

# Deciphering the links that bind mental illness and creativity

## **Abstract**

For millennia, a link between mental illness and creativity has been implied; however, the scientific literature around this topic has been controversial. Consequently, the purpose of this study was to perform a systematic review of the literature to determine the current state of knowledge pertaining to the links between mental illness and creativity. Study after study of those with serious mental illness show that these individuals face high levels of stigmatization, unemployment rates and low self-esteem. This in turn impacts the determinants of health such as socioeconomic status and social support of these individuals, leading to poorer health outcomes. Consequently, a review showing a link between creativity and mental illness would affect these determinants of health by informing the types of social programs from which these individuals might benefit. To undertake this review a list of search terms and keywords were generated. This list was then used to search for articles in key biomedical databases such as Medline, PsycINFO and Embase. Inclusion and exclusion criteria were applied to the articles and articles were assessed for quality based on selection bias, study design, confounders, blinding, data collection methods and withdrawals/dropouts. Preliminary results indicate that there is a strong link between bipolar disorder and creativity and no link between depression and creativity. The link between schizophrenia and creativity appear two-fold – while having the disease is negatively correlated with increased creativity, having a predisposition to experiencing the positive symptoms of this disease and a family history of the disease is positively correlated to the disease. Therefore, in conclusion, the link between creativity and mental illness appears to depend on the disorder and the type of symptoms within a disorder being studied.

**Keywords:** mental disorder, creativity, bipolar disorder, schizophrenia, depression

## **Background to Agency and Research**

In 1987, Lisa Brown, a nurse at the Centre for Addiction and Mental Health (CAMH) had envisioned a program that would bring together individuals struggling with mental health and addiction issues in the common pursuit of art. During her time at CAMH, she had noticed that not only did her patients display immense talents in the arts, but they also found that partaking in artistic activities was therapeutic. Out of this vision and observations was borne the Workman Arts Project of Ontario (1). The following report will outline the project that was conducted under the supervision of now executive artistic director of Workman Arts (WA) Ms. Lisa Brown and CAMH education scientist, Dr. Sophie Soklaridis.

In keeping with Ms. Brown's original vision for this organization, WA's mission includes nurturing creative talent within individuals with mental health issues of all talent levels, from the novice to the professional. As well, this organization engages in various art projects geared towards increasing public awareness of mental health issues. They provide training programs to artists and provide venues in which to showcase their talents. At its inception in 1987, WA began as a group of only eight members; however, over the past twenty-five years, WA has flourished into a professionally recognized multidisciplinary arts company with membership of over 250 artists. Furthermore, over the years, WA has put on a number of shows in a variety of artistic disciplines including more than 20 original full-length plays, 19 "Rendezvous with Madness" film festivals, 10 yearly "Being Scene" art exhibitions and the "Madness and Arts" world festival (2). Recently, this organization also ran the art project "Beneath the surface" that presented visual stories of 6 of their members on TTC subway screens all over the city for a week in order to mark World Mental Health Day in October of this year (3).

As stated above, the target population of WA is individuals with mental health and addiction issues. As such, membership is open to anyone who lives in and has acquired services for mental health or addiction in the Greater Toronto Area. Membership in this organization is free. WA is a not-for-profit organization and thus relies on its sponsors such as CAMH, Ontario Arts Council, Canadian Heritage, and Canada Council for the Arts to sustain their programs. Additionally, money generated from the sales of tickets to the art shows go towards the running of the training programs, execution of the art shows and the providing of employment opportunities for members (2).

While not a direct provider of health care services, WA fits into the health care system by providing an environment of support to a population that has faced stigmatization (4), high unemployment rates (5) and low self-esteem (6). WA addresses the stigma associated with mental illness through its public art shows. Furthermore, WA provides some of its members with employment opportunities, thus attempting to overcome the employment issues faced by this population. Lastly, member testimonials regarding their experience in engaging with WA in the various art programs and projects have shown the positive impact this organization has had on their self-image (2).

In addition, WA has been engaged in various research endeavours to explore the need and demonstrate effectiveness of such a program. One such project examined whether undergoing art training at WA improved the quality of life of its members. The most striking result was the reported improvement in health as a result of the program (7). Furthermore, WA cultivates and promotes the engagement in art and creativity of those individuals with mental health issues. As such, a positive link between the presence of mental illness and creativity would warrant the need for an organization such as WA as an effective way to engage these

individuals in society. Consequently, the current project involved conducting a systematic review to look at the links between creativity and mental illness in the context of determining whether there is a positive association between the presence of mental illness and an increased propensity towards creativity.

For centuries, a link between creativity and mental illness has been postulated. The first connection between these two concepts is believed to have been brought forward in ancient Greece by Plato who is quoted as saying “*Some of our greatest blessings come from madness, which is given by the gods to help us achieve the greatest happiness*”. His student Aristotle was later quoted as saying “*poetry demands a man with a special gift for it, or else one with a touch of madness in him*” (8). However, while there have been several references to this connection between creativity and mental disorders throughout history, the presence of this link in the scientific literature has been controversial. In 1998, Waddell conducted a review of the literature to try and decipher the strength of the linkage. She evaluated 29 studies that looked at the association between creativity and mental illness. Of these, 15 showed no evidence to link the two concepts, 9 showed a link and 5 were inconclusive (9). As a follow-up to this study, Lauronen et. al. tried once again to clarify the connections between creativity and mental illness in 2004. Of the 13 studies they reviewed in-depth, all but one of these studies showed a positive association, but the association seemed to depend on the type of psychiatric diagnosis (10). Consequently, since the above two reviews were not completely conclusive in the links between mental illness and creativity, and because of the large enough amount of time that has passed since the last review and now, we believed that another review in this area was warranted to update the literature.

As mentioned earlier, those suffering from mental illnesses are among those in our population that face high levels of stigmatization (4) and unemployment (5), as well as low self-esteem (6). Consequently, a positive link between mental illness and creativity would imply that individuals with mental illness would thrive in environments that foster creativity and thus would suggest the need for more organizations like WA. This, in turn, would affect the individuals' mental, financial and social well-being, and thus address and have a positive impact on the individuals' determinants of health.

As a side note, we are required to cite three relevant articles from our literature search assignment from the fall. Since this is a systematic review, and the articles generated are essentially the results, these three articles will be cited in the 'results' section, with the reference in the reference list at the end bolded for easier viewing.

## **Methodology**

We conducted a systematic review of the scientific literature from January 2004 to December 2012 to answer the following research question: What is the link between mental illness and creativity. In analyzing the utility and efficacy of this research question, the FINER (Feasibility, Interesting to the Investigator, Novel, Ethical, Relevant) approach was employed rather than PIE (Population, Intervention, Effect). As this is a systematic review, the PIE approach would have led more to a description of the methodology (P= scientific papers, I = systematic review, E=conclusion of systematic review as to links between mental illness and creativity). Consequently, using FINER was deemed to be more appropriate.

The first concept in FINER is feasibility. Since the last review in the area was published in 2004, limiting the search to the time period between 2004 and 2012 limited the amount of

literature that had to be sifted through and thus made the project feasible in terms of working within the time constraints of the course. Furthermore, restricting our search in this way, gave us the freedom to be more general in our other search criteria. For example, mental illness is a broad term that refers to several different conditions. Consequently, it might have been prudent to cut down this term to a narrower definition; however, because we wanted to capture as many articles as possible, we kept our search terms as broad as possible.

As mentioned earlier, WA works with and promotes the involvement of individuals with mental illness in the arts. Consequently, a review showing whether there is an actual predisposition to creativity in these individuals would be of interest to those at WA who are involved in creating and organizing the art training programs. Furthermore, from a personal point of view, in doing some preliminary searches and in reading older papers and reviews, the lack of consensus in this field made for an exciting project. With the advent of newer technology and more robust measures of creativity, it was interesting to see whether or not the literature has moved toward showing a stronger linkage or a weaker one.

As this is a review and not an original study, the concept itself is not novel. Furthermore, as there have been reviews on this topic in the past, the basic methodology itself was also not novel. What is novel is that this review analyzed newer studies. In a preliminary scan of the literature, a study emerged that looked at the association between dopamine receptor levels in the brain, schizophrenia and the link to creativity (11). Consequently, the novelty of this review lay in the fact that we also looked at studies that explored the connection between neurotransmitters implicated in various mental illnesses and creativity which was not explored by the earlier reviews.

The last two concepts in the FINER schematic are ethical and relevant. Ethics involves the weighing of risks and benefits to determine the need for a study. As this project is a systematic review and deals with already published literature, there is no direct risk of harm. The benefits lie in the fact that this review will take a closer look at the connections between mental health and creativity. As mentioned earlier, individuals struggling with mental health issues have a higher rate of unemployment than the general population (5). A positive correlation would provide evidence for the need for groups like WA that cater to the strengths of these individuals. Furthermore, if there is a positive link between creativity and mental illness, this link would have implications in the medical management of these individuals as medicines that treat the symptoms of mental illness, might also be affecting the creative output of these individuals. Consequently, not only would this study be ethical as the benefits outweigh the risks, but also relevant to those who suffer from mental illnesses.

In terms of the methodology, a systematic review will be used to answer the research question. This type of study is a useful way to synthesize, organize and understand complex data (12). As noted above, there is a lack of general consensus in the literature as to the link between creativity and mental illness. The strength of this evidence appears to depend on the type of mental disorder being considered. Indeed, a review was needed to explore the specific nature of the associations between these two phenomena.

The systematic review method can involve the analysis of qualitative, quantitative or mixed studies (12). For this review, the focus was on quantitative studies as they allowed for more efficient comparisons. Also, it is important to note that systematic reviews can involve a quantitative meta-analytic approach to organizing the data (13). While this method of analysis can be utilized when studying randomized control trials, the studies in our topic utilize varying

study methodologies and include different definitions of creativity and mental illness. Therefore, the analyses of the studies were undertaken in a more qualitative manner.

Being a systematic review, the study population in this case was scientific papers in the literature. One common way of undertaking a systematic review is to follow the methods outlined for conducting a Cochrane review. While this method is usually employed in order to analyze randomized control trials, the methodology can also be employed for this more qualitative review, with the exception of step 5, meta-analysis. Briefly, the steps are as follows (13):

1. Define the review question and develop criteria for including studies
2. Search for studies
3. Select studies and collect data
4. Assess risk of bias in included studies
5. Analyse data
6. address reporting biases
7. present results and “summary of findings” tables
8. Interpret results and draw conclusions

For the sake of brevity, the detailed methodology will be described in the next section along with the results.

## **Data Collection and Results**

First, a comprehensive list of search terms was generated. The terms are outlined in **Table 1**. The terms are based on those used in the review by Lauronen et. al. (10); however, we also added neurotransmitters implicated in mental illnesses to see whether any studies have

investigated the links between these neurotransmitters and creativity. Those terms without an asterisk (\*) beside them are MeSH terms and those with an asterisk beside them are keywords. To combine the search terms, the Boolean term “or” was used to combine words in the same column and the term “and” was used to combine the terms in column A with those of column B. In terms of the limits that were used, the articles were limited to those that are in the English language and those that include work only on human subjects. Furthermore, in order to avoid repeated analyses of studies already used by Lauronen et. al (10), we limited our studies to those published after 2004

**Table 1.** List of search terms used to generate a list of relevant articles

A	B	
Creativeness Creativ*	Mental disorders	Neurotransmitter agents
	Mad*	Acetylcholine*
	Mental disorder*	Dopamin*
	Mental illness*	Norepinephrine*
	Schizophrenia*	Epinephrine*
	Mood disorder*	Seroton*
	Personality disorder*	GABA*
	Neurotic disorder*	
	Anxiety disorder*	

Once the search terms were finalized, they were inputted into various databases in order to generate a list of articles. The primary databases used were Medline and PsycINFO. The primary focus of Medline is that of biomedicine and the focus of PsycINFO is the psychological literature; thus these databases gave good coverage of the scientific literature relevant to our topic. Both these databases are part of the OVID system of databases and thus involve the use of MeSH terms. To ensure that we did not miss any relevant articles, other medical science databases were also used such as Embase.

Once the list of articles was created, we used the titles and abstracts of the papers to narrow down the list of papers. **Table 2** contains the exclusion and inclusion criteria that were applied to the abstracts in order to generate the list of articles for full review. **Table 3** displays the number of articles generated from the original search, the number of abstracts reviewed based on the title, total number of full articles that were read from all three databases and the total number of articles that were assessed for quality after having passed all the inclusion and exclusion criteria.

<b>Table 2. Inclusion and Exclusion criteria for including abstracts</b>	
<b>Inclusion Criteria</b>	<b>Exclusion criteria</b>
Subjects in study measured for psychopathology and creativity	Studies looking at substance abuse and creativity
If study looked at neurotransmitter in relation to creativity, the study must also talk about its implication for mental illness	Studies only looking at psychopathology and not creativity and vice versa
Measurement of creativity in study an output rather than experience	Effect of medication on creativity
Quantitative study	Studies looking at syndromes rather than diseases Studies measuring dimensions of personality without reference to mental illness Studies looking only at the following conditions in relation to creativity: autism, ADHD, dementia, Parkinson's disease. Non-primary articles Studies that did not have abstracts published in the databases Non-quantitative studies

**Table 3.** Number of articles generated using the Medline, PsychINFO, and Embase databases, the number of abstracts reviewed, and the number of full articles that were read.

Database	# Original Articles	# Abstracts reviewed	# Articles for full review from all databases	# articles assessed for quality from all databases
Medline	684	151		
PsychINFO	2033	178	53	44
Embase	1386	132		

Once the final list of articles was generated, they were read and assessed for quality. This was done using the Quality Assessment Tool for Quantitative Studies which has been evaluated for content and construct validity and inter-rater reliability (attached as Appendix A) (14). Briefly, the tool was used to assess the papers in terms of selection bias, study design, confounders, blinding, data collection methods and withdrawals and dropouts. The papers were read both by myself and my supervisor Dr. Soklaridis and assessed independently in order to increase the internal validity of the study. At this point, while we both have read all the papers and individually assessed them, we still need to meet to review the papers and choose the papers that are of high quality.

As the final results of this project are yet to be determined, the 44 papers were organized into different categories to determine the general trend of the literature as to the link between mental illness and creativity. The first category used to divide the papers was type of study. There are five general ways these studies are done. The first kind of study involves healthy subjects engaging in a battery of tests that measure creativity and predisposition to psychopathology (15-30). The next type of study involves the use of healthy creative individuals (that is, individuals deemed to be in creative professions/fields of study like poets and artists) and healthy non-creative controls engaging in tests that measure their predisposition to psychopathology (31-39). The third type of study compares healthy individuals with those diagnosed with different mental illnesses by either getting both groups to complete tests of

creativity or by analyzing the kinds of professions to which they belong (40-48). The fourth type of study employs all three groups of individuals – healthy creative, healthy non-creative and psychiatric patients - and depending on the research question gets them to do either creativity tests or tests of psychopathology or both (49-54). The last type of study looks at individuals diagnosed with different mental illnesses and their unaffected relatives and determines the prevalence of creative professions in both these populations (55, 56).

Within each type of study, the papers were further categorized according to the kind of psychopathology studied. The majority of papers focused on bipolar disorder, depression and/or schizophrenia, while a few looked at anxiety disorder, personality disorder and narcissistic disorder. Furthermore, some studies broke down bipolar and schizophrenia further into subtypes/milder versions of the disease. For bipolar, this included hypomania, cyclothymia, manic, depressive or mixed. For schizophrenia, while those studies whose population was individuals diagnosed with the disease did not use subtypes, the studies that used healthy individuals and tests of psychopathology broke down the predisposition to schizophrenia into positive and negative schizotypy. Positive schizotypy involves the trait of unusual experiences and cognitive disorganization while negative schizotypy involves introverted anhedonia (34). **Table 4** summarizes the 44 studies and details the number of instances within each of the above categories of a positive link between creativity and mental illness and a negative/no link between mental illness and creativity. Note, that the number of positive/negative instances are more than 44 because some papers dealt with more than one mental illness and thus are represented more than once in the table.

**Table 4.** Type of study, the disorder and subset of disorder studied and whether there is a positive or negative/no association (14-49)

Type of Study	Mental Illness	Subsets	Association	
			+	-/None
Healthy	Bipolar	-	1	
		hypomania	1	
	Schizophrenia	-	1	1
		+ve schizotypy	3	
		-ve schizotypy		1
	Depression	-	1	2
	Mood disorder (unspecified)	-	2	
	Anxiety	-		1
Narcissism	-		1	
Creative + Non-creative controls	Psychopathology	-	1	
	Bipolar	Hypomania	1	
	Schizophrenia	Schizotypy		1
		+ve schizotypy	4	
		-ve schizotypy		1
Depression	-	2		
Healthy Control + Psychiatric Patients	Schizophrenia	-		5
	Bipolar	-	3	
		Manic	3	
		Depressive		4
		Mixed	1	
	Personality disorder	-		1
Anxiety disorder	-		1	
Healthy non-creative, healthy creative, psychiatric patients	Schizophrenia	+ve schizotypy	1	
		-ve schizotypy		1
	Bipolar	-	3	
		Cyclothymia	1	
	Depression	-		2
Psychiatric conditions	-		1	
Family Study	Bipolar	Patients	2	
		Healthy relatives	2	
	Schizophrenia	Patients		2
		Healthy relatives	2	
	Depression	Patients		2
		Healthy relatives		2
	Anxiety	Patients		1
		Healthy relatives		1

In general, the existence of a positive link between mental illness and creativity depended on the type of disorder being studied and the subtype of disorder. Studies analyzing the link between bipolar disorder and creativity all showed a positive link except for the studies that looked at the depressive subtype. This is consistent with most of the studies that looked at depression and creativity which showed a negative correlation. Next, studies that used individuals with schizophrenia as the study population showed a negative correlation between the existence of the disease and creativity; however, studies that used healthy individuals and divided the schizophrenia-like traits into positive schizotypy and negative schizotypy found that while positive schizotypy linked with creativity, negative schizotypy did not. This is consistent with the family studies that show while individuals diagnosed with schizophrenia are not over-represented in creative occupations, the relatives of these individuals are over-represented. Lastly, while only a few studies looked at anxiety disorder, personality disorder and narcissistic disorder, none of these studies showed a positive correlation between the disorder and creativity.

In terms of ethics, approval was not needed for this study. This study is a systematic review and thus the “population” studied was the published scientific literature. As such, there was no interaction with patients and no need for access to patient charts to undertake this study. The ethics tracking tool is attached as Appendix B.

## **Discussion**

The preliminary results of this review showed that while quite a few studies found a positive link between mental illness and creativity, this link appears to be stronger for some forms of mental illness like bipolar disorder compared to others like depression. Furthermore, for

disorders like schizophrenia, the type of symptoms determines increased creativity. Positive schizotypy appeared to lead to increased creativity scores while negative schizotypy and full-blown schizophrenia hamper creativity scores. Consistent with this, all family studies looking at healthy relatives with bipolar disorder or schizophrenia showed increased measures of creativity, while those of other disorders studied did not show this trend. While this trend is similar to that seen in the review by Lauronen et. al. (10), the link between bipolar disorder and creativity is not as clearly delineated in this older review. As well, none, if any, of the studies in this earlier review broke down the predisposition to schizophrenia into the various positive and negative traits and thus the conclusion of the link between schizophrenia and creativity is slightly different between this project and the previous review.

It is important to note that since the final quality assessment of the studies has not been completed, the above results may or may not stand true at the completion of this project. While the final conclusion of this review most probably will reflect the above results as not a lot of studies prove contrary to the above conclusions, there is a slight possibility that only the studies showing a negative correlation are of high quality. Consequently, analyzing the impact on the agency, the population and the literature itself in light of a positive, negative or no link would be prudent.

The results of the review have the potential to impact the agency as well as the focus population of the review, individuals with mental illnesses, especially if there's a positive linkage. WA provides individuals with mental illnesses the chance to engage in various artistic endeavors. Studies have already shown that engaging in artistic activities has benefits for those with mental illnesses (57, 58). If the literature shows that those with mental illnesses have a predisposition to creativity, this would have the added benefit of showing further need for

agencies like WA that provide these individuals with the opportunity to engage in activities for which they potentially have an aptitude. For those suffering with mental illnesses, a positive linkage could impact the kinds of social programs to which they have access. In addition, as mentioned earlier, if there is a positive association between mental illness and creativity, medical management of these individuals could be impacted.

Alternatively, if there is a negative association between creativity and mental illness, while the impact on the management of those with mental illness will not be affected, the case for starting more organizations like WA might be weakened. Similarly, if this review ends up showing no association between the concepts of creativity and mental illness or if the review ends up being inconclusive due to the studies in this review being mostly of low quality, the above impact on the agency would still stand true; however, this would also have implications for the literature. If inconclusive, this would be the third review in a row to show this result. This could mean that either there actually is no association between the two concepts or that the concept of creativity is just too abstract and that mental illnesses are too complex and not yet well-defined to study objectively.

As this project stands right now, there does appear to be a link between certain illnesses and creativity. Consequently, based on these preliminary results, some recommendations for WA would be to use these results as evidence that more organizations like WA is warranted. Also, these results could be used to procure more funding from the government and charitable organizations to expand WA itself.

There were a number of limitations of this study. First of all, due to the time constraints of this project, only studies from 2004 to the present were analyzed. While, it would have been ideal to have used our search criteria and inclusion and exclusion criteria to analyze even earlier

papers, this would not have been feasible. Consequently, we may have missed some key older studies that may have been excluded by the previous review as the inclusion and exclusion criteria were not clearly outlined in the previous review. Furthermore, my lack of expertise in the field and in doing systematic reviews was a limitation. This lack of knowledge and experience resulted in this project taking longer than originally expected and thus only preliminary results are available for this report. However, this last limitation will not hinder the completion of this project which is expected to be in the next couple of months.

The lessons learnt in doing this project can be broken down into three areas – the method, content and agency. In terms of the method, while I had read systematic reviews in the past, I had never conducted a systematic review myself and this was quite the learning experience. As mentioned earlier, I did not realize how much time reading the papers would take especially since I was not well versed in the area and thus had to do a lot of background reading on the ways in which creativity is studied as well as in the criteria used in diagnosing mental illnesses. Next, while I would use the word ‘creativity’ in my every day language, I did not spend much time thinking about how complex this topic actually is. In doing this project, I realized how highly abstract creativity is, making it a difficult and controversial topic to study. Lastly, this project allowed me to learn about WA, and the great strides this agency is making in raising public awareness about mental illness and in integrating/re-integrating artists with mental illness into the arts community. Regardless of the final conclusions of this project, the positive impact this agency has on its members and community is enough evidence for expansion of WA into other cities, provinces, and countries.

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