particular interest to this study, as one key component of the awe experience is “need for accommodation” (Yaden et al., 2019). Interpretation is often an intrinsic part of an art experience, and different types of art (such as figurative or abstract art) can call for different types of mental accommodation. Figurative art is, according to Tate, art “that retains strong references to the real world and particularly to the human figure” (Tate, “Art term: Figurative art”) and, by contrast, abstract art is “art that does not attempt to represent an accurate depiction of a visual reality but instead use shapes, colors, forms, and gestural marks to achieve its effect” (Tate,

“Art term: Abstract art”). The question can be raised; could abstract art potentially be more awe-inspiring than representational art?

Construal Level Theory (CLT) states that people interpret information based on their psychological distance from the event or object in question (Trope & Liberman, 2010). When an object or event is psychologically distant, people tend to think about it more abstractly, whereas when it is closer, they tend to think about it more concretely. In the context of abstract art, CLT predicts that people interpret abstract art more abstractly than figurative art because it is more psychologically distant. A study by Durkin, Hartnett, and Shohamy (2020) found support for this idea, showing that when viewing abstract art participants exhibited higher levels of abstract thinking than when viewing figurative art. Since abstract art is more ambiguous and potentially experienced as more vast and difficult to mentally accommodate than figurative, it could be a link to the experience of awe. Despite the potential link between CTL, abstract art, and awe, there is no empirical research on whether abstract art is more awe-inspiring than representational art. Therefore, this study aims to investigate whether abstract art elicits more awe than representational art, as measured by the Awe Experience Questionnaire (AWE-S).

It has already been confirmed that experiences in Virtual Reality (VR) can elicit awe (Chirico et al., 2017; Gallagher et al., 2014). Chirico et al. (2017) concluded that awe-inducing content elicited significantly more awe in 3D VR than on 2D screen, and McPhetres (2019) replicated these results. In addition, beauty has been described as the most common theme of awe (Yaden et al., 2019).

Chirico et al. (2021) examined VR art’s capacity to elicit the sublime: an awe-like aesthetic emotion as defined by Keltner and Haidt (2003). Their study compared Vincent van Gogh’s *Starry Night*, a post-impressionistic piece teetering between representation and abstraction, with a photographic version of the same scene which constituted a comparative realistic, “nature” condition. Findings revealed no difference in art and nature’s ability to elicit the sublime, but there were differences in “perception of vastness”; it was higher in the nature-based condition. This is remarkable as one of the factors underlying the AWE-S is “the perception of vastness” (Yaden et al., 2019). However, the study didn’t elucidate which aspects of the nature scene or the painting gave rise to these responses. This lack of clarity resurfaces the question: Could there be a difference in awe between abstract and figurative art?

No such study on awe and art style has been carried out. To fill this research gap, this study showed participants abstract and non-abstract immersive VR artworks and measured their experience of awe using self-report measures. Against the background of the earlier studies that tangents need for accommodation and perceived vastness, this thesis will also aim to examine the factors underlying the awe-experience more closely. In addition, Ochadleus et al. (2023) found that familiarity diminished the intensity of awe experiences when viewing natural scenery, which makes a case for examining familiarity with the art too. The findings could shed light on the relation between the level of abstraction in art and awe.

### **Research Purpose and Question**

The purpose of this thesis is to examine the differences in awe experience between abstract and figurative immersive art experiences in virtual reality (VR). Specifically, the thesis aims to compare experiences that could be conceptualized as awe during *Hilma af Klint: The Temple* (an abstract art experience) and *Art Plunge* (a figurative art experience) within VR environments. By investigating the potential differences in the experience of awe between these two types of art encounters, this research seeks to contribute to a better understanding of the relation between awe and abstraction in art, as well as the potential applications of VR in the fields of aesthetics, emotion, and well-being. The thesis aims to fulfill this purpose by answering the question: Does an abstract, immersive art experience in VR differ in experience of awe compared to similar, figurative content? More specifically; 1) Does the experience of awe differ between *Hilma af Klint: The Temple* and *Art Plunge*? and 2) Do the factors underlying AWE-S differ between the abstract and figurative experience? In addition, two potentially interacting issues were analyzed: 3) Does familiarity with the art influence the awe-experience? 4) Is there a difference in awe-experience depending on art preference?

### **Method**

#### **Design**

The study's design was repeated measures, combining both quantitative and qualitative measures, and participants were recruited using a convenience sampling method. Data was collected using a self-report ratings survey consisting of both a validated questionnaire and a semi-structured written reflection.

The decision to employ a mixed methods design was rooted in the belief that a solely quantitative approach might fail to encapsulate the full experience. A mixed method approach

facilitates a complementary analysis: the quantitative data derived from the AWE-S was analyzed to discern significant differences or patterns between the two viewings, offering a systematic overview on the variations in awe experience. Concurrently, the qualitative data was analyzed to yield in-depth descriptions and elucidate greater nuances, aiding the interpretation and contextualization of the quantitative findings. By harmoniously merging these analyses, the aim was to gain a more comprehensive and robust understanding of the experiences being studied.

### **Material and Tools for the Experiment.**

#### ***Device***

The device used for the experience is Oculus Quest 2, a wireless virtual reality headset developed by Meta Platforms. The headset is comparatively light and has a higher refresh rate and per-eye resolution (1832 x 1920), making the user experience comfortable. The headset has built-in speakers which gives 3D positional audio and the hand controls have haptic feedback and translate users' gestures into the VR environment.

#### ***Art***

**Abstract VR Artwork.** *Hilma af Klint: The Temple* is a 12-minute-long virtual reality experience inspired by Hilma af Klint's vision of building a spiral-shaped construction that would house her most important works. The VR piece contains 193 of Hilma af Klint's paintings, the majority of them abstract, from the series "Paintings for the Temple." Once the experience starts, the visual impressions start to change in continuous series. Broad-brushed, the experience starts in white space, moves through a spiral, over a sunflower field, through one of the flowers, to a space with interconnected, geometric shapes, up through the temple Hilma af Klint visioned where her 193 paintings for the temple are presented in a spiral building, and the experience finishes in white light. The auditory milieu is religious music and heartbeats. The viewer has a 360-degree experience and can look in all directions, but cannot control any movement within the artwork.

**Non-abstract VR Artwork.** *Art Plunge* is an immersive, interactive art experience in VR. It includes five well known paintings: *Mona Lisa* by Leonardo da Vinci, *Starry Night* by Vincent van Gogh, *The Birth of Venus* by Sandro Botticelli, *The Creation of Adam* by Michelangelo, and *Girl Reading a Letter at an Open Window* by Johannes Vermeer. The viewer can enter into the paintings in a 3D space. One of the paintings, van Gogh's *Starry Night*, has qualities that are post-impressionistic. After having entered the painting, the art

starts to move, the room gains full depth, and an auditory milieu that fits the visual experience is introduced. The viewer has a 360-degree experience, and can look in all directions. The art is accessed through a virtual art corridor which is located in outer space. The experience includes a degree of control, where the viewer chooses what painting to enter into using a hand control. The experience does not have a natural end, but is stopped after 12 minutes.

### **Measurements.**

#### ***Awe Experience Scale (AWE-S)***

The AWE-S (Yaden et al., 2019) contains 30 items and six factors; (F1) *altered time perception*; (F2) *self-diminishment*; (F3) *connectedness*; (F4) *vastness*; (F5) *physical sensations*; (F6) *need for accommodation*. Each factor and the total scale have strong reliability ( $\alpha = .93$ ) (Yaden et al., 2019).

#### ***Art Familiarity***

Two items concerning the participant's familiarity with the art were included: "Did you recognize art in the experience?" and "Have you seen the art in real life?" to rule out art familiarity as confounding variables.

#### ***Art Interest***

Participants' art preferences were operationalized into three nominal categories based on their self-reported interest on a scale of 1–7: Low Interest (scores 1–2), Moderate Interest (scores 3–5), and High Interest (scores 6–7).

#### ***Reflective Questions***

The participants were asked to write about the part of the experience they enjoyed the most, and if there was anything else that they would like to add about the experience.

### **Participants**

A total of 49 participants were included in the study. The participants were asked to join the study through social media, posters in public spaces, and e-mail.

#### ***Gender, Age, and Occupation***

The gender distribution of the population sample was imbalanced, with almost two thirds of the participants being male (see Table 1). The population's sample was young, with most of the participants being 18 to 34 years old (see Table 1). The majority of the participants were students, followed by working individuals, with the sample including just one retired individual (see Table 1).

#### ***VR-Experience***



Prior experience with virtual reality (VR) among the participants was found to be minimal. Approximately half of the participants had only engaged with VR a few times, and almost half of the participants had never previously experienced VR (see Table 1). A small fraction reported having multiple prior VR experiences.

***Art Interest and Preference***

The majority of participants had a moderate interest in art, and almost a third of the participants had a high interest in art (see Table 1). Only two participants reported having a low interest in art.

The participants' art preferences were diverse, as depicted in Table 1. Slightly fewer favored abstract art than those preferring figurative art, and a large group had no preference.

**Table 1**

*Sample demographic characteristics table*

| Characteristic    | <i>n</i> | %    |
|-------------------|----------|------|
| <b>Gender</b>     |          |      |
| Female            | 17       | 34.7 |
| Male              | 32       | 65.3 |
| <b>Age</b>        |          |      |
| 18-24             | 20       | 40.8 |
| 25-34             | 22       | 44.9 |
| 35-44             | 2        | 4.1  |
| 45-54             | 2        | 4.1  |
| 55-64             | 2        | 4.1  |
| 65+               | 1        | 2    |
| <b>Occupation</b> |          |      |
| Student           | 38       | 77.6 |
| Working           | 10       | 20.4 |
| Retired           | 1        | 2.0  |

| Characteristic | <i>n</i> | %    |
|----------------|----------|------|
| VR-Experiences |          |      |
| None           | 21       | 42.9 |
| A few          | 24       | 49.0 |
| Multiple       | 4        | 8.2  |
| Art interest   |          |      |
| Low            | 2        | 4.1  |
| Moderate       | 32       | 65.3 |
| High           | 15       | 30.6 |
| Art preference |          |      |
| Abstract Art   | 13       | 26.5 |
| Figurative Art | 16       | 32.7 |
| No preference  | 20       | 40.8 |

*Note.* *N* = 49

### **Procedure**

The protocol included two video-viewing trials. Each participant watched each video once in a counterbalanced order. The video was shown in a group setting with two to ten participants. The experience was, however, individual. Ten seats with headsets placed on a table in front of them were placed in a large circle. The seats were spaced out with 2 m<sup>2</sup> so that each participant had space to move.

For the first video trial, participants were asked to sit down on one of the seats. They provided informed consent by scanning a QR-code with their smart-phone linked to a form with information about the study (see Appendix 1) and an opportunity to consent. An iPad with the form was available for the participants that could not use their own device. Then, participants were given instructions for the VR-experience. They were provided with an oral description of the procedure of the study, asked to perform a one-minute guided breath relaxation exercise (Headspace, 2018) and were told how to use the headset and navigate the

experience, all according to a manuscript (see Appendix 2). Participants then put on a virtual reality head-mounted display (Oculus Quest 2) at the same time. The virtual reality experience started automatically after putting on the headset. The participants were able to adjust volume and focus according to preference. The participants took off the headset after “The end” appeared on the screen or if instructed to do so. After the VR exposure, participants completed the self-report rating (see Appendix 4) on their smartphone without talking to each other. The participants then had a 15-minute break. In the meantime, the next video trial was set up on the VR-devices.

For the second video trial, the participants were asked to sit down on one of the chairs. The participants were provided with the oral instructions for the secondary part of the study (see Appendix 3), as well as being asked to perform the same relaxation exercise as previously. The participants then put on the virtual reality headset at the same time. The virtual reality experience started automatically after putting on the headset. The participants were able to adjust volume and focus according to preference. They took off the headset after “The end” appeared on the screen, or if instructed to do so. After the VR exposure, the participants completed the second part of the self-reported ratings without talking to each other. Once the questionnaire was completed, they were thanked for their time and participation (see Appendix 4) and were instructed to not talk about the study with anyone who had not participated (see Appendix 5). The entire experiment lasted approximately one hour.

## **Implementation**

**Order.** Despite implementing a counter-balanced design and utilizing a randomization tool to allocate participants, an unequal distribution of participants occurred across the experimental conditions due to the viewing groups being differently large, resulting in 23 participants ( $n = 23$ ) viewing *Art Plunge* first, and 26 participants ( $n = 26$ ) experiencing *Hilma af Klint: The Temple* first.

**Technical Issues.** Across both conditions, none of the participants reported technical issues significant enough to impact their overall experience. This suggests that potential confounding effects of technical difficulties on the study outcomes were minimal.

## **Data Analysis**

### ***Quantitative Analysis***

Three statistical analyses were performed to answer the research questions of this study. The first research question aimed to determine whether there is a significant difference in the level of awe between abstract and figurative art in virtual reality. This was examined by repeated measures ANOVA, where the score on the AWE-S scale after experiencing each virtual reality artwork was compared. An ANCOVA controlled for order effects.

The second research question sought to investigate whether there were particular differences in the experiences between abstract and figurative art. This was achieved by comparing the scores for each condition, factor by factor, and following up the comparison with a further exploratory repeated measures ANOVA for each of the six factors that underlies the AWE-S scale.

Difference in total awe-experience, and between the conditions, depending on art preference was explored by a between subjects repeated measures ANOVA, grouping the participants by art preference.

Furthermore, multiple regression analysis was performed to explore the extent to which art familiarity could serve as reliable predictors of the variance in the total score. In addition, it was also applied to see if gender occupation and age could have significant predictive power.

The statistical analysis utilized Jamovi software, employing a significance level of  $\alpha = 0.05$ , indicating statistical significance for  $p$ -values below 0.05.

### ***Qualitative Analysis***

The method utilized was thematic analysis, a versatile method fitting various theoretical contexts. Refraining from a naïve realist perspective, we employed a contextualist approach—typically linked to theories like critical realism (Braun & Clarke, 2006)—to balance between essentialism and constructionism. It typically takes personal qualities and experiences into account; but due to this study’s limited resources, the anonymity of responses, and ethical restrictions regarding personal background information, the interpretation context is confined to the individual participant’s response and the experiment’s setup. Despite these constraints, we have strived to maintain reflexive interpretation, constantly revising the data through a dialogical and collaborative approach, while keeping the analysis inductive.

This results in a hermeneutic pendulum between the entirety of the answer and the experiment’s structure when interpreting parts. It is recognized that themes and patterns do

not automatically “emerge” from the data—there is a process of interpretation involved.

The analysis was done in accordance with Braun and Clarke’s (2006) six-step process for thematic analysis: 1) data familiarization, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) report writing. To ensure interobserver reliability in the thematic analysis of the written reflections, the second step (coding) was carried out independently by each of the observers. The codes were then compared and the overlapping codes were grouped into themes. The process was repeated once, after which the thematic coding of the individual responses appeared saturated. Step 1–3 was carried out for the individual responses. The responses were then read again, and step 4–6 was carried out over the entire data set; identifying patterns and naming the themes. Finally, the interpretation was revised and compared to the individual responses again, making sure that the themes still matched the individual responses.

### **Ethics**

The study was conducted in accordance with the Swedish Ethical Review Act (SFS 2003:460) and the guidelines from the Swedish Research Council (2017). The study followed the guidelines from 2002 summarized in the four main ethical requirements for research: information requirement (informationskravet), requirement of consent (samtyckeskravet), confidentiality requirement, (konfidentialitetskravet), and utilization requirement (nyttjandekravet). Participation was not considered to imply any meaningful risk for the participants. The Hilma af Klint VR-experience has been presented at museums and other art venues in Europe, among them Tate Modern in London (2022, 2023) and Bozar Centre for Fine Arts in Brussels (2023), where thousands of participants voluntarily have engaged with the experience with positive responses. Art Plunge has been shown to more than a thousand participants in various art venues, among them the art exhibition and conference Siggraph in Japan (2018) and Laval virtual in France (2019) with much appreciation. VR experiences are common at museums today, and anyone that purchases a headset can have a VR experience at home. In that sense, it can be called an everyday experience.

In the museums and exhibition settings, no particular measures were taken to establish informed consent. This study has been more careful: The participants gave informed consent (see appendix 1) and had full disclosure of the purpose of the study (see Appendix 5). Prior to being in the study, all participants were informed of the purpose of the study in a way that would not bias their experience (see Appendix 1 and 3), were told that the purpose is to study

different experiences of art in VR, and were briefed on how their information would be collected, used, and stored, which satisfies the information requirements for informed consent (see Appendix 1). Individuals with preexisting medical conditions, such as epilepsy, were advised to not participate in the study. After the study, the participants were informed that the purpose was to examine the differences in awe experience between abstract and figurative immersive art experiences in VR (see Appendix 5).

Participants were informed that their participation was optional, and that they could withdraw their consent and participation at any time. Furthermore, they were made aware that the data would be anonymous and stored in an adequate manner. A letter of consent was provided to participants at the beginning of the study, which they were asked to sign to confirm their understanding and participation.

In accordance with the requirements of use set forth by the Swedish Research Council (Vetenskapsrådet, 2017), individual answers will not be shared with any other person or researcher. In addition, no sensitive information was gathered, and the participants' identities are rendered in such a way that they are unidentifiable from the recorded data. Contact details to the researchers and the name of the supervisor was included in the consent form (see Appendix 1) as well as at the end of the survey (see Appendix 4). The participants were thanked for the participation (see Appendix 4 and 5).

## **Results**

### **Quantitative analysis**

#### ***Abstract and Figurative Awe-Differences***

Although there was a small numerical difference in the total awe score between the two conditions (see table 2) a repeated measures ANOVA showed no significant difference between the two art conditions (*Art Plunge* and *Hilma af Klint: The Temple*) ( $F(1, 48) = 1.46$ ,  $p = .233$ ,  $\eta^2 = .002$ ) and the effect size was negligible. A follow-up ANCOVA using order of presentation as a covariate showed that order of presentation had no effect ( $F(2, 47) = .32$ ,  $p = .575$ ,  $\eta^2 = .001$ ), indicating the absence of an order effect. No further tests were conducted due to the non-significant main effect.

**Table 2***Summary Statistics for the Total Awe Score Between the Artworks*

| Condition | <i>M</i> | Mdn | <i>SD</i> | Min | Max |
|-----------|----------|-----|-----------|-----|-----|
| AP        | 120      | 116 | 34.7      | 46  | 170 |
| HaK       | 124      | 121 | 35.5      | 46  | 190 |

*Note.* Descriptive statistics for total awe-score after viewing *Art Plunge* (AP) and *Hilma af Klint: The Temple* (HaK).  $n = 49$ .

***AWE-S Factor Differences Between Abstract and Figurative Art***

Each factor was examined separately with a repeated measure ANOVA, and no significant differences were observed between the factors (all  $p > .05$ , see Table 3.), indicating that the effect of each factor alone was not statistically significant.

**Table 3***Descriptive overview of AWE-S factors and factor comparison Between HaK and AP*

| Factors               | <i>M</i> | Mdn | <i>SD</i> | Min | Max | <i>F</i> (1,48) | <i>p</i> | $\eta^2$ |
|-----------------------|----------|-----|-----------|-----|-----|-----------------|----------|----------|
| Time                  |          |     |           |     |     |                 |          |          |
| AP                    | 22.8     | 24  | 7.6       | 5   | 35  |                 |          |          |
| HaK                   | 22.2     | 24  | 7.9       | 5   | 35  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.30            | 0.587    | 0.001    |
| Self-loss             |          |     |           |     |     |                 |          |          |
| AP                    | 19.9     | 19  | 6.6       | 7   | 32  |                 |          |          |
| HaK                   | 19.3     | 18  | 8.0       | 5   | 35  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.30            | 0.587    | 0.002    |
| Connection            |          |     |           |     |     |                 |          |          |
| AP                    | 20.1     | 20  | 7.7       | 6   | 33  |                 |          |          |
| HaK                   | 20.1     | 20  | 7.9       | 7   | 34  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.0004          | 0.985    | 0.00     |

| Factors               | <i>M</i> | Mdn | <i>SD</i> | Min | Max | <i>F</i> (1,48) | <i>p</i> | $\eta^2$ |
|-----------------------|----------|-----|-----------|-----|-----|-----------------|----------|----------|
| Vastness              |          |     |           |     |     |                 |          |          |
| AP                    | 22.7     | 24  | 8.0       | 5   | 35  |                 |          |          |
| HaK                   | 23.3     | 25  | 7.3       | 7   | 35  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.32            | 0.579    | 0.002    |
| Physical              |          |     |           |     |     |                 |          |          |
| AP                    | 17.5     | 17  | 8.8       | 5   | 34  |                 |          |          |
| HaK                   | 17.3     | 17  | 8.1       | 5   | 35  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.05            | 0.826    | 0.00     |
| Accommodation         |          |     |           |     |     |                 |          |          |
| AP                    | 18.2     | 19  | 6.3       | 7   | 31  |                 |          |          |
| HaK                   | 17.9     | 18  | 7.2       | 5   | 34  |                 |          |          |
| Compared <sup>a</sup> |          |     |           |     |     | 0.05            | 0.832    | 0.00     |

*Note.* Descriptive statistics for the factors measured in *Art Plunge* (AP) and *Hilma af Klint: The Temple* (HaK).

<sup>a</sup>Compared through a repeated measure ANOVA

### ***Impact of Art Preference on Awe***

A repeated measure ANOVA between subjects revealed that there was a significant difference in the awe-experience between the participants reporting that they preferred abstract art ( $n = 13$ ) and the ones that reported that they preferred figurative art ( $n = 16$ ) ( $F(1,27) = 9.85, p = 0.004, \eta^2 = .22$ ). The ones that had no preference ( $n = 20$ ) were excluded from this part of the analysis. However, the effect size was small and a subsequent regression analysis revealed that art preference accounted for approximately 27% of the variance in total awe-experience ( $R^2 = .267$ ). The predicted total awe-score was 57.4 scores higher for the participants that preferred abstract art ( $SE = 13.6$ ) and  $p < 0.03$ . The difference still remained when each condition, *Hilma af Klint: The Temple* ( $R^2 = .31, p = .002, SE = 9.45$ ) and *Art Plunge* ( $R^2 = .15, p = .041, SE = 11.33$ ), was examined separately ( $p < 0.05$ ).

### ***Impact of Art Familiarity on Awe***



No statistical significance was found when examining how much of the variance in awe that could be predicted by art familiarity as measured by art recognition and real life experience in a multiple regression analysis, the determining coefficient was close to zero for both conditions, indicating that there is little to no relation between the awe-experience and familiarity or novelty for the art.

### ***Impact of Art Interest on Awe***

The linear regression analysis revealed no significant relationship between art interest and awe, neither for *Art Plunge*, *Hilma af Klint: The Temple* nor the total level of awe (all  $p > 0.05$ ).

### ***Impact of Gender, Occupation and Age on Awe***

A multiple regression analysis showed that there was no significant relation between gender, occupation, and age, and the awe-experience reported by participants, both in terms of total awe-experience and the difference in awe-experience between the two works. Gender explained very little of the variance in both general awe experience ( $R^2 = .01$ ) and awe experience between the two conditions ( $R^2 = .08$ ).

### **Thematic Analysis.**

In the qualitative section of the questionnaire, participants were asked to write about their experience. The length of the responses ranged from one to 226 words.

### ***Hilma af Klint: The Temple.***

In the thematic analysis of *Hilma af Klint: The Temple* the most common themes that emerged were: 1) harmonious and excited emotions, 2) the sensation of movement, 3) the art's movement, 4) physical sensations, 5) the amount of impressions, 6) spiritual and philosophical themes, and 7) comments on the technology or VR-adaptation of the art.

**Emotions.** A predominant theme was the emotions the experience gave rise to. The emotions revolved around two clusters of emotions: *harmonious* and *excited*. Many participants reported feeling calm, harmonious or mindful, all with positive connotations, and on the other end of the spectrum there were participants describing their experience as exciting and eventful. The latter category was normally described positively, in combination with words like “fascinating,” but there were also reports about feeling overwhelmed.

**The Sensation of Movement.** The sensation of moving was frequently discussed. In particular, the sensation of moving upwards or flying was discussed and was regarded as a positive experience. The sense of being guided or the movement having a direction

reoccurred, and was most often rendered as a positive experience. However, a few people noted that they felt controlled.

**The Art's Movement.** The fact that the art had elements that moved was often brought up and appreciated, described as giving rise to the experience of the art feeling alive or being more engaging. For some people, this was the favorite part of the experience.

**Physical.** The physical sensations and bodily experience were frequently brought up, where the reflections on body lessness and weightlessness were prevailing themes, as well as the contrary: “a very bodily experience”. There were a few mentions of dizziness especially when standing.

**Amount of Impressions.** Interestingly, many participants made notes on the amount of impressions, seeming overwhelmed and having mixed emotions about not being able to grasp it all. Some described it as “intense,” “strong,” and “lit” in an appreciative tone, but some had descriptions with partly negative connotations. It was both the sheer amount of impressions that were brought up and not feeling like having enough time to “take it all in” as well as being stressed about things happening in several directions that were brought up.

**Spiritual and Philosophical.** The experience seemed to convey spiritual and philosophical themes, as a recurring topic from the reflections were symbolism, references to mystic or spiritual content or comparisons to psychedelic experiences. In addition, there were frequently existential reflections related to life, death, and the interconnectedness of all things as well as explicit descriptions of having existential thoughts.

**Technology and VR-adaptation.** Many participants mentioned VR-technology and the adaptation of the art in VR. Out of the twelve commenting on the technology, all but one had positive assertions. Some regarded technology as “fascinating,” others reflected on the novelty of a VR-experience, some described it as an aid in the engagement with the art, such as allowing to view the art from new perspectives. A few people mentioned the adaptation of Hilma af Klint’s work to VR and expressed appreciation.

**Noted Preferences in the Experience.** 20 participants did not comment on any specific part of the content, but out of the ones that did ( $n = 29$ ), the sunflower field ( $n = 9$ ) and the Temple ( $n = 7$ ) were the most frequently appreciated part of the experience.

### ***Art Plunge***

In the qualitative analysis of Art Plunge, the most common themes that emerged were: 1) emotions, 2) the art’s movement, 3) appreciation of the soundscape, 4) the environment in

and around the art, 5) choosing to stay in a particular painting, 6) the relation to the subjects in the paintings, 7) VR-adaptation and remarks for improvement.

**Emotion.** A prevailing theme was the range of emotions that participants felt. There was a greater dispersion of emotions in Art Plunge than in Hilma af Klint. The Temple. There were, however, clusters of emotions that emerged as sub-themes. There was an expression of *harmonious* feelings, which included descriptors like harmony, calm, presence, and relaxation. Participants also reported a sense of *belonging*. However, there were also a few descriptions of feeling “bored”.

**The Art’s Movement.** Participants often commented on the movement present within the artwork. Although not explicitly divided into sub-themes, this theme was pervasive across many of the responses and described as positive.

**Soundscape.** A significant theme emerged around the appreciation of the sounds. The interaction of the sounds and the environment of the art combined, which changed depending on where the participant gazed, facilitated an immersive experience that was easier to engage with.

**Environment.** The environment was another frequently mentioned theme. It was described with positive words and as adding to the experience. In particular, outer space was recognized with appreciation.

**Choosing to Stay in a Particular Painting.** Notably, nine participants described that they chose to stay or spend more time with a particular painting. The descriptions appeared as both explanations for how they adapted their experience to appreciate it as much as possible, as well as fascination and thought provocation.

**Relation to the Subjects in the Art.** Several participants expressed varying degrees of connection or relation to the subjects within the artwork, in particular from intimacy and closeness with the *Girl reading a letter at an open window* and *Mona Lisa*.

**VR-adaptation and Technology.** A few people commented on the VR- technology in itself, which expressed fascination, and several commented on the adaptation of the art works into VR. Under this theme, three sub-themes emerged: *Appreciation*, with seven mentions, a positive or neutral description of the experience as *Realistic* by five participants, and notably there were twelve participants giving *Remarks for improvement*.

**Noted Preferences in the Experience.** 22 of 49 participants did not mention any preference for any particular painting. Among the 27 participants that did, *The Girl Reading a*

*Letter* emerged as the most favored painting, with 10 participants discussing it as their favorite part of the experience. *The Birth of Venus* and *Starry Night* were each discussed as the most appreciated content by five participants. *Mona Lisa* and *The Creation of Adam* were preferred by four and three participants respectively. Interestingly, *Mona Lisa* was mentioned by 12 participants, indicating that it made a significant impression on a large number of participants, even among those that did not pick it as their favorite.

### Discussion

The purpose of this thesis was to examine the differences in awe experience between abstract and figurative immersive art experiences in virtual reality (VR), and it can be concluded that no relation seems to exist between the level of abstraction in art and the experience of awe when comparing *Hilma af Klint: The Temple* and *Art Plunge*. No significant difference in the experience of awe was identified between the abstract artwork *Hilma af Klint: The Temple* and the figurative artwork *Art Plunge*. This finding was consistent across all six factors underlying the awe-experience as measured by AWE-S, suggesting that awe experiences do not differ significantly between abstract and figurative art in VR.

Since awe is considered an epistemic emotion, and the awe-experience questionnaire includes *need for accommodation*—a factor that potentially could be linked to abstract art experiences—each factor was examined separately and it is notable that no such difference appeared. It indicates that the experiences were similar in all the six aspects. The difference that can be observed between abstract and figurative art when it comes to change in mindset according to CLT, does not seem to have any explanatory value for awe-experiences in this study.

One plausible, alternative explanation is that although abstract art needs to be interpreted in a different way than figurative art, as the written responses reflected, it might not challenge our understanding but simply prompt us to break away from traditional object recognition patterns. Nevertheless, that interpretation is already underway as viewers interact with the art, and it may not necessarily correspond to an epistemic pursuit. In other words, the mental accommodation required for abstract art might be a different type of accommodation measured by AWE-S.

There was a bias in the sample towards a young, male dominated, studying population. Occupation, gender, and age were not significant predictors of awe-experiences in this study

according to the regression analysis—which is in line with our expectations. However, since the sample was skewed, no generalizations can be made.

Although the VR-experience among the participants was low, the order of the conditions was not found to have any effect on the awe-experience, suggesting that the novelty of the experience had minimal effect on the results.

Previous research that pointed to familiarity can decrease awe-experiences (Ochadleus et al., 2023), although the study was carried out on natural scenery in VR and not on art. To rule out art familiarity as a confounding variable, this study included two items on familiarity with art to see if familiarity had any predictive value for awe-experiences, but there was no significant relation between having seen the paintings before or seen them in real life and awe.

That art can elicit awe, that beauty is a common theme for awe-experiences and that immersive VR-experiences elicit awe have already been confirmed (Chirico et al., 2017; Chirico et al., 2021; McPhetres, 2019): A noteworthy critique could thus have been that the conditions were too similar or both too awe-inspiring in order to compare the awe-experiences. However, no ceiling effect was observed for any of the participants nor for any of the conditions, and the dilemma can be disregarded. Instead, the results seem to indicate that there is no significant difference between abstract and figurative art's ability to elicit awe. On the other hand, the conditions varied quite a bit not only on abstract versus figurative, but in quantity of art shown, the nature of the painting, and so on, but it would be extremely difficult to have conditions that varied exclusively in figurative versus abstract content. Our conditions also varied in other aspects such as control of the experience, which might be more amenable to manipulation.

That our study found no significant difference between the two conditions is in line with the results presented by Chirico et al. (2021). Their study on the sublime triggered by art and nature closely resembles ours in terms of participant size ( $n = 49$ ,  $n = 50$ ) and design (repeated measure). A key divergence between our studies lies in the area of perceived vastness, with our study finding no difference between abstract and figurative art, while Chirico et al. (2021) found a difference between art and nature. This could be explained by nature being perceived as more vast than all forms of art, or the difference could be due to conceptual differences: The sublime and awe have been defined and compared in various ways. Some have considered them as overlapping concepts (Brady, 2019), as interconnected

but distinct (Bethelmy & Corraliza, 2019), or as interchangeable (Pelowski et al., 2019). Arcangeli et al. (2020) listed five more views. As we stated in the introduction, Keltner and Haidt (2003) initially classified the sublime as an awe-like aesthetic emotion. Despite similarities, the sublime lacks a validated questionnaire, making it challenging to quantitatively compare it with awe. One effort in this direction by Clewis et al. (2021) revealed that sublime experiences strongly correlate with high AWE-S scale scores.

Moving away from just perceived vastness, and back to the general findings of the studies; if we accept this theoretical framework and consider the studies comparable despite their different conceptual starting points, it's interesting that they yield similar results despite using different elicitors. This suggests a level of stability between stimuli, and potentially indicates that it could be challenging to elicit contrasts in awe, and in experiences of the sublime, within a single experiment. It's likely that these broad, complex emotional concepts can be triggered differently for various individuals. More exploration into these variances would be desirable.

Chirico et al. (2021) also concluded that they found no general dispositional characteristics concerning Positive Emotion Dispositions or Desire for Aesthetics. However, they recommended further examination of individual differences, which is what we found in our study. Our study, while not finding a significant difference between abstract and figurative art in terms of awe elicitation, did identify a noteworthy relationship between a preference for abstract art and general awe experience. This suggests that individual predispositions, such as personality, may play a significant role when investigating awe-experiences in relation to art. Preference for abstract art has been associated with the personality trait openness to experience, which also predicts overall art appreciation across all art styles (Feist & Brady, 2004). Further, openness to experience has been identified as a predictor of intense awe-experience (Silvia et al., 2015; Yaden et al., 2017).

In addition, although there was no statistical difference in awe-experience, it should be noted that there seemed to be a qualitative difference in how the two artworks were experienced. Emotions were a pivotal part of both experiences, confirming the elicitation of feelings as an outcome of both art forms. The movement within the artworks was discussed as a positive attribute in both cases. However, *Hilma af Klint: The Temple* was additionally recognized for evoking personal sensations of movement, whereas in *Art Plunge*, the focus was on participants' preference for lingering in certain paintings. Both experiences triggered

sensory reflections. Notably, bodily experiences, or a sense of bodylessness, was discussed after *Hilma af Klint: The Temple*, whereas the soundscape was a highlighted feature in *Art Plunge*. The soundscape facilitated a more engaging and multi-sensory experience. A crucial difference was the reflections on the content. While *Art Plunge* elicited considerations about the relation with the subjects in the art, spiritual and philosophical reflections were more prevalent in responses to *Hilma af Klint: The Temple*. As awe is a prosocial emotion, this could be a partial explanation for the connections to and interest for the subjects portrayed in the art in *Art Plunge*. The environment surrounding the art in *Art Plunge* was also discussed and appreciated by many participants, in particular the depiction of outer space. The participants could choose where they wanted to stay, and the environment seems to have grasped the attention of many of them. In contrast, *Hilma af Klint: The Temple*, where movement was not participant-controlled, generated mixed responses concerning the amount of impressions presented. The intensity of this experience was enthusiastically received by some participants, while others felt overwhelmed. Finally, participants commented on the technology in both experiences, expressing fascination. More reflections on the technology itself rather than its application to the artwork were recorded for *Hilma af Klint: The Temple*, whereas the reverse was observed for *Art Plunge*. Many participants found the adaptation of the art to VR in *Art Plunge* to be realistic and appreciated, although remarks for improvement were also given. This could potentially be due to the interactive nature of *Art Plunge*, which offered users a sense of control.

What the qualitative analysis shows is that the experiment was successful in providing emotionally arousing content, and that the experience was positive for the great majority. In line with earlier studies (Chirico et al., 2017; McPhetres, 2019), the VR experiences were deeply engaging.

However, it can be noted that the degree of control that *Art Plunge* included allowed the participants to alter the experience the way they wanted, and it was not only art that the participants paid attention to: Looking at outer space was among the most appreciated part of *Art Plunge*. Experience of deep space has been linked to awe experiences (Silvia et al., 2015), and this could be a noteworthy confounding variable in the study. In addition, all elements in *Hilma af Klint: The Temple* were not abstract, and all paintings in *Art Plunge* were not figurative in a conservative sense. In particular, *Starry Night* by van Gogh was discussed as interesting due to its non-realistic elements by a few of the participants. However, a more

frequently discussed theme in *Art Plunge* was the relation to the subjects portrayed. This fact makes a case for the accuracy of the results.

### **Further Research**

Although there was no difference in the factor *need for accommodation* between the two works, it should be noted that many participants reported in the written reflections that they had difficulty grasping *Hilma af Klint: The Temple*. With this in mind, the factor *need for accommodation* could benefit from some extra attention: When Keltner et al. (2019) validated the AWE-S questionnaire, the factor *need for accommodation* showed relatively high internal consistency ( $\alpha = .81$ ), however, there were no validated measure of mental accommodation that the factor was compared to, in order establish convergent and divergent validity. In other words, no empirical evidence for the connection between the claimed epistemic aspect of the emotion and awe has been established. Although awe has been defined as an epistemic emotion, it was only in 2019 (McPhetres) that an empirical test of the conceptualization of awe as an epistemic emotion was carried out. It was a long overdue investigation, but curiously, in one of the studies, increased epistemic pursuit conceptualized “science interest” was measured by giving the participants the option between a ticket to a science or an art museum. If they chose the science museum ticket, an increased interest for science was considered affirmed. This is particularly strange in light of awe being an aesthetic emotion, and the concept having long and deep roots with nearby aesthetic concepts, such as the sublime. There is no doubt that awe is labeled as an epistemic emotion (de Cruz, 2020), however, there seems to be a problematic research gap in what this implies for the definition and experience of awe. It can be concluded that there’s a certain amount of conceptual confusion about what awe is, and it has long been claimed that awe is an epistemic emotion—without any evidence for this. This conceptual confusion needs to be resolved, and there is also a pressing lack of clarification on how the categorization of awe as both an epistemic and aesthetic emotion is interconnected. *Need for accommodation* should clearly be defined, and a discussion of whether awe even can be regarded as an epistemic emotion empirically should be initiated.

Although this study is the first to study awe-experiences related to art in VR, the study does not include any comparison condition and is thus not fit to tell whether the art experiences have been awe-inspiring or not as compared to a control condition. The participants make up their own controls in the repeated measure, giving insightful evidence



for the (non-existent) difference in awe between abstract and figurative art, but this design cannot provide any information on whether both conditions were awe-inspiring, or none. Future studies, with less limited resources, would benefit from following up on this track.

If Keltner and Haidt's (2003) framework is embraced, art-induced awe could be analyzed through the sublime lens. This study has discussed the conceptual similarities between awe and the sublime, and the empirical findings of this study has both confirmed and challenged such a view. This calls for further investigation into the experience of the sublime and how it connects to awe in art experiences.

### **Conclusion**

The study revealed that there is no significant difference in awe between an abstract art VR experience (*Hilma af Klint: The Temple*) and a figurative one (*Art Plunge*), indicating that the level of abstraction in art does not significantly impact awe. Factors like art familiarity, age, occupation, or gender also did not notably affect the experience. A connection was found between the preference for abstract art and the general awe experience, emphasizing the influence of personal predispositions, and both artworks prompted unique qualitative reflections. Furthermore, the written reflections revealed nuances in how the art was experienced: *Art Plunge* sparked considerations about the relationship with the subjects, while *Hilma af Klint: The Temple* led to spiritual and philosophical reflections..

### **Disclosure Statement**

Stolpe Wikström has worked for Bokförlaget Stolpe, which provided parts of the material and all the technology used in this research. In addition, she has family connections to the director of *Hilma af Klint: The Temple*. Stolpe Wikström was masked during the quantitative data coding and interpretation. Qvant declares no conflict of interest.

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## Appendix

### Appendix 1. Consent form

Hej och tack för att du vill delta i vår studie!

Vi är två studenter som gör vårt kandidatarbete i psykologi vid Lunds universitet. Vi heter Nike Stolpe Wikström och Wilgot Qvant.

Studien undersöker konstupplevelser i Virtual Reality (VR). Du som samtycker till att delta i studien kommer att få se två typer av konstupplevelser i VR. Först ska du få svara på några frågor om dig själv, sedan kommer du att få instruktioner av oss och därefter få sätta på dig headsetet. När upplevelsen är över kommer du att få svar på ett frågeformulär. Upplevelsen i VR tar 12 minuter och frågeformuläret tar ungefär fem minuter. Sedan kommer du att få en paus, och en ny 12 minuters upplevelse och få fylla i ett lika långt frågeformulär. Sammanlagt tar studien ungefär en timme, och du kommer att få tydliga instruktioner av oss genom hela studien.

Deltagandet är helt och hållet frivilligt, och du kan när som helst avbryta ditt deltagande genom att ta av dig headsetet. Ditt deltagande är anonymt och inga personuppgifter som kan spåra din identitet samlas in. Allt insamlat material kommer att behandlas konfidentiellt. Resultatet av studien kommer att presenteras i en skriftlig uppsats vid Lunds universitet.

För att delta i studien behöver du vara över 18 år. Upplevelsen har rapporterats som övervägande positiv, men har du tidigare drabbats av epileptiska anfall ska du inte delta i studien. Har du nedsatt känsla för rörelse och balans rekommenderar vi att du inte deltar i studien. Om du är mycket trött, under påverkan av alkohol eller droger, bakfull, lider av stor emotionell stress eller ångest, en pågående infektion, migrän eller öronvärk, ska du inte heller delta i studien då detta kan öka känsligheten för negativa symptom.

En del av frågorna kommer att vara på engelska.

Du som deltar i studien samtycker till att inte berätta om din upplevelse för någon som inte deltagit i studien. Detta för att inte påverka studiens resultat.

Har du några frågor är du välkommen att ställa dem till oss, direkt eller per e-post. Våra kontaktuppgifter kommer också att dyka upp i slutet av enkäten.

Vänliga hälsningar,

Nike Stolpe Wikström och Wilgot Qvant

[ni3627wi-s@student.lu.se](mailto:ni3627wi-s@student.lu.se)

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Studien genomförs under handledning av Etzel Cardeña, som kan kontaktas på:  
etzel.cardena@psy.lu.se

## **Appendix 2. Manuscript for introduction**

[Alla välkomnas in och ombeds att ta en stol, men att inte flytta headseten. Både Nike och Wilgot presenteras.]

[När alla har satt sig] Hej igen och välkomna! Jag kommer att följa ett manus för att upplevelsen ska bli lika för alla.

Har ni en smartphone med er? Så bra, den kommer ni att behöva i den här studien. Ni kan ta fram den nu. [Om någon inte har en smartphone:] Ingen fara, vi har en iPad du kan låna.

[När alla har satt sig] Nu när alla har satt sig skulle jag vilja be er att skanna QR-koden framför er med mobilen. Den leder till lite information om studien, ett samtyckesformulär och en enkät som ni kommer att få fylla i under den här studien.

Alla svar du skriver in är helt anonyma, och vi kan inte på något sätt koppla dina svar till dig. Dyker det upp några frågor är det bara att ställa dem.

Du kan nu läsa informationen. När du har läst färdigt kan du trycka på “Nästa” för att bekräfta ditt samtycke. Därefter kommer du att få svara på några korta frågor om dig själv. När alla har gjort det ska jag ge instruktioner om hur vi ska gå vidare.

## **Appendix 3. Manuscript for instructions**

[När alla ser ut att ha svarat på samtyckesformuläret] Först och främst—tack för att ni är här och vill delta i vår studie! Innan vi börjar: Är det någon som inte samtyckt till att delta i studien?

[Om någon säger ja] Jag förstår, det är inga problem. Du behöver inte delta i studien, det är bara att lämna VR-headsetet och gå härifrån.

[Om alla säger nej] Toppen. Om det är någon som skulle ångra sig är det bara att säga till, ni kan när som helst avbryta studien under experimentets gång. Då kan vi börja. Precis som ni har läst så är den här studiens syfte att undersöka konstupplevelser i VR. Ni kommer att få se två typer av av konstupplevelser i VR. Den första kommer vi att starta om en liten stund, men först skulle jag vilja be er alla att landa här i rummet tillsammans med mig. Vi har alla olika intryck från dagen, och för att studien ska bli så lika för alla ska vi göra en kort övning. Jag kommer att sätta på en inspelning, lyssna bara och följ med instruktionerna i en minut.

[Sätter på den guidade meditationen från Headspace]

Det ni snart ska få se är ett VR-verk som kommer att vara i 12 minuter.

Det här är ett VR-headset. Ni ska alldeles strax få ta på er det. Ta på setet ungefär som du hade satt på en hjälm. [Om någon har glasögon] Om du använder glasögon lägg in glasögonen i VR setet och ta på headsetet framifrån och sätt på huvudremmarna sist. Dra ned den bakre huvudremmen långt ned i bakhuvudet, och justera sedan hur tight det sitter genom att vrida på vredet i bakhuvudet. Se till att headsetet inte är för spänt eller löst, det ska sitta bekvämt och inte trycka för mycket mot ansiktet och huvudet.

För att justera bilden kan du sätta båda händerna i sidorna av VR setet och flytta headsetet upp eller ner för bättre skärpa. Behöver du justera ljudvolym så finns en knapp under höger öga som du kan trycka på. Ytterligare skärpa kan justeras genom att skruva på vredet vid bakremmen.

1. [Vid visning av *Hilma af Klint: The Temple*]: Okej! Nu till själva upplevelsen. Det ni nu ska få se är ett VR-verk som kommer att vara i 12 minuter. I detta verk behöver du ingen handkontroll. Det är en upplevelse med 360 graders vy, alltså kan du titta åt alla håll och i alla vinklar, och du kommer att guidas fram. Vi vill starkt uppmuntra er att



faktiskt titta i alla vinklar, även bakom er och mot golvet och taket för att få ut så mycket som möjligt av upplevelsen. Kom ihåg det—de flesta glömmar detta, och det är vad som skiljer VR från film. Om du känner dig bekväm får du gärna ställa dig upp. Du behöver inte göra någonting för att interagera med konstverket, och du behöver ingen kontroll. Du behöver inte tänka på något särskilt under upplevelsen, tvärtom är det bara att släppa taget om alla tankar och följa med i upplevelsen. Du kommer att veta att det är över när det står “The end” på skärmen.

[Efter 3 minuter: Passa på att titta i alla vinklar, och ställ er gärna upp om ni är bekväma med det. Ta tag i stolens ryggstöd om ni behöver.]

2. [Vid visning av *Art Plunge*]: Okej! Det ni nu ska få se är ett VR-verk som kommer att vara i 12 minuter. Det är en upplevelse med 360 graders vy, alltså kan du titta åt alla håll och i alla vinklar, och du kommer att kunna interagera med verket. Detta styr du genom att ta kontrollen i höger hand. Med den kan du sikta på de objekt du vill interagera med. Tryck inte på någon knapp just nu, men med knappen på baksidan kan du ta dig in eller ut ur en upplevelse. Vi uppmuntrar starkt att titta i alla vinklar, även bakom er och mot golvet och taket för att få ut så mycket som möjligt av upplevelsen. Kom ihåg det— de flesta glömmar detta, och det är vad som skiljer VR från film. Men av tekniska skäl behöver du sitta ned under hela upplevelsen. Du behöver inte tänka på något särskilt under upplevelsen, tvärtom är det bara att släppa taget om alla tankar och följa med i upplevelsen. Du kommer att veta att det är över när vi säger till.

[Efter 3 minuter: Passa på att titta i alla vinklar.]

[För *Art Plunge*] Så. Nu är det dags att avsluta upplevelsen. Det går bra att ta av er headsetet oavsett var ni befinner er.

[Efter upplevelsen:] Nu förstår vi att ni är fulla av intryck, men innan ni börjar prata om dem med varandra skulle vi vilja att ni svarar på frågeformuläret. Det kommer att ta ungefär fem till 10 minuter. Om det är något ord ni inte förstår eller är osäkra på är ni välkomna att fråga.

[När de frågar om hur de ska tolka en fråga]: Vi kan inte hjälpa till med tolkningen, bara översättningen, men försök känna efter om du tycker att påståendet passar in på det du just upplevde.

[När alla ser ut att ha svarat på enkäten] Ta nu en 15 minuter paus, ni får gärna ta lite fika eller gå ut för lite frisk luft.

[Mätning två:]

Nu är det dags att börja igen.

Den andra upplevelsen kommer att starta om en liten stund, men först skulle jag vilja be er alla att landa här i rummet tillsammans med hjälp av samma övning som tidigare. Jag kommer att sätta på en inspelning, lyssna bara och följ med instruktionerna i en minut.

[Sätter på den guidade meditationen från Headspace]

Det ni ska få se nu är ett VR-verk som kommer att vara i 12 minuter. Är det någon som skulle vilja ha en påminnelse om hur man använder VR-setet?

[För Hilma af Klint: The Temple]

1. Okej! Nu till själva upplevelsen. Det ni nu ska få se är ett VR-verk som kommer att vara i 12 minuter. I detta verk behöver du ingen handkontroll. Det är en upplevelse med 360 graders vy, alltså kan du titta åt alla håll och i alla vinklar, och du kommer att guidas fram. Vi vill starkt uppmuntra er att faktiskt titta i alla vinklar, även bakom er och mot golvet och taket för att få ut så mycket som möjligt av upplevelsen. Kom ihåg det—de flesta glömmar detta, och det är vad som skiljer VR från film. Om du känner dig bekväm får du gärna ställa dig upp. Du behöver inte göra någonting för att interagera med konstverket, och du behöver ingen kontroll. Du behöver inte tänka på något särskilt under upplevelsen, tvärtom är det bara att släppa taget om alla tankar och följa med i upplevelsen. Du kommer att veta att det är över när det står “The end” på skärmen.

[Efter 3 minuter: Passa på att titta i alla vinklar, och ställ er gärna upp om ni är bekväma med det. Ta tag i stolens ryggstöd om ni.]

[För Art Plunge]

3. Okej! Det ni nu ska få se är ett VR-verk som kommer att vara i 12 minuter. Det är en upplevelse med 360 graders vy, alltså kan du titta åt alla håll och i alla vinklar, och du kommer att kunna interagera med verket. Detta styr du genom att ta kontrollen i höger hand. Med den kan du sikta på de objekt du vill interagera med. Tryck inte på någon knapp just nu, men med knappen på baksidan kan du ta dig in eller ut ur en upplevelse. Vi uppmuntrar starkt att titta i alla vinklar, även bakom er och mot golvet och taket för att få ut så mycket som möjligt av upplevelsen. Kom ihåg det—de flesta glömmer detta, och det är vad som skiljer VR från film. Men av tekniska skäl behöver du sitta ned under hela upplevelsen. Du behöver inte tänka på något särskilt under upplevelsen, tvärtom är det bara att släppa taget om alla tankar och följa med i upplevelsen. Du kommer att veta att det är över när vi säger till.

[Efter 3 minuter: Passa på att titta i alla vinklar.]

[Efter upplevelsen:] Nu förstår vi att ni är fulla av intryck, men innan ni börjar prata om dem med varandra skulle vi vilja att ni svarar på frågeformuläret. Det kommer att ta ungefär fem till 10 minuter.

#### **Appendix 4. Confirmation as it Appears in the Survey**

Nu är studien färdig—stort tack för att du har deltagit!

Har du frågor om studien eller vill ta del av resultaten är du välkommen att höra av dig till Nike Stolpe Wikström på [ni3627wi-s@student.lu.se](mailto:ni3627wi-s@student.lu.se) eller Wilgot Qvant på [wi7475qv-s@student.lu.se](mailto:wi7475qv-s@student.lu.se).

Studien genomförs under handledning av Etzel Cardeña, som kan kontaktas på [etzel.cardena@psy.lu.se](mailto:etzel.cardena@psy.lu.se).

## **Appendix 5. Manuscript After the Experience**

[När båda mätningarna är över]: Nu är studien färdig, stort tack för att ni har varit med!

Nu undrar ni säkert vad det exakta syftet med den här studien var. Det vi mätte var förundran, och det vi undersöker är om det finns någon skillnad mellan abstrakt och figurativ konst när det kommer till upplevelsen av förundran.

Det är viktigt för oss att ni inte pratar med andra som inte gjort studien ännu om syftet med studie, och berätta heller inte om innehåller eller vad ni kände under upplevelserna då det kan påverka resultatet, men däremot får ni gärna rekommendera andra att delta i studien om ni hade en positiv upplevelse. Ni får gärna ta en lapp om ni vill ge den vidare till någon, eller så kan ni skicka vidare länken till informationen om studien och bokningsformuläret direkt.

Om ni har några frågor hittar ni våra kontaktuppgifter både i bekräftelsen på enkäten, och via länken som ni bokade genom. Om ni vill ta del av studiens resultat är det också de e-postadresserna ni kan höra av er på!