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Development and Validation of the Aesthetics Processing Preference Scale (APPS)

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Several models of aesthetic experience have assumed that engaging in controlled processing is an important facet of appreciation, where people who engage with an artwork more deeply appreciate it more than those who simply accept their initial "gut reaction" (Graf & Landwehr, 2015; Leder et al., 2004; Pelowski et al., 2017; Van Geert & Wagemans, 2020). Although the willingness to engage in controlled processing with aesthetic objects has been theorized to be important to aesthetic experiences, there is no direct measure that adequately measures controlled processing within the domain of aesthetics. General measures of willingness to engage in controlled processing do exist (e.g., Cacioppo & Petty, 1982; Kruglanski & Webster, 1996); however, there is evidence that these are often too general to be used in aesthetic research (Steciuch et al., in press). For example, the items on the Need for Cognition scale measure general thinking strategies and are therefore not suitable to measure engagement with artworks. Similarly, the Need for Cognitive Closure scale measures one's tolerance for the completeness of their thinking ("I don't like situations which are uncertain.") but has failed to correlate with the processing of visual art (Steciuch et al., in press).

There are at least three "styles" of cognitive processing that have been identified in the literature that may cover a significant share of how individuals engage in controlled processing while engaging in art. The first is the appreciation of complexity in artworks. Professional artists have been found to prefer art that is more visually complex than non-artists (e.g., Bimler, Snellock, & Paramei, 2019). The second is the tolerance of ambiguity. Tolerance of ambiguity is positively correlated with creativity (Tegano, 1990; Zenasni, Besançon, & Lubart, 2008). The third is connecting an artwork to its historical and cultural context. Researchers have argued that

connecting artwork to a larger context is important to appreciating the artwork (Bullot & Reber, 2013; Pelowski et al., 2017; Redies, 2015; Thompson & Antliff, 2013).

Despite the potential importance of individual differences in understanding artwork, there are currently no scales that measure individuals' tendency to engage in controlled processing with aesthetic objects like literature, music, and visual artworks. The purpose of the current study is to create a measure of one's willingness to engage in controlled processing with aesthetic objects, the Aesthetics Processing Preference Scale (APPS).

Study 1

Participants

Participants were 702 workers (58% female) recruited through Amazon's Mechanical Turk (MTurk) and compensated for their participation. Participants were primarily White (76%) with sizeable Black (10%) and Asian minorities (11%). Participants were paid $0.50 and the survey took a median of 9 minutes to complete.

Materials

Aesthetics Processing Preference Scale (APPS). The APPS initial item pool contained 92 items and captured various aspects of aesthetics-specific cognitive processing. These items were constructed along three dimensions: Appreciation of Complexity (e.g., "I like to take multiple perspectives when thinking about an art object"), Tolerance for Ambiguity (e.g., "I prefer art objects with only one interpretation"), and Propensity to Contextualize (e.g., "I think that it is important to consider the context in which an art object is made"). The items were rated on a 1 to 6 scale ("Strongly Disagree" to "Strongly Agree").

Procedure

Participants were given an inclusive definition of what an art object is (i.e., "By 'art objects' we mean **paintings, photographs, illustrations/drawings,** and **murals** [emphasis in original] that are created from an artist"), followed by the instruction to answer the APPS items by thinking about how the items describe their general behaviors with art objects. We intentionally only included static 2-dimensional artworks to limit the number of different types of artwork. Participants then completed the APPS items as well as some basic demographic questions. Participants were then debriefed and thanked.

Results

To reduce the number of items in the APPS item pool, we entered all 92 initial APPS items into a maximum likelihood exploratory factor analysis with varimax rotation. A three-factor solution was suggested by both the scree plot, and a parallel analysis.

Items were then culled based on their primary loadings (i.e., items loading less than .50 were deleted) and based on cross-loadings (i.e., items with cross-loadings higher than .30 were deleted). A total of 79 items were culled resulting in a final three factor APPS that accounted for 49% of the item variance. See Table 1 for factor loadings. Factor 1 (Appreciation for Complexity, α = .84) accounted for 22% of the item variance and contained six items related to how much people appreciated complex artwork or how much they enjoyed thinking about art objects. Factor 2 (Tolerance for Ambiguity, α = .71) accounted for an additional 16% of the item variance and contained three items that described either a preference for simplicity, or negative affective experiences when encountering an art object with multiple meanings. Finally, factor 3 (Propensity to Contextualize, α = .79) accounted for an additional 11% of the item variance and contained four items about grounding a given art object in the context or culture which it came

from. As can be seen, all three scales were found to be acceptably reliable, but not so high as to suggest redundancy in items.

Study 2

Participants

Participants were an additional 542 workers (61% female) recruited through Amazon's Mechanical Turk (MTurk). Similar to Study 1, participants were predominantly White (80%), with sizeable Asian (8%) and Black (9%) minorities. Participants were compensated $0.90 for the study, which took a median time of 18 minutes to complete.

Materials

APPS. The reduced APPS item pool was administered to participants. In the current sample, internal consistency was high, $.74 < \alpha$'s $< .86$, again suggesting good reliability for the APPS subscales.

Need for Closure Scale (NFCS). The NFCS (Webster & Kruglanski, 1994) was used a general measure of one's willingness to engage in cognitive processing. More specifically, the NFCS measures the preference for one to come to a quick and certain conclusion over a more ambiguous one. Previous research has established the reliability of the NFCS ($.62 < \alpha < .82$; Webster & Kruglanski, 1994) and the measure has often been used in aesthetics research (e.g., Steciuch et al., in press).

Vienna Art Interest and Art Knowledge Scale (VAIAK). The VAIAK (Specker et al., 2020) was used to assess participants' general level of interest and knowledge about artwork. Reliability for both portions is good ($\omega > .77$), and both the art interest and art knowledge portions have been shown to discriminate between art historians and laypeople, suggesting good validity (Specker et al., 2020).

Art Reception Survey (ARS). To assess how participants react to aesthetic experiences, we administered three abstract artworks used in prior research (e.g., Steciuch et al., in press). After viewing each artwork, participants completed the Cognitive Stimulation and Negative Emotionality components of the ARS (Hager, Hagemann, Danner, & Schankin, 2012). The ARS was designed to measure situational responses to aesthetic experiences and has been shown to be reliable (Cognitive Stimulation α = .90, Negative Emotionality α = .85.

Ten Item Personality Inventory (TIPI). The TIPI (Gosling, Rentfrow, & Swann, 2003) was used as a brief measure of the Big Five personality traits. Each of the Big Five personality traits are measured with two self-report items about how the participant views themselves. Previous research has found the TIPI to be reliable (test-retest mean r = .72) and it has also been shown to correlate with longer Big Five measures such as the NEO-PI-R.

Positive Affect Negative Affect Schedule (PANAS). The positive affect and negative affect scales of the PANAS (Watson & Clark, 1999) were used as a measure of current affect. Participants were given a set of 20 adjectives and asked to rate how much they felt each one in the present moment. Previous research has found the PANAS to be reliable (Positive affect α > .83, Negative affect α > .85).

Procedure

Participants completed the APPS, NFCS, VAIAK, ARS, TIPI, and PANAS in a randomized order. After completing these measures, they were asked demographic questions and were then debriefed and thanked.

Results

Predicted relationships between the APPS subscales and convergent validity measures were largely found to be consistent with a priori predictions (17 out of 21 significant in predicted

direction) and relationships with divergent measures were less often significant (12 out of 28) and were nearly all weaker than the convergent relationships. This indicates the strong validity of the APPS subscales and the APPS measure as a whole. See Table 2 for details on validity correlations.

Conclusion

As noted previously, there is no scale available that relates to people's preference in engaging with aesthetic objects, yet there are several different models of aesthetic appreciation that argue for its importance (e.g., Graf & Landwehr, 2015; Leder et al., 2004; Pelowski et al., 2017; Van Geert & Wagemans, 2020). The APPS thus fulfills a crucial, yet unoccupied role in aesthetics research. In addition, the APPS can help researchers explore factors associated with disciplinary literacy in literary texts as well as visual art. Teachers and educators may be interested in these domain-specific measures that capture students' tendency to engage more with educational materials in literature and the arts. Understanding the intricacies of students' preferences in the willingness to induce more cognitive effort for the wide variety of discourses they are exposed to may help educators better cater to students' needs and to encourage a deeper understanding and appreciation of literature and the arts.

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Table 1

Factor Loadings for Initial APPS Development Study

	Factor 1: Appreciation of Complexity (α = .84)	Factor 2: Tolerance for Ambiguity (α = .71)	Factor 3: Propensity to Contextualize (α = .79)
1. I like art objects that I don't understand immediately	**.61**	.11	.09
2. I like art objects that make me think	**.65**	.17	.27
3. When I think about art objects, I try to find multiple meanings	**.76**	.01	.22
4. I like to take multiple perspectives when thinking about an art object	**.71**	.08	.19
5. When I have trouble understanding an art object, I persist in trying to figure it out	**.60**	-.06	.26
6. I try to interpret what the art object might mean to different people	**.60**	.00	.26
7. I prefer art objects with only one interpretation	.26	**.54**	-.08
8. If I don't understand an art object, I get upset	-.07	**.72**	.00
9. Not knowing the meaning of an art object makes me feel uneasy	.03	**.78**	-.06
10. I think that it is important to consider the context in which an art object is made	.23	-.01	**.66**
11. I think that the artist's background is important to consider when engaging with art objects	.16	-.16	**.68**
12. I understand art by understanding the culture that made it	.26	-.02	**.68**
13. I like to evaluate art objects as a product of the time in which they are produced	.21	.00	**.61**

Table 2

Convergent and Divergent Validity Predictions and Results for Study 2

	Appreciation of Complexity		Tolerance for Ambiguity		Propensity to Contextualize	
	Predicted Correlation	Actual Correlation	Predicted Correlation	Actual Correlation	Predicted Correlation	Actual Correlation
NFCS Order	Negative	**-.09**	N/A	-.08	Positive	**.09**
NFCS Predictability	Negative	**-.22**	N/A	.02	N/A	.00
NFCS Decisiveness	Negative	-.07	N/A	**-.26**	N/A	-.01
NFCS Ambiguity	Negative	-.02	Positive	**.25**	N/A	**.13**
NFCS Closed-Mindedness	Negative	**-.33**	N/A	**.34**	N/A	**-.21**
VAIAK Art Interest	Positive	**.61**	Negative	.06	Positive	**.44**
VAIAK Art Knowledge	Positive	**.21**	Negative	**-.17**	Positive	**.21**
ARS Cognitive Stimulation[a]	Positive	**.36**	N/A	-.02	Positive	**.21**
ARS Negative Emotionality[a]	N/A	.04	Positive	**.44**	N/A	.04
TIPI Openness	Positive	**.42**	Negative	**-.24**	N/A	**.26**
TIPI Neuroticism	Negative	-.04	Positive	**.23**	N/A	.01
TIPI Conscientious-ness	N/A	.06	N/A	**-.21**	N/A	.05
TIPI Extraversion	N/A	**.10**	N/A	-.05	N/A	.03
TIPI Agreeableness	N/A	**.10**	N/A	**-.24**	N/A	**.12**
PANAS Positive	N/A	**.27**	N/A	.04	N/A	**.13**
PANAS Negative	N/A	.04	Positive	**.40**	N/A	.01

Relationships significant at the $p < .05$ level are displayed in bold.

[a] The correlations for the ARS Cognitive Stimulation and ARS Negative Emotionality are averages of the correlations for each of the three art objects that participants viewed.