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MANAGEMENT SCIENCE
Articles in Advance, pp. 1–10
ISSN 0025-1909 (print), ISSN 1526-5501 (online)

Death, Bereavement, and Creativity

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Received: June 6, 2016
Revised: December 4, 2016
Accepted: April 3, 2017
Published Online in Articles in Advance: October 16, 2017

https://doi.org/10.1287/mnsc.2017.2850

Abstract. Does creativity, on average, increase or decrease during bereavement? Dates of death of relatives and close friends of 33 French artists and 15 American artists were gathered from electronic sources and biographies, and information on over 15,000 paintings was collected from the Blouin Art Sales Index and the online collections of the Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay, including more than 12,000 observations on price. An event study indicates that there is no evidence that the death of a friend or relative makes an artist more creative, and there is some evidence that prices of paintings are significantly lower during the first year following the year of death of a friend or relative. Furthermore, paintings that were created during this bereavement period are less likely to be included in a major museum's collection.

History: Accepted by John List, behavioral economics.
Supplemental Material: The online appendix is available at https://doi.org/10.1287/mnsc.2017.2850.

Keywords: creativity • death • artist • art auctions • bereavement

1. Introduction

The death of a friend or relative is universally recognized as a painful experience. Whether the psychological pain resulting from the death increases or decreases creativity is not known. On the one hand, incidental observation of the history of art suggests that bereavement is correlated with the production of great art. For example, in 1901, Pablo Picasso's good friend Carlos Casagemas committed suicide. Many art historians believe that this event launched Picasso into his Blue Period of painting, in which Picasso painted somber monochromatic works. Paintings from Picasso's Blue Period have in the past achieved record prices at auction.[1] On the other hand, questions remain as to the impact of bereavement on an artist's state of mind. In the field of psychology, state of mind has long been associated with creativity through the idea of being completely absorbed in an activity, named by Michael Csikszentmihalyi as a "flow state" (May 1959, Getzels and Csikszentmihalyi 1976, Isen et al. 1987). Bereavement can interrupt flow and alter mood. The empirical question of whether the death of a relative or close friend on average increases or decreases creativity in the years immediately following the death is addressed by this research.

Dates of death for friends and relatives of the French artists used in this study were gathered from *Oxford Art Online*, reading both *Grove Art Online* and the *Benezit Dictionary of Artists*. For the American artists used in this study, dates of death were gathered primarily from biographies. Information on over 15,000 paintings was gathered from the Blouin Art Sales Index and the online collections of the Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay, including over 12,000 observations on price. As in Graddy (2013) and others, the basic premises of this research are that price reflects a painting's importance within an artist's oeuvre. Furthermore, an artist's most important paintings are likely to be included in one of these museums' collections. The attraction of using art to measure the effect of bereavement is that it is known when a painting was produced and that the importance of a creation can be measured by its price at auction and inclusion in a museum's collection.

This study is in the spirit of work by Bennedsen et al. (2006), who show that the death of a chief executive officer's immediate family member is negatively correlated with firm performance. More recent work by Nguyen and Nielsen (2014) links an executive's death to a change in shareholder value. Oswald et al. (2015) demonstrates that people who say they have recently experienced a death or illness in the family perform worse on a simple numerical task designed to measure productivity in an experimental setting. Anecdotes have linked bereavement to decreased productivity by artists. For example, after Édouard Manet's friend Charles Baudelaire died in 1867, Manet started painting *The Funeral* but never finished.[2]

The rest of this paper proceeds as follows. In Section 2, the psychology literature on creativity is briefly reviewed. In Section 3, the paper details the data collection procedures. Section 4 explains the regression methodology. In Section 5, the price regression results are presented, and the robustness of the price regressions is discussed in Section 6. Section 7 analyzes the probability of inclusion in the collections of the Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay, and Section 8 concludes the analysis.

2. Creativity and State of Mind

The concept of a flow state that people enter when being very creative has gained acceptance by psychologists. As described by Keith Sawyer (Sawyer 2012, p. 78), Rollo May was one of the first researchers to describe the experience of being in a creative state as experiencing intensity of awareness, heightened consciousness, and obliviousness to the environment and to the passage of time (May 1959). Csikszentmihalyi continued this strand of research and coined the term "flow state" (Getzels and Csikszentmihalyi 1976). During flow, people are at their most creative. Csikszentmihalyi did further studies that showed that in all professions, people feel at their peak when they are most creative, and therefore, through flow, individuals can achieve happiness (Csikszentmihalyi 1990).

Distraction is an enemy of flow and creativity. At best, it could take hours to regain the peace of mind lost from distraction to resume a creative endeavor. At worst, "more serious health, family, or financial problems could occupy the mind of a person so insistently that he or she is no longer able to devote enough attention to work. Then a long period of drought may follow, a writer's block, a burnout, which may even end a creative career" (Csikszentmihalyi 1997, p. 120). Through interrupting flow, death and bereavement can reduce creativity.

Psychologists then surmised that if the flow experience is correlated with enhanced creativity, then mood is related to creativity. Using experiments, researchers showed that mood is strongly related to problem solving by the induction of positive affect (Isen et al. 1987, Estrada et al. 1994, Subramaniam et al. 2009). Death and bereavement are induced negative effects and often result in sadness and depression.

To date, there have been few, if any, empirical studies that have related mood to creativity, though economists and others have used empirical methods to document productivity over the life cycle. Galenson and Weinberg (2000, 2001) have extensively studied the productivity of artists over the life cycle, and Simonton (1990) presents a general study of other professions. The idea for this study came from a case study of three musicians by Karol Jan Borowiecki (2013) as presented at the Genius for Sale! conference in Oxford on May 8, 2014.

Academic studies have related death to creativity through different venues. It is well documented that individuals deemed "geniuses" were more likely to have suffered a parental loss as a child or adolescent (Eisenstadt 1978, Simonton 1984), though economists have also documented negative social effects from parental loss (Corak 2001). In a very interesting and original study, Azoulay et al. (2010) looked at unexpected deaths of "superstar" researchers and subsequent productivity of coauthors. They find a lasting decline of between 5% and 8% in quality-adjusted publication output of the coauthors. They explain this lasting decline by the loss of an irreplaceable source of ideas.

The research in this paper is very different in spirit. All individuals experience loss through death of a close relative or friend at some point in their lives, geniuses and superstars included. This paper seeks to measure the effect of this loss on creative output. The hypothesis is that alteration in mood and inability to focus during bereavement may affect creative output.

3. Data Collection

The question of the effect of death on creativity is addressed with prices on over 10,000 paintings produced by 33 French impressionist artists and over 2,000 paintings by 15 modern American artists born between 1900 and 1920. The auction data were gathered online from the Blouin Art Sales Index.[3] The sale dates range from 1972 to 2014. In addition, information on 1,730 paintings in the collections of the Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay were manually collected from these museums' websites.[4]

The artists chosen were those first analyzed in Galenson and Weinberg (2000, 2001). The French impressionists were originally chosen by Galenson and Weinberg according to importance to art history and connection to France. Galenson and Weinberg wanted to choose two different cohorts of American artists, with the first cohort, which is used in this paper, dominated by abstract expressionists.[5] The French artists used in this study are listed in Table 1, and the American artists used in this study are listed in Table 2, along with the dates of deaths of friends and relatives that were found for each artist.

Collecting death data for this paper was not trivial and was done in two phases. In the first phase, the death dates for the French artists were gathered from *Oxford Art Online*, with one author reading both *Grove Art Online* and the *Benezit Dictionary of Artists* and noting all deaths that were mentioned in these biographies, with the other author verifying the work.

Table 1. French Artists

Artist	Father	Mother	Wife1	Wife2	Child1	Friend1	Friend2	Friend3
Jean Arp (1886–1966)	1921	1929	1943					
Roger Bissière (1884–1964)		1902	1962			1932	1962	1963
Pierre Bonnard (1867–1947)	1895	1919				1940	1919	
Georges Braque (1882–1963)	1911	1942				1953		
Paul Cézanne (1839–1906)	1886	1897				1903	1902	
Marc Chagall (1887–1985)	1921	1915	1944			1939		
Henri de Toulouse-Lautrec (1864–1901)	1913	1930						
Maurice de Vlaminck (1876–1958)								
Edgar Degas (1834–1917)	1874	1847						
Robert Delaunay (1885–1941)								
André Derain (1880–1954)								
Marcel Duchamp (1887–1968)	1925	1925						
Raoul Dufy (1877–1953)	1845							
Paul Gauguin (1848–1903)	1849	1867			1897			
Juan Gris (1887–1927)	1920	1940						
Fernand Léger (1881–1955)	1897		1950			1932		
Édouard Manet (1832–1883)	1862	1862				1867	1881	
André Masson (1896–1987)						1983		
Henri Matisse (1869–1954)	1910	1920				1898		
Joan Miro (1893–1983)		1944				1970		
Claude Monet (1840–1926)	1871	1857	1879	1911	1911			
Francis Picabia (1879–1953)	1929	1884						
Pablo Picasso (1881–1973)	1913	1939	1955			1901	1915	1918
Camille Pissarro (1830–1903)	1865	1889						
Odilon Redon (1840–1916)	1874				1886			
Pierre-Auguste Renoir (1841–1919)	1874	1896	1915					
Georges Rouault (1871–1958)	1912					1953	1898	
Henri Rousseau (1844–1910)	1868	1890	1888	1903				
Georges Seurat (1859–1891)								
Chaim Soutine (1893–1943)						1920	1932	
Yves Tanguy (1900–1955)	1908							
Vincent van Gogh (1853–1890)	1885	1907						
Édouard Vuillard (1868–1940)	1884	1928						

We did not originally go beyond *Grove Art Online* and the *Benezit Dictionary of Artists* because we wanted the breadth of references from which deaths were collected to be selected not by us, but by an outsider not involved in this particular study. In our reading of these two sources, we gleaned a total of 46 deaths for our 33 French artists, which included parents, spouses, children, and friends. There were no sibling deaths listed in *Oxford Art Online*, and all artists other than Picasso had deaths of no more than three friends listed.[6] A "friend" is simply someone that the reference mentions as having died and being a friend of the artist. The fact that the death was mentioned at all is an indication that the biographer felt the death affected the artist.

During the first phase of data collection, we found that *Oxford Art Online* was not useful for any of the American artists, and it was necessary to use a mixture of websites and biographies from libraries to collect the data; hence, the breadth of references used for the American artists was determined by us. Once again, one author originally collected and documented the data while the other author went back and checked everything. Probably because of genealogy records, we found that deaths of parents were much more assiduously recorded for the American artists, who lived more recently, than for the French artists. In this first phase, a total of 30 deaths were gathered for 15 artists. We originally performed the analysis using only these 76 deaths.[7]

In the second phase of the data, upon the suggestion of a referee and editor, we went to online genealogical sources to attempt to find all parent deaths. We found the deaths of fathers for all American artists and the mother's death for 11 of 15 of the American artists. We found the deaths of fathers for 25 out of the 33 French artists and the deaths of mothers for 23 out of the 33 French artists. In total, we now have about 75% of parent deaths.[8]

The brother and sister variables are not included in Table 1 because there were no sibling deaths in *Oxford Art Online*, as discussed above. We did not find a third friend death date listed in the references that we used for the American artists, also as discussed above, and hence only two friends are listed in Table 2. For our analysis, we have a total of 118 deaths. Online Appendix A includes the original references used for

Table 2. American Artists

Artist	Father	Mother	Wife1	Wife2	Child1	Brother	Sister	Friend1	Friend2
Willem de Kooning (1904–1997)	1908							1948	
Arshile Gorky (1904–1948)	1947	1919					1908		
Adolph Gottlieb (1903–1974)	1947	1958					1956		
Philip Guston (1913–1980)	1924	1949						1956	
Franz Kline (1910–1962)	1917								
Morris Louis (1912–1962)									
Agnes Martin (1912–2004)	1914					1949			
Robert Motherwell (1915–1991)	1943	1972						1965	
Alice Neel (1900–1984)	1946	1954			1927				
Barnett Newman (1905–1970)	1947	1965				1961		1956	
Jackson Pollock (1912–1956)	1933	1958						1940	1945
Fairfield Porter (1907–1975)	1939	1942							
Ad Reinhardt (1913–1967)	1957	1957							
Mark Rothko (1903–1970)	1914	1948							
Clyfford Still (1904–1980)	1960	1968							

American artists, Online Appendix B includes the original references used for French artists, and Online Appendix C contains the genealogical sources used for parent deaths.

Summary statistics for this data set, broken up by French artists and American artists, are presented in Table 3. The prices presented are in 2010 dollars and are deflated by the Consumer Price Index (CPI). The French artists were born earlier on average than the American artists. The price and age variables are similar to one another, but there are over twice as many paintings per French impressionist as there are paintings for each American artist included in the data set.

4. Methodology

An event study is used for the regression analysis. For the event study, each sale is an observation. As shown in Equation (1) below, the dependent variable is the natural log of the price of painting i that was sold at time j. Binary variables were created that indicate whether a painting was produced in the third, second, or first year prior to the death of the friend or relative, $Prior3_i$, $Prior2_i$, and $Prior1_i$. Unless the death was foreseeable, this variable should not have an effect. Another 0–1 variable indicating whether the friend or relative died during the year the work was painted, $Current_i$, is also created. It is not possible to establish when in a year the painting was created or whether the death occurred before or after a particular work was created. Three more variables are created, $After1_i$, $After2_i$, and $After3_i$, indicating whether the work was produced in the first, second or third year following the death of a friend or relative. The coefficients on these variables are α_1–α_7, as indicated in Equation (1) below.

Table 3. Summary Statistics

	French	American	All
Year of birth	1872	1908	1878
	(19)	(5)	(22)
Painting date	1924	1962	1931
	(28)	(12)	(30)
Age of artist	53	54	53
	(18)	(12)	(17)
Year of sale	2002	2001	2002
	(9)	(10)	(9)
Price	1,463,567	1,517,807	1,472,652
	(4,376,458)	(5,586,213)	(4,601,108)
Observations	11,752	2,292	14,044
Number of artists	33	15	48
Paintings per artist	545	223	492

Notes. Standard deviations are in parentheses. Prices in 2010 dollars are deflated with the CPI.
Source. Blouin Art Sales Index; see text.

Five different cohorts, interacted with age, age^2, age^3, and age^4, are used for controls. Cohorts 1–4 coincide with the four cohorts for French painters used by Galenson and Weinberg (2001). That is, cohort 1 consists of French painters in the data set born between 1820 and 1839, cohort 2 consists of those French painters born between 1840 and 1859, cohort 3 consists of those French painters born between 1860 and 1879, and cohort 4 consists of those French painters born between 1880 and 1900. Cohort 5 consists of American painters and coincides with Galenson and Weinberg's (2000) first cohort of American painters. The cohorts have coefficients β_1–β_5. Artist fixed effects with coefficients ψ_k; year fixed effects with coefficients θ_y; and in the full specification, fixed effects for painting date, with coefficients ω_y, and an error term, ϵ_{ij}, are also included in the regressions. These controls are similar to those used in Galenson and Weinberg (2000, 2001):[9]

$$\begin{aligned}&\ln(Price)_{ij}\\&= \alpha_1 Prior3_i + \alpha_2\, Prior2_i + \alpha_3 Prior1_i\\&\quad + \alpha_4 Current_i + \alpha_5 After1_i + \alpha_6 After2_i + \alpha_7 After3_i\\&\quad + \sum_{c=1}^{4} [\beta_1^c Age_i + \beta_2^c Age_i^2 + \beta_3^c Age_i^3 + \beta_4^c Age_i^4] I(cohort_i = C)\end{aligned}$$

$$+\sum_{k=1}^{48}\psi_k I(i=k)+\sum_{y=1972}^{2014}\theta_y I(Sale\_year_j=y)$$
$$+\sum_{y=1840}^{y=1972}\omega_y I(Painting\_date_i)+\epsilon_{ij}. \quad (1)$$

5. Results

Of the 14,044 observations, a sale price was observed for 12,705 observations. The auction results included 164 paintings by American artists and 1,175 paintings by French artists that went unsold at auction because they did not meet the reserve price.[10] The results from estimating the regression equation (1) are presented in Table 4.

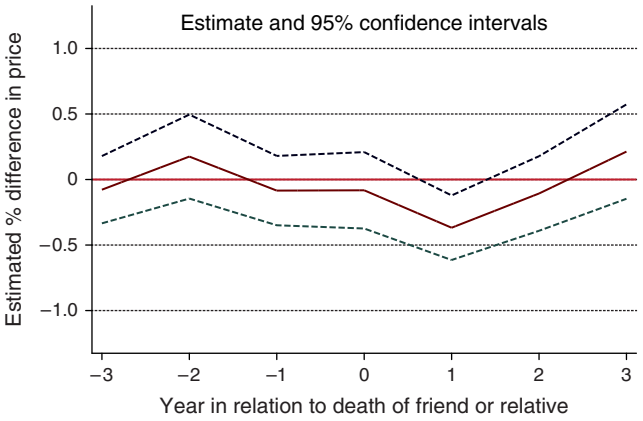
Columns (1) and (3) present the results of unweighted regressions, and columns (2) and (4) present weighted regressions. Columns (3) and (4) include painting date fixed effects and columns (1) and (2) do not. To control for differences in the variability of different artists' sale prices, each artist's paintings are weighted by the mean square error for that artist. Unweighted regressions implicitly weight artists with more sales more heavily than artists with fewer sales. As the mean squared error takes into account both the number of works for sale and the variability in sale prices, the inverse of the mean squared error appears to be the correct weight. The results are similar when each work is weighted by the inverse of the number of paintings by an artist, so that each artist receives equal weight. Robust errors are calculated with the observations clustered by artist.

Table 4. Determinants of Sale Price

	(1)	(2)	(3)	(4)
Painted in 3rd year prior to death	−0.102	−0.0101	−0.128	−0.0777
	(0.110)	(0.116)	(0.125)	(0.128)
Painted in 2nd year prior to death	0.0673	0.202	0.0744	0.175
	(0.129)	(0.146)	(0.145)	(0.160)
Painted in 1st year prior to death	−0.0000287	−0.0143	−0.0392	−0.0845
	(0.0972)	(0.119)	(0.115)	(0.132)
Painted in year of death	0.00269	−0.130	0.00559	−0.0823
	(0.109)	(0.171)	(0.113)	(0.146)
Painted in 1st year after death	−0.211*	−0.304*	−0.243*	−0.368**
	(0.0913)	(0.128)	(0.106)	(0.123)
Painted in 2nd year after death	−0.111	−0.0686	−0.200	−0.107
	(0.109)	(0.159)	(0.102)	(0.142)
Painted in 3rd year after death	0.0702	0.245	0.00777	0.213
	(0.136)	(0.156)	(0.134)	(0.180)
Observations	12,705	12,705	12,705	12,705
Artist fixed effects	Yes	Yes	Yes	Yes
Year of sale fixed effects	Yes	Yes	Yes	Yes
Cohort fixed effects interacted with *age*, age^2, age^3, age^4	Yes	Yes	Yes	Yes
Painting date fixed effects	No	No	Yes	Yes

Notes. Standard errors in parentheses. Standard errors are robust, clustered by artist. Regressions in columns (1) and (3) are unweighted. Regressions in columns (2) and (4) are weighted by the inverse of the sum of the mean squared error for each artist.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Figure 1. (Color online) Event Graph of Bereavement Period



Note. Solid line is the estimate; dotted lines are the upper and lower 95th confidence intervals.

Results are consistent in both the weighted and unweighted regressions. The weighted regressions indicate that the value of a painting decreases by about 35% for paintings created in the year following the death of the artists' friend or relative. Figure 1 plots the coefficients and standard errors from column (4) of Table 4. As is evident from both the table and the figure, there is a significantly negative bereavement effect one year after the death but no significant effect in other years. These results are consistent with the psychology literature relating to mood and creativity, but they are not consistent with the popular idea that suffering necessarily increases artistic creativity.

To check that the results are consistent with the results of Galenson and Weinberg (2001), the peak age of earnings for each French impressionist cohort is estimated using regression equation (1) weighted by the inverse of the mean squared error and including painting date fixed effects. These estimated peak ages are presented in Table 5. The results are similar, with the peak age of artist declining by year cohort.[11] This research supports their empirical analysis with a different data set of sales. These sales took place from 1972 through 2014; the Galenson and Weinberg sales took place from 1980 to 1996.

Table 5. Estimated Peak Ages: French Artists

	1820–1839	1840–1859	1860–1879	1880–1900
Peak age estimates	53	48	31	27
Galenson and Weinberg peak age estimates[a]	48	38	28	28

[a]Galenson and Weinberg (2001).

6. Robustness Checks

This section checks for robustness in four ways. First, this section checks whether including size of painting changes the results. Second, random death dates for relatives and friends are assigned for each artist, to check whether or not the pattern persists. Third, this section checks whether the results differ in the data set on French impressionists from the results in the data set on American modern painters. Finally, this section checks whether the results depend on whether a parent has died or whether a spouse, child, sibling, or friend has died.

6.1. Size of Work

The data set on prices and deaths put together for this research did not contain information on the size of a work. As the variable of interest is death, this omission could impact the results if size of work is correlated with mood. To check for this possibility, the average area (height times width) of work for each French impressionist artist at each age of the artist was collected from the data set used in Ashenfelter and Graddy (2003) and Beggs and Graddy (1997). If an age was missing for a particular artist, the size was replaced with the average size painted at the previous age for that artist. If information on size was missing for the artist overall (the modern American painters were not included in these data sets), the artist was dropped. Results are presented in Table 6, with the coefficients plotted in Figure 2.

Once the sample is taken into account, the inclusion of area has almost no effect: none of the coefficients in the regression models including area is statistically significantly different from any of the coefficients in the regression models not including area. However, in this change of sample, the coefficients on year of death, first year after death, and second year after death all become statistically significantly negative, strengthening the previous results.

6.2. Random Death Assignments

To check that there is not something systematic about the data structure that was creating the dip in prices during the bereavement period, random death dates were assigned to the relatives and friends of each artist. The number of deaths for each artist was kept the same as in Tables 1 and 2. A random integer for each death was generated using a uniform distribution including endpoints three years prior to the first painting date and three years after the last painting date for each artist. Equation (1) was then estimated with 10,000 draws. The specification included painting dates and was weighted by the mean squared error for each artist, which was the specification plotted in Figure 1. The average coefficient estimates and twice the standard deviations of the mean coefficient estimates are plotted in Figure 3. As is evident from the figure, while there does tend to be a very slight downward trend in price, nothing is significant and the bereavement pattern is not repeated.

Table 6. Determinants of Sale Price: Sample with Area

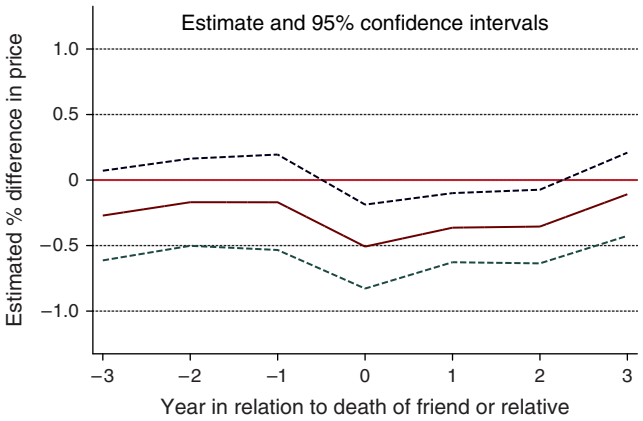
	(1)	(2)	(3)	(4)
ln(*Area*)	0.158*	0.147*		
	(0.0728)	(0.0585)		
Painted in 3rd year prior to death	−0.102	−0.271	−0.125	−0.304
	(0.163)	(0.171)	(0.166)	(0.166)
Painted in 2nd year prior to death	−0.0490	−0.169	−0.0993	−0.206
	(0.111)	(0.166)	(0.111)	(0.162)
Painted in 1st year prior to death	−0.121	−0.170	−0.144	−0.184
	(0.111)	(0.182)	(0.118)	(0.183)
Painted in year of death	−0.547*	−0.508**	−0.594**	−0.545**
	(0.214)	(0.160)	(0.201)	(0.154)
Painted in 1st year after death	−0.368	−0.363*	−0.441*	−0.425**
	(0.194)	(0.132)	(0.183)	(0.130)
Painted in 2nd year after death	−0.245	−0.355*	−0.292	−0.392**
	(0.162)	(0.141)	(0.159)	(0.134)
Painted in 3rd year after death	−0.0182	−0.108	−0.0397	−0.140
	(0.157)	(0.159)	(0.152)	(0.152)
Observations	8,035	8,035	8,035	8,035
Artist fixed effects	Yes	Yes	Yes	Yes
Year of sale fixed effects	Yes	Yes	Yes	Yes
Cohort fixed effects interacted with *age*, age^2, age^3, age^4	Yes	Yes	Yes	Yes
Painting date fixed effects	No	Yes	No	Yes

Notes. Standard errors in parentheses. Standard errors are robust, clustered by artist. Regressions are weighted by the inverse of the mean squared error for each artist.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

6.3. French Impressionists Compared to Modern Americans

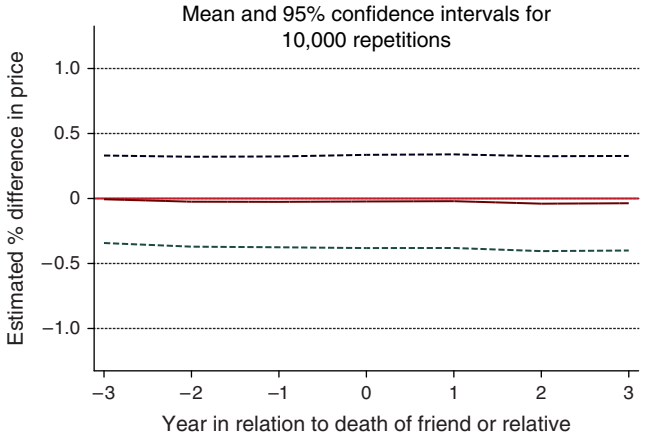
The next regression tests whether death effects in the sample of French impressionist painters differ

Figure 2. (Color online) Event Graph of Bereavement Period (with Area)



Note. Solid line is the estimate; dotted lines are the upper and lower 95th confidence intervals.

Figure 3. (Color online) Event Graph of Random Death Assignments



Note. Solid line is the estimate; dotted lines are the upper and lower 95th confidence intervals.

from death effects in the sample of modern American painters. In Table 7, a set of new variables is created by interacting an indicator variable, equal to 1 if the artist is a French impressionist and 0 if not, with painting dates relative to deaths.

In this regression, the coefficient on French impressionists is no longer statistically significantly negative, but the coefficient on modern American painters is now very significant and has decreased even more. The coefficients in the specification are not significantly different from one another; we cannot reject the null hypothesis that death effects are the same for the French and American artists.

6.4. Parent Death Compared with Other Death

In Table 8, yet another set of new variables is created by interacting an indicator variable equal to 1 if a parent has died and 0 if a spouse, child, sibling, or friend has died, with painting dates relative to these deaths.

The results indicate that there is no statistically significant difference whether the death involved a parent or whether the death involved a sibling or friend. (The coefficient on parent is no longer significantly different from zero, but it remains negative; the coefficient on other deaths remains significantly negative.)

7. Inclusion in a Museum's Collection

Art historians and others often criticize price as being a poor measure of a painting's creativity or worth. To allay some of these concerns, we look at another measure of importance or creativity: whether or not paintings are included in a museum's collection.[12]

We gathered information on all paintings in the collections of the New York Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay

Table 7. Determinants of Sale Price

	(1)	(2)
Painted in 3rd year prior to death: French impressionist	0.0316 (0.134)	−0.0373 (0.149)
Painted in 2nd year prior to death: French impressionist	0.0489 (0.0971)	−0.00929 (0.134)
Painted in 1st year prior to death: French impressionist	−0.0418 (0.0940)	−0.0309 (0.150)
Painted in year of death: French impressionist	−0.254 (0.190)	−0.0969 (0.161)
Painted in 1st year after death: French impressionist	−0.257 (0.160)	−0.261 (0.143)
Painted in 2nd year after death: French impressionist	−0.203 (0.174)	−0.163 (0.153)
Painted in 3rd year after death: French impressionist	0.175 (0.185)	0.199 (0.203)
Painted in 3rd year prior to death: Modern American	−0.0687 (0.209)	−0.166 (0.220)
Painted in 2nd year prior to death: Modern American	0.659 (0.383)	0.578 (0.356)
Painted in 1st year prior to death: Modern American	0.158 (0.328)	−0.127 (0.296)
Painted in year of death: Modern American	0.291 (0.308)	−0.0709 (0.312)
Painted in 1st year after death: Modern American	−0.446* (0.210)	−0.660** (0.205)
Painted in 2nd year after death: Modern American	0.315 (0.334)	0.0147 (0.317)
Painted in 3rd year after death: Modern American	0.528 (0.286)	0.280 (0.330)
Observations	12,705	12,705
Artist fixed effects	Yes	Yes
Year of sale fixed effects	Yes	Yes
Cohort fixed effects interacted with *age*, age^2, age^3, age^4	Yes	Yes
Painting date fixed effects	No	yes

Notes. Standard errors in parentheses. Standard errors are robust, clustered by artist. Regressions are weighted by the inverse of the mean squared error for each artist.
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

by the 33 French impressionist artists in our sample and added them to our auction data set. Paintings by 32 of the 33 French artists (all but Roger Bissière) were included in at least one collection. In total, 1,730 paintings were appended; the artist with the most paintings in the museums is Claude Monet with 179, and the artist with the fewest besides Bissière is Marcel Duchamp with 1.

We ran a probit analysis, where a binary variable indicating whether a painting is included in a museum's collection is regressed on the independent variables described in Equation (1). These results are presented in Table 9. The original data set started with 11,556 observations of the French artists (excluding Roger Bissière) from the auction data set collected from the Blouin Art Sales Index, including those without price. Then, the 1,730 observations were added from

Table 8. Determinants of Sale Price

	(1)	(2)
Painted in 3rd year prior to death of parent	0.214	0.104
	(0.192)	(0.187)
Painted in 2nd year prior to death of parent	0.378	0.251
	(0.189)	(0.222)
Painted in 1st year prior to death of parent	−0.0434	−0.167
	(0.186)	(0.211)
Painted in year of death of parent	−0.0365	0.0140
	(0.240)	(0.174)
Painted in 1st year after death of parent	−0.191	−0.203
	(0.213)	(0.200)
Painted in 2nd year after death of parent	0.0930	−0.00722
	(0.231)	(0.236)
Painted in 3rd year after death of parent	0.353	0.371
	(0.227)	(0.245)
Painted in 3rd year prior to death of spouse, child, sibling, or friend	−0.204	−0.188
	(0.152)	(0.180)
Painted in 2nd year prior to death of spouse, child, sibling, or friend	−0.0220	0.0417
	(0.158)	(0.181)
Painted in 1st year prior to death of spouse, child, sibling, or friend	0.0664	0.0800
	(0.114)	(0.129)
Painted in year of death of spouse, child, sibling, or friend	−0.177	−0.0980
	(0.218)	(0.237)
Painted in 1st year after death of spouse, child, sibling, or friend	−0.381*	−0.432*
	(0.152)	(0.170)
Painted in 2nd year after death of spouse, child, sibling, or friend	−0.207	−0.159
	(0.188)	(0.167)
Painted in 3rd year after death of spouse, child, sibling, or friend	0.0823	0.0891
	(0.164)	(0.183)
Observations	12,705	12,705
Artist fixed effects	Yes	Yes
Year of sale fixed effects	Yes	Yes
Cohort fixed effects interacted with age, age^2, age^3, age^4	Yes	Yes
Painting date fixed effects	No	Yes

Notes. Standard errors in parentheses. Standard errors are robust, clustered by artist. Regressions are weighted by the inverse of the sum of the mean squared error for each artist.
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

Table 9. Included in a Museum's Collection (Probit)

	(1)	(2)
Painted in 3rd year prior to death	−0.596**	−0.612**
	(0.202)	(0.201)
Painted in 2nd year prior to death	0.107	−0.0980
	(0.151)	(0.222)
Painted in 1st year prior to death	−0.208	−0.328
	(0.307)	(0.190)
Painted in year of death	−0.143	−0.0480
	(0.106)	(0.179)
Painted in 1st year after death	−0.716*	−0.686*
	(0.292)	(0.271)
Painted in 2nd year after death	−0.202	−0.429*
	(0.142)	(0.187)
Painted in 3rd year after death	−0.0627	−0.0952
	(0.215)	(0.328)
Observations	13,286	12,015
Artist fixed effects	Yes	Yes
Cohort fixed effects interacted with age, age^2, age^3, age^4	Yes	Yes
Painting date fixed effects	No	Yes

Notes. Standard errors in parentheses. Standard errors are robust, clustered by artist. Regressions are weighted by the inverse of the number of paintings for each artist; 1,270 observations were dropped with painting date fixed effects because of colinearity.
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

the museums' collections, ending with 13,286 observations. Column (1) of Table 9 reports the results without painting date fixed effects, and column (2) reports the results with painting date fixed effects.

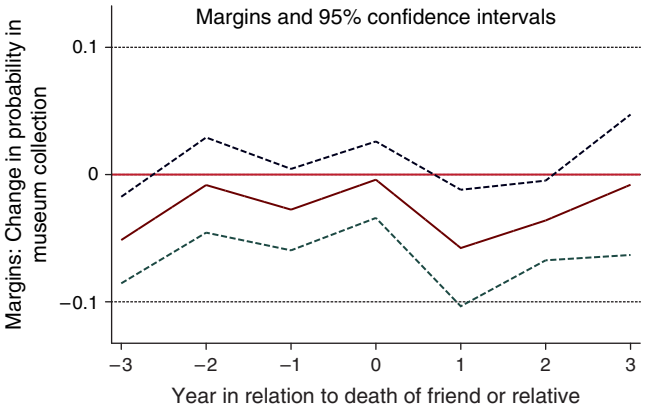
Works that were painted in the first year after the death of the artist's friend or relative were significantly less likely to be included in the collections. These results are plotted in Figure 4. The pattern is not as striking as in the price regressions, but the pattern still exists.[13]

8. Interpretation and Conclusion

This research has used both prices of paintings, as determined by the auction mechanism years after the works have been painted, and inclusion in the collections of the Metropolitan Museum of Art, the Art Institute of Chicago, the National Gallery of Art, the J. Paul Getty Museum, and the Musée d'Orsay to infer the "creativity" of the artist at the time he or she worked on the painting. This use of prices relies on the assumption that, on average, prices are a valid measure of the artist's creativity at different points in his or life. An exhibition of a painting in a museum is widely thought to be a signal of artistic merit.

The analysis has indicated that artists, in the year following the death of a friend or relative, are on average less creative than at other times of their lives. There is some evidence that paintings that were created in the

Figure 4. (Color online) Event Graph of Inclusion in a Museum's Collection



Note. Solid line is the estimate; dotted lines are the upper and lower 95th confidence intervals.

year following a death fetch significantly less at auction than those created at other times in an artist's life. Paintings that were created one year after a death are less likely to be included in a major museum's collection. These findings coincide with the psychology literature on the effects of mood on creativity and follow on Csikszentmihalyi's extensive work on "flow." There is no evidence that the death of a friend or relative makes an artist more creative.

One potential problem with this research is that stories sometimes build around famous artists' lives, and these stories can affect which deaths are reported by biographers and online sources. For example, all sources now cite Carlos Casagemas's death in relation to Picasso because it is so well known. With other artists, it proved extremely difficult to find even the death dates of their parents. Only deaths that had a well-known and public impact on an artist's life may be the ones that are reported. It is difficult to know which way the potential bias may go from this sample selection, but it is certainly important to note that sample selection in death reporting could be a consideration.

Further research into the effects of death on creativity is called for. Azoulay and colleagues' seminal paper (2010) on coauthor death and the resulting effect on scientific creativity is very much in this realm, though the mechanism through which death affects creativity, the loss of scientific ideas, is very different in the work of Azoulay et al. than in this research. The results in this paper are consistent with a change in the creator's mood that results in work that was later deemed less valuable or important.

Researching biographies is very time consuming. It becomes more difficult the earlier an artist lived (for example, there is less information on the old masters than on the impressionists) and with relatively contemporary artists. Nonetheless, this detailed data collection can yield surprising insights. More work in this area is called for.

While we have used art to document this creativity, primarily because it is relatively easy to determine when an artist paints a work and to find the work's subsequent market value, this research could potentially extend to any area in which creativity plays a role. Notably, employers in creative industries should perhaps take note of this death effect and may wish to provide counseling.[14] Not only could this be good for a worker's psychological health but it could also perhaps counteract reduced creativity related to bereavement.

Acknowledgments

The authors thank Orley Ashenfelter and Andrew Oswald as well as participants at the Faculty Lunch at Brandeis; the 2015 Art Markets Workshop in Brussels; the 2015 North American Cultural Economics Workshop in New Orleans; the May 2016 Conference on Auctions, Competition, Regulation, and Public Policy held at Lancaster University; the ACEI 19th International Conference held in June 2016 in Valladolid, Spain; the Genius for Sale! conference held in October of 2016 at Brandeis University; and the"Bridging Two Cultures" seminar series held at the Shapiro Science Center at Brandeis University in November of 2016. The authors also thank David Brooks for assistance in providing data for Vincent van Gogh.

Endnotes

[1] In 2000, *Woman with Crossed Arms* broke a previous record for Picasso paintings by selling for 38 million pounds. This price pales, however, next to the recent sale of the *Women of Algiers* (*Version O*) for $179 million at Christie's in May of 2015.

[2] See Stamberg (2016) for more details.

[3] The URL for the Blouin Art Sales Index is http://artsalesindex.artinfo.com/asi/search.action. The data were accessed in June 2014.

[4] The URLs for these collections are http://www.metmuseum.org/collection/the-collection-online, http://www.artic.edu/aic/collections/, http://www.nga.gov/content/ngaweb/Collection.html, https://www.getty.edu/art/collection/, and http://www.musee-orsay.fr/en/collections/index-of-works/home.html, respectively. These data were accessed in August 2016.

[5] We had originally planned to gather death data on both cohorts of American artists, but given the difficulty relative to the French cohort of gathering data on the first American cohort, and since most of the second cohort of artists are still alive, we stopped after the first American cohort.

[6] We excluded two deaths of friends of Picasso that occurred in 1952 and 1954; Picasso died in 1955.

[7] We found that prices were lower by about 50% in the year following a death than at other times.

[8] During this time, we also did a Google search for spouses of American artists. We found Elaine de Kooning, who died in 1989, after any dates of de Kooning's paintings that we have in our data set. None of the other artists, surprisingly, had spouse deaths while they were still together. (We made the decision not to include Carlos Enríquez Gómez, Alice Neel's husband, as they had been separated for 27 years, with him living in Cuba and her in the United States, before he died.)

[9] Area of work was used in these papers but was not originally collected for this data set. Section 6.1 describes a specification that was used to test for robustness with respect to area.

[10] Note that the Blouin Art Sales Index does not include all unsold items from all auctions.

[11] Galenson and Weinberg explain this decline by the hypothesis that artists in the latest cohort were "conceptualists," valuing new ideas above technique, and artists in the earlier cohort were "experimentalists," whose style developed slowly through trial-and-error experimentation. Conceptualists reach their peak production age earlier than experimentalists. Ginsburgh and Weyers (2006) provide a critique of this hypothesis.

[12] Galenson and Lenzu (2016) show that results using auction prices are very similar to results using data indicating inclusion in art history textbooks or retrospective exhibitions when looking at the age profiles of innovation of two artists, Andy Warhol and Jackson Pollock.

[13] As suggested by the editor, we aggregated all of the paintings that we had in the data set to get a quantity measure. We do not include these results because we do not have all paintings—only those that happen to sell at auction or be in a museum. The regressions indicate that quantity appears to decrease in years 2 and 3 after a death, but not in year 1.

[14] Some organizations already do provide counseling. A list of employee benefits posted in the mailroom at Brandeis University cites "bereavement counseling" as one benefit.

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