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Is There a Relationship Between Art and Theory of Mind? A Review of Findings

Christina M. Brucker, Dale Phillips, PhD.

Abstract

Art interpretation, or perception of art, reflects the intrapersonal relationship to emotions, thoughts, and seductions that a person experiences while viewing artwork (Barret, 2002). Alongside the importance of artwork interpretation, Theory of Mind (ToM) can be defined as the capacity to imagine or form opinions about the cognitive states of others (Pam, 2016). Together, art interpretation and the measure of one's Theory of Mind could provide further insight into those with weaker ToM abilities. The purpose of this research is to discover whether a relationship between Theory of Mind and art interpretation exists for future directions such as art therapy or ToM interventions.

Introduction

The question in the following study was whether a cognitive process in regard to empathy, such as Theory of Mind, has any relationship to interpreting artwork. This is important to discover because Theory of Mind is an ability that could potentially strengthen through art making or looking at art. Therefore, one could become more empathic through art processes, which is a technique commonly used by art therapists, counselors, and psychotherapists who believe that increasing an individual's capacity for creative thinking and behavior through art helps to reduce emotional distress or conflict and enhances understanding of oneself and others (Malchiodi, 2007). Understanding and building upon Theory of Mind abilities is important for all populations, but is especially important to examine in children with Autism who have been found to alter Theory of Mind skills. Deficits in ToM significantly impact the quality of their social interactions shown by neuroimaging studies of altered activation of the ToM cortical network (Kana, 2015). Kana's (2015) research found reduced activation in core Theory of Mind brain regions and several networks involved with ToM, which provided insight into the social cognition in children with Autism. Because some children with Autism are nonverbal, meta-verbal communication, defined by Malchiodi (2007) as expressing feelings without using words, using art therapy or interpretations could be a potential solution. Meta verbal communication with art therapy can also serve the same purposes for other disorders with etiologies that include low empathy or low of ToM abilities, as according to Malchiodi's research, art conveys powerful messages both conscious and unconscious about our bodies and minds, which is an effective therapy for those who are confronting illness or symptoms (2007). Several studies, including Mitchell (2016) have examined ToM deficits in disorders such as Schizophrenia and Bipolar Disorder to better

understand the cognitive processes involved and whether or not the ability could be improved. Mitchell (2016) found that Theory of Mind in Bipolar Disorder and Schizophrenia was difficult to consolidate due to the complexities; however, their extensive research and literature review found optimism in improving Theory of Mind in these disorders. Further, the research suggested that Schizophrenic patients with thought disorder was the only group with impaired ToM abilities when given The Reading the Mind in the Eyes test, which was a strong predictor of global positive symptoms. The Reading the Mind of the Eyes test is a well researched assessment tool for Theory Of Mind and will be discussed in further detail. The finding in this study is important because it suggests a link between Theory of Mind impairment and specific symptoms of psychosis. Holistically, Mitchell (2016) found that if the neurodevelopmental nature of Schizophrenia and its timing mitigate against ToM (Korkman 2007) abilities, the less pronounced neurodevelopmental processes behind adult forms of Bipolar Disorder could be taken to indicate greater potential for therapeutic success in attempts to remediate Theory of Mind impairment in Bipolar Disorder.

To specifically understand Theory of Mind holistically as a cognitive process, the development of the ability is essential to consolidate. Korkman (2010) describes the human infant becoming socialized through the acquisition of a specific cognitive mechanism known as Theory of Mind, described as a set of intellectual abilities that enable us to understand that others have beliefs, desires, hopes, plans, information, and intentions that may differ from our own. In conjunction to Mitchell (2016), Korkman restates that various neurodevelopmental disorders such as Autism Spectrum Disorders, Attention Deficit Hyperactivity Disorder, Developmental Language Disorders, and Schizophrenia impair Theory of Mind. Precursors of ToM development include nonverbal communication that begins to function at birth, such as emotional contact between the mother and child that involves reciprocity, engagement, empathy, and imitation. Korkman (2010) identified the crucial difference between empathy and Theory of Mind, in that empathy is intuitive and is an emotional awareness of others' feelings and is a reaction to another's mental state, ToM is a more complex cognitive ability which requires grasping the other person's perspective. Further, the development of ToM continues in abilities such as perceiving faces, distinguishing between the mother and unfamiliar faces, and recognizing facial emotions and expressions are vital and happen from the moment of birth, and merge so that perception becomes social perception, which is the basic neuropsychological function that opens the door to Theory of Mind Development. ToM, or the [capacity](#) to imagine or form opinions about the cognitive states of other people such as: "What does the other person know, what route of [behavior](#) is that person most probable to pursue?" is a vital [element](#) of the thought process that is attempting to credit beliefs, aims, or wishes to other people. Particularly, this thought process is an effort to foretell their actions. It starts to show up around 4 years of age in humans, which also makes developmental psychology important to consider (Pam, 2016). Specifically, Korkman (2011) explained that the social interactions that children experience with peers and adults triggers and promotes spontaneous development around this age (3-4) without any formal instruction or effort. Further, Korkman (2011) elaborated that Theory of Mind development depends largely on mental/physical manifestations of feelings and others, memory systems including short-term and long-term declarative memory, emotional memory, and source memory that

coincides with autobiographical memory but is independent in episodic memory, language (which can also be an early predictor of ToM ability) because the skill requires higher orders of verbal thought such as changing natural concepts to social concepts, direct experiences and being told about false beliefs in selves and others, executive functions such as deduction and estimating, perspective-taking that requires the knowledge that one individual has different perspective than another and distinguishes between self and others, social/environmental factors such as conversational elaboration and interactions, and sums up that the whole of childhood from kindergarten to the end of secondary school involves gaining and refining ToM ability.

The importance of understanding Theory of Mind and its development lies in formulating paths to strengthen those with weak ToM. The development has important consequences on children's social interactions, behavior,, and essential aspects of spontaneous mental state inference for moral judgment, cognition, and emotions such as teasing, blushing, embarrassment, and feeling trust (Korkman, 2011). Children most likely to suffer from underdeveloped ToM include those with neurodevelopmental disorders, such as autism, schizophrenia, bipolar affective disorder, ADHD, personality disorders, congenital blindness/deafness, and developmental language disorders (Korkman, 2011).

Because assessment is crucial in any type of deficit, it is important to outline the type of task required in examining Theory of Mind. One brief example of a ToM task that is often used to further enhance understanding of the concept is called the False-Belief Task Lewis (2011):

Johnny is shown a box with "candies" written across the top. The evaluator asks: "What do you think is inside this box, Johnny?" Typically, the child would respond, "candy." When the box is opened and reveals pencils, Johnny is then asked, "What do you think Suzie would think is inside this box?" The typical answer is "pencils." Johnny is presumed to have weaker ToM because he is not able to relate to Suzie's mental state of mind, i.e., her not knowing the content of the box prior to it being opened. If Johnny replied "candies" he would understand that like him, Suzie would suspect the same content without the knowledge.

ToM emphasizes the recognition and understanding of others' various emotion states, whereas empathy involves sympathy and matching the emotional states of others (Goldstein & Winner, 2012). Numerous valid assessments have been developed to assess ToM, including the aforementioned False-Belief Task, Theory of Mind subtest of The Developmental NEuroPSYchological Assessment, Second Edition (NEPSY-II), Strange Stories Test, Reading the Mind in the Eyes Test, and others (Prelock, 2011).

To connect a complex thought process such as Theory of Mind to the creative process such as Art Therapy begins by, to the best ability, defining what it means to interpret artwork. "Art has become incomprehensible. Perhaps nothing so much as this fact distinguishes art today from what it has been at any other place or time. Art has always been used, and thought of, as a means to interpreting the nature of world and life to human eyes and ears; but now the objects of art are apparently among the most puzzling implements man has ever made. Now it is they that need interpretation" (Arnhiem, 1966, p. 7).

A brief understanding of the opposite genres of artwork should be defined. Non-representational artwork (abstract) is that in which the artist does not supply content,

rather leaving it for the viewer to decide (Lane, 1998). The Museum of Modern Art defines representational art as merely the opposite, the visual portrayal of someone or something (2015).

The next relevant idea to consider is how the general population perceives and prefers art on the spectrum of non-representational to representational artwork. A study conducted by Roubertoux, Carlier, & Chaguiboff (2011) used a valid, consistent, and reliable scale to measure aesthetic preference in the visual domain and found that two groups of people emerged, those that showed a preference for non-representational art and those that preferred representational art. The higher mean scores were obtained from the group that preferred non-representational artwork, but the study suggested that the socio-cultural background of this group's families was significantly lower than the other group (Roubertoux, Carlier, & Chaguiboff (2011). However, the preferences of culture vastly change over time, and as such, new preference data could be different in 2015.

The therapeutic element through art making and the abovementioned developmental aspect of ToM development; visual empathy achieved through art led Franklin (2016) to conduct research based on mirror neurons (neurons fired when you do an action, and also when you watch others do an action) in regard to art therapy interventions. The study found that with careful symphony, art therapists can develop unique, aesthetic forms of empathic fullness through art making that will help clients feel deeply seen and develop empathy for themselves and compassion for others (Franklin, 2016). Because empathy is an enhancement of ToM, it is likely that the same effects would occur with the same art processes attempting to enhance this ability. Linking ToM and the interpretation of art, Keskin (2015) contended that these concepts involve some symbolic capability, and that the link between them was explained through symbolism. The relevance of her claim is that when analyzing artwork, the viewer requires an understanding of 'the real' (what is immediately seen/symbols) of the artwork and the represented (what the symbols are referring to). The cognition's involvement with ToM includes these exact concepts in different terms, understanding the reality of another person and that in which they are thinking (mental states). A study conducted by Heinrich (2012) suggested that "constructing a theory of mind and representation meta-levels is already a theory, especially in performance settings, which overtly deal with positioning performers (sender) and spectators (receivers), empathy is already a communication act and thus (at least) proto-theoretical reflection. Gadamer's rediscovery of the ancient *theoria*, underpinned by the theory of mind, enfolds a double movement: distances establishing and minimizing movement. This correlates with Luhmann's distinction between perception (as the physiological and phenomenological aspects of the art-experiencing person) and communication (as interpretation of information and messages). In (performance) art, this constant observation shift between communication and perception is clearly based on the ability to form meta-representations of the perceived." Heinrich also concluded the viewing performance of arts to perspective taking (ToM) as linking the contemplative observation (theory) back to the unfathomable object of observation in a cyclic motion; in which the object (art) is both the performer and the viewer's own "fleshness." Heinrich symbolically writes fleshness as a point of interest in that performance art is presented as absolute presence, and that flesh can only be perceived through a reflective bearing (Heinrich, 2012).

Due to evidence supporting that strong ToM is important because it has lineage

to empathy, many useful assessments to evaluate ToM should be supported. Additionally, an assessment designed to assess ToM while creating or interpreting art should be further researched, especially because art already holds a place in schools. Furthermore, as schools evolve to research-based curriculum, the more evidence is needed to support art teachers and provide interventions that involve using ToM to interpret or create artworks. The deficit of ToM shown in children with Autism as well as other disabilities or disorders also play an important role in this research because specific art interventions to improve ToM could serve as a major benefit once assessed and intervened. Most ToM tasks involve either visual stimuli or interpretation of a presented situation; therefore, the significant relevance between the two is clear. As with empathy, art and ToM can coincide address to different cognitive, behavioral, and emotional deficits. The power of art alone is enough to be used as an intervention (Pearson & Wilson, 2009) who found that expressive therapies (creative therapies) include the use of tools that facilitate expression without the focus on language and emphasized that it marries creativity with psychodynamic focus as well as individual style, which can lead to emotional relief, and creating a doorway that leads to positive changes in behavior, beliefs, attitudes, and relationships. However, the more research that is done between ToM and art, the more beneficial art will become.

The following study examines the possible relationship between art and ToM and hypothesized that the stronger Theory of Mind abilities an individual had, the more likely he/she would be to favor non-representational artwork, and that the weaker ToM individuals would prefer representational artwork strongly in that he/she was unable to take the perspective of the artist to appreciate the non-representational style of abstract artwork.

Methods

The study began with participants ranking 20 pieces of art based on their personal preferences using a scale (1-20). For example, if a participant favored Artwork #7 the most, he or she will wrote (1) in the provided space. The survey had a range of 20 artworks to choose from, researched and pulled together with the researcher and an art history expert, Dr. Costanzo, with extensive research on appropriate representations for each genre selected. Dr. Costanzo began by breaking the spectrum into three segments, Abstract, Realist, and Representational but not Realist. Dr. Costanzo's expert opinion suggested finding masterwork pieces for each category, which was revised and researched several times until each painting represented the spectrum respectively. Dr. Costanzo also assisted with the presentation of the images to select the most quality and fair to the artworks; where they would laminate, numbered, and represented professionally. The artworks represented clusters of representational, nonrepresentational, and representational but not realistic spectrum. The artworks were randomized and displayed as high-quality posters for the participants to look at. The survey allotted for a numerical representation of the likeliness spectrum chosen by the viewers. The organized style allowed for participants to quickly but carefully arrange the preferences respectively. When the participants categorized the artworks in order of preference, and completed the artwork survey, they moved to phase 2 of the study. Phase 2 consisted of participants completing the "Reading in the Mind in the Eyes Test." The Reading the

Mind in the Eyes Test, developed by Simon Baron-Cohen (1997) administers a series of 36 photographs of the eye-region of the face of different actor and actresses with a multiple choice options of different emotions that correlate with the appearance of the eyes. The test has been validated and normed across cultures (Vellante et al., 2013) to better predict one's ToM abilities and is now recognized as an "advanced theory of mind test" that measures the first stage of attribution for ToM (compassion) but not inferring the content of that mental state (e.g., compassion for mother's loss). Though The Reading the Mind in the Eyes test has improved with its content and usages, it is important to note that there are still limitations within the test, such as that the stimuli is still and static and the real world is not (Baron-Cohen, Wheelright, Hill, Raste, & Plumb, 2001). The test was developed at first to develop an adult test of social sensitivity, which is similar to the revised version of the test. Specifically, the original test measured how well the participant can put themselves into the mind of the other person, and "tune in" to their mental state; thus being described as a test of advanced Theory of Mind. Due to the limitations of the original test, Baron-Cohen revised the test in effort to render a test with a more sensitive measure of adult social intelligence and has strong implications for examining adults on the Autism Spectrum (Baron-Cohen et. al., 2001). The psychometric properties of the Reading the Mind in the Eyes test are as follows: Internal consistency (Cronbach's alpha) = .605. Confirmatory factor analysis provided evidence for a one-dimensional model, with maximal weighted internal consistency reliability.719.

A study (Cohen, et. al, 2001) found that the test-retest reliability for "the Eyes test", as measured by intraclass correlation coefficient, was .833 (95% confidence interval .745 to .902). Females scored significantly higher than males on both the Eyes test and the EQ, replicating earlier work. Those participants who scored lower than 30 on the EQ (n=10) also scored lower on the Eyes test than those who did not (pB.05). Eyes test scores were not related to social desirability. This study confirms the validity of the Eyes test. Simon Baron-Cohen, professor of Developmental Psychopathology at Cambridge University, developed the test. Specifically, the test asks participants to choose a word that describes what the person in the photograph is thinking or feeling, i.e., angry. Similar options may appear, but the participant is asked to choose the BEST and most suitable answer, after reading all of the options. The participants are asked to complete the test as quickly as possible, but are not timed. The test has 36 pairs of eyes that serve as questions for the participant to complete.

Participants

Participants were 50 college-age student **volunteers**, ranging in race, gender, art experience, and age. All data collected was consented for and kept anonymous.

Materials

Materials consisted of the artwork survey and the research-based Theory of Mind test: Reading the Eyes in the Mind, which potentially served as a second survey.

Procedures

1. The design of the study was correlational, as the researchers were trying to determine if there was any connection to preference of representational and on representational art and one's theory of mind, according to the hypothesis.
2. Important instructions to the participants were as follows:

Participants were asked to sign the provided consent form to participate in the study—an incentive of extra credit was provided for volunteers in the classroom setting.

Participants were instructed to complete the provided artwork rating survey after having an opportunity to analyze 20 pieces of artwork presented as high-quality posters; they were not timed.

After participants completed the artwork portion of the study, they were instructed to complete the “Reading the Mind in the Eyes” test; again, the participants were not timed.

Results

The results of this study demonstrated that there is a relationship between the preference for non-representational artwork and ToM abilities. The main finding was that preference for non-representational artwork was the best predictor for strong ToM abilities (.60). This was demonstrated by the negative correlation between ToM and Abstract art, meaning that the people who preferred Abstract art were more likely to score high on the ToM test. Sensibly, there was also a negative correlation amongst representational artwork, as the more representational art preferred, the less abstract art was liked ($r = -.61$).

Regression data revealed that ToM scores was the variable most likely to predict preference for abstract art. The dependent variable was the Abstract Art Score and the predictor variable was the Representational Art Score. The significant finding emerged with the Abstract Art score significance of (.17), when the dependent variable was ToM score. This regression analysis indicates how much the variation of Abstract Art score is shared by the other variable, ToM Score. The findings are demonstrated in the charts below.

Table 1
Descriptive Statistics

Variable (<i>n</i> =50)	Standard Deviation	Skewness	Kurtosis
Age	2.25	1.30	1.87
School Year	.99	-.25	.66
Relationship Status	1.06	2.64	8.86
Gender	.40	1.54	.40
Ethnicity	1.10	2.22	5.29
Art Classes	2.02	2.82	8.58
ToM Score	3.68	-.71	.76
Abstract Art Score	12.4	.08	-.79
Representational Art Score	13.5	-.30	-.92

Table 2-*Correlations that emerged between variables, especially the dependent variable, ToM*

Score

	School Year	Relationship Status	Gender	Ethnicity
School Year	1	-.00	.22	.00
Status	-.00	1	.11	.32
Art Classes	-.11	.17	-.07	-.03
Abstract Art Score	.05	.16	.19	.31
Representational Art Score	.00	-.31	-.04	-.28
Age	.52	.10	.21	-.02
ToM Score	-.09	-.05	.01	-.24

	Art Classes	Abstract Art Score	Representational Art Score
School Year	-.11	.05	.00
Relationship Status	.17	.16	-.31
Gender	-.07	.19	-.04
Ethnicity	-.03	.31	-.28
Art Classes	1	.08	-.15
Abstract Art Score*	.08	1	-.60
Representational Art Score	-.15	-.60	1
Age	.02	.07	-.02
ToM Score	.14	-.34	.27

* .00= $p < .05$

Discussion

Although the research has reached its aims, there were some unavoidable limitations. Limitations of this study consisted of lack of prior research studies on the topic, in that the scope of former research linking Theory of Mind to the interpretation of artwork is limited. The layout of this study was original in the methods aimed at linking the two variables, which made this current study exploratory. This limitation provides the need for further research in the idea that art interpretation could correlate with Theory of Mind. Second, the population of the experimental group was small, consisting of 50 participants and may not have represented the majority of individuals within the age group. The importance of future research examining a vast population with a variable age group could provide stronger evidence that individuals with stronger Theory of Mind prefer abstract artwork.

The significance of these findings entails future directions for art therapists, school psychologists, art teachers, parents, or anyone in related fields. Specifically, future work should be aimed at addressing some of the shortcomings of the current study,

such as expanding the population and extending the ideas explored to address several other relevant aspects of Theory of Mind, Art Therapy, and interventions for kids with ToM deficits. As abovementioned, it will be important to explore the correlation between Art Therapy and Theory of Mind in order to gain higher-level understanding of this relationship. The extension of the population participating would provide insights such as a stronger found link between those that prefer abstract artwork having higher ToM abilities and contrarily, that those with ToM deficits prefer representational artwork. Theory of Mind abilities assessment is relevant for social intelligence needed to coexist amongst others in school, jobs, and home. Future research aimed at increasing Theory of Mind abilities will strengthen intervention possibilities. Similarly, further research in increasing ToM or empathy through Art Therapy would provide experts with specific and interactive approaches to working with struggling children. In that strong ToM abilities and preference for non-representational artwork relationship exists, it is suffice to say that teachings of abstract art, how to accomplish it, and studying abstract artists opens the door for many people struggling with weak ToM abilities. As it has been proven numerous times, those with autism tend to have a difficult time relating to others or demonstrating empathy. With abstract artwork as a tool belt, it is a possibility that their ToM abilities could improve over time. As negative social interactions are also problematic in schools, implications from this study shows that it is possible to utilize artwork as a means for a connection with one another; potentially reducing bullying, ostracizing, or functions as individuals versus a whole in a school environment.

Conclusion

The objective of this study was to examine whether or not a relationship between ToM abilities and preferences for non-representational/representational artwork existed. To accomplish this, a correlational study that dissected each variable of the participants with their score on a test measuring Theory of Mind was conducted; with findings suggesting that preference for non-representational artwork and strong Theory of Mind correlates. In other words, the more a participant gravitated toward nonrepresentational artwork; their ToM test score was apt to be higher. Interestingly, this occurred as a positive correlation, meaning that both variables will rise and fall in conjunction with one another. The common logic that art has nothing to do with psychological processes was tested via this project, allowing the researcher to confidently believe that in this case, the hypothesis could be nullified. Future understandings or research based off of this hypothesis would strengthen that argument. With the significant results, many implications were discussed. Though this study should be confirmed in regard to results, the findings should not be taken lightly. The future of increasing understanding toward one another is crucial; and with similar or concrete findings, it is possible to accomplish many different positive directions in regard to empathy and accepting perspectives in daily lives.

References

- Adams, R.B., Rule, N.O., Franklin, R.G., Wang, E., Stevenson, M.T., Yoshikawa, S.,
Nomura, M., Sato, W., Kveraga, K., & Ambady, N. (2010). Cross-cultural

- reading the mind in the eyes: an fMRI investigation. *Journal of Cognitive Neuroscience*, 22 (1).
- Alic, M. (2009) Theory of Mind. Retrieved from Education.com/School and Academics/Classroom learning.
- Autismspeaks.org
- Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., Plumb, I. (2001). The “reading of the mind in the eyes” test revised version: a study of normal adults, adults with Asperger’s, and adults with high-functioning autism. *Journal of Child Psychiatry*, 42 (2).
- Can You Read People's Emotions? (2013, October 3). Retrieved September 29, 2015.
- Davies, P., Simon, D., Denny, W., Roberts, A., Hofrichter, F., & Jacobs, J. (2007). *Janson's History of Art: The Western Tradition* (7th ed.). Prentice Hall.
- Franklin, M. Affect Regulation, Mirror Neurons, and the Third Hand: Formulating Mindful Empathic Art Interventions. (2016). *Journal of American Art Therapy Association*, 1.
- Goldman, A. Theory of Mind. (2012). *Oxford Handbook of Philosophy and Cognitive Science*, 1.
- Goldstein, T., & Winner, E. (2012). Enhancing Empathy and Theory of Mind. *Journal of Cognition and Development*, 19-37.
- Heinrich, F. (2012). Flesh as communication—body art and body theory. *Contempaesthetics*.
- Kana, R. K., Maximo, J. O., Williams, D.L., Keller, T.A., Schipul, S.E., Cherkassky, V.L., Just, M.A. (2015) Aberrant functioning of the theory-of-mind network in

- children and adolescents with autism. *Molecular Autism*, 6(1).
doi:10.1186/s13229-015-0052-x
- Keskin, B. (2015). How would theory of mind play a role in comprehending art? *Early Child Development and Care*, 179(5), 645-649.
- Korkman, M., Kirk, U., & Kemp, S. (2007b). NEPSY-II: *Clinical and interpretive manual*. San Antonio, TX: The Psychological Corporation.
- Lewis, M. (2012). False believe task. Retrieved from
cognitiveatlas.org/task/false_belief_task
- Malchiodi, C. A. (2007). *The art therapy sourcebook*. New York: McGraw-Hill.
- Mitchell, R., Young, A. (2016). Theory of Mind in Bipolar Disorder with Comparison to the Impairments Observed in Schizophrenia. *Frontiers in Psychiatry*, 16-17.
- Pearson, M., & Wilson, H. (2009). *Using expressive arts to work with the mind, body and emotions theory and practice*. London: Jessica Kingsley.
- Prelock, P. (2011). Innovations in Theory of Mind Assessment & Intervention for Children with ASD. *College of Nursing & Health Sciences*.
Retrieved from <a href=<http://psychologydictionary.org/theory-of-mind/> title="THEORY OF MIND">THEORY OF MIND
- Roubertoux, P., Carlier, M., & Chaguiboff, J. (2011). Preference For Non-Objective Art: Personal And Psychosocial Determiners*. *British Journal of Psychology*, 62(1), 105-110.
- Seyfarth, R.M, Cheney, D.L. (2013). Affiliation, empathy, and the origins of theory of mind. *Proc National Academy of Science*.
- Sullivan, K. (2009). The Languages of Art: How Representational and Abstract Painters

Conceptualize Their Work in Terms of Language. *Poetics Today*, 517-560.

The Metropolitan Museum of Art - Home. (n.d.). Retrieved September 28, 2015.

Vellante, M., Baron-Cohen, S., Melis, M., Marrone, M., Petretto, D., Masala, C., & Preti, A. (2013.). The “Reading the Mind in the Eyes” test: Systematic review of psychometric properties and a validation study in Italy. *Cognitive Neuropsychiatry*, 326-354.