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Alexithymia, Emotional Intelligence, and Their Relation to Word Usage in Expressive Writing

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ALEXITHYMIA, EMOTIONAL INTELLIGENCE, AND THEIR RELATION TO

WORD USAGE IN EXPRESSIVE WRITING

BY

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Abstract

This correlational and experimental study examines how people with different levels of alexithymia and emotional intelligence write about their emotional experiences. Because research on expressive writing (writing about important emotional experiences) has found such far-reaching therapeutic benefits, and attributes much of it to expressive writing's linguistic properties, exploring how a person's emotional understanding relates to language matters. Sixty-eight participants engaged in Pennebaker's expressive writing paradigm, and their word usage was measured on a number of categories, as given by the Linguistic Inquiry and Word Count program. Results indicated that different levels of emotional intelligence and alexithymia correlated with certain parameters of word usage. However, few relationships were observed between the two attributes and change in word usage over time.

It has been well established that expressing one's emotions verbally, such as in writing, can be beneficial in myriad ways (Pennebaker, 1997). This has implications for therapy and healing from trauma. In particular, it is believed that the *way* a person writes about emotions can influence the extent to which this emotional disclosure is beneficial (Pennebaker & Seagal, 1999). This poses a potential problem for some, though, because the way an individual writes may be affected by the personality of that individual (Pennebaker, Mehl, & Niederhoffer, 2003). Of specific interest in the present study are those who have different levels of emotional understanding. Do people who have low levels of emotional understanding verbalize their emotions differently than those with high understanding? If so, what is the nature of this difference and how does it affect their writing and its benefits?

Expressive Writing

The term "expressive writing" refers to disclosure of emotions and emotional experiences in written form (Pennebaker, 1997). In the past 25 years, researchers have explored the benefits, the bounds, the moderators, and more about expressive writing. The typical method (originally from Pennebaker & Beall, 1986) that these studies follow involves writing about an important emotional event or trauma for 15 to 30 minutes a day for three to five days. Participants are asked to "really let go" and describe their deepest feelings. As a control, another group of individuals write about superficial, non-emotional subjects. Using this paradigm, investigators can discover the effects of expressive writing.

The beneficial effects from this exercise have been shown to be wide-ranging. On the physiological level, expressive writing has been found to be associated with a decrease in physician visits (Cameron & Nicholls, 1998; Francis & Pennebaker, 1992; Greenberg & Stone, 1992; Pennebaker, Barger, & Tiebout, 1989; Pennebaker & Francis, 1996) and better antibody response to a virus (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994). Behaviorally, research has shown expressive writing to lead to faster reemployment time for unemployed individuals (Spera, Buhrfeind, & Pennebaker, 1994), better attendance at work (Francis & Pennebaker, 1992), higher GPA in students (Cameron & Nicholls, 1996; Pennebaker & Francis, 1996), more working memory capacity (Klein & Boals, 2001), and better transition to college for recent high school graduates (Francis & Pennebaker, 1996). The results also extend to psychological well-being, like a decrease in depressive symptoms (Gortner, Rude, & Pennebaker, 1999; Greenberg & Stone, 1992; Spera et al, 1994).

Other studies have explored the extent or bounds of expressive writing's effectiveness. Burton and King (2008) found that even writing for two minutes on two days could elicit some of these effects, while Chung and Pennebaker (2008) found that writing for one hour in a single sitting had effects but not significantly more than was found for shorter writing stints. In another study specifying expressive writing's extent of effectiveness, Burton and King (2004) found that the valence of topic may not matter for beneficial results. In addition, a number of studies have also focused on how individual differences may either moderate or augment the effects of expressive writing, such as gender, age, or personality (Christiansen et al, 1996; Pennebaker, 1997), though few have shown consistent trends.

Why is Writing Effective?

It is of interest, then, to determine the underlying processes in expressive writing that make it work so effectively. Though investigators posit different ideas, there is no completely conclusive theory, and some doubt that there is a single theory to account for all of the benefits (Smyth & Pennebaker, 2008). Originally, a model of inhibition and confrontation was adopted to explain the effectiveness of expressive writing (Pennebaker, 1989). This explanation described inhibition of thoughts, feelings, and behaviors as a physically stressful activity—as an activity that involves conscious and deliberate self-restraint. Over time, this stress builds up and may lead to detriments in psychological or physical health. It also keeps one from fully analyzing the event or experience that he or she is suppressing. Therefore, confronting one's emotions within expressive writing works to reverse and release this build-up. When people actively think about and process their emotions as opposed to inhibit them—what purportedly occurs during expressive writing—they reduce the weight of physical stress and are able to better understand their emotions (Pennebaker, 1989). Essentially, Pennebaker theorized that the positive outcome effects from expressive writing were a repercussion of catharsis—that the inhibition of emotional expression is stressful, and venting can reduce that stress and lead to improved health. This model of emotional disclosure found support in previous theories in psychoanalysis, cognitive psychology, and psychophysiology (Pennebaker, 1989).

However, more recent research leads one to believe that it has more to do with the power of language and of verbalizing one's emotions (Danoff-Burg, Mosher, Seawall, &

Agee, 2010; Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997;

Pennebaker & Seagal, 1999; Smyth, True, & Suoto, 2001). Investigators speculate that

writing down or talking out emotional issues allows a person to give the issue more

structure through words, and this structure may lead individuals to find their emotional

experiences easier to understand and process (Gonçalves, 1995). Furthermore, in creating

a coherent narrative out of one's emotional experiences, individuals may be able to

manage their emotions more effectively, thus producing the mental and physical

improvements (Pennebaker & Seagal, 1999). Studies have also shown that expressive

writing essays that contain a more logical and structured narrative lead to more benefits

in the writer (Smyth, True, & Suoto, 2001; Danoff-Burg et al, 2010). This finding

bolsters the idea that the structure of language and narrative is the underlying source of

benefit in expressive writing. Two pieces are involved: that emotions can often be messy

and unordered, and that we as humans seek stories and narratives to explain our world

(Pennebaker & Seagal, 1999). The conventions of language and writing, then, offer an

order to the sometimes irrational nature of emotional experience, resulting in better

management of both one's emotions and the stresses that can come from them.

Specifics of Word Usage and Language

Following from the theory that verbalizing emotions leads to health improvement,

a number of studies have attempted to specify how certain words or structures may

influence the benefits of expressive writing (Campbell & Pennebaker, 2003; Lakoff,

1975; Pennebaker, 1993; Pennebaker & Francis, 1996; Pennebaker & Graybeal, 2001;

Pennebaker, Mayne, & Francis, 1997; Petrie, Booth, & Pennebaker, 1998; Wientraub,

1981). If creating a narrative is the eventual "goal" for expressive writing as a treatment, how do people create it with the words available to them? It turns out that the answer to this question is linked to individual differences.

That the way people write, talk, and communicate is a function of their personality is not a new discovery, and possibly a statement of common sense. Pennebaker and King (1999) established reasonable evidence that individuals' writing or linguistic styles remain relatively stable over time and in different situations; thus, even elements of writing like word choice, tense, and point of view could reflect consistent aspects of personality. However, the study of specific word usage is relatively new. One example is Lakoff's (1975) study, which showed that women swear less than men, use more intensifiers like "really" and "so," and use more words reflecting uncertainty like "sort of" and "maybe" than men—perhaps due to cultural expectations linked with gender. Another example is that of Weintraub (1981), who found that individuals with depression used the word "I" significantly more than those without depression. These studies exhibit how language can reveal not just stable parts of our personalities but also mirror more time-sensitive states of mind or stages in our lives.

The following are several models that investigators have developed over a number of studies to account for effects of specific word usage. For instance, investigators have attempted to formulate a model based on emotion words. Initially, Pennebaker (1993) found that individuals who used a high number of negative emotion words (such as "hate" and "cry") and a low number of positive emotion words (such as "glad" and "cherish") showed the most benefit from writing about personal traumas. Pennebaker and Francis (1996), however, found no support for this claim; rather, they

found that using more positive emotion words and a moderate number of negative

emotion words elicited the most improvements in health. Yet even their findings have

only limited support (Pennebaker & Graybeal, 2001). A possible explanation could be

that fewer than five percent of the words people use when writing on emotional subjects

are actually emotional (Pennebaker, Mehl, & Niederhoffer, 2003), so results in these

studies could be so variable simply because the usage of these words are so low. It may

still be possible that a model can arise from positive and negative emotion words, but

given the unsystematic nature of them in natural language use, a simple prediction of

"more" or "less" may not be the way to interpret it.

A second, "cognitive change" model proposes that individuals who use an

increasing proportion of insight words (such as "realize" and "notice") and causal words

(like "because" and "depends") from the first session of expressive writing to the last will

show the most improvements in psychological and physical health (Pennebaker, Mayne,

& Francis, 1997; Pennebaker, Mehl, & Niederhoffer, 2003). This model is of particular

interest in research on word usage, not only because it has more robust supporting

evidence than other models, such as the emotion words model, but also because it directly

relates to the building of a coherent narrative. These words add logical structure to one's

writing about emotional experiences. Additionally, it was the increase of insight and

causal words over multiple writing sessions—as opposed to high, unchanging usage

overall—that related to the most improvements in health. Those who maintained an

insightful narrative from the very beginning did not see the same improvements

(Gonçalves, 1995). This finding implies that benefit from expressive writing derives in

part from analyzing and *learning* new things about one's emotional experiences. In turn,

a number or researchers hypothesized that increase in insight and causal words would lead to improvements in physical health, immune functioning, or working memory capacity, and found support for those predictions (Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997; Petrie, Booth, & Pennebaker, 1998; Klein & Boals, 2001). Pennebaker and Graybeal (2001) identified this model as the most promising for explaining how writing can lead to beneficial outcomes. They proposed that a future direction for research on expressive writing should further specify its underlying mechanisms.

Another proposed model pertains to "pronoun shifts"—that individuals show preference to different pronouns from day to day (Campbell & Pennebaker, 2003). In this view, individuals who glean the most benefits from expressive writing reference themselves a lot on certain days but not on others, whereas those who stick to one way of referencing people in their narratives do not see the benefits (Campbell & Pennebaker, 2003; Pennebaker, 2011). The researchers reason that emotional experiences are largely social ones as well, so in describing them, one must process how one relates to others. The differences that can arise in choosing which pronouns to use as placeholders in a sentence carry subtle connotations; thus, exhibiting flexibility with this usage also exhibits an even keel when it comes to handling one's emotional experiences (Pennebaker, 2011). The study (Campbell & Pennebaker, 2003) that tested this model found support for it.

Alexithymia

Alexithymia is a multi-faceted cognitive-affective construct that primarily pertains to emotional understanding and experience. Taylor, Bagby, and Parker (1991) outlined the established symptoms for alexythimia as having difficulty in describing or verbalizing one's emotions, difficulty differentiating between body functions and emotions, difficulty with imaginative thinking, and a tendency toward externally oriented cognition. This is not to say that alexithymics do not have emotional experiences, but rather they lack an ability to identify, process, and express their feelings. Alexithymia was originally identified within the context of psychosomatic medicine—the connection of emotions and personality with bodily functions, like disease (Taylor, 1984). Medical doctors and psychiatrists (e.g. Lesser, 1983) noticed that some patients had a marked inability to describe their emotions. These patients would instead use very vague emotional statements ("I felt bad"), describe body functions ("My headaches got worse"), or not be able to answer doctors' questions about emotions. Overall, alexithymia is considered a stable personality trait as opposed to a dynamic ability (Salminen et al, 1994; Taylor, Bagby, & Parker, 1991). With regard to alexithymia's prevalence in certain demographics, some studies have shown higher rates of alexithymia in men than women (cf. Levant, 1998), in older individuals than younger individuals (Pasini et al, 1992), and in lower socioeconomic status than higher status individuals (Lane, Sechrest, & Riedel, 1998). Research has also associated alexithymia with a number of mental or behavioral disorders. Taylor (1984) cites associations between alexithymia and somatoform disorders, substance abuse, and posttraumatic stress disorders. Studies in several western countries have found the prevalence of alexithymia to be around seven to 18 percent of the respective general populations (Kokkonen et al, 2001; Loas, Fremaux, Otmani, &

Verrier, 1995; Parker, Taylor, & Bagby, 1989). Thus, alexithymia could be said to fall at the bottom end of a spectrum of emotional understanding, and to be a state that affects many and can have serious repercussions.

It is of interest, then, to discern how this different level of emotional understanding manifests itself in people's writing style, especially when the content of writing is so emotional.

Alexithymia and Expressive Writing

A handful of studies have examined alexithymia's influence on expressive writing's benefits (Ashley, O'Connor, & Jones, 2011; Baikie & McIlwain, 2008; Gortner, Rude, & Pennebaker, 2006; Lumley, 2004; Paez, Velasco, & Gonzalez, 1999; Solano et al, 2003). Researchers hypothesized that those high in alexithymia would not benefit from writing because the benefits of expressive writing may have as a prerequisite the ability to process one's emotions in a meaningful way (Lumley, 2004; Ashley, O'Connor, & Jones, 2011). However, research has shown two opposing outcomes. First, certain studies that used Pennebaker's expressive writing paradigm while comparing alexithymia scores simply found outcomes similar to general studies on the benefits of expressive writing: those who both scored high in alexithymia and performed expressive writing showed a decrease in depressive symptoms (Gortner, Rude, & Pennebaker, 2006; Baikie & McIlwain, 2008), fewer physician visits and less sleep disturbance (Baikie & McIlwain, 2008), faster recovery from bladder papilloma surgery (Solano et al, 2003), and better mood (Paez, Velasco, & Gonzalez, 1999). In those studies, alexithymia does

not necessarily act as a moderator. Conversely, expressive writing helped alexithymics improve their health.

However, other studies have found alexithymia to have moderating effects on the benefits of expressive writing. O'Connor and Ashley (2008) observed more stress in alexithymic individuals following expressive writing. Lumley (2004) also reviewed a number of his studies that showed that alexithymics did not benefit from emotional disclosure. Among the studies that did not find beneficial effects, some also had at least one moderating variable (Paez, Velasco, & Gonzalez, 1999; Solano et al, 2003). Paez, Velasco, and Gonzalez (1999) reported that, after a brief expressive writing condition, those high in alexithymia had a higher negative mood score than those low in alexithymia. Solano, Donati, Pecci, Persichetti, and Colaci (2003), as well as Paez et al (1999) described the writing of alexithymics to be shorter, less emotional in nature, and more focused on reporting what took place in their experience. While these studies maybe have concluded overall that alexithymics can benefit from expressive writing, this conclusion was not unanimous.

Therefore, the two patterns of data in the studies result in two competing explanations for alexithymia's role in expressive writing. On one side, it may be that alexithymics can benefit from expressive writing because their daily lives do not often force them to examine and describe their emotional experiences. Given this new chance to reflect and verbalize these feelings, alexithymics improve in health and well-being. On the other side, alexithymics may not benefit from expressive writing because there are a number of conditions that must be met before one can effectively express or disclose their emotions (Lumley, 2004; Kennedy-Moore & Watson, 1999; Middendorp & Geenen,

2008). According to Lumley (2004), these conditions include a) experiencing emotional

or stressful events, b) being able to identify and analyze one's emotions, c) valuing

disclosure, d) actively inhibiting the experience prior to disclosure, and e) being in a

situation that normally does not value disclosure. Alexithymics specifically lack the

second condition, and thus may also not qualify for the third and fourth, rendering any

attempt at expressive writing to be ineffectual. Baikie and McIlwain (2008) propose

another alternative: that alexithymics may show some superficial benefit from expressive

writing, but are not actually tapping into the cognitive changes that bring about true

improved health. That is to say, expressive writing does not necessitate that alexithymics

accurately identify their emotions, only that they discuss something self-reported as

emotion. It is for this reason that Lumley (2004) argues there may be a possibility for

those who rate high in alexithymia to benefit from expressive writing *if* they are given

"emotional didactics" or guidance along with emotional disclosure. This proposition

creates some common ground for the opposing views. In essence, Lumley (2004)

explains that expressive writing, independently, is most effective for those who have a

propensity for introspection. Because alexithymics lack this potential, they would require

some sort of instruction on how to express themselves in this way. Unlike those with

typical levels of emotional understanding, alexithymics may not engage in the task of

expressive writing in a way that naturally leads to health improvement.

       Though these connecting ideas are plausible, it is not clear which one of the initial

arguments is correct. The possibility that both could be true, given different conditions,

also exists. Examining the language that alexithymics use in comparison to non-

alexithymics may help parse out why these differing findings occur. Recall that the main

theory behind expressive writing dictates that benefits from the exercise arise from the structure that language and narrative offer and perhaps from certain word usage. However, it is possible that one can write about one's emotions without actually analyzing them and working through them, and it is likely that this would result in different patterns of usage. So, if alexithymics show different patterns than non-alexithymics, this difference could provide evidence for the argument that expressive writing is not beneficial for alexithymics. But if the patterns of word usage for alexithymics change in comparison to non-alexithymics over multiple writing sessions, and they change in ways that elicit more structure, then there will be evidence that alexithymics can benefit from expressive writing.

Emotional Intelligence

Emotional intelligence is a complex construct, which contains more facets than alexithymia. The organization of these parts into a cohesive model remains under debate (Mayer, Salovey, & Caruso, 2000). In general, emotional intelligence is defined as the ability to accurately process emotion in a way that leads to adaptive use of emotions and thought (Mayer, Roberts, & Barsade, 2008). It came to be a heavily researched topic though the exploration and subsequent popularity of the notion of multiple intelligences, and is considered a subset of social intelligence (Salovey & Mayer, 1989).

There are three main types of models under which investigators have classified emotional intelligence. The first type considers emotional intelligence as a set of specific abilities, namely, perceiving emotion, understanding and appraising emotion, using

emotion in cognition, and managing emotion (Mayer, Roberts, & Barsade, 2008). These abilities may pertain to one's own emotions or to that of others (Salovey & Mayer, 1989).

The second model type is integrative, and approaches emotional intelligence by gathering and organizing information about a number of abilities like the ones described above in order to gain a general sense of emotional intelligence overall. Examples are Izard's (2001) Emotional Knowledge model, which focuses on perception and appraisal of emotion. It takes the stance that emotional intelligence should be measured in terms of the knowledge already attained about emotion, and thus is more cohesive. Another is the Four-Branch model of emotional intelligence (Mayer & Salovey, 1997), the four branches being the same as those in pure ability models, with the difference being in how the model is structured. While the abilities in specific-ability models remain distinct or unordered—that is, maintaining separate facets where one does not lead to others—some proponents of integrated models argue that the abilities that comprise emotional intelligence build on each other to create a "cascading model" (Mayer & Salovey, 1997; Joseph & Newman, 2010). Each ability reinforces the next. For example, people can manage their emotions because they can use their emotions in their thought processing. Likewise, if a person cannot perceive emotions well, then he or she will not be able to understand them well either, and so forth. This organization of emotional intelligence attempts to see its skill set as slightly more interconnected than pure ability models.

Finally, some researchers prefer a mixed-model organization of emotional intelligence. The primary difference from the other types of models is that mixed models incorporate extra traits, such as happiness, self-regard, and tolerance of stress, with abilities like those outlined in specific-ability and integrative models (Bar-On, 1997).

Bar-On's (1997) model of emotional intelligence also outlined more general abilities, like "non-cognitive capability, competency, or skill," in contrast to the more specific abilities given in other models. Mixed models are much broader in scope because they include these additional elements, which have earned them some criticism for being too general (e.g., Joseph & Newman, 2010). Some even believe that the mixed models represent a separate psychological construct from specific-ability and integrative models. Van Rooy, Viswesvaran, and Pluta's meta-analysis (2005) found that while mixed models correlated with each other, mixed models and ability models were relatively distinct. According to Mayer, Roberts, and Barsade (2008), though, this criticism does not imply that relating other variables to emotional intelligence is wrong—it has an important place in the literature—but it is also important to acknowledge that these variables are not part of emotional intelligence.

Emotional intelligence has many practical implications. Goleman (1995) made the phenomenon a popular one, especially in the workplace and academia, stating that emotional intelligence could predict job performance. This application should be taken with caution, however, in light of later findings that qualify the use of emotional intelligence models with work performance (Joseph & Newman, 2010). Another application for emotional intelligence lies in social relations among children and adults. For example, measures of children's emotional regulation and emotion knowledge at ages 3 to 4 were found to predict social competence not only at that age but also when children reach kindergarten (Denham et al, 2003), and in adults, emotional intelligence scores were found to predict social competence based on self reports (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). Finally, levels of emotional intelligence are

positively associated with psychological well-being (e.g. Gohm et al, 2005). These

findings give a sense of how emotional intelligence pervades all aspects of our everyday

lives.

Emotional Intelligence and Expressive Writing

The relationship between emotional intelligence and expressive writing is largely

unresearched. Only two studies (Wing, Schutte, & Byrne, 2006; Kirk, Schutte, & Hine,

2011) have examined outcome effects of expressive writing while also measuring

emotional intelligence. Wing, Schutte, and Byrne (2006) found that expressive writing

led to higher scores of emotional intelligence and a higher rating of life satisfaction. Kirk,

Schutte, and Hine (2011) also found higher levels of emotional intelligence after

expressive writing in a professional or workplace setting. These studies focused on

emotional intelligence as a dynamic ability as opposed to a static trait, as evidenced by its

status as an outcome of expressive writing in and of itself, as opposed to a variable that

predicts other subsequent benefits after expressive writing. It is intriguing that they do not

align with those on alexithymia, which in some ways can be considered a lower bound

for emotional intelligence, as alexithymia represents a deficit in verbal understanding of

emotion within certain models of emotional intelligence (Salovey & Mayer, 1989). In

fact, these two attributes are treated very differently in the literature on expressive

writing, with alexithymia as a predictor and emotional intelligence and a dependent

variable. This debate will be developed further later on. Clearly, more research must be

done to better understand how these elements interplay. This distinction affects not only

the diverging outcomes of the research, but also the implications for these constructs of emotional understanding.

Another Missing Piece in the Literature

Few studies have focused on connecting emotional understanding (alexithymia, emotional intelligence) with models regarding word usage or writing style. One exception is Paez, Velasco, and Gonzalez's (1999) study, where they found that higher scores on the Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994) correlated with less introspectively written essays. However, the researchers relied on human raters for this analysis, and since then, computer programs have been developed to code for linguistic properties in expressive writing more objectively and intensively. One study has examined alexithymia with expressive writing and also used one such program in its analyses. O'Connor and Ashley's (2008) study, as previously referenced, used the Pennebaker expressive writing paradigm and the Language Inquiry and Word Count (LIWC) program (Pennebaker, Chung, Ireland, Gonzalez, & Booth, 2007) to draw associations between expressive writing and outcomes of blood pressure reactivity and distress while controlling for the moderator of alexithymia. In their analyses, they examined how certain word usage in expressive writing might predict the physical and psychological markers of blood pressure activity and distress.

Two main distinctions must be made to show that the conclusions from their study do not preclude the need for more research on alexithymia and word usage in expressive writing. First, and most important, O'Connor and Ashley's study still aligns with the previous literature in that it concentrates on the outcome effects of language use

only. That is to say, their usage of the LIWC program was to relate word usage with the

outcome variables, rather than finding associations between alexithymia and levels of

word usage. Second, O'Connor and Ashley's study only addressed the use of emotion

words (positive and negative). There are plenty other categories of word usage that may

play a role in expressive writing, as previous research on natural language use describes

(Pennebaker, Mehl, & Niederhoffer, 2003), and the LIWC readily outputs 65 categories

of words and punctuation. While it was helpful that their study found significant

interactions for the emotion words model, further exploration is needed.

        The lack of earnest focus on patterns of language use in expressive writing also

extends to research on its relations to emotional intelligence. Language coding computer

programs have not been used in conjunction with emotional intelligence and expressive

writing in any capacity.

The Present Study

        That the exercise of expressive writing is beneficial is well established. However,

the underlying mechanisms as to why it is beneficial are relatively unclear. This study

will further investigate how linguistic underpinnings in expressive writing lead to health

benefits by noting the moderating factors of differing levels of emotional understanding.

Emotional understanding within the individual seems to be a condition under which

expressive writing is beneficial, and it is reasonable to think that individuals with

different levels of alexithymia and emotional intelligence, as specific markers of

emotional understanding, might write about their emotions differently. Linking this

insight with the current literature on language and personality can also shed more light on the workings of these individual characteristics.

The present study used the structure of the Pennebaker expressive writing paradigm to focus more directly on word usage. After gathering data on levels of alexithymia and emotional intelligence and conducting the expressive writing paradigm, word usage was compared to emotional understanding. The study assigns the word usage itself as a variable that depends upon levels of emotional understanding (alexithymia and emotional intelligence), and it aims to broaden the current models of word usage and writing style to more types of words and punctuation. In doing so, it lays groundwork to make further associations between differences in personality, writing style, and benefits in expressive writing. It is hypothesized that, as a function of the attributes of alexithymia and emotional intelligence, content (especially word usage) in expressive writing will be different and will change over multiple sessions of expressive writing.

The following predictions, for clarity's sake, are described with the more general term of emotional understanding, which intends to encompass both alexithymia and emotional intelligence. It is hypothesized that alexithymia and emotional intelligence will be negatively correlated—that as levels in alexithymia increase, levels of emotional intelligence decrease. So, scoring high in emotional understanding will stand for scoring low in alexithymia and high in emotional intelligence. Alexithymia and emotional intelligence, then, are predicted to relate to word usage such that certain trends in word usage will have a positive correlation for one and a negative correlation for the other. While this expectation may seem to be obvious, given previous explanations that

alexithymia represents a lower bound of emotional intelligence, it has not previously been shown empirically.

Baseline Differences in Word Usage.

First, those who score lower in emotional understanding (high in alexithymia, low in emotional intelligence) will use more tentative words (such as "guess" and "maybe") and less certain words (such as "definitely" and "always") than those who score higher in emotional understanding. It is a characteristic of alexithymia to have an inability to identify emotions (Taylor et al, 1991), so these individuals may choose words that tend to reflect this uncertainty.

Second, those who score lower in emotional understanding will use more past tense and less future tense than those who score higher in emotional understanding. Pennebaker and Seagal (1999) describe that effective, introspective essays from expressive writing display an ability to dispense past events and integrate them with present and future sentiments and actions. Thus, those low in emotional understanding may lack this ability, because they focus in an externally-oriented way on the passage of past events instead of trying to work out how that emotional event affects their present and future states of being (Solano et al, 2003).

Third, those who score lower in emotional understanding will use fewer adverbs than those who score higher in emotional understanding. Speculatively, adverbs may indicate more precise descriptions. Because alexithymics can have difficulty even with describing physical ailments to their doctors (Lesser, 1983), fewer adverbs may be a marker of the vagueness in their emotional disclosures.

Fourth, those who score lower in emotional understanding will use less seeing words (such as "look" and colors), hearing words (such as "listen" and "whisper"), and feeling words (such as "grip" and "hot") than those who score higher in emotional understanding. Appealing to one's own sensations in connection with one's emotions could indicate a certain level of understanding of how one's surroundings and circumstances affect emotions. It is anticipated that those with low emotional understanding will be less proficient in making this connection in their writing.

Fifth, those who score lower in emotional understanding will use a different number of social words (such as "interact" and "companion"), family words (such as "daughter" or "parent"), and friend words (such as "friend" or "roommate") than those who score higher in emotional understanding. There are two plausible explanations for these types of words. On one hand, people with low emotional understanding may be more likely to use these words. Alexithymia is characterized in part by "externally-oriented thinking" (Bagby, Parker, & Taylor, 1994), so they may be more inclined to focus on other people than on themselves. On the other hand, people with low emotional understanding may use less of these words, because understanding emotional connections with others may be linked with understanding one's own emotions.

Sixth, and drawing from the ideas in the emotion words model, those who score higher in emotional understanding will use more positive emotion words and fewer negative emotion words than those who score lower in emotional understanding. Individuals high in emotional understanding are already more in control and in touch with their emotions, so it stands to reason that they will then correlate with the more stable and beneficial proportions of emotion word usage.

Seventh, those who score lower in emotional understanding will use more periods than those who score higher in emotional understanding. Period use should correlate with words per sentence, so those who use more periods are also expected to have fewer words per sentence. Since all writing topics will be emotional in nature, more periods and fewer words per sentence may correspond with less earnest emotional appraisal—an ability of which is outlined in models of emotional intelligence (Mayer, Roberts, & Barsade, 2008)—or less complex thoughts on the subject.

However, this idea may not extend to punctuation use overall. Punctuation gives structure to sentences (Cocker, 1878), so more punctuation use may correspond with a greater sense of structure to one's thoughts on his or her emotions. Investigators indicate that emotional intelligence indicates a clearer understanding of emotions and use of emotion in cognition (Mayer, Roberts, & Barsade, 2008). Thus, those who score lower in emotional understanding are anticipated to use less punctuation overall than those who score higher in emotional understanding.

Change in Usage Over Multiple Writing Sessions.

In general, those who have lower emotional understanding are anticipated to show different rates of change from the first writing session to the last than those who have higher emotional understanding. Due to the debate that persists in previous literature, the direction of this relationship is unknown.

It is possible that those who score lower in emotional understanding will show increases in use of types of words that indicate cognitive-emotional processing (from the ones described above: certain words, seeing words, hearing words, feeling words, positive emotion words, present and future tense, and adverbs) and decrease in use of

words that reflect uncertainty or negativity (such as tentative words, negative emotion words, past tense, and periods) in comparison to those who score higher in emotional understanding. Additionally, and following the cognitive change model (Pennebaker, Mayne, & Francis, 1996), those with lower emotional understanding may increase usage of causal and insight words in comparison to those with higher emotional understanding. The changes in word usage would indicate that these individuals are actually learning from the exercise. While individuals low in emotional understanding may not be as familiar with the exercise of verbalizing their emotions, because they have more difficulty with it. However, being faced with and actually completing this task may cause these individuals to increase use of these words the most, as practice makes perfect.

However, it is also possible that those who score lower in emotional understanding will not show these changes, whereas those who score higher in emotional understanding will. This prediction follows Lumley's (2004) argument that this cognitive change is not immediately accessible or achievable for alexithymics.

Finally, the present study sheds light on the stability of emotional understanding—that is, whether alexithymia and emotional intelligence are traits or abilities. After completion of the expressive writing paradigm, alexithymia and emotional intelligence were re-measured, allowing them to be analyzed not only as predictors of word usage but also as possible outcome effects from expressive writing. Research on alexithymia treats it essentially as an unchanging trait, while emotional intelligence is more often considered an ability. Thus, these attributes end up playing different roles in psychological studies; alexithymia becomes a predictor variable while emotional intelligence becomes an outcome variable or effect. Emotional intelligence, in part, is

included alongside alexithymia in this study for precisely this reason. The present study, then, will examine each attribute's status as a stable trait or as a dynamic ability by using them both as primarily an attribute that is stable, but also monitoring if those levels for each individual change after completing multiple sessions of expressive writing. The exercise of expressive writing may lower levels of alexithymia and increase levels of emotional intelligence over time, as a person begins to analyze their emotions in a new way through verbalizing them. The studies with emotional intelligence (Wing, Schutte, & Byrne, 2006; Kirk, Schutte, & Hine, 2011) and some with alexithymia (Baikie & McIlwain, 2008; Paez, Velasco, & Gonzalez, 1999; Solano et al, 2003) suggest this possibility. A causal relationship is not determined in this study, but correlates are examined.

Method

Participants

Potential participants were 120 English-speaking individuals in the United States. This number reflects individuals that expressed interest in participating in the study and received email alerts to complete it online. Of these, 81 people began the study at the first session. However, the analysis includes only those who completed all sections of at least one session in the study. Analyses for baseline hypotheses of word usage were conducted with those who completed at least one session, and analyses for change in word usage were conducted with those who completed all three sessions.

Sixty-eight people completed at least one writing session. There were 54 women and 14 men. The average age of the participants was 37.98 years ($SD = 20.15$), and they

had on average 15.62 years of education ($SD = 2.68$). The self-identified racial or ethnic

breakdown was 92.60% White or Caucasian, 4.40% Asian or Asian American, 4.40%

Middle Eastern, 1.50% from Lantino/a, European, and multiracial backgrounds.

Fifty-two individuals completed all three writing sessions. Of these, 44 were

women and eight were men. The average age was 38.07 years ($SD = 20.25$) and the

average number of years of education was 15.94 ($SD = 2.26$). The self-identified ethnic

or racial breakdown was the following: 92.30% White, 5.80% Asian American, 3.80% of

Middle Eastern descent, and 1.90% from Latino/a, European, and multiracial

backgrounds.

Participants were recruited through flyers, emails, and an event posting on

Facebook, a social networking website. Compensation for participation involved the

option to enter a raffle for a 50-dollar gift card, and some participants received extra

credit for their introduction to psychology class.

Materials

Toronto Alexithymia Scale (TAS-20). Participants completed the 20-item scale

for alexithymia developed by Bagby, Parker, and Taylor (1994), which has become a

standard for operationalizing alexithymia. Analyses of reliability and validity found

strong convergent and concurrent validity (Bagby, Taylor & Parker, 1994), modest

discriminant validity (Bagby, Taylor & Parker, 1994), strong factorial validity (Parker,

Taylor, & Bagby, 2003), and strong internal reliability (Parker, Taylor, & Bagby, 2003).

The scale targets three elements of alexithymia: difficulty identifying feelings, difficulty

describing feelings, and externally oriented feelings. This scale involved responding on a

7-point Likert-type scale by indicating agreement or disagreement with statements like "I prefer talking to people about their daily activities rather than their feelings" and "It is difficult for me to find the right words for my feelings." Participants' overall scores were calculated by averaging ratings across scale items. In this study, the 20 items had a Cronbach's $\alpha = .85$. See Appendix A for the entire questionnaire.

Abridged Emotional Intelligence Test. To get a general impression of participants' emotional intelligence, an abridged test was given. It was a 10-item scale distributed by PsychTests AIM, Inc. (n.d.) that asks participants to respond to statements such as, "When someone I care about is sad, I feel sad too," and "I am not satisfied with my work unless someone else praises it" on a 7-point Likert-type scale by indicating how much they agreed or disagreed. Scores were determined in the same fashion as those for alexithymia. The 10 items, in this study, had a Cronbach's $\alpha = .82$. See Appendix B for the entire questionnaire.

Expressive Writing Task. Following the Pennebaker (1986) paradigm, participants completed three sessions of expressive writing. Each session was 15 minutes long. Participants were prompted with the following text, drafted and used by Pennebaker (1997), with minor revisions[1]:

> For the next 15 minutes, I would like for you to write about your very
>
> deepest thoughts and feelings about an important emotional issue that has
>
> affected you and your life. In your writing, I'd like you to really let go and
>
> explore your very deepest emotions and thoughts. You might tie your

---

[1] "For the next three days" was changed to "For the next 15 minutes." Also, for ethical reasons, "extremely important emotional issue" was changed to simply "important emotional issue."

topic to your relationships with others, including parents, lovers, friends, or relatives; to your past, your present, or your future; or to who you have been, who you would like to be, or who you are now. There will be three writing sessions in all, over three days; you may write about the same general issues or experiences on all days of writing or on different topics each day. All of your writing will be completely confidential. Don't worry about spelling, sentence structure, or grammar. The only rule is that once you begin writing, you continue to do so until 15 minutes have passed.

Language Inquiry and Word Count. The "essays" that participants completed were analyzed using the Linguistic Inquiry and Word Count coding computer software (Pennebaker et al, 2007). The 2007 version of the program contains over 21,000 words in its dictionary and outputs proportions of 65 categories of words and punctuation. Word usage categories are calculated as proportions out of total number of words. Punctuation usage categories, though, are listed simply as the number of times they occur in an essay. Hypotheses for patterns of language use in this study were based on these categories. In addition to modestly successful reliability and validity tests performed by Pennebaker et al (2007), Kahn et al (2007) established strong construct validity for the program through three experiments with emotion triggering and subsequent disclosure. It was also found to sufficiently agree with human raters' coding (Pennebaker et al, 2007). Though this program cannot pick up on certain descriptive styles and aspects such as sarcasm, its analysis has the ability to reveal many parameters of natural language use (Pennebaker, Mehl, & Niederhoffer, 2003). For a table listing all 65 categories, examples, and statistics of reliability and validity, see Appendix C.

Procedure

The study involved three separate "surveys" created on SurveyMonkey.com, a website for creating Internet surveys. These "surveys" were completed on three consecutive days (one per day). Individuals signed up for the study by sending a brief email of interest to an email address created for the study. Participants were sent links to each of the online surveys through email alerts that were delivered one per day three days in a row. For the first survey, participants first gave their informed consent and confirmed that they were at least 18 years of age. They created an identification pseudonym that was used to track participation across surveys while maintaining anonymity. Participants filled out the Toronto Alexithymia Scale and the Abridged Emotional IQ Test, and finally, completed one session of the expressive writing paradigm. Participants were asked to enter the time of day they started to write, and the time of day they finished writing. To ensure that participants did not completely make up the times they entered, times were also recorded by a tracker from the Survey Monkey website and compared to the participants' answers. In general, these times were equivalent (Two individuals' data were discarded because the tracker revealed they did not write for 15 minutes). After the self-determined 15 minutes passed, participants were thanked for their participation, given a partial debriefing and reminded to check their email the next day for the alert for the next part of the study. The second survey included another session of the expressive writing paradigm as in the first survey. In the third survey, participants completed a final expressive writing session. Then, participants also completed the TAS-20 and the

Abridged Emotional Intelligence Test again. Finally, they were debriefed more fully and thanked for their participation.

Results

Baseline Analysis from Session 1

A Pearson correlation between first-day score for alexithymia ($M = 2.62$, $SD = 0.73$) and first-day score for emotional intelligence ($M = 3.52$, $SD = .95$) was found to be statistically significant, $r(66) = 0.358$, $p = .001$. All tests reported here, unless otherwise indicated, are used at an alpha level of 0.05, one-tailed. A higher score for alexithymia indicates a higher level of alexithymia, and a higher score for emotional intelligence also indicates a higher level of emotional intelligence. Thus, according to these data, as levels of alexithymia increase, levels of emotional intelligence also increase.

Individuals wrote on a wide range of subjects, the majority of which were negative in valence. Common themes were family members, stresses with romantic relationships, future planning, health or body image, and bereavement.

From the following reports of correlations between alexithymia and word usage and between emotional intelligence and word usage, it becomes clear that one attribute (alexithymia or emotional intelligence) can show a particular trend in word usage where the other does not. There are four word usage categories that show similar relationships with both alexithymia and emotional intelligence; these are tentative words, positive emotion words, adverbs, and periods.

Alexithymia and Word Usage.

As depicted in Table 1, Pearson correlations were performed between alexithymia at day 1 ($M = 2.62$, $SD = 0.73$) and the categories of word and punctuation usage with

hypothesized relations. Significant positive correlations were observed between

alexithymia and tentative words and adverbs. Significant negative correlations were

observed between alexithymia and family words, positive emotion words, and periods.

There was no relationship between alexithymia and total word count, words per sentence,

certain words, insight words, causal words, past tense, future tense, social words, friend

words, seeing words, hearing words, feeling words, negative emotion words, and overall

punctuation.

Table 1
Correlations for Hypothesized Outcomes Between Alexithymia and Word Usage

Variable	M	SD	r	p
Total Word Count	441.97	152.37	0.119	0.166
Words Per Sentence	20.03	5.62	0.188	0.063
Certain Words	1.78	0.84	-0.17	0.09
Tentative Words	3.21	1.43	0.211	0.042
Insight Words	3.94	1.45	0.13	0.146
Causal Words	2.12	0.93	0.182	0.069
Past Tense	4.71	2.96	-0.037	0.383
Future Tense	0.94	0.61	-0.052	0.337
Social Words	10.01	3.89	-0.095	0.22
Family Words	1.16	1.36	-0.242	0.023
Friend Words	0.44	0.63	-0.082	0.253
Seeing Words	0.49	0.45	-0.118	0.168
Hearing Words	0.4	0.47	0.08	0.258
Feeling Words	1.3	0.86	0.167	0.086
Positive Emotion Words	3.89	1.89	-0.244	0.022
Negative Emotion Words	2.98	1.52	0.174	0.077
Adverbs	6.47	1.85	0.223	0.034
Periods	5.53	1.91	-0.218	0.037
All Punctuation	14.38	4.26	0.03	0.405

Data-mining found no other significant correlations between alexithymia and

word or punctuation usage.

Emotional Intelligence and Word Usage.

As depicted in Table 2, Pearson correlations were performed between emotional

intelligence at day 1 ($M = 3.52$, $SD = .95$) and the categories of word and punctuation

usage with hypothesized relations. Significant positive correlations were observed

between emotional intelligence at day 1 and total word count, words per sentence,

tentative words, insight words, and adverbs. Significant negative correlations were

observed between emotional intelligence and positive emotion words and periods. There

was no relationship between emotional intelligence and certain words, causal words, past

tense, future tense, social words, family words, friend words, seeing words, hearing

words, feeling words, negative emotion words, and overall punctuation.

Table 2
*Correlations for Hypothesized Outcomes Between Emotional
Intelligence and Word Usage*

Variable	M	SD	r	p
Total Word Count	441.97	152.37	0.203	0.048
Words Per Sentence	20.03	5.62	0.206	0.046
Certain Words	1.78	0.84	-0.092	0.227
Tentative Words	3.21	1.43	0.263	0.015
Insight Words	3.94	1.45	0.215	0.039
Causal Words	2.12	0.93	0.02	0.436
Past Tense	4.71	2.96	-0.103	0.201
Future Tense	0.94	0.61	-0.093	0.225
Social Words	10.01	3.89	0.05	0.341
Family Words	1.16	1.36	0.012	0.461
Friend Words	0.44	0.63	-0.115	0.176
Seeing Words	0.49	0.45	-0.127	0.151
Hearing Words	0.4	0.47	0.125	0.156
Feeling Words	1.3	0.86	0.112	0.182
Positive Emotion Words	3.89	1.89	-0.27	0.013
Negative Emotion Words	2.98	1.52	0.074	0.274
Adverbs	6.47	1.85	0.28	0.01
Periods	5.53	1.91	-0.261	0.016
All Punctuation	14.38	4.26	0.033	0.394

In addition to the hypothesized results, a number of other noteworthy Pearson

correlations were found to be significant at the .05 alpha level, two-tailed. They are

displayed in Table 3. Significant positive relationships were observed between emotional

intelligence and pronouns, personal pronouns, and the first-person singular point of view.

Significant negative relationships were found between emotional intelligence and long

words (six letters in length or longer) and inclusive words (such as "both" and "and").

Table 3
Correlations for Data-mined Outcomes Between Emotional
Intelligence and Word Usage

Variable	M	SD	r	p
Six letters +	15.19	2.8	-0.249	0.04
Pronouns	20.92	3.04	0.436	0.001
Personal Pronouns	14.17	2.87	0.286	0.018
First-person Singular	10.09	2.48	0.242	0.047
Inclusive Words	5.34	1.45	-0.277	0.022

Analysis of Change in Word Usage from Session 1 to Session 3

One sample *t*-tests were performed on difference scores (session 3 – session 1) for

all 65 output categories from the LIWC to gain a general sense of which categories

showed significant changes from the first writing session to the third writing session

independent of alexithymia and emotional intelligence. *T*-tests that resulted in significant

differences at an alpha level of 0.05, two-tailed, are displayed in Table 4 below.

Insignificant results for the other 59 categories are listed in Appendix D. In sum,

significant changes in word usage were observed in use of function words (pronouns and

articles), pronouns, negation words (such as "no" and "don't"), number words (such as

"three"), negative emotion words, and motion words (such as "go" and "visit"). These

findings indicate that usage of number words and motion words increased, while usage of

pronouns, negation words, and negative emotion words decreased.

Table 4
Significant One-sample T-tests of Difference in Word Usage
from Session 1 to Session 3

Difference Variable	M	SD	t	p

Function Words	-1.09	3.81	-2.06	0.045
Pronouns	-0.9	3.1	-2.09	0.042
Negation Words	-0.27	0.98	-2.02	0.049
Number Words	0.34	0.86	2.85	0.006
Negative Emotion Words	-0.7	2.17	-2.31	0.025
Motion words	0.5	1.05	3.44	0.001

Alexithymia and Change.

Pearson correlations were performed to determine whether alexithymia at day 1 was related to change in hypothesized word and punctuation usage from session 1 to session 3. All were found to be insignificant, and are presented in Table 5.

Table 5
Correlations for Hypothesized Outcomes Between Alexithymia and Change in Word Usage

Difference Variable	M	SD	r	p
Certain Words	0.0063	1.13	-0.008	0.478
Tentative Words	0.01	1.44	0	0.499
Insight Words	0.23	1.82	-0.06	0.335
Causal Words	-0.19	1.58	-0.2	0.077
Future Tense	-0.03	1	-0.094	0.253
Family Words	-0.24	1.62	0.221	0.058
Seeing Words	0.17	0.62	0.175	0.107
Hearing Words	-0.01	0.66	-0.022	0.439
Feeling Words	-0.09	0.85	-0.138	0.165
Positive Emotion Words	0.76	3.17	-0.03	4.16
Negative Emotion Words	-0.7	2.17	0.048	0.367
Adverbs	-0.12	1.88	-0.008	0.478
Periods	-0.08	1.69	0.077	0.293
All Punctuation	-0.1	3.39	-0.216	0.062

While none of the hypothesized correlations were significant, a number of them trended near significance. As levels of alexithymia increased, change in use of family words tended to increase, change in causal words tended to decrease, and change in overall use of punctuation tended to decrease.

In addition to the hypothesized results, a number of other noteworthy Pearson correlations were found to be significant at the 0.05 alpha level, two-tailed, and are

displayed in Table 6. As levels of alexithymia increased, change in use of the word "you"

decreased, and change in use of question marks also decreased.

Table 6
Correlations for Data-mined Outcomes Between Alexithymia
and Change in Word Usage

Difference Variable	M	SD	r	p
Second-person Singular	0.12	0.83	-0.355	0.01
Question Marks	0.08	0.5	-0.294	0.034

Emotional Intelligence and Change.

Pearson correlations were performed to determine whether emotional intelligence

at day 1 was related to change in hypothesized word and punctuation usage from session

1 to session 3, and are displayed in Table 7. All were found to be insignificant.

Table 7
Correlations for Hypothesized Outcomes Between Emotional
Intelligence and Change in Word Usage

Difference Variable	M	SD	r	p
Certain Words	0.0063	1.13	0.074	0.302
Tentative Words	0.01	1.44	0.004	0.488
Insight Words	0.23	1.82	-0.191	0.087
Causal Words	-0.19	1.58	-0.07	0.311
Future Tense	-0.03	1	0.203	0.075
Family Words	-0.24	1.62	-0.098	0.246
Seeing Words	0.17	0.62	-0.024	0.433
Hearing Words	-0.01	0.66	-0.034	0.406
Feeling Words	-0.09	0.85	-0.033	0.409
Positive Emotion Words	0.76	3.17	0.041	0.387
Negative Emotion Words	-0.7	2.17	0.008	0.478
Adverbs	-0.12	1.88	0.012	0.468
Periods	-0.08	1.69	0.165	0.122
All Punctuation	-0.1	3.39	-0.168	0.117

While none of the hypothesized correlations were significant, a number of them

showed trends near significance. As levels of emotional intelligence increased, change in

use of insight words tended to decrease, and change in use of future tense tended to

increase.

In addition to the hypothesized results, a number of other noteworthy Pearson correlations were found to be significant at the 0.05 alpha level, two-tailed, and are displayed in Table 8. As levels of emotional intelligence increased, change in use health words (such as "doctor" and "sick") decreased, and change in use of home words (such as "bedroom" and "homesick") also decreased.

Table 8

Correlations for Data-mined Outcomes Between Emotional Intelligence and Change in Word Usage

Difference Variable	M	SD	r	p
Health Words	-0.14	1.16	-0.303	0.029
Home Words	0.11	0.75	-0.299	0.031

Change in Alexithymia and Emotional Intelligence

Test-retest correlations were performed to discern the consistency of alexithymia and emotional intelligence over the course of the study. Alexithymia at day 1 and day 3 were found to be positively correlated, $r(52) = .917$, $p < .001$. Emotional intelligence at day 1 and day 3 were also found to be positively correlated, $r(52) = .904$, $p < .001$.

Paired-groups *t*-tests found that levels of alexithymia from the first day to the third day were not found to be statistically significant at an alpha level of .05, $t(53) = -2.00$, $p = .051$, one-tailed, suggesting that the change was nearly significant. Additionally, levels of emotional intelligence from the first day to the third day were not found to be statistically significant at an alpha level of .05, $t(53) = .664$, $p = .509$, suggesting that emotional intelligence remained virtually unchanged.

Discussion

The hypothesis that those low in emotional understanding write differently about their emotional experiences than those high in emotional understanding was partially supported in this study. Looking at specifics of word usage reveal some expected and some surprising results.

Alexithymia and emotional intelligence were shown to be related such that as alexithymia increased, emotional intelligence also increased. This finding is completely contrary to what was expected. If the finding indeed reflects the reality of the situation for this sample, it could be that these individuals are ones who embody the multiple parts of emotional intelligence (such as emotional perception, appraisal, cognition, and management; Mayer, Roberts, & Barsade, 2008) but the act of verbalizing them and discussing them openly is not something they are either proficient at or inclined to do. Thus, this sample would represent a particular, and perhaps atypical, section of the population. It could also be that these scores reflect a certain level of denial in individuals for either alexithymia or emotional intelligence. Because levels of alexithymia and emotional intelligence were gauged through self-report scales, participants may have chosen answers that corresponded with how they hoped to be as opposed to how they actually are. Many of the items in the Abridged Emotional Intelligence Test (n.d.) were framed negatively, such as "I am bored most of the time," "Everything I try to do ultimately ends in failure," and "I feel like I worry about things that other people don't even think about." It could be that those actually high in emotional intelligence did not want to admit these things about themselves, thus changing how emotional intelligence and alexithymia correlated. If the test had included a better balance of negative and positive items, individuals may have been more inclined to answer differently or more

honestly, which may have resulted in a more expected correlation between emotional intelligence and alexithymia. It may also be helpful to remember that while the positive correlation between the two was significant, it was still far from being a perfect correlation (1.00). The outcome, overall, suggests that while both attributes report levels of emotional understanding in an individual, they are not completely redundant variables.

This aside, alexithymia and emotional intelligence showed some differences in word usage independent of each other. These relationships agree with previous literature that personal attributes can be reflected in the way a person writes (Pennebaker, Mehl, & Niederhoffer, 2003). The following describe and explain the found baseline correlations in the study.

First, as levels of alexithymia at session 1 increased, use of tentative words increased. This relationship supports the predicted idea that those who have trouble verbalizing their emotional experiences will reveal this difficulty by tending to use more words like "maybe" and "depends."

Second, as levels of alexithymia increased, use of family words decreased. Family members can often be those with which we have the most complicated relationships, because of spending so many years living together, sometimes when personalities or temperaments are very different. Therefore, it could be that alexithymics chose not to write about address the emotional aspect of those relationships, as they may be less straightforward and harder to explain than other emotional issues.

Third, use of positive emotion words decreased as levels of alexithymia increased. This finding is in agreement with O'Connor and Ashley (2008), who also found this trend. In accordance with tendencies for alexithymics to manifest other stress disorders

(Taylor, 1984), alexithymics are not as able to integrate positive emotion in their writing on emotional experience.

Fourth, adverb use increased as levels of alexithymia increased. This finding is contrary to what was predicted, and to the relation found between emotional intelligence and adverb use. However, it is possible that instead of adding specificity to one's emotional experiences, adverbs can simply become filler words, only showing a superficial attempt at being more precise. For instance, some of the most commonly used adverbs are "really" or "very," which do not add much specificity at all. Essays in this study with the highest proportions of adverbs had many instances of those less descriptive adverbs.

Finally, use of periods decreased as levels of alexithymia increased. Though this finding is also contrary to what was expected, it can also possibly show a lack of emotional understanding in writing. If alexithymics are unsure about their emotions, they may be more inclined to write longer sentences that ramble, are run-ons, or reflect unorganized thoughts. In this way, period use could reflect confusion when writing on emotional topics.

Correlations were also found between emotional intelligence and word usage. First, as levels of emotional intelligence increased, the total word count for participants' essays increased. In addition, as levels of emotional intelligence increased, the number of words per sentence increased. It is plausible, then, that writing longer essays and longer sentences, within the context of expressive writing, reflects the ability to engage more fully and easily with one's emotional experiences. Those who are higher in emotional intelligence are more likely to be at ease with discussions of emotional topics, and are

more readily available to have both more to say about their emotions and to have less inhibition in disclosing them. It also lends support to the theory that those who have more emotional intelligence have more complex ideas or thoughts on their emotions, assuming longer sentences indicate more complex and integrated ideas. Bolstering this idea is the finding that use of periods decreased as levels of emotional intelligence increased.

Second, as levels of emotional intelligence increased, use of insight words also increased. Understandably, those who are more able to use emotion in cognition and manage their emotions are more likely to use words that explain what their emotions mean and that convey their more solid understanding of them.

Third, use of positive emotion words decreased as levels of emotional intelligence increased. Speculatively, positive emotions are generally easier to admit and discuss than negative emotions. Perhaps those lower in emotional intelligence focused on writing more on the positive aspects of their emotional experiences, simply because they were easier to identify, while those higher in emotional intelligence were not as hesitant to tackle more difficult emotions.

Fourth, use of tentative words also increased as a function of emotional intelligence. This finding does not fit with how one might characterize the writing of those with emotional intelligence. However, it could be that in working out more difficult emotional experiences, as the previous point discussed, use of tentative words in this case might represent a weighing of possibilities, therefore indicating the process of emotional appraisal.

Finally, adverb use increased as levels of emotional intelligence increased. Adverbs, as intensifiers, ostensibly make verbal expression more specific. With

emotional subjects, this finding may reflect a more precise understanding of one's emotions.

In addition to these predicted outcomes, a number of other significant relationships between emotional intelligence and word usage were found. First, as levels of emotional intelligence increased, use of long words (six letters or more in length) decreased. Though some may think that using longer words shows a more sophisticated level of understanding, it could be that those who have a more natural handling on their emotions are able to use simpler, less complicated vocabulary to communicate what they are feeling emotionally.

Second, as levels of emotional intelligence increased, use of pronouns, personal pronouns, and the first-person singular point of view also increased. To find an explanation for this relationship, one should turn to Pennebaker's (2011; Campbell & Pennebaker, 2003) research on how pronoun use reflects our psychological and physical health. Use of pronouns in writing indicates an understanding for communication of one's ideas; effective pronoun use means that a reader can follow the logic that the writer has crafted in his of her writing, as the writer uses pronouns as placeholders for other people or things (Pennebaker, Mehl, & Niederhoffer, 2003). Within the context of emotional writing, then, more pronoun use may offer information about emotional intelligence as well. Use of personal pronouns and first-person singular strengthen this idea, but also add a new element. Using these types of words shows that writers are actually focusing on themselves in relation to their emotional experiences, and perhaps indicating more introspection. Campbell and Pennebaker (2003) argue that having flexibility in pronoun use from session to session relates most strongly with the physical

benefits of expressive writing. This study shows that those high in emotional intelligence exhibit this flexibility to a certain extent.

Finally, as levels of emotional intelligence increased, use of inclusive words decreased. This was in incidental finding, and there does not seem to be an immediate explanation that fits with previous findings. We can speculate, though, that perhaps words like "we," "with," "both," and "and" represent a certain logic or considering of options, whereby more consistent use of them translates to having more ideas, people, or subjects to consider. Therefore, those with more emotional intelligence may use less of these words because they are more able to assess emotional situations in such a way that exhibits their ability to process and make insights about their emotional experiences by already choosing amongst those "options" and simplifying their language. Too many inclusive words could reflect more jumbled, overlapping thoughts.

In sum, it is apparent that there are marked differences in the way that those with different levels of emotional understanding write about their emotional experiences, but these differences are not as clear-cut overall as one might originally expect. That is, to make a blanket statement, saying that alexithymics write in ways that exhibit uncertainty and vagueness while those high in emotional intelligence do the opposite, might be misleading, because there were a number of outcomes for both constructs that overlapped. High levels of both alexithymia and emotional intelligence were related to more tentative words, positive emotion words, adverbs, and periods, and this complicates what one expects for these constructs. It is likely, though, that these relationships also reveal the complexity of language—how certain words and devices can have divergent implications depending on their context.

A few of the hypothesized outcomes did not turn out with significance. Appeals to the senses through use of seeing, hearing, and feeling words did not vary in accordance with levels of alexithymia and emotional intelligence. This outcome can make sense when one acknowledges that sensing one's environment does not automatically mean that one is integrating it with one's emotions. One high in alexithymia is even more inclined to externally oriented cognition, so it may be that they also use seeing, hearing, and feeling words to simply describe what they see around them. Use of social and friendship words also did not vary in relation to levels of alexithymia and emotional intelligence. Though this was not the predicted outcome, it is reasonable to believe, considering that simply referring to others does not require that one have high emotional understanding. Those high in emotional understanding may have used these types of words in a way that evoked understanding of emotional ties with people in their lives. Simultaneously, those low in emotional understanding may have used these types of words because they were simply discussing what was happening around them in a social situation and thereby evading a personal assessment of emotions.

There were also very few significant changes in word usage from the first to last writing sessions. Of the hypothesized changes in word usage from the first to the last session of writing, none were significant for both alexithymia and emotional intelligence. Data mining revealed that higher levels of emotional intelligence related to less change in health word and home words over time. It also revealed that higher levels of alexithymia related to less change in use of second-person point of view and of question marks. Though these findings show that those who are low in each of these attributes did exhibit more change in word usage from expressive writing, it is important to recognize that

what was characteristic for the attributes was relatively consistent. The general stability of word usage suggests that these attributes are also more stable, at least in this manifestation of them. This explanation, paired with the lack of significant changes in emotional intelligence levels after expressive writing, troubles past studies of emotional intelligence and expressive writing, which contend that expressive writing leads to an increase in emotional intelligence (Wing, Schutte, & Byrne, 2006; Kirk, Schutte, & Hine, 2011). The theory for why this sort of benefit occurs is tied to language and writing style, but if there were no changes in this factor—as evident in this study—then emotional intelligence should also not change. This insight raises questions about the underlying mechanisms behind the changes in emotional intelligence in past studies. Was a change in word usage actually a contributor to the result? These studies did not examine word usage per se, so an answer to this question is not available. If it is not word usage causing emotional intelligence to increase after expressive writing, then what does cause it? Was it simply a result of emotional confrontation (Pennebaker, 1989)? Or are there more subtle linguistic elements at work that analysis of word usage could not capture? Answering these questions should be a task of future research.

But returning to the findings from the current study, it is important to consider these results in light of previous literature's support of the cognitive change model, where increases in causal and insight words are related to more health benefits in individuals (Pennebaker, Mayne, & Francis, 1997; Pennebaker, Mehl, & Niederhoffer, 2003). The current study did not find significant changes, let alone increases, for these word usage categories across expressive writing sessions. In addition, neither change in use of insight words nor change in use of causal words were related to levels of alexithymia or

emotional intelligence. Two conclusions can be drawn from these findings. One, the "cognitive changes" that other studies report may not be as prevalent as they lead readers to believe. Two, though these changes may occur, the individual difference of emotional understanding (measured through levels of alexithymia and emotional intelligence) is not a factor that relates to or accounts for that cognitive change.

It is also possible that three days of writing for 15 minutes was not sufficient to show changes that would otherwise occur with more "practice." There were a number of word and punctuation categories that showed trends toward significance. Higher levels of alexithymia were nearly significantly correlated with more change in use of family words and less change in causal words and punctuation in general. In addition, higher levels of emotional intelligence were nearly significantly correlated with more change in use of future tense and less change in use of causal words. These trends are consistent with the proposal that more sessions of expressive writing may result in significant changes in word usage, reflecting the adaptive, cognitive changes that expressive writing may elicit. However, given that there were so few out of all the tests that were run, and that these trending relationships do not immediately fit with any of the literature that considers cognitive change (Gonçalves, 1995; Pennebaker & Francis, 1996; Pennebaker, Mayne, & Francis, 1997), this conclusion does not seem highly likely.

Finally, the study showed no significant changes in levels of alexithymia and emotional intelligence from the beginning to the end of the study. While these findings cannot directly support or refute the beneficial effects of expressive writing, they do inform us more about expressive writing's ability to influence and change these specific attributes. Therefore, the results suggest that levels of emotional understanding are not

inclined to change as an effect of an exercise of emotional probing and expression, at least in a short-term time frame. These results pair relatively well with the characterization of alexithymia, since investigators consider it more of a trait (Salminen et al, 1994; Taylor et al, 1991). But it comes as more of a challenge for emotional intelligence, which is largely accepted as an ability (though mixed models do include stable traits in their assessment of the construct). Emotional intelligence may be more stable than past studies have indicated, or it may be that expressive writing is not always an effective exercise to augment levels of emotional intelligence. Perhaps, though, the interpretation is more complicated or nuanced. The *t*-test that measured change in alexithymia from before to after expressive writing was actually near significance, suggesting that perhaps alexithymia is more fluid than the previous literature contends. However, because there was no control group—the Pennebaker expressive writing paradigm typically has participants randomly assigned to write about either emotional or superficial topics—all these analyses remain on a relatively speculative level.

Limitations

There are several limiting factors that one must keep in mind when considering the implications of this study. First, and in light of the unexpected relationship between scores for alexithymia and emotional intelligence in this study, the accuracy of the emotional intelligence scale is questioned. While the TAS-20 has a number of published articles describing its validity and reliability (Bagby, Parker, & Taylor, 1994), the equivalent was not found for this abridged emotional intelligence scale. The scale did have good reliability, but this lack of information could account for a requisite lack of

construct validity. Future studies, with more resources, should combat this uncertainty by using a more trustworthy scale of emotional intelligence.

Second, the range of alexithymia and emotional intelligence was relatively low, and contained scores mostly in the lower range of alexithymia and the middle-low range of emotional intelligence. For alexithymia at day 1, scores ranged from 1.1 to 4.8 out of a possible range of 1 to 7, and was positively skewed. The literature marks scores at 4.27 and above[2] as alexithymic (Taylor, Bagby, & Parker, 1997), so only two participants could actually be considered alexithymic. For emotional intelligence at day 1, scores were similar, ranging from 1.7 to 5.3. A wider range of scores may have produced stronger or more relationships between writing style and emotional understanding in this study, because the sample captures so much of one side of the spectrum—low alexithymia and average to low emotional intelligence. A wider range of scores would give a stronger sense of comparison between high emotional understanding and low emotional understanding. Future studies should attempt to gather a larger swath in this respect.

Third, the sample size was relatively small. More participants would help elicit stronger, more trustworthy results.

Fourth, a few factors may have influenced the extremity of emotional experiences that participants chose to share. One, the sample of the individuals that participated in this study was a convenience sample. As such, many participants were acquainted with the principal investigator. This relationship may have caused more vagueness or censorship

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[2] This is the equivalent score for the present study. A score of 61, based on a sum of ratings on a 5-point Likert scale, is cited as the cut-off for alexithymia (Taylor, Bagby, & Parker, 1997).

in written responses. Two, this study was online as opposed to in person or in a lab. A person's general sense of security may have been lessened when entering information into a computer and sending it out into what may seem like the "abyss" of the Internet, due to general preconceived notions about limited privacy online. The online setting, though more convenient for participants, may have also influenced participants to not take the study as seriously as they may have, had they come into a lab. Due to these possibilities, relationships to word usage and change in word usage may not have appeared simply because writing topics were not emotional enough.

Fifth, in comparison to other longitudinal studies of expressive writing, this one covered an extremely short time span. Therefore, changes in word usage may not have appeared simply because 15 minutes of writing over three days is not sufficient time to create enough cognitive change that word usage changes significantly. In the future, one could have participants write for more days in a row to more fully examine the effects of practicing expressive writing on word usage. In addition, causal conclusions about long-term changes in alexithymia and emotional intelligence cannot be determined conclusively. However, what these results do offer is a more detailed and enriched account of how emotional understanding relates to one's language use in emotional topics.

Finally, a relatively large number of statistical tests were conducted. This increases the risk of type 1 error, meaning that some of the significant findings in this study may reflect chance rather than word usage patterns. Therefore, replication is required.

Implications and Future Directions

The outcomes from this study show that those with different levels of emotional understanding write in slightly different ways about their emotional experiences, beyond those that have been reported in past studies. The main next step, after replication, will be to take these multiple categories of words and punctuation and using them in an experimental design. It will be important to establish which of these identified differences relate to more beneficial outcomes.

Another task at hand for the future is continuing the debate and research on the stability or fluidity of alexithymia and emotional intelligence. As previously discussed, these attributes are often treated differently or considered separately—alexithymia as a trait and emotional intelligence as an ability. But the results from this study complicate their statuses in the literature. Because the two incorporate such similar ideas while simultaneously displaying different implications for behavior (trait versus ability), future research should attempt to resolve this discord and learn more about the nature of emotional understanding.

This study also enriches expressive writing's implications for therapy. In knowing the differences in word usage and identifying how they relate to potential deficiencies can help therapists cater to their patients when engaging in verbal expression. Specific elements of language, like tentative words, sentence length, adverbs, and pronouns have been found to relate to emotional understanding, and can therefore be tools for therapists to guide their patients in the more productive ways to express their emotions. This knowledge can begin to lay the groundwork for what Lumley (2004) termed "emotional didactics." Through finding these elements of writing style, future research can

strengthen found characteristics, like the ones in this study, and use them to develop

rubrics or curricula for those low in emotional understanding, especially alexithymics. In

this way, the individuals that need the most help with making sense of their emotions can

be better equipped to make progress possible. With such a useful and natural therapeutic

exercise as expressive writing, it is important to find the ways in which it can truly

benefit individuals to the utmost extent.

Appendix A. The 20-item Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994)

Please respond to the following statements by indicating how much you agree that they describe you, according to the scale:
1 = Completely disagree, 2 = Mostly disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree, 5 = Somewhat agree, 6 = Mostly agree, 7 = Completely agree.

1. I am often confused about what emotion I am feeling.
2. It is difficult for me to find the right words for my feelings.
3. I have physical sensations that even doctors don't understand.
4. I am able to describe my feelings easily.
5. I prefer to analyze problems rather than just describe them.
6. When I am upset, I don't know if I am sad, frightened, or angry.
7. I am often puzzled by sensations in my body.
8. I prefer to just let things happen rather than to understand why they turned out that way.
9. I have feelings that I can't quite identify.
10. Being in touch with emotions is essential.
11. I find it hard to describe how I feel about people.
12. People tell me to describe my feelings more.
13. I don't know what's going on inside me.
14. I often don't know why I am angry.
15. I prefer talking to people about their daily activities rather than their feelings.
16. I prefer to watch "light" entertainment shows rather then psychological dramas.
17. It is difficult for me to reveal my innermost feelings, even to close friends.
18. I can feel close to someone, even in moments of silence.
19. I find examination of my feelings useful in solving personal problems.
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

Items 4, 5, 10, 18, and 19 are reverse-scored.

Appendix B. Abridged Emotional Intelligence Test (PsychTests AIM, Inc., n.d.)

Please respond to the following statements, indicating how much you agree that they describe you, according to the scale:
1 = Completely disagree, 2 = Mostly disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree, 5 = Somewhat agree, 6 = Mostly agree, 7 = Completely agree.

1. When I mess up, I say self-depreciating things such as "I am such a loser," "Stupid, stupid, stupid," or "I can't do anything right."
2. I run into obstacles that keep me from reaching my goals.
3. Even when I do my best, I feel guilty about the things that were not done perfectly.
4. I am able to stop thinking about my problems.
5. I am bored most of the time.
6. I feel like I worry about things that other people don't even think about.
7. When someone I care about is sad, I feel sad too.
8. Some people make me feel bad about myself, no matter what I do.
9. Everything I try to do ultimately ends in failure.
10. I am not satisfied with my work unless someone else praises it.

Item 4 is reverse-scored.

Appendix C. LIWC2007 Output Variable Information (Pennebaker et al, 2007)

Category	Abbrev	Examples	Words in category	Validity (judges)	Alpha: Binary/raw
Linguistic Processes					
Word count	wc				
words/sentence	wps				
Dictionary words	dic				
Words>6 letters	sixltr				
Total function words	funct		464		.97/.40
Total pronouns	pronoun	I, them, itself	116		.91/.38
Personal pronouns	ppron	I, them, her	70		.88/.20
1st pers singular	i	I, me, mine	12	.52	.62/.44
1st pers plural	we	We, us, our	12		.66/.47
2nd person	you	You, your, thou	20		.73/.34
3rd pers singular	shehe	She, her, him	17		.75/.52
3rd pers plural	they	They, their, they'd	10		.50/.36
Impersonal pronouns	ipron	It, it's, those	46		.78/.46
Articles	article	A, an, the	3		.14/.14
[Common verbs][a]	verb	Walk, went, see	383		.97/.42
Auxiliary verbs	auxverb	Am, will, have	144		.91/.23
Past tense[a]	past	Went, ran, had	145	.79	.94/.75
Present tense[a]	present	Is, does, hear	169		.91/.74
Future tense[a]	future	Will, gonna	48		.75/.02
Adverbs	adverb	Very, really, quickly	69		.84/.48
Prepositions	prep	To, with, above	60		.88/.35
Conjunctions	conj	And, but, whereas	28		.70/.21
Negations	negate	No, not, never	57		.80/.28
Quantifiers	quant	Few, many, much	89		.88/.12
Numbers	number	Second, thousand	34		.87/.61
Swear words	swear	Damn, piss, fuck	53		.65/.48
Psychological Processes					
Social processes[b]	social	Mate, talk, they, child	455		.97/.59
Family	family	Daughter, husband, aunt	64	.87	.81/.65
Friends	friend	Buddy, friend, neighbor	37	.70	.53/.12
Humans	human	Adult, baby, boy	61		.86/.26
Affective processes	affect	Happy, cried, abandon	915		.97/.36
Positive emotion	posemo	Love, nice, sweet	406	.41	.97/.40
Negative emotion	negemo	Hurt, ugly, nasty	499	.31	.97/.61
Anxiety	anx	Worried, fearful, nervous	91	.38	.89/.33
Anger	anger	Hate, kill, annoyed	184	.22	.92/.55
Sadness	sad	Crying, grief, sad	101	.07	.91/.45
Cognitive processes	cogmech	cause, know, ought	730		.97/.37
Insight	insight	think, know, consider	195		.94/.51
Causation	cause	because, effect, hence	108	.44	.88/.26
Discrepancy	discrep	should, would, could	76	.21	.80/.28
Tentative	tentat	maybe, perhaps, guess	155		.87/.13
Certainty	certain	always, never	83		.85/.29
Inhibition	inhib	block, constrain, stop	111		.91/.20
Inclusive	incl	And, with, include	18		.66/.32

Category	Abbrev	Examples	Words in category	Validity (judges)	Alpha: Binary/raw
Exclusive	excl	But, without, exclude	17		.67/.47
Perceptual processes[c]	percept	Observing, heard, feeling	273		.96/.43
See	see	View, saw, seen	72		.90/.43
Hear	hear	Listen, hearing	51		.89/.37
Feel	feel	Feels, touch	75		.88/.26
Biological processes	bio	Eat, blood, pain	567	.53	.95/.53
Body	body	Cheek, hands, spit	180		.93/.45
Health	health	Clinic, flu, pill	236		.85/.38
Sexual	sexual	Horny, love, incest	96		.69/.34
Ingestion	ingest	Dish, eat, pizza	111		.86/.68
Relativity	relativ	Area, bend, exit, stop	638		.98/.51
Motion	motion	Arrive, car, go	168		.96/.41
Space	space	Down, in, thin	220		.96/.44
Time	time	End, until, season	239		.94/.58
Personal Concerns					
Work	work	Job, majors, xerox	327		.91/.69
Achievement	achieve	Earn, hero, win	186		.93/.37
Leisure	leisure	Cook, chat, movie	229		.88/.50
Home	home	Apartment, kitchen, family	93		.81/.57
Money	money	Audit, cash, owe	173		.90/.53
Religion	relig	Altar, church, mosque	159		.91/.53
Death	death	Bury, coffin, kill	62		.86/.40
Spoken categories					
Assent	assent	Agree, OK, yes	30		.59/.41
Nonfluencies	nonflu	Er, hm, umm	8		.28/.23
Fillers	filler	Blah, Imean, youknow	9		.63/.18

Appendix D. One-sample t-tests of difference in word usage from session 1 to session 3 that resulted in insignificant change, two-tailed.

	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Word Count	-1.485	51	.144	-29.48077	-69.3231	10.3615
Words Per Sentence	-.589	51	.559	-.42212	-1.8621	1.0179
Six Letters +	-.353	51	.726	-.16462	-1.1018	.7726
Dictionary Words	-2.012	51	.050	-.75769	-1.5138	-.0016
Numerals	.224	51	.824	.01462	-.1166	.1458
Function Words	-2.055	51	.045	-1.08577	-2.1463	-.0253
Personal Pronouns	-1.823	51	.074	-.82231	-1.7280	.0834
1st person singular	-1.246	51	.219	-.51250	-1.3385	.3135
1st person plural	.604	51	.549	.09346	-.2174	.4044
2nd person	1.032	51	.307	.11942	-.1128	.3517
3rd person singular	-1.375	51	.175	-.66712	-1.6414	.3072
3rd person plural	.910	51	.367	.14462	-.1743	.4635
Impersonal Pronouns	-.224	51	.824	-.07365	-.7341	.5868
Articles	1.667	51	.102	.44269	-.0906	.9760
Verbs	-.001	51	.999	-.00058	-.8167	.8155
Auxiliary Verbs	-1.584	51	.119	-.44481	-1.0086	.1190
Past tense	.063	51	.950	.03538	-1.0864	1.1572
Present tense	-.213	51	.832	-.13962	-1.4576	1.1784
Future tense	-.224	51	.824	-.03096	-.3090	.2471
Adverbs	-.457	51	.650	-.11942	-.6441	.4052
Prepositions	-1.228	51	.225	-.35154	-.9264	.2233
Conjunctions	-.114	51	.910	-.02654	-.4956	.4425
Quantifiers	.907	51	.369	.19288	-.2341	.6198
Swear Words	-1.039	51	.304	-.01846	-.0541	.0172
Social Words	-1.167	51	.248	-.79000	-2.1486	.5686
Family Words	-1.069	51	.290	-.24038	-.6920	.2112
Friend words	-.709	51	.482	-.08558	-.3279	.1568
Human Words	.457	51	.649	.05654	-.1917	.3048
Affect Words	.308	51	.759	.13923	-.7677	1.0462

Positive Emotion Words	1.730	51	.090	.76135	-.1221	1.6448
Anxiety Words	-1.958	51	.056	-.29731	-.6022	.0076
Anger Words	.040	51	.968	.00481	-.2342	.2438
Sad Words	-1.973	51	.054	-.26750	-.5397	.0047
Cognitive Words	-.355	51	.724	-.20365	-1.3558	.9485
Insight Words	.896	51	.374	.22635	-.2807	.7334
Causal Words	-.878	51	.384	-.19288	-.6341	.2483
Discrepancy Words	-1.051	51	.298	-.16942	-.4930	.1542
Tentative Words	.045	51	.964	.00904	-.3918	.4098
Certain Words	.040	51	.968	.00635	-.3083	.3210
Inhibition Words	-.943	51	.350	-.07885	-.2468	.0891
Inclusive Words	.431	51	.668	.10788	-.3942	.6099
Exclusive Words	-.027	51	.979	-.00577	-.4337	.4222
Perception Words	.712	51	.480	.10673	-.1942	.4076
Seeing Words	1.937	51	.058	.16615	-.0060	.3383
Hearing Words	-.149	51	.882	-.01365	-.1981	.1708
Feeling Words	-.729	51	.469	-.08558	-.3212	.1501
Biology Words	-.531	51	.598	-.12096	-.5785	.3366
Body Words	1.332	51	.189	.10000	-.0507	.2507
Health Words	-.856	51	.396	-.13808	-.4620	.1858
Sexual Words	-.415	51	.680	-.03885	-.2266	.1489
Ingesting Words	-1.348	51	.183	-.11019	-.2742	.0539
Relative Words	1.088	51	.282	.49385	-.4173	1.4050
Space Words	-.573	51	.569	-.13769	-.6202	.3448
Time Words	.381	51	.705	.12192	-.5201	.7639
Work Words	.464	51	.645	.12019	-.4003	.6407
Achieve Words	1.221	51	.228	.23212	-.1494	.6137
Leisure Words	1.916	51	.061	.23865	-.0114	.4887
Home Words	1.078	51	.286	.11231	-.0968	.3215
Money Words	-1.131	51	.263	-.07904	-.2193	.0613
Religious Words	1.375	51	.175	.08885	-.0409	.2186
Death Words	-.617	51	.540	-.04538	-.1930	.1023
Assent Words	-1.629	51	.110	-.05019	-.1121	.0117
Non-fluencies	.449	51	.655	.01808	-.0628	.0989
Fillers	.022	51	.983	.00154	-.1388	.1419
Periods	-.361	51	.719	-.08481	-.5561	.3865
Commas	.481	51	.633	.14192	-.4505	.7343
Colons	.677	51	.502	.01308	-.0257	.0519
Semicolons	-.731	51	.468	-.01192	-.0447	.0208

Question Marks	1.174	51	.246	.08077	-.0573	.2189
Exclamation Marks	-.435	51	.665	-.02077	-.1166	.0751
Dashes	-.660	51	.512	-.10019	-.4047	.2043
Quotation Marks	-.474	51	.638	-.04577	-.2397	.1482
Apostrophes	-.657	51	.514	-.13519	-.5483	.2780
Parentheses	-.716	51	.477	-.03058	-.1163	.0551
Other Punctuation	1.483	51	.144	.04577	-.0162	.1077
All Punctuation	-.221	51	.826	-.10385	-1.0483	.8406

References

Ashley, L., O'Connor, D.B., & Jones, F. (2011). Effects of emotional disclosure in caregivers: Moderating role of alexithymia. *Stress and Health*, *27*, 5, 376-387.

Bagby, R.M., Parker, J.D.A., & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale—I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, *38*(1), 23-32.

Bagby, R.M., Taylor, G.J., & Parker, J.D.A. (1994). The twenty-item Toronto Alexithymia Scale—II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research, 38*(1), 33-40.

Baikie, K.A., & McIlwain, D. (2008). Who does expressive writing work for? Examination of alexithymia, splitting, and repressive coping style as moderators of the expressive writing paradigm. *British Journal of Health Psychology, 13*(1), 61-66.

Bar-On, R. (1997). *Bar-On Emotional Quotient Inventory: Technical manual*. Toronto: Multi-health Systems.

Brackett, M.A., Rivers, S.E., Shiffman, S., Lerner, N., & Salovey, P. (2006). Relating emotional abilities to social functioning: A comparison of self-report and performance measures of emotional intelligence. *Journal of Personality and Social Psychology, 91*(1), 780-795.

Burton, C.M., & King, L.A. (2008). Effects of (very) brief writing on health: The two-minute miracle. *British Journal of Health Psychology, 13*(1), 9-14.

Burton, C.M., & King, L.A. (2004). The health benefits of writing about intensely positive experiences. *Journal of Research in Personality, 38*, 2, 150-163.

Cameron, L.D., & Nicholls, G. (1998). Expression of stressful experiences through

    writing: A self-regulation manipulation for pessimists and optimists. *Health*

    Psychology, *17*(1), 84-92.

Campbell, R.S., & Pennebaker, J.W. (2003). The secret life of pronouns: Flexibility in

    writing style and physical health. *Psychological Science*, *14*(1), 60-65.

Christianson, A.J., Edwards, D.L., Wiebe, J.S., Benoesch, E.G., McKelvey, L., Andrews,

    M. & Lubaroff, D.M. (1996). Effect of verbal self-disclosure on natural killer cell

    activity: Moderation influence on cynical hostility. *Psychosomatic Medicine,*

    58(1), 150-155.

Chung, C.K., & Pennebaker, J.W. (2008) Variations in the spacing of expressive writing

    sessions. *British Journal of Health Psychology, 13*(1), 15-21.

Cocker, W.J. (1878). *Hand-book of punctuation*. New York: A.S. Barnes and Co.

Danoff-Burg, S., Mosher, C.E., Seawell, A.H., & Agee, J.D. (2010). Does narrative

    writing instruction enhance the benefits of expressive writing? *Anxiety, Stress,*

    and Coping, 23, 3, 341-352.

Denham, S.A., Blair, K.A., DeMulder, E., Levitas, J., Sawyer, K.,& Auerbach-Major, S.

    (2003). Preschool emotional competence: pathway to social competence. *Child*

    Development, 74(1), 238-256.

Esterling, B.A., Antoni, M.H. Fletcher, M.A., Margulies, S., & Schneiderman, N. (1994).

    Emotional disclosure through writing or speaking modulates latent Epstein-Barr

    virus body titers. *Journal of Consulting and Clinical Psychology, 62*(1), 130-140.

Francis, M.E., & Pennebaker, J.W. (1992). Putting stress into words: Writing about

    personal upheavals and health. *American Journal of Health Promotion, 6*(1), 280-

    287.

Gohm, L.L., Corser, G.C., & Dalskey, D.J. (2005). Emotional intelligence under stress:

    Useful, unnecessary, or irrelevant? *Personality Individual Differences, 39*(1),

    1017-1028.

Goleman, D. (1995). *Emotional intelligence*. New York: Bantam.

Gonçalves, O.F. (1995). Cognitive narrative psychotherapy: The hermaneutic

    construction of alternate meanings. In M. Mahoney (Ed.), *Cognitive and

    constructive psychotherapies: Theory, research, and practice* (139-161). New

    York: Springer.

Gortner, Rude, & Pennebaker, J.W. (2006). Benefits of expressive writing in lowering

    rumination and depressive symptoms. *Behavior Therapy, 37*(1), 292-303.

Greenberg, M.A., & Stone, A.A. (1992). Writing about disclosed versus undisclosed

    traumas: Immediate and long-term effects on mood and health. *Journal of

    Personality and Social Psychology, 63*(1), 75-84.

Izard, C.E. (2001). Emotional intelligence or adaptive emotions? *Emotion, 1*(1), 249-257.

Joseph, D.L., & Newman, N.A. (2010). Emotional intelligence: An integrative meta-

    analysis and cascading model. *Journal of Applied Psychology, 95*(1), 54-78.

Kahn, J.H., Tobin, R.M., Massey, A.E. & Anderson, J.A. (2007). Measuring emotional

    expression with the Linguistic Inquiry and Word Count. *American Journal of

    Psychology, 120*, 2, 263-286.

Kennedy-Moore, E., & Watson, J.C. (1999). *Expressing emotion: Myths, realities, and therapeutic strategies*. New York: The Guilford Press.

Kirk, B.A., Schutte, N.S., & Hine, D.W. (2011). The effect of an expressive-writing intervention for employees on emotional self-efficacy, emotional intelligence, affect, and workplace inclivity. *Journal of Applied Social Psychology, 41*(1), 179-195.

Klein, K., & Boals, A. (2001). Expressive writing can increase working memory capacity. *Journal of Experimental Psychology: General, 130*, 3, 520-533.

Kokkonen, P., Karvonen, J., Veijola, J., Läsky, K. Jokelainen, J. Järvelin, & M. Joukamaa. (2001). Prevalence and sociodemographic correlates of alexithymia in a population sample of young adults. *Comprehensive Psychiatry, 42*(1), 471-476.

Lakoff, R.T. (1975). *Language and woman's place*. New York: Harper & Row.

Lane, R.D., Sechrest, L., & Reidel, R. (1998). Sociodemographic correlates of alexithymia. *Comprehensive Psychiatry, 39*, 6, 377-385.

Lesser, I.M. (1983). Current concept in psychiatry: Alexithymia. *The New England Journal of Medicine, 312*, 11, 690-692.

Levant, R. F. (1998). Desperately seeking language: Understanding, assessing, and treating normative male alexithymia. In W. Pollack & R. Levant (Eds.), *New psychotherapy for men* (35–56). New York: Wiley.

Loas, G., Fremaux, D. Otmani, O., & Verrier, A. (1995). Prevalence of alexithymia in general population: A study of 183 normal subjects and in 263 university students. *Annales Medico-psychologiques, 153*(1), 355-357.

Lumley, M.A. (2004). Alexithymia, emotional disclosure, and health: A program of

    research. *Journal of Personality, 72*, 6, 1271-1300.

Mayer, J. D., Roberts, R. D., & Barsade, S. G. (2008). Human abilities: Emotional

    intelligence. *Annual Review of Psychology, 59*(1), 507–536.

Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey, D.

    Sluyter (Eds.), *Emotional development and emotional intelligence: Educational

    implications* (3-31). New York: Basic Books.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Models of emotional intelligence. In

    R. Sternberg (Ed.), *Handbook of intelligence* (392–420). Cambridge, England:

    Cambridge University Press.

Middendorp, H., & Geenen, R. (2008). Poor cognitive emotional processing may impede

    the outcome of emotional disclosure interventions. *British Journal of Health

    Psychology, 13*(1), 49-52.

O'Connor, D.B., & Ashley, L. (2008). Are alexithymia and emotional characteristics of

    disclosure associated with blood pressure reactivity and psychological distress

    following written emotional disclosure? *British Journal of Health Psychology*,

    13(1), 495-512.

Paez, D., Velasco, C., & Gonzalez, J.L. (1999). Expressive writing and the role of

    alexythimia as a dispositional deficit in self-disclosure and psychological health.

    Journal of Personality and Social Psychology, *77*, 3, 630.

Parker, J., Taylor, G.J., & Bagby, R.M. (1989). The alexithymia construct: Relationship

    with sociodemographic variables and intelligence. *Comprehensive Psychiatry, 30*,

    5, 434-441.

Parker, J., Taylor, G.J., & Bagby, R.M. (2003). The twenty-item Toronto Alexithymia

Scale—III. Reliability and factorial validity in a community population. *Journal

of Psychosomatic Research, 55*, 3, 269-275.

Pasini, A., Delle Chiaie, R., Seripa, S., & Ciani, N. (1992). Alexithymia as related to sex,

age, and educational level: Results of the Toronto Alexithymia Scale in 417

normal subjects. *Comprehensive Psychiatry, 33*(1), 42-46.

Pennebaker, J.W. (1989). Confession, inhibition, and disease. *Advances in Experimental

Social Psychology, 22*(1), 211-244.

Pennebaker, J.W. (1993). Putting stress into words: Health, linguistic, and therapeutic

implications. *Behaviour Research and Therapy, 31*, 6, 539-548.

Pennebaker, J.W. (1997). Writing about emotional experiences as a therapeutic process.

Psychological Science, 8, 3, 162-166.

Pennebaker, J.W. (2011). *The secret life of pronouns: What our words say about us*. New

York: Bloomsbury Press.

Pennebaker, J.W., Barger, S.D., & Tiebout, J. (1989). Disclosure of traumas and health

among Holocaust survivors. *Psychosomatic Medicine, 51*, 5, 577-589.

Pennebaker, J.W., & Beall, S.K. (1986). Confronting a traumatic event: Toward an

understanding of inhibition and disease. *Journal of Abnormal Psychology, 95*(1),

274-281.

Pennebaker, J.W., Chung, C.K., Ireland, M., Gonzalez, A., & Booth, R.J. (2007). *The

development and psychometric properties of LIWC2007*. Austin, TX.

Pennebaker, J.W., & Francis, M.E. (1996). Cognitive, emotional, and language processes

in disclosure. *Cognition and Emotion, 10*, 6, 601-626.

Pennebaker, J.W. & Graybeal, A. (2001). Patterns of natural language use: disclosure, personality, and social integration. *Current Directions in Psychological Science, 10,* 3, 90-93.

Pennebaker, J.W., & King, L.A. (1999). Lingustic styles: Language use as an individual difference. *Journal of Personality and Social Psychology, 77*, 6, 1296-1312.

Pennebaker, J.W., Mayne, T.J., & Francis, M.E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology, 72*, 4, 863-871.

Pennebaker, J.W., Mehl, M.R., & Niederhoffer, K.G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*(1), 547-577.

Pennebaker, J.W., & Seagal, J.D. (1999). Forming a story: The health benefits of narrative. *Journal of Clinical Psychology, 55*, 10, 1243-1254.

Petrie, K. J., Booth, R. J., & Pennebaker, J. W. (1998). The immunological effects of thought suppression. *Journal of Personality and Social Psychology, 75*, 5, 1264–1272.

PsychTests AIM, Inc. (n.d.). Emotional IQ test – abridged. *Discovery Fit & Health*. Retrieved September 20, 2011, from http://cl1.psychtests.com/take_test.php?idRegTest=2998.

Salminen, J.K., Saarijarvi, S., Aairela, E., & Tamminen, T. (1994). Alexithymia—state or trait? One-year follow-up study of general hospital psychiatric consultation out-patients. *Journal of Psychosomatic Research, 38*, 7, 681-685.

Salovey, P., & Mayer, J.D. (1989). Emotional intelligence. *Imagination, Cognition, and Personality, 9*, 3, 185-211.

Smyth, J.S. (1998). Written emotional expression: Effect sizes, outcome types, and

    moderating variables. *Journal of Consulting and Clinical Psychology*, *66*(1), 174–

    184.

Smyth, J.M., & Pennebaker, J.W. (2008). Exploring the boundary conditions of

    expressive writing: In search of the right recipe [Special issue]. *British Journal of*

    Health Psychology, *13*(1), 1-102.

Smyth, J., True, N., & Suoto, J. (2001). Effects of writing about traumatic experiences:

    The necessity for narrative structuring. *Journal of Social and Clinical Psychology,*

    20(1),161–172.

Solano, L., Donati, V., Pecci, F., Persichetti, S., & Colaci, A. (2003). Postoperative

    course after papilloma resection: Effects of written disclosure of the experience in

    subjects with different alexithymia levels. *Psychosomatic Medicine, 65*, 477-484.

Spera, S.P., Buhrfeind, E.D., & Pennebaker, J.W. (1994). Expressive writing and coping

    with job loss. *Academy of Management Journal, 37*, 3, 722-733.

Taylor, G.J. (1984). Alexithymia: Concept, measurement, and implications for treatment.

    American Journal of Psychiatry, 141, 6, 725-732.

Taylor, G.J., Bagby, R.M., & Parker, J.D. (1991). The alexithymia construct: A potential

    paradigm for psychosomatic medicine. *Psychosomatics: Journal of Consultation*

    Liaison Psychiatry, 32, 2, 153-164.

Taylor, G.J., Bagby, R.M., & Parker, J.D. (1997). *Disorders of affect regulation:*

    Alexithymia in medical and psychiatric illness. Cambridge, England: Cambridge

    University Press.

Van Rooy, D.L., Viswesvaran, C., & Pluta, P. (2005). An evaluation of construct

validity: What is this thing called emotional intelligence? *Human Performance,*

18(1), 445-462.

Weintraub, W. (1981). *Verbal behavior: Adaptation and psychopathology*. New York:

Springer.

Wing, J.F., Schutte, N.S., & Byrne, B. (2006). The effect of writing on emotional

intelligence and life satisfaction. *Journal of Clinical Psychology, 62*, 10, 1291-

1302.