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Marie Forgeard ^a

^a Department of Psychology, Boston College and Department of Neurology, Beth Israel Deaconess Medical Center,

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Linguistic Styles of Eminent Writers Suffering from Unipolar and Bipolar Mood Disorder

Marie Forgeard

Department of Psychology, Boston College and Department of Neurology, Beth Israel Deaconess Medical Center

Past research has shown that the styles of drawings by patients with unipolar and bipolar mood disorder differ, the latter expressing more positive and fewer negative emotions (Wadeson, 1980). In the first study presented here, it was expected that prose texts by eminent writers who suffered from unipolar versus bipolar mood disorder would show this same effect. One novel per writer was analyzed, using Pennebaker, Francis, and Booth's (2001) *Linguistic Inquiry and Word Count*. Results disconfirmed the hypothesis, but indicated 3 other differences that were then replicated in Study 2, using a second set of novels by the same authors. Results indicated that: (a) Bipolar writers referred to death more than did unipolar writers; (b) unipolar writers referred to people other than themselves more than did control writers; (c) unipolar writers used more words describing cognitive mechanisms (e.g., *understand, know*) than did both other groups. The fact that the unipolar and bipolar groups did not differ from controls on measures related to emotions and feelings can be partially explained in terms of the therapeutic effect of writing (Pennebaker, 1997). The interest displayed by unipolar writers in cognitive mechanisms is consistent with Verhaeghen, Joorman, and Khan's (2005) finding that rumination mediates the link between creativity and unipolar depression.

Numerous studies have shown that writers have above average rates of unipolar and bipolar mood disorders. In unipolar disorder, the individual suffers from a depressed mood, a loss of interest and pleasure, feelings of worthlessness, an inability to concentrate, and recurrent thoughts of death, among other symptoms. Bipolar disorder is characterized by the occurrence of both depressive and manic or hypomanic episodes in the same individual. Symptoms of mania include abnormally elevated, expansive or irritated moods, feelings of grandiosity, and a decreased need for sleep, as well as possible psychotic episodes. The term *hypomania* is used to describe milder occurrences of this type of behavior, often shorter in duration and causing less impairment in social functioning (American Psychiatric Association, 2000).

In a study of 30 creative writers at the University of Iowa's Writers' Workshop, Andreasen (1987) discovered that 80% had, at some point, suffered from a mood disorder, compared with only 30% of her matched control group. Andreasen also noted a tendency within the writers who had a mood disorder to suffer from the bipolar subtype. Jamison (1993) analyzed further the relationship between creativity and bipolar disorder. Her extensive review of famous artists who suffered from this disorder corroborated and expanded on Andreasen's findings. Jamison (1989) also found that among a sample of 47 eminent British writers and artists, playwrights and poets were the most likely to have suffered from a mood disorder. Overall, writers displayed higher rates of mood disorders than did artists in nonverbal fields (painters and sculptors). With the exception of the poets, most of Jamison's (1989) subjects had suffered from unipolar depression.

Similarly, Ludwig's (1992) analysis of more than a thousand biographies revealed that individuals in the creative arts experience significantly more psychopathology

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Correspondence should be sent to Marie Forgeard, Department of Neurology, Beth Israel Deaconess Medical Center, 330 Brookline Avenue, Boston, MA 02215. E-mail: forgeard@bc.edu

and undergo psychotherapy more frequently than do individuals in other professions. Ludwig also noted that different types of psychiatric difficulties are associated with different modes of artistic expression. With regards to writers, Ludwig found that fiction writers and poets share alcoholism, drug abuse, depression, and suicide attempts, but differ on other types of psychopathology. Poets show significantly more mania before age 40 and more psychosis over the course of their lifetime than fiction writers; fiction writers display more anxiety and adjustment problems before age 40 than do poets. In addition, Ludwig demonstrated that two measures of psychopathology—lifetime anxiety and lifetime depression—are predictive of creative achievement independently of the type of profession considered. Kaufman (2001) furthermore demonstrated that prize-winning authors (including fiction and non-fiction writers, poets, and playwrights) are more likely to suffer from some form of mental illness (type not specified) than are nonwinning authors.

Possible mechanisms to account for the relationship between mental illness and creative writing have been investigated. Richards (1981, 1990) developed a five-part typology explaining the potential bidirectionality between the two variables. Psychopathology may directly or indirectly enhance creativity. Conversely, creativity may directly or indirectly lead to psychopathology. Both psychopathology and creativity may also be independently affected by a third factor.

The proposed explanations accounting for how psychopathology may enhance creativity differ for bipolar versus unipolar mood disorder. Jamison (1995) and Richards (1981) pointed out that features of hypomania found in bipolar disorder may foster creativity by increasing fluency and original thinking. Jamison (1995) explained that hypomania enhances both the quality and the quantity of an individual's thoughts. Hypomanic patients use word and sound associations (such as rhymes, alliterations, or neologisms) more often than do unaffected individuals; their altered state of consciousness seems to facilitate the formation of new and creative ideas. Hypomania also provides the individual with high levels of energy and a reduced need for sleep, both of which may enhance creative productivity by increasing the motivation to write. Jamison (1989) also found that 90% of creative writers and artists reported intensely creative episodes characterized by increases in enthusiasm, energy, self-confidence, speed of mental associations, fluency of thoughts, and well-being. Richards and Kinney's (1990) study of individuals affected by bipolar disorder reported that the participants experienced mildly elevated moods during creative periods. Other explanations must be considered: if hypomania provides an individual with a decreased need for sleep, creative productivity may be enhanced

just by the mere fact that the individual has more energy and time to work. Flach (1990) distinguished between the *form* and the *essence* of creativity. The creative process in itself may not be linked to psychopathology, but some extraneous factors (the form) could explain their cooccurrence (such as self-discipline, motivation, or determination).

The link between creativity and unipolar disorder is more difficult to explain. As Jamison (1993) pointed out, past research has demonstrated that periods of depressed mood lead to a decrease in creative thinking and production. Verhaeghen and colleagues (2005) showed that no direct link exists between creativity and depression. Instead, self-reflective rumination acts as a mediating factor explaining why creativity and unipolar disorder often cooccur. Self-reflection renders the individual more prone to depression, while at the same time preparing and motivating him or her to generate and pursue creative ideas. The experience of depression may also provide writers with emotions and thoughts to write about, and the process of writing could, in return, bring relief to the individual. Pennebaker (1997) showed that writing about emotional experiences is therapeutic. Moreover, Pennebaker and Seagal (1999) also demonstrated that this beneficial effect is mostly associated with writing narratives. Improvements in physical and mental health were found after participants wrote for only 15 minutes over the course of 3 days. Writing allowed them to organize and understand complex emotional experiences, and thus lessen their distress.

If unipolar and bipolar mood disorders are each associated with creativity via a different mechanism, it seems likely that the contents of works by writers with each kind of disorder should differ. Although no research has explored differences between these two groups of authors, researchers have examined these variations in the domain of drawing. Wadson (1980) described striking differences between drawings produced by patients with unipolar and bipolar mood disorder. Patients with unipolar mood disorder used fewer colors, left much empty space, and made figures that were less complete and that showed little affect or depressive affect. Patients with bipolar mood disorder exhibited a similar style when going through a depressive phase. However, when entering mania, their drawings became vivid, colorful, and full of motion. Their drawings expressed emotions related to their psychological state.

The goal of the studies presented here was to test the hypothesis that writings by authors diagnosed with unipolar depression can be distinguished from those with bipolar disorder, and that both can be distinguished from texts by writers with neither diagnosis. Only prose writings were analyzed, because novelists and poets may have different modes of expression that could confound

results, were both styles to be considered together without distinction. Kaufman and Baer (2002) argued that poetry is more introspective and expressive than fiction.

The frequency of positive and negative emotions expressed was assessed using text analysis techniques, which have proven to be valid indicators of psychopathology. Gottschalk and Hoigaard (1986), for instance, developed a content analysis scale to measure depression and found that, in speech samples, depressed individuals express more hopelessness, self-accusation, outward hostility, and concern over death than do nondepressed individuals.

Martindale's (1975, 1990) *Regressive Imagery Dictionary* also used content analysis techniques to reveal regularities in word usage by measuring the percentage of words describing primary process thinking. Primary process thought is associative and irrational, as opposed to secondary process thought, which is logical and reality-oriented. West and Martindale (1988) discovered that speech samples given by patients suffering from paranoid schizophrenia contained significantly more words revealing primary process thinking than speech samples of psychiatric patients not suffering from schizophrenia. This result supports the psychoanalytic claim that schizophrenia involves the breakdown of secondary process thinking. Word usage may therefore be used to investigate the thought processes associated with various clinical diagnoses.

Pennebaker and King (1999) also argued that linguistic style can be treated as a stable individual difference. Words chosen by authors thus provide a reliable window into their personalities and mental states. Pennebaker, Francis, and Booth (2001) in turn developed content analysis software (called *Linguistic Inquiry and Word Count*) designed to code for word usage related to affective, emotional, cognitive, sensory, and social processes.

Stirman and Pennebaker (2001) used this software to contrast writings by suicidal and nonsuicidal poets and found that suicidality could be predicted by references to the self. Their results supported the idea that suicidal individuals are isolated from others and preoccupied with themselves. Surprisingly, words referring to hopelessness did not predict later suicide. Stirman and Pennebaker's research demonstrated the importance of social relatedness in suicide, which is often overlooked in favor of depression and negative affect.

Linguistic Inquiry and Word Count was used in the present studies to compare the works of well-known writers. Ten of them are suspected to have suffered from unipolar mood disorder, 10 others from bipolar mood disorder. The remaining 10 were never suspected of having psychological disorders, and therefore served as controls.

STUDY 1

Study 1 tested the possibility that works by writers with bipolar mood disorder should show more positive affect and less negative affect than works by writers with unipolar disorder. This expectation was based on the reported finding that artists with bipolar disorder create during hypomanic phases (Jamison, 1993, 1995; Richards, 1981).

Method

Participants. The selection of the 30 authors whose works were assessed presented many difficulties, due to the retrospective nature of the diagnosis of mental illness (Goodwin & Jamison, 1990). Social context and medical progress determine, to a large extent, which behaviors are noticed, considered abnormal, and how they are labelled. The distinction between unipolar and bipolar mood disorder is also not always straightforward. There has been a tendency to underestimate bipolar disorder because biographers have paid more attention to depressive episodes than to periods of elevated moods, thus creating "false unipolars" (Goodwin & Jamison, 1990, p. 66). Recently, since the link between manic-depressive disorder and creativity has been uncovered, the opposite problem has surfaced: Many writers who displayed higher levels of excitation and joy may have been too hastily labelled as bipolar (Goodwin & Jamison, 1990; Jamison, 1993).

Writers were included in the bipolar group if they had been so identified by Jamison (1993), because her classifications were based on documentation from multiple sources. Eight of the 10 participants in the bipolar group came from Jamison. German author Hermann Hesse was included in the bipolar group, even though he suffered from cyclothymia and not full-blown bipolar disorder. The choice to include Hesse was justified by the proximity of the two disorders on the same clinical spectrum. The remaining two authors were included because two different sources indicated that they probably had suffered from the disorder.

Writers were also included in the unipolar group if they had been so identified by two sources. These sources included all biographical dictionaries made available online by the Thomson and Gale publishing group (*The Dictionary of Literary Biography*, *The Dictionary of American Biography* and *The Encyclopedia of World Biography*, among others). Scholarly books and journal articles were also accepted as sources of information.

Control writers were selected only if three sources made no mention of any form of psychopathology during their lives. The complete list of writers as well as the

references supporting their classification is provided in Appendix 1.

The resulting list of participants contained 30 of the most famous Western writers of the past 3 centuries. Four women and six men formed the unipolar group; both of the other groups consisted of one woman and nine men. Because of the small sample size, the effect of gender on linguistic style was not examined. Practical reasons guided the decision to include only Western authors: First, more extensive biographical information was available for them; second, electronic versions of texts by non-Western authors (necessary for a computer analysis) were difficult to find. The sample size was set at 10 writers per group. The search for participants was discontinued once the 30 participants were identified.

Materials. One novel was selected for each author, with the exception of Edgar Allan Poe (one of his longer short stories was picked). A list of these works can be found in Appendix 1. One crucial aspect of the choice of materials was that the work must have been written at a time when the author had already presented signs of mental illness, as determined by biographical sources. The works examined are, therefore, often from the latter part of the authors' lives. Authors who suffered from a mood disorder but did not write any fiction after the onset of the disorder were not included. Autobiographies were also excluded, in order to avoid the potential confound that writing about personal mental illness could bring.

Texts were retrieved from the Gutenberg Project, a Web site offering free electronic texts (<http://www.gutenberg.org>). Because of intellectual property regulations, this Web site does not provide recently published texts; thus, contemporary authors could not be included in this study.

Because most authors had written more than one book after the onset of their illness, a method had to be determined to choose between the possible works to be analyzed. This choice was often limited by the fact that the Gutenberg project carried only a limited selection of books for most authors. Priority was first given to books that had been written during periods of psychological difficulties, if such a period had been identified by biographical sources. If no such period was established, or if there was more than one option, priority was given to the books that received the most critical acclaim from the literary field, as described by the biographies.

Procedure. The 30 works were analyzed using Pennebaker et al.'s *Linguistic Inquiry and Word Count* (2001). This program yielded percentages of words classified into 74 lexical categories referring to

emotional, cognitive, sensory, and social processes. It was expected that the works of writers with bipolar disorder would have higher percentages, relative to the works of writers with unipolar disorder, in eight categories of words. The first category included all words describing affective and emotional processes. The second category of words included only words describing positive emotions. This category was, in turn, subdivided into two categories: positive feelings (described by words such as *happy* or *joy*), and optimism and energy (described by words such as *certainty* or *pride*). A fifth category of words included all terms describing negative emotions. This category was subdivided into three categories: anxiety or fear (described by words such as *nervous* or *afraid*), anger (with words such as *hate* or *killed*) and sadness or depression (described by words such as *grief* or *cry*). All examples of words come from the *Linguistic Inquiry and Word Count* manual (Pennebaker et al., 2001).

Results

The eight lexical categories were analyzed together using multivariate analysis of variance (MANOVA), with the type of disorder (unipolar, bipolar, or control) being the between-subjects variable.

The results failed to confirm expectations and did not show a significant overall effect, *Wilks' Lambda* = .446, $F(16, 40) = 1.244$, $p = .279$. Subsequent univariate analysis of variances (ANOVAs) did not reveal any differences in the number of positive or negative words referring to emotions and feelings expressed by the three groups of authors, *Affect*: $F(2, 27) = .570$, $p = .572$; *Positive emotions*: $F(2, 27) = 1.638$, $p = .213$; *Positive feelings*: $F(2, 27) = 1.689$, $p = .204$; *Optimism and Energy*: $F(2, 27) = 1.659$, $p = .209$; *Negative emotions*: $F(2, 27) = .443$, $p = .647$; *Anxiety*: $F(2, 27) = .117$, $p = .89$; *Anger*: $F(2, 27) = 1.815$, $p = .182$; *Sadness*: $F(2, 27) = .745$, $p = .484$. Means, expressed as percentages, and standard deviations, are shown in Table 1.

TABLE 1
Means and Standard Deviations for Each Type of Word Usage
Related to Positive or Negative Emotions (Study 1)

	<i>Unipolar</i>		<i>Bipolar</i>		<i>Control</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Affect	3.93	.58	3.79	.88	3.57	.72
Positive emotions	2.36	.48	2.12	.66	1.91	.51
Positive feelings	.54	.20	.56	.33	.38	.15
Optimism, energy	.56	.23	.44	.08	.48	.11
Negative emotions	1.53	.22	1.64	.36	1.64	.31
Anxiety	.27	.04	.28	.10	.28	.08
Anger	.33	.11	.39	.10	.43	.13
Sadness	.48	.09	.54	.13	.49	.11

An exploratory analysis was then carried out; the remaining 67 categories were examined using MANOVA to determine whether any differences among groups would emerge.

There was once again no overall significant effect, *Wilks' Lambda* = .002, $F(54, 2) = .882$, $p = .671$. The subsequent univariate ANOVAs, however, indicated that six dependent variables yielded unpredicted significant results. They were reanalyzed together using a MANOVA, and this particular combination of dependent measures showed an overall significant between-groups effect, *Wilks' Lambda* = .330, $F(12, 44) = 2.714$, $p = .008$. Means and standard deviations for these six categories are listed in Table 2. An effect size *Cohen's d* was computed for each significant finding when comparing two groups. Cohen's (1988) criteria were used to interpret effect sizes as small ($d = .2$), medium ($d = .5$) or large ($d = .8$).

First, groups differed in their uses of questions, $F(2, 27) = 7.43$, $p = .003$. Post-hoc tests using the Games-Howell procedure revealed that both writers with unipolar ($p = .001$, *Cohen's d* = 1.897) and bipolar mood disorder ($p = .016$, *Cohen's d* = 1.481) tended to ask more questions than did control writers.

Second, groups differed in their references to the sensory perception of touch and feeling, measured by words such as *touch* or *hold*, $F(2, 27) = 6.485$, $p = .005$. Again, both writers with unipolar ($p = .002$, *Cohen's d* = 1.811) and bipolar mood disorder ($p = .033$, *Cohen's d* = 1.277) had significantly higher means than control writers.

Third, groups differed in their references to others, as measured by two dependent variables. The first category measured all occurrences of third person pronouns, $F(2, 27) = 3.383$, $p = .049$. Post-hoc analyses revealed that writers with unipolar disorder used these more than did control writers ($p = .038$, *Cohen's d* = 1.252). The second category included all pronouns but the first person singular, $F(2, 27) = 3.703$, $p = .038$. Once again, writers with unipolar disorder made significantly

more of these references than control writers ($p = .017$, *Cohen's d* = 1.379).

Fourth, groups differed in their use of words describing cognitive mechanisms, such as *understand* or *know*, $F(2, 27) = 3.416$, $p = .048$. Writers with unipolar disorder had significantly higher percentages than did control writers ($p = .035$, *Cohen's d* = 1.218).

Finally, groups diverged in their use of terms related to death, $F(2, 27) = 4.641$, $p = .019$. Writers with bipolar disorder employed significantly more of these words than did writers with unipolar disorder ($p = .025$, *Cohen's d* = 1.307).

Discussion

The results of Study 1 were surprising, because they did not reveal any differences between unipolar and bipolar writers' uses of words related to emotions. The psychological states under which artists are able to create provide an explanation as to why there may not be any differences in emotional states between mood-disordered writers and healthy writers during the creative process.

Jamison (1995) noted that bipolar artists are most creative when hypomanic, but that their elation must remain under a certain threshold, because psychosis and the incoherent thinking and speech associated with full-blown mania are detrimental to creativity. Richards (1990), for instance, explained that creativity only benefits from an "optimal level of symptomatology" (p. 323). The present findings provide indirect support for this claim. When writers with unipolar and bipolar mood disorders create, their affective states appear to be moderate and converge towards mild mood elevation. Wadeson's (1980) findings that creative contents differ for patients with unipolar and bipolar mood disorders cannot be transposed to the present studies. Although hospitalized patients are pushed by art therapists to engage in art no matter how severely their disorders are affecting them, most writers probably only take the initiative to create when their psychological states are not extremely depressed or elevated, but moderate (Andreasen & Glick, 1988; Richards, 1981; Richards & Kinney, 1990).

Control writers also did not differ from either of the other two groups in their use of emotion terms. One possible explanation is that control writers also wrote while in a positive and moderate emotional state. Research by Ulman and Levy (2001) suggests yet another explanation. They developed an approach to diagnosing psychopathology based on the content of paintings by patients. Their study confirmed Wadeson's (1980) findings—they identified noticeable differences in the styles of patients depending on the type of mental illness. Ulman and Levy then described how another

TABLE 2
Means and Standard Deviations for Each Type of Word Usage
Differing Between Groups (Study 1)

	<i>Unipolar</i>		<i>Bipolar</i>		<i>Control</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Questions	.22	.05	.26	.12	.12	.04
Third-person pronouns	6.87	2.14	5.69	2.05	4.76	1.02
All but first-person	8.71	1.58	7.47	2.04	6.68	1.35
Feeling	.37	.092	.35	.13	.22	.06
Cognitive mechanisms	6.19	.88	5.55	1.01	5.10	.89
Death	.12	.09	.24	.07	.21	.09

variable—artistic training—affected their results. One patient was discovered to have been misdiagnosed as psychologically healthy even though she really suffered from paranoid schizophrenia. Because she had undergone artistic training in the past, she was able to fool experimenters. Her trained drawing style, therefore, did not reflect her psychopathology.

Because of their lifelong training in writing, the authors examined in the present studies may have been able to produce texts that did not reflect their psychological problems. This does not mean, however, that they were hiding their psychopathology and pretending to be normal. Rather, during the time that they were writing, these authors may have been able to adopt an emotional perspective similar to that of healthy writers.

Pennebaker (1997) already demonstrated the therapeutic effect of writing about emotional experiences. The writers studied here did not write about personal traumatic experiences but instead invented stories and constructed narratives, the writing style that Pennebaker and Seagal (1999) demonstrated to be most associated with positive outcomes. Writing a book is a lengthy endeavor that requires the author to structure his or her thoughts and bring meaning to the events being described. Moreover, Kaufman and Baer (2002) have contrasted the therapeutic consequences of writing prose with the perverse effects of writing poetry. Because poetry entails the expression of emotions in a form that allows for less reflection, it may worsen the psychological distress of the poet instead of relieving it. Future research on linguistic styles could confirm this hypothesized difference in therapeutic effect between prose and verse.

It is unclear how writing affected the writers' personal lives. However, it can be speculated that their artistic training allowed them to adopt a constructive psychological perspective at the very moments that they were left alone with their thoughts, pen, and paper. This temporary relief already makes the creative process a worthy initiative, even if it did not spill over to the rest of their existences.

Even though they failed to support the hypotheses, results from Study 1 indicate that there may exist other differences in styles among the three kinds of authors. Variations were not found in the uses of words related to internal feelings and moods as had been predicted, but rather in less emotionally tinged lexical categories. Symptoms of mood disorders could explain these results. The fact that writers with mood disorders asked more questions than controls may reflect the state of confusion and anxiety that accompanies their illnesses, or could reflect a philosophical interest perhaps triggered by suffering. The higher rates of references to others made by writers with unipolar disorder in comparison to controls may reflect the loneliness and

longing for relationships that often characterizes depression. Their use of words describing cognitive mechanisms can be linked to rumination—the inability to stop thinking about unpleasant events and emotions—which is associated with depressive disorders and anxiety (Nolen-Hoeksema, 2000; Verhaeghen et al., 2005). The fact that writers with bipolar mood disorder displayed more concern over death makes sense, given the high suicide risk associated with this disorder. Finally, the higher rates of words related to the sense of touch are the most difficult to explain in light of mood disorders. It can be speculated that words such as *touching* or *holding* also express the individual's isolation and need for contact with the external world. However, because the significant results in Study 1 resulted from an exploratory analysis using multiple tests, replicating these results in a second study was necessary. The large effect sizes found in Study 1 motivated the belief that these results were not due to chance.

STUDY 2

The following six hypotheses were tested: unipolar and bipolar writers should (a) use more questions and (b) use more words related to the sense of touch and feeling than control writers. Unipolar writers should (c) use more third person pronouns, (d) use more pronouns in general (except the first person singular) and (e) use more words describing cognitive mechanisms than control writers. Finally, bipolar writers should (f) use more words related to death than unipolar writers.

Methods

Subjects. The same authors were used in Study 2. However, three of them were excluded, either because they had not written another novel after the onset of their disorder (Marietta Holley), or because such a novel was not available online at the Gutenberg Project or any other Web site providing free texts (Herman Hesse and Kate Chopin). Because each of these three authors belonged to a different group, the sample sizes in each condition remained equal. The unipolar group comprised three women and six men, the bipolar group one woman and eight men. The control group only included men.

Materials. A new work by each author was selected to replicate the first experiment and test the new hypothesis. Study 2, therefore, compared nine works of fiction by authors with unipolar depression, nine by authors with bipolar disorder, and nine by authors with neither diagnosis.

Procedure. Only the six categories relevant to the hypotheses were examined, using *Linguistic Inquiry and Word Count* (Pennebaker, Francis, & Booth, 2001).

Results

Again, the data were analyzed using MANOVA, and significant main effects were further investigated by post-hoc tests using the Games–Howell procedure.

The MANOVA analysis showed a main effect for group, *Wilks' Lambda* = .258, $F(12, 38) = 3.071$, $p = .004$. Univariate ANOVAs revealed that four out of the six categories tested supported the new hypotheses. Means and standard deviations for these measures are listed in Table 3.

Groups differed in their use of references to others: third person pronouns, $F(2, 24) = 6.647$, $p = .005$, as well as all pronouns but the first person singular, $F(2, 24) = 5.324$, $p = .012$. Replicating Study 1, writers with unipolar depression surpassed control writers on both measures (respectively, $p = .009$, *Cohen's d* = 1.658, and $p = .013$, *Cohen's d* = 1.53).

Groups also differed in their use of words related to death, $F(2, 24) = 4.047$, $p = .031$. Replicating Study 1, writers with bipolar mood disorder made more of these references than writers with unipolar disorder ($p = .029$, *Cohen's d* = 1.387).

Finally, groups differed in their use of words describing cognitive mechanisms, $F(2, 24) = 5.332$, $p = .012$, but the post-hoc tests did not strictly confirm the prediction. Writers with unipolar depression once again had the highest mean of all groups, but this time differed significantly from writers with bipolar disorder ($p = .029$, *Cohen's d* = 1.392), instead of from control writers as they had in Study 1. However, the effect size that characterizes the relationship between writers with unipolar disorder and control writers (*Cohen's d* = 0.753) indicates that results may have been significant with a larger sample size. Control writers and writers with bipolar mood disorder did not differ.

Groups did not differ significantly in their use of questions, $F(2, 24) = 2.389$, $p = .113$, or references to the sense of touch, $F(2, 24) = 1.969$, $p = .161$. The effect sizes indicate that these differences might have reoccurred with larger sample sizes in three cases: unipolar

and bipolar writers used more questions than control writers (respectively, *Cohen's d* = .91 and *Cohen's d* = .986); unipolar writers made more references to the sense of touch than control writers (*Cohen's d* = .816).

Discussion

These results indicate that the type of mood disorder (unipolar or bipolar) that a writer suffers from is associated with certain linguistic characteristics. Writers with unipolar depression express more interest in others, as well as in cognitive processes, whereas writers with bipolar disorder use more words related to death.

The significant differences revealed by the present studies must be examined in relationship to the authors' suspected psychopathologies. First of all, suicidal ideation is a feature of both unipolar and bipolar mood disorder. However, individuals with bipolar disorder are at greater risk for suicide than individuals with unipolar disorder (Dubovsky & Buzan, 1999). The concern over death expressed by writers with bipolar disorder therefore makes sense, but cannot be considered pathological, as they do not differ significantly from the control group. It seems however counterintuitive that writers with unipolar disorder should have the lowest mean of all three groups. Further research is needed in order to account for this surprising finding. It is possible that in periods of better functioning, writers with unipolar disorder compensate for their previous morbid thoughts by ignoring this theme in their writings.

This strategy of compensation could also apply to the discovery that writers with unipolar disorder have the highest mean of references to people other than themselves. Whereas feelings of loneliness usually accompany unipolar disorder, affected authors appear to attempt to relate to others in their writings. This feature of their linguistic style seems adaptive. Stirman and Pennebaker (2001) discovered the complementary phenomenon: In their study, poets who referred to themselves the most were at the highest risk for suicide.

Writers with unipolar disorder also used more words describing cognitive mechanisms. Pennebaker and Seagal (1999) studied individuals who wrote about important personal experiences every day and discovered

TABLE 3
Means and Standard Deviations for Word Categories With Significant Results in Study 2

	<i>Unipolar</i>		<i>Bipolar</i>		<i>Control</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Third-person pronouns	6.55	1.75	5.28	1.35	4.03	1.23
All but first-person	8.52	1.40	6.84	1.63	6.21	1.60
Cognitive mechanisms	6.19	1.12	4.93	.61	5.51	.61
Death	.10	.05	.21	.09	.19	.10

that those who benefited the most from writing tended to progressively use more words related to cognitive mechanisms. Writers with unipolar disorder seem to fit this strategy: Their description of cognitive processes indicates that they attempted to understand and find meaning in the experiences that they described in their works. It is possible that their encounter with unipolar depression motivated their thirst for knowledge and gave them a particular insight into the human condition.

GENERAL DISCUSSION

Overall, it seems that a difference in psychological state (although not in mood and emotions) exists between writers with unipolar disorder and those with bipolar disorder. Whereas both types of writers appeared to experience similar emotional states as controls, writers with unipolar disorder achieved a higher level of reflection than both unipolar and control writers. This finding corroborates Verhaeghen et al.'s (2005) account of rumination as the mediating factor between depression and creativity. In this thinking mode, the individual attempts to understand his or her own internal state. During the writing process, the authors may have been able to redirect their rumination and use it in the content of their narratives. This finding suggests that writers with unipolar disorder may use more secondary thought processes (that are logical and rational), as opposed to the sample of patients suffering from schizophrenia studied by West and Martindale (1988).

Several unavoidable shortcomings of the present studies must be acknowledged. First, as mentioned earlier, the diagnosis of nonliving writers can never be ascertained with as much certainty as when an individual is diagnosed in person by a psychiatrist. Second, if linguistic style depends upon personality, more factors than mental illness should be considered in order to account for existing differences. Future research should investigate the impact of variables such as age, gender, period of existence, and literary genre, as well as other relevant personality markers. To do so would require a far larger sample size.

Nonetheless, the present studies provide indirect support for the claim that writing prose is associated with therapeutic effects. Artistic training, in particular, may have allowed writers to adopt, at least temporarily, a healthy perspective. In addition, differences between the linguistic styles of unipolar and bipolar writers were uncovered. Writers with unipolar depression in particular seem to employ specific strategies aimed at compensating for symptoms of loneliness and rumination. By using rumination as a creative tool, they were able to use a maladaptive feature of their disorder in a positive way. This finding confirms the idea that a

psychological disorder can be both a curse and blessing for an artist who has learned how to rechannel symptoms into a creative initiative.

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APPENDIX 1: LIST OF WRITERS, THEIR NOVELS, AND THE REFERENCES USED TO CLASSIFY THEM

Study 1

Unipolar

- Jane Austen, *Persuasion*.
- Charlotte Brontë, *Jane Eyre*.
- Kate Chopin, *The Awakening*.
- Arthur Conan Doyle, *The Poison Belt*.
- Thomas Hardy, *Jude the Obscure*.
- Henry James, *The Ambassadors*.
- Franz Kafka, *The Metamorphosis*.
- Rudyard Kipling, *Kim*.
- Leo Tolstoy, *Anna Karenina*.
- Edith Wharton, *The Age of Innocence*.

Bipolar

- Honoré de Balzac, *Cousin Betty*.
- Charles Dickens, *Great Expectations*.
- F. Scott Fitzgerald, *Tender Is the Night*.
- Johann Goethe, *The Sorrows of Young Werther*.
- Hermann Hesse, *Siddharta*.
- Victor Hugo, *Les Misérables*.
- Herman Melville, *Moby Dick*.
- Edgar Allan Poe, *The Fall of the House of Usher*.
- Mark Twain, *Huckleberry Finn*.
- Virginia Woolf, *To the Lighthouse*.

Controls

- Pio Baroja, *The Quest*.
- James Fenimore Cooper, *The Last of the Mohicans*.
- Alexandre Dumas père, *The Three Musketeers*.
- Henry Fielding, *Tom Jones*.
- Henry Rider Haggard, *She*.
- Marietta Holley, *Samantha Among the Brethren*.
- Jerome K. Jerome, *Three Men in a Boat*.
- Bram Stoker, *Dracula*.
- Jules Verne, *Around the World in Eighty Days*.
- H. G. Wells, *The War of the Worlds*.

Study 2

Unipolar

- Jane Austen, *Pride and Prejudice*.
- Charlotte Brontë, *Villette*.
- Arthur Conan Doyle, *The Lost World*.
- Thomas Hardy, *Tess of the d'Urbervilles*.
- Henry James, *The Golden Bowl*.
- Franz Kafka, *The Trial*.
- Rudyard Kipling, *Captain Courageous*.
- Leo Tolstoy, *War and Peace*.
- Edith Wharton, *The Glimpses of the Moon*.

Bipolar

- Honoré de Balzac, *Lost Illusions*.
- Charles Dickens, *A Tale of Two Cities*.
- F. Scott Fitzgerald, *The Beautiful and the Damned*.
- Johann Goethe, *Wilhelm Meister's Apprenticeship*.
- Victor Hugo, *The Man Who Laughs*.
- Herman Melville, *Israel Potter*.
- Edgar Allan Poe, *Collection of Stories*.
- Mark Twain, *The Adventures of Tom Sawyer*.
- Virginia Woolf, *Jacob's Room*.

Controls

- Pio Baroja, *Caesar or Nothing*.
- James Fenimore Cooper, *The Pioneers*.
- Alexandre Dumas père, *The Count of Monte-Cristo*.
- Henry Fielding, *Amelia*.
- Henry Rider Haggard, *King Solomon's Mines*.
- Jerome K. Jerome, *Paul Kelver*.
- Bram Stoker, *The Lady of the Shroud*.
- Jules Verne, *Twenty Thousand Leagues Under the Sea*.
- H. G. Wells, *The Time Machine*.

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