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1 Slow Looking at Still Art: The Effect of Manipulating Audio Context and Image Category on
2 Mood and Engagement During an Online Slow Looking Exercise

3

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26 Abstract

27 In the past two decades, ‘slow looking’ has emerged as an engaging art-viewing approach used
28 by museums around the world as part of their in-person and online programming, but there has
29 been little empirical inquiry into the precise effects of the practice. This study represents the first
30 such attempt, exploring reported impacts of slow looking within an online context. Specifically,
31 the study examined the effects of two factors — audio context (control, meditation, historical)
32 and image category (photography, representational, abstract) — on mood change and aesthetic
33 engagement. A total of 141 participants completed the online exercise, first selecting a series of
34 three artworks within one of the image categories and then viewing each for 3 min per work
35 while listening to the randomly allocated audio context. Participants reported feeling
36 significantly more pleasant and relaxed after the exercise. Representational artworks were chosen
37 the most and also contributed to greater overall aesthetic experience scores, and the historical
38 condition was found to lead to greater levels of cultural understanding and engagement. Future
39 investigation within an ecologically valid setting is currently underway, examining the
40 contribution of different live viewing elements to the slow looking experience.

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42 **Keywords:** slow looking, art viewing, mood, aesthetic experience, context

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49 **Introduction**

50 **The Rise of Slow Art, Physically and Virtually**

51 Likening the process of art viewing to an “experience” rather than a simple response to visual
52 stimuli, American pragmatist John Dewey (1934) maintained that looking at artworks was a key
53 part of aesthetic education, leading to more pronounced and healthier relationships with
54 ourselves and the world around us. Indeed, a plethora of large-scale studies have corroborated
55 the benefits of engagement with the arts and humanities, showing evidence of reduced mortality
56 risks (e.g., Fancourt & Steptoe, 2019b; Konlaan et al., 2000; Väänänen et al., 2009), decreased
57 occurrence of various mental health disorders, such as depression, anxiety, and dementia (e.g.,
58 Cuypers et al., 2011; Fancourt & Steptoe, 2019a; Fancourt & Tymoszuk, 2019), and greater
59 ratings of subjective well-being (e.g., Cuypers et al., 2011; Węziak-Białowolska & Białowolski,
60 2016). Furthermore, engaging with the arts through cultural institutions, specifically by visiting
61 art museums, has shown similar impacts, heightening subjective health (e.g., Grossi et al., 2019;
62 Thomson et al., 2018) and quality of life (e.g., Schall et al., 2018; Wilkinson et al., 2007) while
63 simultaneously lowering levels of mental health risk (e.g., Binnie, 2010; D’Cunha et al., 2019).

64
65 For this reason, it is imperative for investigators in empirical aesthetics to turn their efforts to
66 research on art viewing within cultural institutions. One of the best ways to do so is by studying
67 the specialized educational strategies used by institutions around the world, especially as these
68 institutions adopt more visitor-oriented approaches (Mayer, 2005). ‘Slow looking’ is one such
69 approach, encouraging museum visitors to look ‘more slowly’ at a single work of art. At its most
70 basic definition, slow looking implies art viewing for a period longer than the 27.2 to 32.9 s
71 average previously found in viewing behavior studies (Carbon, 2017; J. K. Smith & Smith, 2001;

72 L. F. Smith et al., 2017). But in practice, most slow looking programs incorporate even longer
73 viewing times — usually 5 to 10 min — in line with other visual thinking strategies that aim to
74 increase engagement (Housen, 2002). And like those strategies, slow looking usually involves
75 more than just spending extended time. It also incorporates techniques for looking that similarly
76 require more time, most commonly in the form of a guided approach led by a museum educator
77 and subsequent discussion afterward (Tishman, 2017).

78

79 And these guided approaches have varied globally across museums and galleries. Since its
80 launch in 2010, Slow Art Day, occurring on the 2nd of April each year, has been hosted at over
81 1,500 different venues across all seven continents (Slow Art Day, 2021). Even as most of these
82 institutions closed their physical doors during the height of the COVID-19 pandemic in 2020,
83 switching to online programming to show off their collections and foster arts engagement from a
84 distance (Agostino et al., 2020; Samaroudi et al., 2020), slow looking directives stayed just as
85 relevant. Fifty-four museums around the globe adapted their Slow Art Day activities to the
86 online realm, incorporating digital marketing and social media interaction, guided video
87 instructions, Zoom discussions, and, of course, engaging artworks, to remind their visitors that
88 the benefits of art interaction extend beyond the physical space of the cultural institution. Every
89 one of the virtual events involved viewing a selection of artworks from the institution for several
90 minutes or longer, but the prompts alongside the viewing instructions differed from gallery to
91 gallery. Some of these prompts gave information on the artist while others focused viewer
92 attention on the formal qualities of the works while others still encouraged mindful breathing or
93 stream-of-consciousness notetaking (Slow Art Day, 2021)

94

95 The Success of Slowing Down

96 In their 2020 annual report, the Slow Art Day founders collated each institution's post-program
97 feedback and found it to be generally positive, both from the programming leaders and from
98 online viewers. Participant feedback included some of the following sentiments: "This is the sort
99 of thing I need to lift my spirits, just like every visit to your gallery has always done;" "A really
100 interesting session ... I'm more mindful of how to observe art in the future;" and "I was very
101 moved by the art selections and benefitted from this experience greatly," suggesting that this
102 type of viewing approach, even in an online context, can lead to well-being benefits such as
103 short-term mood improvement and enhanced engagement through emotional impact and
104 increased visual literacy (Slow Art Day, 2021). Providing further support to this, Shannon
105 Lyons, an education coordinator at TarraWarra Museum of Art in Melbourne, Australia, said the
106 following regarding the online slow looking event and discussion:

107 From an educator's perspective, it was interesting to see how willing people were to both
108 delve deeper and give voice to their wonderings online. They actively questioned why
109 aspects of the artworks appeared the way that they did, and why particular elements of
110 the artworks seemed to dominate, hold, or demand attention far more than others.

111 (Slow Art Day, 2021).

112

113 Furthermore, retrospective reports on each institution's online Slow Art Day indicated that the
114 programming brought in new audiences, both in terms of geographic engagement with regards to
115 the particular institution and in terms of infrequent museum goers (Slow Art Day, 2021). This
116 latter finding is in line with a wider trend in increased demand for online arts engagement during

117 the COVID-19 pandemic (Unitt, 2020), leading to new incentives and opportunities for
118 infrequent arts visitors to participate in these encounters (Mak et al., 2021). The practice of slow
119 looking, therefore, particularly in online contexts, should be examined as a potential means of
120 facilitating mood improvement and stronger arts engagement for wider audiences.

121

122 **A Brief Survey of Slow Looking Studies**

123 But while increasing implementation of slow art programs across the world — and analogous
124 participant feedback — seems to suggest that slow looking may lead to certain art engagement
125 benefits, there has been little empirical research on the topic, although longer viewing times have
126 been used in the design of different studies in the past. Jessica Davis (1996) working with
127 Harvard’s Project MUSE, was one of the first researchers to incorporate leisurely viewing
128 exercises into her studies on art education, in which she established a set of learning approaches
129 to be used alongside art viewing for untrained observers and children. This work was later
130 followed up by Seifert and Drennan (2000) who used the same longer viewing periods to expand
131 upon these different learning approaches for art object interpretation. Paul Locher and colleagues
132 (2015) similarly gave trained and untrained observers the choice to view works for an unlimited
133 time period in their study exploring beliefs about authenticity status of paintings, though the
134 researchers observed a mean viewing time of only 18.6 s across their participants.

135

136 With regards to exploring the impacts of longer viewing time on art engagement, other than a
137 small number of single-subject reports (Clark, 2006; Funch, 2019; Reed, 2017), only one
138 research study has investigated the influence slow looking on a population level. Lachapelle et
139 al. (2009) had 34 non-expert participants engage in two viewing activities – the first in which

140 they could look at as many works as they wanted while engaging in a think-aloud protocol and a
141 second in which they had to look at an artwork for 5 min and then think aloud for 5 min after
142 viewing. But while the researchers did find that a mandatory longer viewing time led to
143 increased art appreciation as determined by enumerative analysis, their study lacked a control
144 condition and standardized dependent measures.

145

146 Perhaps one of the reasons that slow looking has yet to be fully investigated is due to its hard-to-
147 pin-down nature. For while longer viewing times have been used and examined in a handful of
148 studies (e.g., Lachapelle et al., 2009; Locher et al., 2015), most museums, in practice, combine
149 this extended view with other approaches (Slow Art Day, 2021). For this reason, it is unclear
150 what precisely gives the most impact — longer viewing on its own or longer viewing combined
151 with a guided approach. And if the combined method is the most effective, for example, there
152 remains a further gap in the literature on which type of guided approach works best in
153 strengthening these impacts. The present study was, thus, the first of its kind in that it
154 investigated the impacts of slow looking, as well as the nuances of the relationship between
155 longer viewing times and different guided approaches, in a large sample of online participants.

156

157 **How to Slow Look, Properly**

158 Even prior to the rise in popularity of slow looking, there has been a long-standing debate within
159 gallery walls on the proper way to present artworks such that they elicit maximal engagement,
160 with institutions like the Museum of Modern Art (MOMA) and the Philadelphia Museum of Art
161 (PMA) famously advocating for differing levels of contextual information for their in-gallery
162 programming (Tishman, 2017). Ishiguro et al. (2021) empirically investigated this debate by

163 assessing which of two opposing contextual interventions greater impacted viewing time, tracked
164 eye movements, and overall evaluation of the works. A previous report by the team is showed
165 that conducting an art-creation course for non-expert participants changed the art viewing
166 strategies employed by the laypeople to be closer to those of the artistically trained group
167 (Ishiguro et al., 2016). In a similar vein, the follow-up study, conducted in 2019, explored
168 educational interventions during the viewing period to increase visual literacy. Participants were
169 assigned either to the art historical lecture condition or the Visual Thinking Strategy, or VTS,
170 condition — which relies on a dialogical appreciation technique emphasizing visual details and
171 personal interpretations of the artworks without historical context — for four weeks of mediated
172 instruction. The results showed that the VTS intervention led to increased viewing times after the
173 intervention but no difference in evaluation strategy compared to the lecture condition (Ishiguro
174 et al., 2021). While lacking a control condition, the study is one of the first to suggest that the
175 didactic framework of the art viewing experience can lead to behavioral impacts.

176 The present study sought to similarly explore this question of contextual intervention but while
177 mapping it onto a fixed slow looking timeframe. Three testing parameters were chosen for the
178 context, inspired by the most common viewing approaches employed by both museums in their
179 general in-person programming and by institutions hosting online slow looking activities during
180 the pandemic (e.g., Slow Art Day, 2021). Art historical background, akin to audio-guide use or
181 educational programming in galleries (e.g., Burnham & Kai-Kee, 2005; Hubard, 2007), was
182 selected as the first context, called the ‘historical’ condition. This choice is supported by
183 previous research, which suggests that historical information influences viewer understanding
184 and evaluation of artworks (Jucker et al., 2014; Kruger et al., 2004; Leder et al., 2006; Swami,
185 2013), an effect that can be observed even when accounting for art expertise in non-expert and

186 expert viewing (Szubielska et al., 2018; Szubielska & Sztorc, 2019). Next, a combined
187 mindfulness / visual thinking approach like that used in early slow looking studies (e.g., Davis,
188 1996; Seifert & Drennan, 2000) was chosen as a second guided context, which we call the
189 ‘meditation’ condition. Style-related information — prompting participants to consider either the
190 visual aspects of the artworks or the conditions in which they were made — has been found to
191 positively impact on aesthetic appreciation of the works (Belke et al., 2006; Demery, 1984),
192 whereas mindfulness meditation, shown to improve creativity (Jedrczak et al., 1985), even at
193 short practice lengths (Ding et al., 2014), has been found by Zabelina and colleagues (2020) to
194 result in deeper art viewing experiences in both children and adults as compared to a control
195 group. Lastly, a control audio context, called the ‘control’ condition, in which participants are
196 allowed to freely view the works without any guidance for the duration of the timeframe, mirrors
197 the category of online slow viewing programming that had viewers look on their own and then
198 either participate in a group discussion, note-take, draw, or otherwise engage in any further
199 reflective activity after the viewing period ended (Slow Art Day, 2021).

200

201 **Not All Art Is Created Equal**

202 There is also the possibility that certain categories of art, or even specific features in certain
203 artists’ works (Chamberlain & Pepperell, 2021), are better suited for slow viewing. Indeed, there
204 was an array of photographic, representational, and abstract works showcased by each institution
205 for their online slow viewing events, although abstract art was shown more frequently by the
206 hosting educators (Slow Art Day, 2021). This stands in opposition to what has been found
207 regarding general preferences for art viewing, in that non-expert viewers tend to prefer

208 representational art over abstract art (Pihko et al., 2011; Uusitalo et al., 2012), with
209 representational artworks showing greater convergence of evaluation and associations across
210 viewers (Schepman et al., 2015). But this preference may also change as viewing time is
211 increased, as evidenced by an earlier study by Cupchik and Gebotys (1988), which found that
212 men and women experienced pleasure from different image categories with increased viewing
213 time: women preferred abstract works as duration increased whereas men preferred
214 representational works.

215 There is, therefore, an inconclusive relationship between the museum educator's selection of
216 image category, the viewer's initial preference of image type, and the changes in preference that
217 may occur as viewing time progresses. So, to further etch out this relationship, we incorporated
218 self-selected image category as one of the predictors in our study. This design choice served a
219 dual purpose: 1) to investigate what category of image participants would select when informed
220 of the duration of viewing they would perform , and 2) to make the viewing experience, although
221 screen-based in this particular study, more akin to the viewing experience in a gallery, in which
222 participants could freely select what artwork they were most interested in viewing, a factor
223 which leads to greater aesthetic freedom (Tschacher et al., 2012). The selected categories were
224 chosen to represent different types of information that participants may find suitable for slow
225 viewing: photographic works, which realistically depict the subject but with a slight abstraction
226 of the lens and perspective; representational paintings, which, while depicting realistic objects,
227 feature symbolic references and tell a story through allegorical depiction; and abstract paintings,
228 which rely on stylistic elements to play with visual perception and symbolism.

229

230 Where Can We See the Impacts of Slow Looking?

231 While participant feedback from Slow Art Day's (2021) online programming hints to the
232 possibility of short-term mood improvement because of longer viewing times, there has been no
233 formal study linking slow looking to mood repair. Despite this, there is evidence to suggest that
234 this could very well be the case. Past studies have indicated that some aspects of well-being,
235 including mood change, are susceptible to contextual changes in environment, such as by means
236 of an art intervention (Fredrickson & Branigan, 2005). This general finding is supported by more
237 recent research on well-being outcomes, including emotion regulation and mood improvement,
238 that can change as a result of arts engagement (e.g., Fancourt & Steptoe, 2019a; Ivcevic &
239 Brackett, 2015; Thomson et al., 2018)

240

241 Furthermore, there has been evidence linking dimensions of mood, namely valence and arousal,
242 to general art viewing and engagement. De Rojas and Camarero (2006) were one of the first
243 empirical researchers to establish mood as one of the variables a visitor brings with them that can
244 determine the satisfaction indexes of an exhibition visit, though their tested causal model did not
245 investigate how mood may change as a result of the visit. However, pre-post assessments were
246 used in another study, in which researchers found an increase in positive valence following art
247 viewing directives even in non-art environments, in this case, a hospital setting (Ho et al., 2015).
248 Next, changes in arousal— an important dimension of mood states (Barrett & Russell, 1999;
249 Feldman Barrett & Russell, 1998; Watson & Tellegen, 1985) — have been found to accompany
250 art viewing (Brinck, 2018; Marin et al., 2016), even in periods of short viewing duration, such as
251 a lunchtime visit to an art gallery (Clow, 2006). These subsequent arousal changes may later
252 contribute towards regulation of emotional states (Thayer et al., 1994) and subjective well-being

253 (Collins et al., 2009). Slow looking, then, as an approach that builds upon the activity of art
254 viewing, both in terms of duration and in terms of added context, could also then impact on
255 valence and arousal measures associated with mood. Moreover, if this effect is found even within
256 a screen-based context, then online slow looking programming could be used as a vehicle for
257 delivering well-being outcomes in a more inclusive way to wider reaches of audience.

258

259 Similarly, while the Lachapelle et al. (2009) study found an impact of prolonged viewing on art
260 appreciation, the nuances of aesthetic engagement as a result of slow looking are undefined. But
261 because aesthetic experience has been identified as an important factor in art interventions,
262 comprising one of the mechanisms that may impact on well-being (Fancourt & Finn, 2019) and
263 inducing pleasurable states that can impact and regulate mood (Mastandrea et al., 2019), it's
264 important to investigate the effects of slow looking on different dimensions of aesthetic
265 experience. This is especially the case when assessing the impacts of different guided
266 approaches, in that museum educators can have a better understanding of which approach they
267 want to use for a desired learning or aesthetic outcome.

268

269 **The Present Study**

270 The present study, therefore, sought to investigate the impacts of slow looking, under different
271 audio contexts and between image categories, on mood, as measured by valence and arousal, and
272 on aesthetic experience. In this online experiment, participants were randomly sorted into one of
273 three viewing context conditions and given a choice of one of the three image categories for slow
274 looking. After viewing three images by their selected artist for 3 min each, participants reported
275 any mood change and filled out a questionnaire on aesthetic experience. As art expertise has

276 been shown to influence behavioral engagement and preference for artwork genre (Szubielska et
277 al., 2018; Szubielska & Sztorc, 2019; Vogt & Magnussen, 2007; Zangemeister et al., 1995),
278 artistic interest was included as a covariate.

279

280 Based on the specific research aims, predicted hypotheses were as follows:

281 1) Observers would experience short-term mood improvement, as measured by
282 increased valence and decreased arousal, in response to all slow-looking conditions and
283 image categories.

284 2) There would be a main effect of audio context upon mood change and aesthetic
285 experience, with the meditation condition prompting higher responses in both variables
286 due to its resemblance to earlier slow looking studies on art viewing approaches for
287 untrained observers (e.g., Davis, 1996; Seifert & Drennan, 2000).

288 3) There would be a non-directional main effect of category upon mood and
289 aesthetic experience.

290

291

Methods

292 Experimental Design

293 The study used a 3x3 factorial design in which the dependent variables were change in mood as
294 measured by the Affect Grid (Russell et al., 1989) and aesthetic engagement as measured by the
295 Aesthetic Experience Questionnaire (Wanzer et al., 2020). The independent variables were audio
296 context condition — control, meditation, historical — as a randomized between-subjects factor
297 and image category — photography, representational, abstract — as a participant-selected
298 between-subjects factor.

299

300 Sample Size

301 In the absence of previously published studies testing conditions of slow looking, the sample size
302 calculation was based on a standard between-subjects analysis with nine groups, a medium effect
303 size of $f = .3$, and an alpha of .05. An a priori power analysis conducted with G*Power3 (Faul et
304 al., 2007) indicated that a total sample of 138 participants was required to achieve a statistical
305 power of .80. To account for the fact that there may be unequal distribution of category groups
306 due to participant choice, data collection efforts aimed for a greater number. A total of 225
307 participants completed the survey, but 84 were removed for not finishing the experiment or for
308 reporting they did not complete the survey seriously.

309

310 Participants

311 Participants were recruited as a convenience sample through word-of-mouth and social network
312 distribution and gave voluntary participation. Participants completed the study between June and
313 August of 2020 during the time of COVID-19 lockdowns in Europe and the United States.
314 Eligibility criteria required that participants be over 18 years of age.

315

316 The 141 participants ranged in age from 18-72 years ($M = 35.81$, $SD = 14.73$), with a slight skew
317 to the younger ages. In terms of gender, 43.3% of the participants were male, 54.6% of the
318 participants were female, and 2.1% reported other. Though representing a diverse total of 23
319 different nationalities, the majority of participants were from the United States (53.2%), Great
320 Britain (9.2%), and Russia (7.1%), and most held either bachelor's degrees (40.4%) or master's
321 degrees (37.6%). Twenty-four of the 141 participants reported visual impairments, including

322 floaters, nearsightedness, amblyopia, astigmatism, but no participants were excluded on the basis
323 of these conditions. Lastly, there was a moderate level of art interest ($M = 53.90$ out of 77, SD
324 $=12.11$) in the total sample of participants as determined by the Vienna Art Interest and Art
325 Knowledge Questionnaire, or VAIAK (Specker et al., 2020), with no difference in art interest
326 distribution between the three condition groups, $F(2,138) = 2.36$, $p = .099$.

327

328 **Materials and Stimuli**

329 The Qualtrics survey that comprised the experiment included the viewing exercise — a set of
330 three still life pictures from the participant’s chosen image category — and a series of
331 questionnaires measuring artistic interest, aesthetic engagement, mood change, demographics,
332 and several Likert-scale and open-ended questions regarding the participant’s overall experience.

333

334 ***Viewing Task***

335 **Image genre.** The still life image was chosen as a neutral genre base to balance content across
336 the three audio conditions without the presence of people, sublime nature scenes, or obvious
337 cultural artifacts that may affect participant responses. Any comparison in viewer interaction
338 with the three categories of image could therefore help illuminate some of the dynamics between
339 stimulus and observer contributions to the slow looking process.

340

341 **Pilot Study.** A slow viewing pilot study ($N = 10$) was conducted to determine the artworks to be
342 used for each categorical set as well as the optimal timing per image. Based on accurate
343 representation of category, previous familiarity, and willingness to look at each artist’s work,
344 Irving Penn was chosen as the photographic artist, Jan Davidsz. de Heem was chosen as the

345 representational artist, and Fernand Léger was chosen as the abstract artist (see Figure 1 for
 346 sample representational and abstract works, see <https://osf.io/3bajp/> for link to photographic
 347 work). Furthermore, participants also indicated that they preferred a viewing time of 3 min,
 348 which is less than traditional in-person slow viewing exercises (Chamberlain & Pepperell, 2021)
 349 but considerably more than average unaided viewing times reported within galleries (Carbon,
 350 2017; J. K. Smith & Smith, 2001; L. F. Smith et al., 2017). Lastly, survey respondents also
 351 indicated that loss of focus was a major factor, so a pre-viewing focusing exercise was added to
 352 the protocol.

353

354 **Figure 1**355 *Stimuli for Representational and Abstract Image Categories (Photographic Image on OSF)*

356

357 **Jan Davidsz. De Heem** (Representational)358 *Still Life with Lobster and Nautilus Cup*

359 1634

360 [Public Domain. Courtesy of Staatsgalerie Stuttgart.]

361

357 **Fernand Léger** (Abstract)358 *Still Life with a Beer Mug*

359 1921 - 1922

360 [Public Domain. Courtesy of Tate Modern.]

362 **Video Stimuli.** The artworks were presented to the participant as YouTube videos. Each video
363 began with an 88 s focusing exercise, which showed an animated GIF (Healthline Media, 2019)
364 that demonstrated the box breathing, or four-square breathing technique. The rest of the videos
365 then showed each static artwork image for a length of 3 min with varying lengths of audio
366 voiceover depending on the audio context. A total of 27 videos were made to account for each of
367 the three images in the three categories of the three audio conditions.

368

369 **Voiceover Text and Timing.** Different voiceover texts were played for the participants
370 depending on the experimental audio context, image category, and image number (see Figure 2).

371

372 For the control condition, the text was the same across all three artworks in a set as well as across
373 the three categories. The open-ended guidance only told participants to keep their eyes on the
374 image as best they could while engaging with the work however they wished. The voiceover ran
375 at a length of approximately 30 s — followed by 2.5 min of silent viewing.

376

377 For the meditation condition, the videos featured different texts for the first, second, and third
378 artworks in a set, but these texts were the same across image categories. The first text introduced
379 mindfulness meditation, asking open-ended questions about the artwork's appearance. The
380 second text guided the participant around the artwork, asking specific questions regarding the
381 formal qualities of the work. The final text prompted the participant to look at the artwork in a
382 similar manner to the previous image but suggested an internal focus as well, asking the
383 participant to survey their own feelings about the artwork and the act of looking itself. Each

384 voiceover was approximately 2 min in length to allow for 1 min of uninterrupted viewing at the
385 end.

386

387 For the historical condition, each artwork in each category had its own voiceover text, although
388 the first, second, and third images followed the same format across the categories. The text of the
389 first artwork gave a general history of still life paintings, contextualizing the particular series
390 being viewed. The second text focused on the life of the artist, situating the artwork at hand
391 within the artist's stylistic tradition. The third artwork text featured a formal and symbolic
392 analysis of the particular image. Each voiceover was approximately 2 min in length to allow for
393 1 min of uninterrupted viewing at the end.

394

395 To download full transcripts of the focusing exercise voiceover and each of the three audio
396 context voiceovers, please visit the following link: <https://osf.io/3bajp/>

397

398 *Measures / Questionnaires*

399 **Demographics.** Demographic questions at the beginning of the survey measured age, gender,
400 nationality, highest education level, and history of visual impairments.¹

401

402 **Vienna Art Interest and Art Knowledge Questionnaire.** Artistic interest was measured by
403 means of the first scale of the VAIAK, developed by Specker et al. (2020). Part A of this
404 questionnaire comprises 11 questions measuring subjective interest and concrete behaviors
405 regarding art practices. All the questions were scored on a 7-point scale with anchors from 1 (*not*

406 *at all / less than once a year*) to 7 (*completely / once a week or more*). A composite art score was
407 calculated to determine overall level of art interest.

408

409 **Affect Grid.** Developed by Russell et al. (1989) as a reliable and valid way of assessing mood,
410 the Affect Grid is a self-reported, single-item measurement tool that has been used in other art
411 viewing and art making studies (e.g., Drake et al., 2011). The scale assesses two dimensions of
412 mood — valence, i.e. from unpleasant to pleasant feelings, and arousal, i.e. from high arousal to
413 sleepiness — that in combination can describe specific states such as stress, calmness,
414 enthusiasm etc. The valence and arousal scores ranged from 1 to 9 and were determined by
415 where the participant placed a mark on the 9x9 grid: the valence score (P) was determined by the
416 column number from the left and the arousal score (A) was determined by the row number from
417 the bottom.

418

419 **Aesthetic Experience Questionnaire.** Developed by Wanzer et al. (2020), the Aesthetic
420 Experience Questionnaire, or AEQ, is a 22-question scale measuring aesthetic experience.
421 Designed for use across all visual art domains, the survey was used in the present study to
422 measure aesthetic engagement with the viewing task. The AEQ features four subscales based on
423 four art-related dimensions — emotional, cultural, understanding, perceptual — and two
424 subscales based on the flow experience of viewing art proposed by Csikszentmihalyi and
425 Robinson (1990). In the present study, one of the flow questions, measuring the proximal content
426 of the flow state, was excluded because the questions were not appropriate to the task and the
427 context of the current study. In addition to the five mean subscale scores, an AEQ composite

428 score was also calculated to measure overall aesthetic engagement. A 5-point Likert scale was
429 used for each of the 19 questions.

430

431 **Evaluative Questions.** A series of evaluative questions about the slow looking exercise were
432 also asked on a 5-point Likert scale. These included the following: how easy/hard participants
433 found the exercise, whether the exercise got easier/harder and less intense/more intense over
434 time, how similar/different and less interesting/more interesting the exercise was from their
435 normal viewing experiences. They were also asked if they would try slow looking again, in
436 person or online. Lastly, participants were prompted to leave any qualitative comments in an
437 open-ended answer box.

438

439 **Procedure**

440 Clicking on the Qualtrics link, participants were asked to view the experiment on a laptop with
441 headphones. After consenting, they answered pre-experimental questions on demographics and
442 art interest and indicated their current valence and arousal levels on the Affect Grid. Next,
443 participants were shown three sets of three images without any text or labels, corresponding to
444 the three artwork categories (photography, representational, abstract). They were prompted to
445 freely select which set of artworks they would most prefer to view during the slow looking
446 exercise. Participants self-sorted themselves into the following category breakdowns —
447 photography ($n = 37$), representational ($n = 61$), abstract ($n = 43$).

448

449 Following this, participants were randomly allocated to one of the three audio conditions —
450 control ($n = 47$), meditation ($n = 44$), historical ($n = 50$) — using the Qualtrics Randomizer

451 function (see Figure 2 for full context and category procedural breakdown). They were then
 452 shown the first Youtube video and instructed to get into a comfortable seated position at a 50-
 453 100 cm distance from their screen, put on their headphones, and make the video full screen,
 454 watching it until the end of the clip. Participants were given the option to take a short break
 455 between the first image and second image, with the following instructions: “Take a few minutes
 456 break here if you would like. Please do not look at your phone or interact with other devices.
 457 When you are ready to continue to the next video, please hit the next button.” Participants were
 458 then instructed to perform the same series of actions for the second and third image in their
 459 chosen series. Total time spent on each page was recorded by the Qualtrics timing option.

460

461 After the viewing task, participants indicated their arousal and valence levels on another Affect
 462 Grid and filled out the AEQ. They were then asked the series of evaluative questions about their
 463 viewing experience. It took participants a median time of 23.8 min to finish the survey.

464

465 **Figure 2**

466 *Context and Category Breakdown (N = 141)*

467

468

469

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471

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473

	Photography n = 37	Representational n = 61	Abstract n = 43
Control (n = 47) “Let your mind wander as you wish for the following duration of unguided viewing.”	(1) (2) (3)	(1) (2) (3)	(1) (2) (3)
Meditation (n = 44) “Think about the forms you see and how they are represented. Observe what you feel as you look.”	(1) (2) (3)	(1) (2) (3)	(1) (2) (3)
Historical (n = 50) “In fine art, the term ‘still-life’ (from the Dutch word <i>Stilleven</i>) refers to a type of painting”	(1) (2) (3)	(1) (2) (3)	(1) (2) (3)

474

475 Ethics

476 This study was reviewed and approved by the Research Ethics and Integrity Sub-Committee of
477 Goldsmiths University, London. Participants were informed on the experimental procedure
478 through a study information page at the beginning of the survey. After giving their consent and
479 completing the survey, participants were shown a debrief form.

480

481 Data Preparation

482 Data preparation and analysis was performed using IBM SPSS Statistics.

483

484 Composite Variables

485 An art interest score (out of 77) was computed for each participant by combining his or her
486 scores on each of the 11 Likert scale questions, as per Specker et al. (2018). Change in mood,
487 split into its two dimensions of change in valence and change in arousal (ranging from -9 to 9),
488 was computed by subtracting the values of the first Affect Grid score from the second (P2A2 –
489 P1A1) and then separating the variables. Subscale scores for the five AEQ sections — emotional,
490 cultural, perceptual, understanding, and flow experience — were computed by taking the mean
491 of the scores within each section, and a composite total engagement score was also computed by
492 taking the mean of all 19 questions, as per Wanzer et al. (2020). All of the AEQ composite
493 scores are out of 5.

494

495

496

497 **Viewing Time**

498 A cursory analysis of the variables indicated that viewing time recorded on each of the three
 499 video trials varied among case numbers, suggesting that not all participants engaged with the
 500 stimuli in the same manner. Based on the focusing exercise length (88 s), actual time spent
 501 watching each trial was calculated for each participant by subtracting 88 s from the total time
 502 viewed per page — see Table 1 for viewing times per image as split by audio context.

503

504 **Table 1**505 *Median Viewing Time Per Audio Condition Per Video Trial (N = 141)*

Audio Condition	Video Trial 1	Video Trial 2	Video Trial 3
	Mdn (s)	Mdn (s)	Mdn (s)
Control	202.79	195.14	195.88
Meditation	202.39	200.55	198.08
Historical	192.81	187.27	173.17

506

507 The median viewing time per condition and trial suggested that participants did engage in slow
 508 looking. However, a small number of participants showed viewing times of less than 30 s
 509 indicating they spent less time with the works than the mean viewing time often found in a
 510 gallery context (Carbon, 2017; J. K. Smith & Smith, 2001; L. F. Smith et al., 2017), thereby not
 511 actually participating in slow viewing. For this reason, we further filtered the data, thereby
 512 reducing the total sample size. To ensure that every participant engaged in at least one slow
 513 looking exercise during the experiment, a cut-off time of 30 s was applied to each video trial.
 514 Participants that had an actual viewing time > 30 for any of the trials were included in the
 515 analysis, meaning they had slow looked at least one of the three artworks in the series. This

516 selection process led to a total $N = 132$ (control = 42, meditation = 44, historical = 46, with five
517 participants in the control condition, zero in the meditation condition, and four in the historical
518 condition being filtered out; and photography = 34, representational = 57, abstract = 41, with
519 three participants who chose the photographic category, four who chose the representational one,
520 and two who chose the abstract one being filtered out). A series of factorial ANCOVAs,
521 examining the effect of audio condition and category on mood and aesthetic engagement, were
522 then conducted on this sample.

523

524 **Data Screening**

525 The data was screened for normality, missing values, outliers and ANCOVA assumptions prior
526 to analysis. Every variable had a normal distribution except for the perceptual engagement score,
527 to which a log transform was applied, resulting in normal skew / kurtosis values (-0.51 / 0.44).
528 Little's MCAR test indicated that any missing data was missing completely at random, $X^2(21, N$
529 $= 132) = 23.48, p = .319$. While the percentage of missing data of art interest scores was only
530 2.2%, because the variable was a summed composite of 11 scores, a mean imputation was
531 carried out for the missing values. For ANCOVA testing, the homogeneity of regression
532 assumption was not met by the following AEQ measures as the CV*IV interaction term was
533 significant: perceptual engagement and understanding, $F(2, 114) = 4.29, p = .016$, and $F(2, 114)$
534 $= 3.13, p = .047$, respectively. For these latter variables, a non-parametric ANOVA alternative –
535 the Kruskal-Wallis test — was performed in place of an alternate covariate analysis after
536 confirming that the data met the assumption of equal variability of group distributions. Effect
537 size for the non-parametric test was calculated based on the following formula (Cohen, 2008): η^2
538 $= (\chi^2 - k + 1) / (N - k)$.

539

540

Results

541 One Sample T-Test

542 Two single sample t-tests were carried out to see if there was a change in mood pre- and post-
543 intervention, regardless of audio context or image category.

544

545 *Hypothesis 1: Mood Change Regardless of Condition / Category*

546 Participants reported a statistically significant increase in valence, ($M = 1.13$, $SD = 1.80$), $t(127)$
547 $= 7.08$, $p < .001$), with valence becoming more positive and moving towards the ‘pleasant’ side
548 of the scale from before ($M = 6.04$, $SD = 2.04$) to after ($M = 7.20$, $SD = 1.57$) viewing, and a
549 statistically significant decrease in arousal, ($M = -.66$, $SD = 1.83$), $t(127) = -4.07$, $p < .001$, with
550 arousal becoming more negative and moving towards the ‘sleepy’ side of the scale from before
551 ($M = 4.71$, $SD = 1.70$) to after ($M = 4.02$, $SD = 1.75$) viewing.

552

553 ANCOVAS and Kruskal-Wallis Tests

554 A series of factorial ANCOVAs were performed to test the main effect of audio condition and
555 image category on change in valence and arousal and on the emotional, cultural, flow
556 experience, and total engagement AEQ scores, while accounting for artistic expertise. A series of
557 separate Kruskal-Wallis analyses testing for main effects of audio condition and image category,
558 without covariate control and effects, were performed on the perceptual and understanding
559 scores that failed ANCOVA assumptions.

560

561

562 ***Hypothesis 2: Main Effect of Condition on Mood and Aesthetic Experience***

563 After running a series of ANCOVAs to test the effect of audio condition on mood and aesthetic
564 experience variables, audio condition was found to have a significant effect on cultural
565 engagement scores, $F(2,122) = 7.35$, $p = .001$, $\eta_p^2 = .108$. Post hoc comparisons using the Tukey
566 HSD Test showed that participants in the historical condition ($M_{adj} = 3.75$, $SE = .13$) had
567 significantly higher cultural engagement ratings than participants in the control ($M_{adj} = 3.23$, SE
568 $= .14$) and meditation ($M_{adj} = 3.05$, $SE = .14$) conditions, $p = .022$ and $p = .001$, respectively. No
569 significant effects of condition were found for the other variables (see Table 2).

570

571 After running a series of Kruskal-Wallis tests on the non-parametric variables, a significant
572 difference in understanding scores was found between the different condition groups, $\chi^2(2, N =$
573 $132) = 9.87$, $p = .007$, $\eta^2 = .061$. Pairwise post hoc comparisons using Dunn's test indicated that
574 the historical group (mean rank = 80.72, $Mdn = 3.88$) had significantly higher understanding
575 ratings than the control (mean rank = 58.98, $Mdn = 3.62$) and meditation (mean rank = 58.82,
576 $Mdn = 3.50$) groups, $p = .006$ and $p = .007$, respectively. There was no significant difference
577 between the control and meditation groups, $p = .985$. There was also no significant effect of
578 audio condition on perceptual engagement scores, $\chi^2(2, N = 132) = 2.47$, $p = .291$, $\eta^2 = .003$.

579

580 ***Hypothesis 3: Main Effect of Category on Mood and Aesthetic Experience***

581 After running a series of ANCOVAs to test the effect of image category on mood and aesthetic
582 experience, category was found to have a significant effect on several variables. There was a
583 significant group difference in cultural engagement scores, $F(2,122) = 8.08$, $p = .001$, $\eta_p^2 = .117$
584 between image categories. Post hoc comparisons using the Tukey HSD Test indicated that

585 participants viewing the representational ($M_{adj} = 3.67$, $SE = .12$) and abstract ($M_{adj} = 3.47$, $SE =$
586 $.14$) image categories had significantly higher cultural engagement ratings than participants
587 viewing photographs ($M_{adj} = 2.90$, $SE = .15$), $p = .001$ and $p = .020$, respectively. Next, while the
588 main effect of category on flow experience scores was significant, $F(2,122) = 3.22$, $p = .044$, η_p^2
589 $= .050$, the pairwise comparison of representational artworks ($M_{adj} = 3.84$, $SE = .11$) over
590 abstract ones ($M_{adj} = 3.46$, $SE = .13$) was not significant after correction, $p = .052$. There was no
591 significant difference between the representational and photographic and photographic and
592 abstract groups either, $p = .293$ and $p = .100$, respectively. Lastly, image category had an effect
593 on total engagement scores, $F(2,122) = 5.72$, $p = .004$, $\eta_p^2 = .086$, with higher ratings reported
594 after viewing representational ($M_{adj} = 3.79$, $SE = .07$) works as compared to photographic ($M_{adj} =$
595 3.44 , $SE = .09$) or abstract ($M_{adj} = 3.49$, $SE = .09$) works, $p = .011$ and $p = .026$, respectively. The
596 other variables did not indicate a significant effect of category. The series of Kruskal-Wallis tests
597 likewise did not indicate an effect of category upon the two non-parametric variables. See Table
598 2 for relevant statistics.

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608 **Table 2**609 *Results of Main Effects Testing – ANCOVAs and Kruskal-Wallis (N = 132)*

Measures	<i>F</i>	<i>p</i>	η_p^2
Change in valence			
Art interest	0.26	.611	.002
Condition	0.58	.563	.009
Category	0.77	.463	.013
Condition * Category	0.83	.510	.026
Change in arousal			
Art interest	2.06	.154	.017
Condition	1.98	.143	.031
Category	0.84	.436	.014
Condition * Category	1.54	.193	.048
Emotional engagement			
Art interest	1.76	.187	.014
Condition	0.56	.573	.009
Category	1.75	.178	.028
Condition * Category	1.60	.180	.050
Cultural engagement			
Art interest	12.18	.001**	.091
Condition	7.35	.001**	.108
Category	8.08	.001**	.117
Condition * Category	1.37	.247	.043
Flow experience			
Art interest	4.76	.031*	.038
Condition	1.70	.188	.027

Category	3.22	.044*	.050
Condition * Category	1.56	.189	.049
Total engagement			
Art interest	7.65	.007**	.117
Condition	2.03	.135	.096
Category	5.72	.004**	.090
Condition * Category	1.98	.102	.032
	χ^2	<i>p</i>	η^2
Perceptual engagement			
Condition	2.47	.291	.003
Category	0.57	.753	.011
Understanding			
Condition	9.87	.007**	.061
Category	5.12	.077	.024

* $p < .05$. ** $p < .01$. *** $p < .001$

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613

614 **Evaluative Question Analysis**

615 Out of 132 participants, 67% reported that they found the experience to be easy or very easy, and
616 55% reported that they found that the experience got easier or much easier over time, though this
617 did not reflect on intensity of experience — a 43% majority reported that the experience
618 remained largely the same in intensity over time. Over 50% of the participants reported that they
619 found the experience to be more different or much more different than their normal art viewing
620 experience, and 61% reported that they found the experience more or much more interesting than
621 their normal art viewing experience (see means and standard deviations for each of the questions

622 in Table 3). Lastly, 96% of participants reported that they would try slow looking again, whether
 623 in person or on their laptops or phone.

624

625 **Table 3**

626 *Descriptive Statistics (Evaluative Questions, out of a 5-point Likert scale, N = 132)*

Variable	Mean	SD
How did you find this looking exercise? Hard: Easy	3.86	0.97
How did you find this looking exercise? Got harder over time: Got easier over time	3.58	1.08
How did you find this looking exercise? Got less intense: Got more intense	3.29	1.07
How did this looking exercise compare to your usual experience of art-viewing? It was about the same: It was very different	3.32	1.18
How did this looking exercise compare to your usual experience of art-viewing? It was less interesting: It was more interesting	3.83	1.01

627

628

629

Discussion

630 This research study was one of the first studies to quantify the impacts of different slow looking
 631 approaches and to examine possible factors that contribute to these effects. Specifically, the
 632 present online study investigated the role of audio context and image category on change in
 633 mood and aesthetic experience after participants slow viewed a series of still life artworks. As
 634 hypothesized, we found that participants felt more pleasant and also more relaxed after
 635 completing the viewing exercise, regardless of their audio context or image category group.

636 Next, audio condition was found to have a moderate to large significant effect on two subscales
637 of aesthetic engagement —cultural engagement and understanding — specifically for
638 participants who listened to the art historical context. Category also had a significant impact on
639 cultural engagement, flow experience, and total engagement AEQ scores. But while there was a
640 main effect of condition and category on some of the AEQ categories, the meditation condition
641 was not significantly singled out as hypothesized, nor were there any detected interaction effects.
642

643 **Slow Looking and Mood**

644 That participants experienced an increase in pleasantness and decrease in arousal supports the
645 short-term mood improvement observed in participant feedback from online slow art events
646 (Slow Art Day, 2021) as well as other studies that have indicated mood changes after art viewing
647 in physical (Ho et al., 2015) and, more recently, online (Trupp et al., 2022) environments. But
648 because the present study did not include a control condition that had participants viewing
649 artworks for a more ‘average’ viewing time of about 30 s (Carbon, 2017; J. K. Smith & Smith,
650 2001; L. F. Smith et al., 2017), we cannot conclude that this impact on mood resulted
651 specifically from slow looking or whether it was due to art viewing in general. However, a study
652 by Cotter and colleagues (2022), conducted after the present research, in which the investigators
653 examined the well-being impacts of a visit to a virtual art gallery with slow looking conditions,
654 showed that participants felt more relaxed and less tense following the visit, though the slow
655 looking groups did not show a bigger impact of arousal as compared to their control looking
656 condition. For this reason, a follow-up study, examining the differences in mood change between
657 slow looking and faster looking conditions is recommended.
658

659 On the Slow Side of History

660 But regardless of how strong the impact of slow looking may be on valence and arousal, our
661 research indicates that slow looking is made more effective when paired with a particular guided
662 approach, even in an online context. The historical audio condition was the only group found to
663 influence engagement, particularly on a cultural and understanding level. According to the AEQ
664 survey authors, the cultural engagement factor accounts for “intellectually-based communication
665 that require[s] historic and cultural knowledge,” while the understanding factor suggests
666 “cognitive and communicative experience not based on knowledge of art history or culture but
667 rather trying to understand the artist based on personal insights” (Wanzer et al., 2020, p. 16). As
668 the historical texts directly addressed both historic and cultural knowledge as well as the nature
669 of the artist’s work, that these two factors were most affected by the informative context comes
670 as no surprise.

671

672 This finding is also in line with previous research. Leder et al. (2006) showed that presenting
673 participants with elaborate titles increased their understanding of abstract paintings but did not
674 affect their appreciation of the works. Swami (2013) further investigated these effects in a three-
675 part study in which he explored viewer understanding and appreciation of artworks, both abstract
676 and representational, in groups of participants who received varying levels of information. The
677 results of his first study indicated that any contextual information compared to a control
678 condition of no context increased viewer understanding of abstract works, but content-specific
679 information (as compared to titular or broadly relating information) led to overall greater
680 understanding levels. Szubielska et al. (2021) found a similar effect for the understanding and
681 appreciation of installation art.

682

683 These findings altogether support the psycho-historical approach proposed by Bullo and Reber
684 (2013), which suggests that aesthetic experiences cannot be fully understood without their art-
685 historical context. While this notion seems to be antithetical to the premise of slow looking, the
686 two do not have to be mutually exclusive. Follow-up investigation to investigate whether a
687 shorter viewing time would achieve the same impact on cultural engagement and understanding
688 as the longer viewing time did could help disambiguate the relationship between the two.

689

690 **Other Ways to Slow Look?**

691 Though more than half of the Slow Art Day programming of 2020 featured mindfulness-based or
692 open-ended viewing approaches (Slow Art Day, 2021), there was no significant impact of either
693 the meditation or control condition on mood or aesthetic engagement in the present study,
694 contrary to our original hypothesis. There are several possible explanations for these findings.
695 Regarding the control condition, if an institution features only silent viewing, these instances are
696 almost always followed by some kind of reflective activity, e.g. group discussion, whether in-
697 person or through Zoom video calls, or a creative pursuit, such as note-taking or drawing (Slow
698 Art Day, 2021). Thus, there may be a social element that must accompany solitary viewing, an
699 idea supported by previous research regarding the positive influence of social behavior, e.g.
700 conversation, on art reception for museum visitors (Tröndle et al., 2012). Alternatively, there
701 may be a desire to produce or create a work of one's own after viewing, as has been supported by
702 various studies showing an increase in creativity following a study of artworks (Ishiguro &
703 Okada, 2021; Parker, 2008; Pavlou, 2013).

704

705 Furthermore, though there has been evidence that style-related information (Belke et al., 2006)
706 and mindfulness meditation (Zabelina et al., 2020) contribute to increased aesthetic appreciation,
707 the majority of these studies are performed either within a museum or a laboratory context.
708 Interacting with a laptop in an uncontrolled environment may not be enough to stimulate the
709 emotional, perceptual, or experience categories that are directly associated with the meditation
710 condition text. As level of experienced immersion in a virtual gallery visit has been shown to
711 mediate changes in emotion (Cotter et al., 2022), the present study may not have engaged that
712 factor enough in its design. For this reason, these AEQ subscales may be harder to engage when
713 not interacting face-to-face with a viewer, or perhaps are even completely unresponsive to
714 general interventions, based more on trait mindfulness levels rather than state levels susceptible
715 to training.

716

717 **Preference for the Representational**

718 In addition to its function as an ecologically valid design consideration, choice of image category
719 resulted in several interesting implications. Firstly, of the total sample ($N = 141$), 61 of the
720 participants chose to view representational works as compared to photographic ($n = 37$) or
721 abstract ($n = 43$) works. That the representational category was most selected for supports
722 previous research that indicates a greater overall preference for representational art (Pihko et al.,
723 2011; Uusitalo et al., 2012), especially without any contextual information (Moore & West,
724 2012). But this observation brings up the following question — were representational images
725 chosen more because of the general popularity and preference for this category or because
726 participants deemed the works most suitable for the task of slow viewing? Shedding further light
727 on this question, the results of our main effects analyses indicated that representational artworks

728 significantly impacted cultural and flow experience subcategories of the AEQ while also leading
729 to higher total engagement scores than either of the other two image categories. For this reason,
730 representational art may be a better choice for slow viewing directives in galleries, although
731 further investigation into this distinction is recommended — perhaps by having participants
732 freely select works of different categories for different lengths of instructed viewing time.

733

734 Lastly, that there was no interaction effect between condition and category is a surprising
735 observation as it has been shown that abstract works benefit from contextual information (akin to
736 our historical condition) more so than representational ones, which do not show the same
737 improvement (Leder et al., 2006). Swami (2013) confirmed this as well in the second part of his
738 study — showing that context increased understanding and appreciation of abstract art but not
739 representational art, suggesting overall that representational art requires less contextualization.
740 While the present study found significant impacts of the representational image category on
741 several engagement measures, that we did not find an interaction between the historical condition
742 and the abstract category suggests that the benefit of information may not generalize to all kinds
743 of abstract artworks.

744

745 **Attending to the Art**

746 Actual time spent viewing the images also emerged as an unexpected point of consideration in
747 the analysis. While participants were meant to view each image for a minimum of 3 min, some
748 skipped one, two, or all three of the videos. The timing data, broken down by both condition and
749 category, provides further interesting insight into viewer behavior. While we filtered out five
750 participants in the control condition and four in the historical one, none were filtered out of the

751 meditation condition. Brieber and colleagues (2014), in examining the relationship between the
752 experience of art and time viewing the artworks, found that while viewing time increased with
753 appreciation of the works, this was modulated by context. The researchers also found an effect of
754 understanding, in that greater understanding of the works was linked to longer viewing times.
755 The present study's information on timing dropouts can be examined in light of these findings in
756 that the control condition, in which no context was given, had the greatest number of dropouts.
757 But it is unexpected that the historical condition, which had the most amount of context, was
758 next highest in this capacity. On the other hand, though, if viewing time is an indicator of
759 viewing behavior or interest (Ishiguro et al., 2021), that the meditation condition only had one
760 participant drop out and that this condition had higher median viewing times as compared to the
761 control and historical condition (see Table 1) suggests that there may have been impacts on
762 mood or engagement within this context that were undetected due to the online nature of the
763 experiment.

764

765 **Limitations**

766 There are several notable limitations in this study. Firstly, as mentioned previously, this study
767 did not have a non-slow-looking control condition, which could have better illuminated the
768 particular impacts that slow looking, as opposed to just looking, may have on mood and
769 engagement. Next, while the focusing exercise at the start of each video stimuli was
770 implemented to combat loss of attention while doing an online task, as determined by the pilot
771 study, it could have contributed to the changes in mood observed across conditions or even
772 obscured some of the possible effects of the meditation context in that it introduced a mindful

773 approach to every video. Follow-up research on the impacts of this type of focusing intervention
774 before viewing an artwork is thus recommended to help uncouple these two possible influences.

775

776 Finally, and perhaps most importantly — while this study is the first of its kind to examine slow
777 looking in an online context, because of the viewing dropouts, an online survey may not be most
778 suitable for this type of investigation. In addition to the general problems associated with web-
779 based research such as inconsistent devices and user settings (for a review, see Wright, 2005),
780 the conditions of the research question suggest that a museum-based or live setting could
781 produce results that are closer to the usual experience of slow looking. Firstly, with regards to
782 viewing behavior, participants tend to like artworks in a museum more, finding them more
783 interesting, viewing them for longer times (Brieber et al., 2014), and subsequently recalling them
784 better afterwards (Brieber et al., 2015). This leads to a better art experience in the museum
785 (Grüner et al., 2019) when compared to laboratory settings, ultimately suggesting a contextual
786 effect on cognitive and affective processes of art appreciation. Secondly, a 2016 review of the
787 effectiveness of 15 randomized controlled trials examining the relationship between online
788 mindfulness-based programs and mental health improvements reported that these programs have
789 small but significant impacts on depression, anxiety, well-being, and mindfulness, with the
790 biggest impact being on stress, with a moderate effect size (Spijkerman et al., 2016). If the most
791 salient observed effect of virtual mindfulness interventions is stress reduction, then it follows that
792 an online context would fail to engage some of the deeper cognitive and reflective processes
793 involved in practicing a mindfulness-based approach alongside slow looking, even if an increase
794 in valence and reduction in arousal was found in all conditions. There is, therefore, a pressing
795 need for researchers to investigate these questions within ecologically valid settings.

796 Conclusion

797 As researchers shed further light on the positive impacts of engagement with the arts (e.g.,
798 Fancourt & Finn, 2019), including art museum visitation (e.g., Thomson et al., 2018), empirical
799 investigation into common art viewing approaches in cultural institutions becomes necessary.
800 The practice of slow looking, or looking at an artwork for a prolonged period of time, often in
801 tandem with guided instructions provided by a museum educator, has been adopted in both
802 physical and online environments by international institutions for over a decade now but has not
803 been systematically explored at the population level. The present online study is the first of its
804 kind to explore the impacts of slow looking on short-term mood improvement and aesthetic
805 experience in a large sample, while also investigating the influence of different guided
806 approaches and image categories on the success of this type of viewing.

807

808 Though a follow-up investigation within a live, ecologically valid setting is currently ongoing to
809 further probe the effects of the meditation condition on slow viewing and to better etch out the
810 impacts of other live viewing factors, the present findings already suggest several important and
811 exciting implications from this pioneering study. Firstly, slow viewing leads to improved mood,
812 even in an online context. Secondly, the context of the viewing experience plays a role in the
813 intensity and type of engagement, with evidence to support the continued use of the psycho-
814 historical approach employed by museums already (Bulot & Reber, 2013). And lastly, some
815 categories of art may be more suited for slow viewing, both in terms of initial viewer selection
816 and on greater impacts on engagement after the viewing period.

817

818

819 **Notes**

820 1. Other demographic-related questions regarding COVID-19 and isolation status were also
821 asked but will be addressed in a separate paper.

822

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824

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