Bullshit Makes the Art Grow Profounder:

Evidence for False Meaning Transfer Across Domains

by

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Author's declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

The purpose of this thesis was to explore the decision making underlying the perception of meaning in abstract art. In particular, I explore if features adjacent to the content of the art itself predominantly drive the perception of depth and meaning in abstract art, especially by drawing a connection between the modes of communication present in the art world "International Art English" and the concept of Pseudo-Profound Bullshit. Across three studies, 500 participants completed tasks that assessed the degree to which Pseudo-Profound Bullshit can enhance the perceived profoundness of abstract art and examined mechanisms that underlie this enhancement. It was found that pairing abstract art pieces with randomly generated pseudo-profound titles enhanced the perception of profoundness in those art pieces (Exp 1), that being under a verbal working memory load enhanced the perception of profoundness of abstract art separately (Exp 2), but did not interact with the presence of a title, nor did it independently affect bullshit receptivity generally (Exp 3). This ultimately contributes to our understanding of the cognition of art, and decision making, especially as it relates to an application of models of cognitive miserliness to the evaluation of abstract art.

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AOT: Actively Open-Minded Thinking

BS: Pseudo-Profound Bullshit

BSR: Bullshit Receptivity Scale

CRT: Cognitive Reflection Task

VA: Verbal Ability

Chapter 1: General Introduction

An experience that may be familiar to the visitors of modern art museums is to find oneself in front of a sprawling mass of colour and shape seemingly randomly splattered on a canvas. One may look at the painting for a few moments, puzzled as to what meaning is purportedly captured in the streaks of colourful paint presented. Eventually, feeling the anxiety of unknowing building inside of oneself, one's eyes are drawn almost instinctively to the description card that is the permanent companion of many modern art paintings. Finally, as if begging for the artist to provide something tangible and specific to tackle cognitively, the description is read, and the museum goer is satisfied, perhaps even exasperatedly telling themselves *"Ah, I could see how that would be…".* Indeed, the perceived meaningless of abstract modern art, and a viewer's personal need for structure, have been associated with not uncommon disliking of modern art (Landau, Greenberg, Solomon, Pyszczynski & Martens 2006), whereas the liking of modern art has been associated with openness to experience and preference for non-conformity (Feist & Brady, 2004). It seems then, that the way we experience modern art is inseparably tied to the ways we deal with meaning, lack of meaning, and our relative comfort with a perceived lack of meaning.

A recent topic in the study of meaning is the perception of meaning where there appears to be none. This has been studied in the form of Pseudo-Profound Bullshit (Pennycook, Cheyne, Barr, Koehler & Fugelsang, 2015). Pennycook and colleagues found that people were willing to endorse superficially impressive, but otherwise not specifically interpretable statements, as holding some degree of profound meaning. Taking together these two separate literatures, on the experience of art in the absence of meaning and the perception of meaning where there is none, we ask whether seemingly meaningless art can be made to look meaningful simply by presenting

it alongside something that merely *suggests* meaning? Do people use information adjacent to the art itself to help resolve the uncomfortable uncertainty surrounding a piece of art's apparent lack of meaning? Moreover, if so, does the propensity to do so vary in accord with any identifiable psychological variable? This is explored in three studies by using the combination of randomly generated art, randomly generated titles, and its relation to the receptivity to Pseudo-Profound BS to explore what factors affect judgments about meaning in art.

It is a common casual observation that artists, and especially abstract or modern artists, have their own specific and unique way of communicating about art. This is reflected in the choice of titles, descriptions, and modes of speaking that collectively fall under the umbrella of "International Art English" (Rule & Levine 2012). Two linguistic features of International Art English as described by Rule and Levine include the morphing of adjectives into nouns: "Visual becomes visuality, global becomes globality, potential becomes potentiality, experience becomes experientiality" (Rule & Levine 2012), and the use of words and metaphors to increase the perceived depth and sophistication while favoring non-specificity in language. This is best captured in a description of the general phenomenon and in descriptions of the work of two specific artists:

> It's not just that IAE is rife with spacey terms like *intersection*, *parallel*, *parallelism*, *void*, *enfold*, *involution*, and *platform*. IAE's literary conventions actually favor the hard-to-picture spatial metaphor: A practice "spans" from drawing all the way to artist's books; Matthew Ritchie's works … "elegantly bridge a rift in the art-science continuum"; Saâdane Afif "will unfold his ideas beyond the specific and anecdotal limits of his Paris experience to encompass a more general scope, a new and broader dimension of meaning" (Rule & Levine 2012, para. 15).

Take now an item from the Bullshit Receptivity Scale from Pennycook et al. (2015): "the future will be an astral unveiling of inseparability" and compare it both in style and form to the above quotations. There is a noticeable similarity, it both includes the morphing of adjectives into nouns in "inseparable" to "inseparability" and also captures the impossible-to-picture visual metaphor as the main vehicle in impressing a sense of depth. In this way, it manages to be stylistically impressive while not communicating anything specific that could be challenged. Linguistically, it seems that the English that artists use to describe and discuss their practice either is the same, or is at least tapping into the same cognitive mechanisms that give Pseudo-Profound Bullshit its effect. That is to say, that the linguistic features that elevate the perceived profoundness of Pseudo-Profound Bullshit above for example, a mundanely stated truth or lie are also present in International Art English, and this may allow for the use of Bullshit to transfer a 'false' sense of profoundness onto an abstract art piece.

The similarity exists at the philosophical and conceptual level as well: Bullshit as originally described by Harry G. Frankfurt, is speech that attempts to persuade or impress the listener, without any concern for truth (Frankfurt, 2005). Insofar as some abstract artists have embraced a radically subjective view toward art, that is to say that there is no possible objective standard for beauty or meaning, then the entire exercise of the production of abstract art along these lines resembles bullshit as its goal is to impress a sense of depth or beauty while going further than merely not being concerned about the truth, but by denying that any objective truth could possibly exist (for discussions of these views of art see: Crowley, 1958;Young, 1997). These two levels of similarity between Abstract Art/International Art English and Pseudo-Profound Bullshit produce two hypotheses to test: If artists use bullshit to enhance the prestige of their work in the real world, then it should be possible to use bullshit to enhance the perception

of profound meaning of art in the lab. Second, the degree to which a person finds meaning in Pseudo-Profound Bullshit should predict the extent to which a person endorses meaning in abstract art.

Chapter 2: General Methods

This section contains information on methods and concepts that are used throughout this thesis. Where needed, this information may be repeated in the relevant studies.

Pseudo-Profound Bullshit: Pseudo-Profound Bullshit items were taken from Pennycook, et al., (2015). These are 30 items, which, while superficially impressive and engaging, do not contain adequate intentional meaning to be specifically interpretable (e.g., "Wholeness quiets infinite phenomena" (Pennycook et al., 2015). Additionally, 10 examples of statements which were technically true, but which do not contain truth of a grand or profound nature, e.g., "Newborn babies require constant attention" were included. Finally, 10 motivational statements, thought to capture the impression of true attempt at communicating meaning and profoundness from a statement, were included, e.g., "A wet man does not feel the rain" (Pennycook et al, 2015). An expanded version of the scale appears in Study 3 that I developed for the purposes of this thesis. A full list of items can be found in Appendix A.

Working Memory Task: Taken from Unsworth, Redick, Heitz, Broadway, and Engle (2009), this working memory task is used to provide a verbal working memory load that generally impairs the ability to engage in reflection. In the "no" working memory load condition, a display containing 6 hash marks (######) is presented for 3 seconds. In the "high" working memory load condition a display containing 6 letters is presented for 3 seconds. Letters are chosen from the set of F, H, J, K, L, N, P, Q, R, S, T, Y (e.g., FKLNPQ). Participants are told that they may ignore the hash marks but will need to remember the letters and report them at the end of the trial by typing them in on a keyboard.

Image Generation: Images were generated by a research assistant who was blind to the studies' purposes and hypotheses. Two hundred images were generated using two websites (http://bomomo.com and http://windowseat.ca/viscosity/create.php), which provide drawing tools that behave in a pseudo-random fashion, only affording the user coarse-grained control over the image's content (i.e., colour, broad shapes, and selection of pattern types) thus producing pseudo-randomly generated abstract images, or images which lack the human-defined intention to communicate meaning.

Title Generation: Randomly generated titles were created using the website (http://noemata.net/pa/titlegen/), which strings together words commonly used in art titles and descriptions. One hundred fifty of these titles were generated, of which eight were removed for their reference to specific figures or concrete features (e.g., "Crying Boy in a Corner") leaving 142 randomly generated titles. In order to match the number of titles to the number of images, a random sample of 142 out of the originally generated 200 images was chosen using the random sampling functions provided in the NumPy library for Python (Walt, Colbert, & Varoquaux, 2011).

Purpose and Hypotheses:

What determines the perceived profoundness of abstract art? Is it mostly a function of the visual content of the art itself, or do contextual features such as labels, descriptions, and titles affect how meaningful a piece of art feels? In the introduction I noted that it is not uncommon to find that artists, and particularly abstract and post-modern artists have settled on a particular way of communicating about their artwork. This style of communication, "International Art English" has a noted similarity in style and construction to the concept of Pseudo-Profound Bullshit. It may be the case that artists have implicitly discovered the cognitive tricks that give Pseudo-Profound Bullshit its effects, and are able to harness this phenomenon to give their own work an edge. If features of International art English are shared with Pseudo-Profound Bullshit, or at the very least may be processed in a similar fashion cognitively, it should be possible to make use of Pseudo-Profound Bullshit to enhance the perceived profoundness of art. This will be tested by comparing the perceived profoundness of the generated abstract art images when a Bullshit title is present, compared to when no title is presented alongside the image.

Methods

Two hundred participants were recruited from the University of Waterloo population. One hundred thirty-three participants participated in the experiment for partial course credit, while 67 participated for payment of $10 CAD. Participants were seated in front of a high-resolution computer monitor and presented with all stimuli, which were displayed using PsychoPy (Peirce, 2007, 2009). The experiment began with participants being shown a series of 142 computer-generated images. They were asked to provide a rating of how profound they

found each image to be on a scale of one to five (Verbatim question: "How profound is this image?") (options on the scale: one = 'Not at all Profound', five = 'Very Profound') they were told by the experimenter before beginning that the definition of profound was to be taken as "of deep meaning; of great and broadly inclusive significance.", in line with the definition Pennycook et al provided to their participants. On any given trial there was a 50% chance that one of the 142 randomly generated titles would appear above the image. Following the image presentation, participants were sequentially shown the full set of 142 randomly generated titles alone (i.e., without corresponding images) and were asked to provide a separate rating of profoundness for the titles. Participants were then shown the 30 BS items, 10 mundane statements, and 10 motivational quotes in a random order and were asked to make a rating of profoundness, as described above, for all 50 items. Participants then completed three individual differences measures, including the 41-item Actively Open-Minded Thinking (AOT) scale, a scale designed to assess the degree to which a person is cognitively flexible, open minded, and resistant to dogmatic thinking (Stanovich & West, 1997). The second individual differences task participants completed was an 11-item Cognitive Reflection Task (CRT), which is used to assess the degree to which a person is likely to engage careful, reflective thinking over intuitive thinking. This 11-item test was made using the three original items from the CRT (Frederick, 2005), four items from the CRT-2 (Thomson & Oppenheimer, 2016) and the CRT-4 (Toplak, West, & Stanovich, 2014). Finally, participants completed a 10-item Wordsum task, where a word in large print would appear at the top of the screen (e.g., "CLOISTERED") and a series of smaller print options would appear underneath (e.g., bunched, secluded, malady, miniature, arched) and the participant was tasked with picking the word out of the options that was the best synonym for the large printed word. The Wordsum task is a vocabulary test regularly used as a

measure of verbal ability (see Malhotra, Krosnick & Haertel, 2007 for a review). Following the Wordsum task, participants were thanked for their time, given the opportunity to ask any questions about the purpose of the study and were awarded either their partial credit or payment.

Results

A paired samples t-test comparing images paired with a randomly generated titles to those presented alone revealed a significant effect of Title Presence $t(199) = 10.16\ p < .001, d = 0.44$, meaning images of randomly generated abstract art were judged to be more profound if a randomly generated title was presented alongside the image ($M = 2.60$, CI[2.53,2.67]) than if no title was presented ($M = 2.31$, CI[2.25,2.37]). The strong relation between receptivity to BS and perceiving profundity in randomly generated titles (see Table 1) strengthens the idea that the titles may be acting as a suitable proxy for Pseudo-Profound Bullshit and thereby boosting the perception of profoundness in abstract art. Exploratory individual differences measures in the form of CRT and AOT did not significantly relate to either Pseudo-Profound Bullshit or perception of meaning in art.

Table 1: Pearson product-moment correlations (*Study 1, n=200*). TI = Titled Image Ratings, UI = Untitled Image Ratings, MS = Mundane Statements Ratings, MQ = Motivational Quotes Ratings, VA = Verbal Ability (Wordsum score), T = Titles Alone Ratings, CRT = Cognitive Reflection Task, AOT = Actively Open-minded Thinking scale, BSR = Receptivity to Bullshit, ** $p < .01$, * $p < .05$

	TI	UI	BSR	MS	MQ	VA	T	CRT	AOT
Titled Image	—								
Untitled Image	.83**	—							
BSR	.58**	.52**	—						
Mundane	.10	.20**	.13	—					
Motivational	.22**	.16*	.44**	.09	—				
Verbal Ability	-.03	-.18*	-.19**	-.33**	-.02	—			
Titles	.66**	.61**	.73**	.19**	.44**	-.17*	—		
CRT	-.05	-.01	-.01	-.09	.01	.04	-.02	—	
AOT	-.01	-.09	-.09	-.25**	.09	.32**	-.07	-.02	—

Discussion

Using suitable proxies for Pseudo-Profound Bullshit in the form of randomly generated art titles successfully increased the perception of profoundness in randomly generated art; furthermore, the relation between bullshit receptivity and perception of art profoundness was strong for both titled and untitled art. If this relation had only held for titled art, one could argue that the receptivity to bullshit was the only factor driving the relation between bullshit and art receptivity. With this relation holding independently for untitled art, it reveals that something unique about abstract art receptivity and bullshit receptivity is driving this relation. It seems that people who tend to find profoundness in abstract art are similarly impressed by the meaning in Pseudo-Profound Bullshit. Of interest here, is that despite the original description of Pseudo-

Profound Bullshit receptivity provided by Pennycook et al. 2015, where bullshit receptivity arises partially from a failure of reflective processes to override an initial intuitive impression of meaning, the measure for cognitive reflection used here (CRT) did not significantly relate to the profoundness ratings for either bullshit nor art. This seeming peculiarity will be addressed in the General Discussion.

Chapter 4: Study 2

Purpose and Hypotheses:

The motivation for Study 2 arises from the question of exactly how bullshit influences the perception of profoundness in art. Does the influence come from affecting some vague intuitive feeling of profoundness (i.e., a type 1 process) or do participants consciously reflect on the content of the bullshit titles and find features in the images that match them (i.e., a Type 2 process and thus requiring working memory)? By introducing a working memory load, participants should have their ability to engage in conscious reflection impaired (Evans & Stanovich, 2013), meaning that if the advantage for titled art comes from reflecting on the titles and art together before forming an impression, then under load there should be no such advantage. If we instead observe an advantage for art under load, it would suggest that most of the evaluative processes in this task take place as Type 1 processes. This will be tested by placing participants under a working memory load on some of the trials where they are evaluating abstract art, and comparing these ratings to instances where they are free from load.

Methods:

Study 2 used the same general procedure as Study 1 with the exception that on some trials participants were placed under a working memory load, creating a 2x2 within-subjects design. One hundred participants were recruited from the University of Waterloo population. All participants received partial course credit. Trials were broken down as shown in Table 2:

Table 2: Trial break down for study 2. Each participant completed 120 trials of image rating, with 30 trials each in the below categories.

Rating Art	No Title	Title
No Load	30	30
High Load	30	30

In order to ensure all images were still represented among the conditions for each participant, a random sample of 120 images was taken from both the full 142 titles and images. Each trial began with a fixation point that remained on the screen for 500 ms. In the "no" working memory load condition, a display containing 6 hash marks (######) was presented for 3 seconds. In the "high" working memory load condition a display containing 6 letters was presented for 3 seconds. Letters were chosen from the set of F, H, J, K, L, N, P, Q, R, S, T, Y (e.g., FKLNPQ) as used in Unsworth, Redick, Heitz, Broadway, and Engle, (2009). Participants were told that they could ignore the hash marks but would need to remember the letters and report them at the end of the trial by typing them in on a keyboard. On every trial, participants provided profoundness ratings for the images as was done in Study 1. Participants also completed the original 3-item Cognitive Reflection Task (Frederick, 2005) and the same Wordsum verbal ability task from Study 1.

Results:

For the loading task, participants scored an average of 63% perfect for the high load trials. This means that on average each participant exactly matched their target string on 40 or so trials out of 60. Most errors that did occur were incorrectly reproducing the order of the characters, or replacing a target character with a different one within the set of allowed letters. All trials were preserved, with no exclusions based on load task performance. A repeated measures ANOVA revealed a significant main effect of Title Presence, replicating the main finding of Study 1, $F(1,99) = 47.27$, $p < .001$, $\eta_p^2 = .323$, participants perceived randomly generated abstract art as more profound when a randomly generated title was present, compared to having no title. M There was also a significant effect of Load, $F(1,99) = 16.05$, $p < .001$, $\eta_p^2 = .139$, indicating that participants perceived randomly generated art to be more profound when tasked with holding a string of letters in working memory (see Table 3 for means).[1]

Table 3: Means for Study 2, 95% confidence intervals in brackets.

Rating Art	No Title	Title
No Load	2.44 [2.29,2.58]	2.67 [2.53,2.82]
High Load	2.48 [2.35,2.63]	2.81[2.66,2.96]

There was no strong evidence of an interaction, however, $F(1,99) = 3.55$, $p = 0.063$, $\eta_p^2 = .035$, meaning that being under a working memory load does not seem to modify the effect of a

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[1] Interestingly, if the analysis is run where only perfect trials are accepted (i.e., participants report the correct six letters in the exact order they were tasked with or that trial is excluded) only the effect of Title Presence remains significant $F(1,95) = 28.86$, $p < .001$, $\eta_p^2 = .201$, there is no longer an effect of Load $F(1,95) = 1.81$, $p = .181$, $\eta_p^2 = .019$, and still no Load*Title Presence interaction $F(1,95) = .56$, $p = .454$, $\eta_p^2 = .006$. This standard however may reduce the effects for individuals who struggled with the load task, decreasing the task difficulty.

title being present when evaluating the profoundness of randomly generated art. There were no significant correlations between the measures of individual differences (Verbal ability via the Wordsum and Cognitive Reflection via the Cognitive Reflection Task) for any category of image rating (all ps > .05) Cognitive Reflection and Verbal Ability were however significantly related to each other r (98) = .40, p < .01.

Table 4: Pearson product-moment correlations (*Study 1, n=100*). CRT = Cognitive Reflection Task. ** $p < .01$, * $p < .05$

	TI Load	TI NoLoad	UI Load	UI NoLoad	VA	CRT
Titled Image Load	—					
Titled Image NoLoad	.91**	—				
Untitled Image Load	.80**	.78**	—			
Untitled Image NoLoad	.81**	.80**	.89**	—		
Verbal Ability	-.10	-.19	-.11	-.17	—	
CRT	-.18	-.13	-.12	-.07	.40**	—

Discussion

The results of this study suggest that participants are likely not engaging in a conscious effort to connect the content of the art and titles together upon presentation, as evidenced by cognitive load enhancing the perception of profoundness in the art, not reducing it. Further, the persistence of the presence of a title boosting the perception of profoundness in abstract art while under a working memory load indicates that most of the evaluative processing for art is taking place without reflection. The lack of an interaction, however, indicates that the receptivity to the title also does not seem dependent on the ability or willingness to reflect. It is possible that the

lack of an interaction between the effects of Title Presence and Load could be an artefact of the working memory load task. With the content of the titles relying on relatively complicated language, introducing a working memory load in the verbal domain may actually prevent participants from fully processing them. This may produce a masking effect where the effect of Pseudo-Profound Bullshit may be exaggerated under load, but the verbal working memory load prevents fully processing the content of the titles, decreasing the expression of its effect. This may also contribute to understanding again why cognitive reflection seemed to play a small or no role at all in the perceived profoundness of abstract art. A follow-up using a fast response paradigm or a visual working memory load would be able to address these concerns. However, in order to discuss how these effects specifically operate between bullshit and abstract art receptivity, it is necessary to consider the effects of this loading task on Pseudo-Profound Bullshit separately.

Chapter 5: Study 3.

Purpose and Hypotheses:

The lack of an interaction between the presence of a title and the condition of being under a working memory load in Study 2 raises the question of what exact role working memory load plays in receptivity to Pseudo-Profound Bullshit. It may be the case that working memory load does not increase bullshit receptivity, and as a result there would be no reason to have expected an interaction between load and art title presence in Study 2. Since the titles used in Studies 1 and 2 are serving as a suitable proxy for Pseudo-Profound Bullshit, they should be similarly affected by load. If it is the case that Pseudo-Profound Bullshit does not change in response to the same working memory load, it would explain why there would be no interaction for the type of loading task used in Study 2. This will be tested by comparing the receptivity to Pseudo-Profound Bullshit for participants while they are under a working memory load, compared to when they are free from load.

Methods:

Two hundred participants were recruited from Amazon's Mechanical Turk and administered via a survey hosted on Qualtrics. Participants received $2.50 USD for participation. Participants were presented with an expanded Bullshit Receptivity Scale including 20 newly generated items (10 new for each category: Motivational Quotes, and Mundane Statements) for a total of 60 items (20 in each category). The new Motivational Quote items were taken from the 'Motivational' section of the website Brainyquote. The new Mundane items were generated by the researchers (a full list of items and associated websites can be found in Appendix A). Participants were shown the full list of 60 items sequentially and rated each item on a one to five

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scale for perceived profoundness as in previous studies. For half of the items, they completed

their ratings alongside the working memory task from Study 2. This working memory load was

applied in a blocked design, meaning for a given half of items participants either provided all of

their ratings under load, or all of their ratings under no load and then switched to the other in a

following block. The order participants were exposed to the loading manipulation during their

ratings was counterbalanced, and which half of the items participants experienced under load vs

under no load was also counterbalanced. Following the completion of the Bullshit Receptivity

Scale, participants completed the Cognitive Reflection Task and received a completion code they

could use to receive their remuneration.

Results

For performance on the loading task, participants scored an average of 57% perfect for

the load trials. This means that on average each participant exactly matched their target string on

17 or so trials out of 30 which is comparable performance to Study 2. Paired samples T-Tests

were performed on each category of item (Bullshit, Motivational quotes, and Mundane

statements) comparing ratings of these items while under load, and while free from load. There is

some evidence that bullshit receptivity was higher when participants were placed under working

memory load ($M = 2.97$, CI[2.83, 3.11]) than when they were free from load ($M = 2.89$, CI[2.75,

3.03]), $t(199) = 2.086$, $p = .038$, $d = 0.08$, but this effect wad so small that it may be considered

negligible. There was no difference in perceived profoundness for Motivational quotes under

load ($M = 3.13$, CI[3.01, 3.25]), compared to when participants were free from load ($M = 3.15$,

CI[3.04, 3.26]), $t(199) = -.84$, $p = .400$, $d = 0.04$. For Mundane quotes, there was a significant

difference observed for perceived profoundness under load ($M = 1.53$, CI[1.45, 1.65]), compared

to under no load ($M = 1.45$, CI[1.33, 1.56]), $t(199) = 2.85$, $p = .005$, $d = 0.08^2$, but similarly to

the effects of load on bullshit receptivity, this effect may be small enough to be considered

negligible. Scores on the Cognitive Reflection Task negatively predicted ratings of profoundness

for all item categories under both loading conditions (all ps < .05), with the exception of

Motivational quotes while under load (p > .05).

Table 5: Pearson product-moment correlations (*Study 1, n=100*). CRT = Cognitive Reflection

Task. ** $p < .01$, * $p < .05$

	BS Load	BS Noload	Quotes Load	Quotes Noload	Mundane Load	Mundane NoLoad	CRT
BS Load	—						
BS NoLoad	.86**	—					
Quotes Load	.53**	.46**	—				
Quotes Noload	.48**	.46**	.79**	—			
Mundane Load	.35**	.30*	.40**	.32**	—		
Mundane Noload	.29**	.25**	.33**	.31**	.92**	—	
CRT	-.21**	-.22**	-.13	-.17*	-.29**	-.29**	—

Discussion

The effects of loading on all item categories were either negligibly small or non-

significant. From these results it becomes clear why no interaction in Study 2 should have been

expected; receptivity of bullshit does not appear to be affected by this working memory task.

However, the same complication arising from the fact that the working memory task was verbal

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[2] As in Study 2, when only trials where participants perform perfectly are included, the observed effects change in a small way. The difference for mundane statements under load compared to free from load remained significant $t(188) = 2.56$, $p = .011$, $d = 0.07$, the effect for Pseudo Profound Bullshit remained significant $t(188) = 2.17$, $p = .032$, $d = 0.09$, and the difference for motivational quotes remained non-significant $t(188) = -.980$, $p = .333$, $d = 0.05$. Again, this likely reduces an observed effect of load by decreasing the impact of participants who struggled with the loading task.

may be present for this study. To find out the true role working memory plays, a visual working memory or speeded response task would need to be used for comparison. Interestingly, when removed from the context of a study explicitly concerning art, cognitive reflection again significantly predicted receptivity to bullshit as found in the original study by Pennycook et al. Rather than treat this as a random fluctuation, this pattern of results will be taken seriously and possibilities to explain it will be addressed in the General Discussion.

Chapter 6: General Discussion

Bullshit, Art, Meaning

Not only does the inclusion of Pseudo-Profound Bullshit alongside abstract art seem to enhance its perceived profoundness, but those who find Bullshit more profound generally also tend to find abstract art to be more profound. This cannot be wholly explained by people simply having lower thresholds for finding meaning, as this relation was not as strong for the 'truly' profound motivational quotes. If it were simply the case that people who find profoundness in Bullshit and abstract art tend to find more meaning in everything, surely this relation would be just as strong if not stronger for motivational quotes. Instead, I argue that there is some underlying commonality between Bullshit and abstract art at the conceptual level (see the next section), and Pseudo-Profound Bullshit and International Art English at the linguistic and stylistic level. To make the comparison again between a Pseudo-Profound Bullshit item and an example of International Art English: "unfold his ideas beyond the specific and anecdotal limits of his Paris experience to encompass a more general scope, a new and broader dimension of meaning" (Rule & Levine 2012) and the Pseudo-Profound Bullshit Item: "the future will be an astral unveiling of inseparability" there is an undeniable similarity in style and form. Further, it should be noted that in the studies presented here, the Pseudo-Profound Bullshit items, and the art titles were generated using two completely unrelated random generators, one making use of words commonly used by new-age gurus, and one mimicking the language of abstract artists. It would be an amazing coincidence that these two unrelated sets of items would relate as strongly as they do (r = .73, see table 1) if they were completely unrelated. Instead, people seem to be unable to distinguish between Pseudo-Profound Bullshit and International Art English as evidenced by their behavior. This provides evidence for the notion that International Art English,

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at least insofar as it was captured here, either taps into the same mechanisms as Pseudo-Profound Bullshit, or is simply Pseudo-Profound Bullshit itself.

The Role of Cognitive Reflection in Art Perception: Lay-Theories of Radical Subjectivity

In Study 1, performance on the Cognitive reflection task did not significantly relate to the receptivity to bullshit, nor to the perception of profoundness in abstract art. However, as found in Study 3 and as previously found by Pennycook et al, 2015, a consistent relation between scores on the Cognitive Reflection Task and receptivity to bullshit seems to exist. In the Introduction I raised a possibility that there exists a relatively common belief among artists that there can be no objective truth or meaning in art, especially in abstract art. I propose that a similar belief among people in the general public may also exist and that this could explain why no relation exists between Cognitive Reflection and Bullshit Receptivity exclusively in Studies conducted around abstract art. In Study 1, participants always completed the Cognitive Reflection Task after they had spent a significant amount of time evaluating the profoundness of Abstract art. Taking a model of decision making proposed by Keith Stanovich (Stanovich, 2009, 2018), the belief that there can be no objective truth or meaning found in abstract art may be a specific kind of Mindware that ensures no reflection would take place. A person who has this acquired belief does not need to reflect at all on the meaning of a piece of abstract art because if it is entirely subjective, no amount of reflection will ever be useful, and therefore reflection does not occur due to our tendency toward miserly cognition (Stanovich, 2018). After having gone through the exercise of evaluating 142 images of abstract art, this may prepare participants to make use of this belief of radical subjectivity when evaluating all items, including those of the bullshit receptivity scale. When participants encounter this scale outside of the context of a study concerning art, this belief may not be activated to the same degree and hence, the association

between reflection and bullshit receptivity can again manifest. This hypothesis would be testable in two ways easily: One, by repeating the design of Study 1 but counterbalancing the order of tasks, half of the participants would evaluate art and then complete the bullshit receptivity scale while the other half complete the tasks in the reverse order. The relation between CRT and bullshit receptivity should manifest for those who complete the bullshit receptivity scale *before* evaluating the art, while it should not be present in the group who evaluated art first. The second way this could be tested would be to ask participants whether they endorse the notion of radical subjectivity in art, and use that value as a predictor of the corresponding relation between cognitive reflection and bullshit receptivity. As addressed previously, the use of different tasks, such as speeded response or a visual working memory load, to bottleneck working memory may also help clear up the role reflection plays in the evaluation of art and bullshit. It cannot be ignored however, that Study 3 took place on Amazon's Mechanical Turk, which may present an entirely different population that may not be perfectly comparable to a university sample. This may have resulted in the case where there was more variance to detect in the Mturk population that was missing the experiments using a university population.

Future Directions and Limitations:

A key question that remains unaddressed is whether it is specifically the use of bullshit that can enhance the perceived profoundness of art, or whether any title, no matter how mundane, would enhance the perceived profoundness. Study 1 did not contain a condition where participants had some other adjacent information such as a mundane title, an artist signature, or a description of the piece which could also be used to enhance the perception of profoundness. It could be the case that participants would merely pick up on any additional information that may indicate that effort, thought, or a human hand went in to producing the piece of art and conclude

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via a heuristic of "if a human made/put effort into it then it is meaningful". This possibility could be addressed in a study where participants are told that half of the images they are to evaluate are artist-made and half are computer-generated and they must submit a guess as to whether a human or machine made a piece of art before they provide their evaluation. Presumably, if participants rely on cues that a human artist put effort into a piece of work before concluding that it is profound, there should be a large difference in perceived profoundness for trials where they guessed a computer had made the piece compared to when a human had. Additionally, simply repeating the design of Study 1 but including trials where the art is accompanied by a mundane title would reveal if something unique about bullshit is driving the advantage or if any adjacent feature would inform their evaluation.

The relationship between bullshit and International Art English needs to be explored directly and empirically, perhaps by exposing participants to both and seeing if they can be told apart reliably.

Conclusion

The perception of the meaningfulness of abstract art seems to be malleable, and seems to be affected by features outside of the visual content of a given image alone. Artists have capitalised on this by stumbling upon principles of Pseudo-Profound Bullshit and using this bullshit to enhance the prestige of their art, as in research on gaming, gambling, and addiction, research on the cognitive evaluation of art is merely playing catch-up to the practitioners. While it remains to be seen whether the enhancement of perceived profoundness is unique to bullshit, for now it can be concluded that at the very least, bullshit makes the art grow profounder.

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Expanded Bullshit Receptivity scale:

Original:

The Bullshit Receptivity Scale
1. Hidden meaning transforms unparalleled abstract beauty.
2. Good health imparts reality to subtle creativity.
3. Wholeness quiets infinite phenomena.
4. The future explains irrational facts.
5. Imagination is inside exponential space time events.
6. Your consciousness gives rise to a jumble of neural networks.
7. Your movement transforms universal observations.
8. Perceptual reality transcends subtle truth.
9. The invisible is beyond new timelessness
10. The unexplainable undertakes intrinsic experiences.
11. We are in the midst of a self-aware blossoming of being that will align us with the nexus itself.
12. Consciousness consists of frequencies of quantum energy. Quantum means an unveiling of the unrestricted.
13. Consciousness is the growth of coherence, and of us.
14. We are in the midst of a high-frequency blossoming of interconnectedness that will give us access to the quantum soup itself.
15. Today, science tells us that the essence of nature is joy.
16. As you self-actualize, you will enter into infinite empathy that transcends understanding.
17. The infinite is calling to us via superpositions of possibilities.
18. We are being called to explore the totality itself as an interface between serenity and intuition.
19. Throughout history, humans have been interacting with the dreamscape via bio-electricity.
20. The future will be an astral unveiling of inseparability.

Mundane Statements
1. Newborn babies require constant attention.
2. Most people enjoy some sort of music.
3. Lazy people usually don't succeed in life.
4. A balanced diet is important for maintaining good health.
5. Human cultures often differ from each other quite a bit.
6. People often have very bizarre dreams.
7. Higher rates of unemployment typically follow economic downturns.
8. Some things have very distinct smells.
9. Some people have poor taste in clothing.
10. Children sometimes look a lot like their parents.

Motivational Quotes

1. Your teacher can open the door, but you must enter by yourself.
2. The creative adult is the child who survived.
3. A river cuts through a rock, not because of its power but its persistence.
4. All endings are also beginnings. We just don't know it at the time.
5. Art and love are the same thing: It's the process of seeing tourself in things that are not you.
6. At the centre of your being you have the answer; you know who you are and you know what you want.
7. A wet person does not fear the rain.
8. Forgiveness means letting go of the hope for a better past.
9. Only those who will risk going too far can possibly find out how far one can go.
10. I wonder how many people I've looked at all my life and never seen.

Additional items added for Study 3:

Motivational Quotes:

From: https://www.brainyquote.com/topics/motivational

1.Always do your best. What you plant now, you will harvest later.
2. Be kind whenever possible. It is always possible.
3. Well done is better than well said.
4. Don't watch the clock; do what it does. Keep going.
5. The harder the conflict, the more glorious the triumph.
6. Every exit is an entry somewhere else.
7. The will to succeed is important, but what's more important is the will to prepare.
8. You can't build a reputation on what you are going to do.
9. Do not wait to strike till the iron is hot; but make it hot by striking.
10. A good plan violently executed now is better than a perfect plan executed next week.

Mundane Items:

1. People often disagree about current events in the news.
2. Some people are taller than others.
3. Some people feel strongly about which sports teams they cheer for
4. Technology has changed a lot about how we live.
5. Objects thrown into the air will usually fall back down.
6. There are many different species of birds on Earth.
7. Many tall buildings are made out of sturdy materials.
8. Some people have made a lot of money on the stock market
9. There are many different languages spoken around the world
10. Exercising regularly can improve a person's health

Wordsum

Malhotra, N., Krosnick, J. A., & Haertel, E. (2007).

A. SPACE   1. school 2. noon 3. captain 4. room 5. board 6. don't know
B. BROADEN   1. efface 2. make level 3. elapse 4. embroider 5. widen 6. don't know
C. EMANATE   1. populate 2. free 3. prominent 4. rival 5. come 6. don't know
D. EDIBLE   1. auspicious 2. eligible 3. fit to eat 4. sagacious 5. able to speak 6. don't know
E. ANIMOSITY 1. hatred 2. animation 3. disobedience 4. diversity 5. friendship 6. don't know
F. PACT   1. puissance 2. remonstrance 3. agreement 4. skillet 5. pressure 6. don't know
G. CLOISTERED 1. miniature 2. bunched 3. arched 4. malady 5. secluded 6. don't know
H. CAPRICE   1. value 2. a star 3. grimace 4. whim 5. inducement 6. don't know
I. ACCUSTOM 1. disappoint 2. customary 3. encounter 4. get used to 5. business 6. don't know
J. ALLUSION   1. reference 2. dream 3. eulogy 4. illusion 5. aria 6. don't know

Actively Open-Minded Thinking Scale:

(Stanovich & West, 1997).

Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

What beliefs you hold have more to do with your own personal character than the experiences that may have given rise to them.

I tend to classify people as either for me or against me.

A person should always consider new possibilities.

There are two kinds of people in this world: those who are for the truth and those who are against the truth.

Changing your mind is a sign of weakness.

I believe we should look to our religious authorities for decisions on moral issues.

I think there are many wrong ways, but only one right way, to almost anything.

It makes me happy and proud when someone famous holds the same beliefs that I do.

Difficulties can usually be overcome by thinking about the problem, rather than through waiting for good fortune.

There are a number of people I have come to hate because of the things they stand for.

Abandoning a previous belief is a sign of strong character.

No one can talk me out of something I know is right.

Basically, I know everything I need to know about the important things in life.

It is important to persevere in your beliefs even when evidence is brought to bear against them.

Considering too many different opinions often leads to bad decisions.

There are basically two kinds of people in this world, good and bad.

I consider myself broad-minded and tolerant of other people's lifestyles.

Certain beliefs are just too important to abandon no matter how good a case can be made against them.

Most people just don't know what's good for them.

It is a noble thing when someone holds the same beliefs as their parents.

Coming to decisions quickly is a sign of wisdom.

I believe that loyalty to one's ideals and principles is more important than "open-mindedness."

Of all the different philosophies which exist in the world there is probably only one which is correct.

My beliefs would not have been very different if I had been raised by a different set of parents.

If I think longer about a problem I will be more likely to solve it.

I believe that the different ideas of right and wrong that people in other societies have may be valid for them.

Even if my environment (family, neighborhood, schools) had been different, I probably would have the same religious views.

There is nothing wrong with being undecided about many issues.

I believe that laws and social policies should change to reflect the needs of a changing world.

My blood boils over whenever a person stubbornly refuses to admit he's wrong.

I believe that the "new morality" of permissiveness is no morality at all.

One should disregard evidence that conflicts with your established beliefs.

Someone who attacks my beliefs is not insulting me personally.

A group which tolerates too much difference of opinion among its members cannot exist for long.

Often, when people criticize me, they don't have their facts straight.

Beliefs should always be revised in response to new information or evidence.

I think that if people don't know what they believe in by the time they're 25, there's something wrong with them.

I believe letting students hear controversial speakers can only confuse and mislead them.

Intuition is the best guide in making decisions.

People should always take into consideration evidence that goes against their beliefs.

Cognitive Reflection Task Composite:

Problems 1-4 from Toplak, West, & Stanovich (2014)

Problems 5-8 from Thomson & Oppenheimer (2016)

Problems 9-11 from Frederick (2005)

Problem 1

If John can drink one barrel of water in 6 days, and Mary can drink one barrel of water in 12 days, how long would it take them to drink one barrel of water together? _____ days

Problem 2

Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class? _____ students

Problem 3

A man buys a pig for $60, sells it for $70, buys it back for $80, and sells it finally for $90. How much has he made? _____ dollars

Problem 4

Simon decided to invest $8,000 in the stock market one day early in 2008. Six months after he invested, on July 17, the stocks he had purchased were down 50%. Fortunately for Simon, from July 17 to October 17, the stocks he had purchased went up 75%. At this point, Simon (circle your answer):

a) has broken even in the stock market
b) is ahead of where he began,
c) has lost money

Problem 5

If you're running a race and you pass the person in second place, what place are you in? _____

Problem 6

A farmer had 15 sheep and all but 8 died. How many are left? _____

Problem 7

Emily's father has three daughters. The first two are named April and May. What is the third daughter's name? _____

Problem 8

How many cubic feet of dirt are there in a hole that is 3' deep x 3' wide x 3' long? _____

Problem 9

A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? _____ cents

Problem 10

If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? _____ minutes

Problem 11

In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for

the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

_____ days

Appendix B: Generation Tools

Art: http://bomomo.com & http://windowseat.ca/viscosity/create.php

Titles: http://noemata.net/pa/titlegen/